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 additions 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 programme. Students should be aware that enrolment in many programmes is limited and that students who are admitted to programmes 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 programme in question. While the University will make every reasonable effort to offer classes as required within programmes, prospective students should note that admission to a degree or other programme 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 4J6
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 Programmes

Information on programmes offered by the Faculties of Dentistry, Law and Medicine, can be found in the Dentistry, Law, Medicine Calendar. Information on programmes offered by the Faculty of Graduate Studies can be found in the Graduate Studies Calendar.
Academic Class Add/Drop Dates

ACADEMIC CLASS ADD/DROP DATES (For financial deadlines and refund dates, visit www.dal.ca/studentaccounts.)

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<tr>
<th>Part of Term Identifier</th>
<th>Duration of Classes</th>
<th>Last Day to Register</th>
<th>Last Day for Late Registration</th>
<th>Last Day to Cased Registration</th>
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Fall Term 2007

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Winter Term 2008

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Other Academic Dates

2007

May
7 Summer Academic term begins, commerce
21 Victoria Day - University closed
22-30 - Spring Convocations

July
2 In lieu of Canada Day - University closed
3 Last day to apply to graduate in October

August
3 Co-op summer academic term ends
6 Halifax/Dartmouth Natal Day - University closed
7 Examinations begin commerce co-op, computer science & engineering
11 Examinations end except commerce co-op
18 Examinations end commerce co-op
28 Labour Day - University closed
6 Classes begin, fall term
12 IPL Module - Palliative care (Senior), dentistry, health professions and medicine
8 Last day to apply for honours programmes
21 Last day to change from Dalhousie to King's and vice versa

September
3 Labour Day - University closed
6 Classes begin, fall term
12 IPL Module - Palliative care (Senior), dentistry, health professions and medicine
21 Last day to change from Dalhousie to King's and vice versa

October
3 Thanksgiving Day - University closed
5 IPL Module - Working in Interprofessional Teams #1 (Entry)
20-21 - Fall Convocations
2007

November
12 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
3 Classes end, full term
3 Last day to apply to graduate in May
5 Examinations begin
15 Examinations end

2008

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

February
1 Munro Day - University closed
14 IPL Module - Family violence (Intermediate), dentistry, health professions and medicine
25 Study break begins

March
3 Classes resume
5 IPL Module - Diversity in Teamwork (Entry)
21 Good Friday - University closed

April
9 Classes end, regular session
12 Examinations begin, regular session
26 Examinations end, regular session

May
5 Co-op 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 and engineering
9 Examinations end, computer science and engineering
15 Examinations end, commerce co-op
Final Dates for Receipt of Applications for Admission

Regular Session
College of Arts & Science, Faculties of Engineering, Computer Science and Management
International Students (except USA).................................April 1
Students entering from Canada or USA5.................................June 1
Returning Dalhousie Students...........................................August 15
Diploma in Meteorology......................................................June 1

Faculty of Architecture and Planning
Bachelor of Community Design......................................June 1
Bachelor of Environmental Design.................................March 1

Faculty of Health Professions
Pharmacy.................................................................................February 1
Social Work, Health Sciences............................................February 15
BSc (Recreation) .................................................................June 1
BSc (Kinesiology) .................................................................June 1
BSc (Health Promotion)......................................................June 1
BSc (Nursing) for Post RN....................................................August 1
Health Services Admin (DHSA, DEFRM, BHDN)...............July 1
BSc (Nursing).................................................................May 1 (for September 2007 intake)
.................................................................March 15 (for September 2008 intake)
Diploma in Nurse Practitioner/Studies for Remote & Underserviced
Communities (DNSP).........................................................June 1
Diploma in Disability Management (DDM).........................July 15

Internal Transfers
Fall term .................................................................................September 22

Dentistry
DDS.....................................................................................December 1
Dental Hygiene ....................................................................March 15
Dentistry Qualifying Programme.................................September 1
Bachelor of Dental Hygiene (BDEH).................................March 1

Medicine
MD ......................................................................................October 31

Law
LLB.....................................................................................February 28

Winter Term
RA and BSc programmes only...........................................November 15
BSc (Nursing) for Post RN only..........................................November 15
Returning Dalhousie Students.................................November 15
BEDS Transfer students.................................................November 1

1 Late applications may be considered up to August 1 but we cannot guarantee space in programmes.
2 Late applications may be considered only if space is available. Applications for the Autumn term must be received by the last day to add classes (March 15).
3 Students need to be registered at Dalhousie wishing to change degree programmes.
4 Information on these programmes is included in the appropriate calendar.
5 Students entering in the BA, BSc, BEng, BScN programmes, or attending as Special entry must apply by March 31.

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 programme due to unsatisfactory academic performance (see Academic Regulations, page 37, section 20).

Academic Programme
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

Advance Standing
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 “Audit”. Audit students must apply in the normal way. Students may register to audit a class only after the last day to add classes in the term.

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 programme 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.
Definitions

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.

Mature Student

Scotia or its equivalent elsewhere.

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.

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

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 programme unless their performance improves by the end of the next term. (See Academic Regulations, page 37, section 19).

Scholarship GPA

See Awards section page 338.

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

Cancer related work experience required in Co-operative Education programmes. 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

3000-4000 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
ANAT - Anatomy & Neurobiology
ARCH - Architecture
ARTC - Applied Health Services Research
ASSC - Arts and Social Sciences Interdisciplinary
BIOC - Biochemistry
BIOE - Biological Engineering
BIOI - Biology
BIOT - Bioethics
BMNG - Biomedical Engineering
BUSI - Business Administration
CANA - Canadian Studies
CH&E - Community Health & Epidemiology
CHEE - Chemical Engineering
CHEM - Chemistry
CHIN - Chinese
CLAS - Classics
COMM - Commerce
COMR - Comparative Religion
CPST - Complimentary Studies
CSCI - Computer Science
CTMP - Contemporary Studies
DCYT - Diagnostic Cytology
DEHY - Dental Hygiene
DENT - Dentistry
DM - Disability Management
DMUT - Diagnostic Medical Ultrasound Technology
ECED - Electrical and Computer Engineering
ECMM - Electronic Commerce
ECON - Economics
EDUC - Education
ENG - Engineering
ENGL - English
ENGM - Engineering Math
ENYE - Environmental Engineering
ENVI - Environmental Studies
ENVS - Environmental Science
ERTH - Earth Sciences
FCSC - Food Science & Technology
FREN - French
GEOG - Geography
GERM - German
GWST - Gender and Women’s Studies
HAPHF - Health and Human Performance
HEED - Health Education
HESA - Health Services Administration
HINF - Health Informatics
HIST - History
HLHT - Health Professions
HPRO - Health Promotion
HSAI - Health Services Administration (International)
HSC - Health Sciences
HSTC - History of Science and Technology
HUCD - Human Communication Disorders
IDS - Interdisciplinary Studies
IEING - Industrial Engineering
INFO - Information Management
INFX - Informatics
INTD - International Development Studies
INTE - Interdisciplinary Studies (Graduate)
INWK - Engineering Internetworking
ITAL - Italian
JOUR - Journalism
KINE - Kinesiology
KING - King’s Foundation Year Programme
LAW - Law
LEVS - Leisure Studies
MARA - Marine Affairs
MARI - Marine Biology
MATE - Materials Engineering
MATH - Mathematics
MEDL - Medical Lab Technology
MECH - Mechanical Engineering
MEDS - Medicine
MEDS - Medical Science
MGMT - Management
MCI - Microbiology & Immunology
MINE - Mining Engineering
MUSC - Music
NESC - Neuroscience
NUMT - Nuclear Medicine Technology
NURS - Nursing
OCCU - Occupational Therapy
OCEA - Oceanography
ORAL - Oral & Maxillofacial Surgery
PATH - Pathology
PETR - Petroleum Engineering
PGMD - Post-Graduate Medicine
PGB - Post-Graduate Pharmacy
PHAC - Pharmacology
PHAR - Pharmacy
PHIL - Philosophy
PHYS - Physics and Atmospheric Science
PHYL - Physiology
PHYT - Physiotherapy
PLAN - Urban and Rural Planning
POLI - Political Science
PRDS - Prosthetics
PYSO - Psychology
PUAD - Public Administration
RADT - Radiological Technology
REGN - Registration Course - Graduate
RSPT - Respiratory Therapy
RUSS - Russian Studies
SCIE - Science
SLWK - Social Work
SOSA - Sociology and Social Anthropology
SPAN - Spanish
STAT - Statistics
THEA - Theatre
TYPR - Transition Year Programme
VISC - Clinical Vision Science
### Undergraduate Programmes

**Faculty of Architecture and Planning**
- Bachelor of Environmental Design Studies (2 years)
- Bachelor of Community Design (3 years)
- Bachelor of Community Design (4 years 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 combined honours)
- Bachelor of Arts/Bachelor of Engineering Concurrent (5 years)
- Bachelor of Music (4 years)
- Advanced Diploma in Costume Studies (2 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 Software Engineering (4 years)**
- Bachelor of Software Engineering (4 years)*
- Bachelor of Arts (4 year double major)*
- Bachelor of Arts (4 year combined honours)*
- Bachelor of Arts/Bachelor of Engineering Concurrent (5 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)*

**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-serviced 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) (5 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 (3 year concentration)
- Bachelor of Science (4 year major)*
- Bachelor of Science (4 year double major)*
- Bachelor of Science (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 programme.
**Offered jointly by Engineering and Computer Science. Also available as a co-op programme.
*** 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 (Hons), PhD

Finance and Administration
Ken Burt, BA, MBA

External
Floyd W. Dykeman, BA, MPI

Student Services
Bonnie Neuman, BA, MA, EdD

Research
Carl Breckenridge, BSc (Hons), MSc, PhD

Associate Vice-President, Academic
Lorry Maloney, B.F.E., BSc, MA, PhD

Assistant Vice-President, Communications and Marketing
Jim Vibert, BA

Assistant Vice-President, Financial Services
Ian Nason, BComm

Assistant Vice-President, Personnel Services
Michael Roughton, CBIS, BA, MSc

Deans of Faculties

Architecture and Planning
Grant Wanzel, BArch, MArch (Toronto), MRAIC

Arts and Social Sciences
Marian Binkley, BA, MA, PhD (Toronto)

Computer Science
J. Norman Scrimger, BSc, MSc, PhD (Western)

Dentistry
David S. Precious, DDS, MSc (Dal), FRCD, FADID, FRCS, FACC, FRCPS (Eng)

Engineering
L. Joshua Leen, BSc, MSc, PhD (Dal), FEng

Graduate Studies
Carolyn Watson, BSc, MSc, MLS, PhD

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 Cook, BSc, MSc, PhD (Dal)

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

College of Continuing Education
Andrew Cochrane, BSc, MBA

College of Arts and Science, Provost
Keith Taylor, BSc (St.FX), PhD (Alberta)

Administrative Officers

University Legal Counsel
Karen Crombie, BA (Hon), JD

University Librarian
William Mao, AR, MA, MLS

University Registrar
Asa Kachan, BA, MLS

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
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. Buehen Cohen
Sir Graham Day
Dr. Ruth Goldbloom

Executive
Hon. Lorne Clarke
Senator James S. Cowan, Chair
Mr. Ezra Edelman
Dr. Mohamed El-Hawary
Ms. Cathy MacNeill, Vice-Chair
Mr. Dan Mills, Honorary Secretary
Dr. Robert Chisholm
Dr. Absalom Sinclair
Dr. Jim Spatz
Mr. Bruce Towler, Honorary Treasurer
Dr. Tom Traves, President

Members
Mr. Jay Abbas
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Ms. Elizabeth Bode
Mr. William Black
Mr. Daniel Clark
Mr. David Craig
Prof. Richard Evans
Dr. Richard Goldbloom
Ms. Lynn Irving
Ms. Nancy Macready-Williams
Ms. Natalie MacLean
Prof. Sunny Marche
Mr. Robert Radchuck
Mr. Chris Smith
Mr. Jim Wilson

University Secretary
Jane O'Connor

Observer for Faculty Association
Dr. Jerome Singleton

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—40 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
Mohamed El Hawary, BEng, PhD

Vice Chair of Senate
Peter M. Butler, PhD

Secretary of Senate
Bruce Dampney, MD, MEd, FRSC (c)
Admission Requirements

Dalhousie University is an affirmative action and equal opportunity educational institution. Students who 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 programme or to rescind an offer of admission of an applicant into a programme. Please refer to University Regulations, page 19.

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.

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 programmes, students require academic grade 12 level, OAC, U or U/C 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 programme) 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 admissions.

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 programme 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 programme of study at Dalhousie. In this case, the student will not be eligible for transfer credit assessment.

4. Acceptable Classes for Atlantic Provinces

• English language and literature or thematic literature in Newfoundland

• 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, modern world problems, 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%.

6. Students from Outside Canada

American High School Curriculum

If you are studying in an American-based curriculum (in the United States, or abroad), you are required to present a Grade 12 high school average of at least “C” or better. In addition, you must present an SAT I score (a minimum combined SAT I score of 1000 on the new SAT test or 1100 on the old SAT test) or an ACT score of 23 or better.

British Curriculum (GCE and GSE)

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 Baccalauréat) 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.

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) - 570
  • TOEFL (paper based) - 80
  • 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 (CAPEA) - 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 in English B

• AP English Examination (Language Composition; Literature and Composition) with a minimum grade of 4

• O-Level GSE or ICSE 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 programme.

• 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.

Admission Requirements
The following Web links will provide more information on English language proficiency tests:

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 4V6
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 IELTS 6.0 or MELAB 7.6 or CxAEL 60 may be offered part-time Dalhousie admission with the co-requirement of completing a full-time approved English training programme.

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 22 for complete information.

10. Mature Students

If you are at least 25 years old and have been out of high school for four years and have not attended university or community college, you may apply for the University Exploration Programme as a mature student. To directly enter a degree programme, 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 restricted from taking full-year classes (see Class Codes and Definitions).

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

11. Transfer Students

Students wishing to apply for transfer credit should consult Academic Regulation 8, 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.

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

12. International Baccalaureate 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.

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

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 Programme Requirements

A. Faculty of Architecture and Planning

1. School of Architecture

1.a Bachelor of Environmental Design Studies (BEDS)

1. Admission Criteria
Each September, approximately sixty-five students are admitted into the BEDS programme. The Admissions Committee gives priority to applicants with a combination of academic performance and creative ability. Well-rounded personal and academic experience is beneficial, as well as experience in drawing, craft, and computer applications.

2. Minimum Academic Requirements
The minimum academic requirements for admission to the programme are:
• Two years of general non-architectural studies in a university degree programme (normally, ten full-year classes), with a minimum 2.5 grade point average;
• A full-year university class in mathematics. Calculus is recommended. Other acceptable subjects are: algebra, calculus, trigonometry or a class for which calculus is a prerequisite. Architectural technology or engineering courses that require substantial mathematical ability may be acceptable.
• A half-year class that emphasizes writing skills.
• Two half-year classes in humanities or social sciences (e.g., anthropology, art history, philosophy, political science, psychology or sociology).

2.a Post-Secondary Institutions
The Admissions Committee may grant up to one year of university credit to 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 as a minimum.

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 programme and does not meet the minimum academic requirements for admission (two years of university required classes 2.5 GPA). In the application, a Mature Student should describe related work experience, and any other pursuits and skills that may serve as grounds for admission. A portfolio of creative work and any post-secondary academic transcripts also must be submitted.

2.c Transfer Students
The School of Architecture welcomes applications from transfer students from other architecture schools in Canada and abroad. Level of entry is based on classes completed elsewhere that are equivalent to required classes at Dalhousie, on 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.
General Information

12. Admission Requirements

• Minimum final grades:
  • Physics, Chemistry
  • Pre-calculus mathematics
  • English

3. Bachelor of Software Engineering

• Minimum final grades:
  • 3 other acceptable university-preparatory classes
  • Pre-calculus Mathematics
  • English

D. Faculty of Engineering

1. Bachelor of Applied Science in Food Science

• English
• Pre-calculus Math
• 3 other acceptable university-preparatory classes
• Minimum final grades:
  • English, Math - 65%
  • Other subjects - 60%
  • Overall Average - 70%

2. Bachelor of Engineering

2a. From High School

• English
• Pre-calculus Math
• Physics, Chemistry
• 1 other acceptable university-preparatory class
• Minimum final grades:
  • English, Chemistry, Math, Physics - 65%
  • Other subject - 60%
  • Overall Average - 70%

2b. Transfer Students

Students wishing admission with advanced placement in the BEng degree programme 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.

2c. Associated Universities

Admission and registration for the Associated University programme 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 programme at the Associated University, such students 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 programme entrance requirements to the Registrar by the date shown on the application form.

A student from an Associated University must complete the "Discipline Choice" form required by Dalhousie during year one to reserve a place in a discipline for year two or year three of the programme.

Students who wish to enter the Faculty of Engineering and who have completed a programme 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 programme at a level determined by the Faculty of Engineering if they meet the entry and promotional requirements of the Faculty of Engineering.

Applicants for the Bachelor of Engineering programme cannot be guaranteed that they will gain entry to the programme of their choice since all programmes are subject to a known maximum number of annual admissions. Thus students are required to specify their choice of at least three programmes, in preferential order, and at a predetermined date departments will select students for admission, the basis for selection being the academic performance of the applicants. Students who may be admitted with a cumulative GPA of less than 2.0 will be deemed admitted on Academic Probation.

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.
Admission Requirements 13

E. Faculty of Health Professions

Some programmes 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 programmes. 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 co-op placements in their particular programme. 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. This deposit is payable within three weeks of notification of acceptance.

1. Diploma in Disability Management

Applicants to the DEM programme will be employees of the Worker’s Compensation Board 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 University’s 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, math
• Minimum overall average of 70% in five grade 12 subjects

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%)

Students already engaged in university programmes can transfer into the Health Promotion programme. 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 programme should be directed to the School of Health and Human Performance.

The deadline for receipt of applications to the programme 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 programme is competitive. Admission from high school requires a minimum average of 70% or better in five grade 12 subjects including:

• English (minimum 70%)
• 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 programme, students transferring from other university programmes are expected to have a minimum GPA of 2.30 (on a 4.30 scale). The deadline for receipt of applications to the programme 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) programme 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) programme, students transferring from other university programmes are expected to have a minimum GPA of 2.30 (on a 4.30 scale). The deadline for receipt of applications to the programme 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 programme is offered with a primary focus on Recreation Administration. The minimum requirement for entry into the Bachelor of Science (Recreation)/Bachelor of Management programme is academic grade 12 with an average of 70% in five university preparatory subjects, including:

• English (minimum 70%)
• Biology or Chemistry (minimum 70%)
• Math (academic - minimum 70%)

Applicants who have not completed grade 12 Math may be admitted on the basis of the other admission requirements. In such cases, Academic Math 12, or an equivalent, must be completed prior to the student entering the second year of the programme.
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 9 classes.
   - Personal suitability for the practice of the selected health profession.

2. Applicants with Previous University Experience
   - GPA of 2.75 in most recent year of full-time studies.
   - 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, evidence must be submitted that they were taken in high school.
   - 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 programme 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 transcripts to Registrar's Office.
   - All other supporting documents directly to the Department.
   - 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 and signed statement of physical demands and detailed instructions on the School of Health Science website www.dal.ca/SHS on admission.
   - 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 programme will not be granted admission without providing evidence of good standing with a professional association.
   - Certain types of conduct or impairments may be considered unsuitable for registration as a professional. 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.a Bachelor of Health Science (Four-Year Entry-Level Programme)

Since admission to all professional streams of the BHSc is limited, applicants must meet admission requirements. Not all applicants who meet the minimum requirements will be accepted into the programme.

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

1. High School Applicants
   - Completion of core course 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 9 classes.
   - Personal suitability for the practice of the selected health profession.

2. Applicants with Previous University Experience
   - GPA of 2.75 in most recent year of full-time studies.
   - 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, evidence must be submitted that they were taken in high school.
   - 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 programme 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 transcripts to Registrar's Office.
   - All other supporting documents directly to the Department.
   - 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 and signed statement of physical demands and detailed instructions on the School of Health Science website www.dal.ca/SHS on admission.
   - 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 programme will not be granted admission without providing evidence of good standing with a professional association.
   - Certain types of conduct or impairments may be considered unsuitable for registration as a professional. 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 Programme)

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 programme 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 programme 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 programme is available on a part-time basis.

Note: Respiratory Therapists wishing to apply to the Anaesthesia Assistant Certificate must fulfill the admission requirements and follow the process for application to the Post-Diploma Programme.

1. Admission Requirements
   - Successful completion of a diploma programme in the profession for which you are applying*
   - Two years of post-diploma work experience in that profession
   - Evidence of good standing with professional association

* 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 professional association, or photocopy of current membership card
   - Letter of intent
Accordingly, admission consideration to Occupational Therapy will be a
at Dalhousie University are advised that normal certification standards
Students interested in applying to the Occupational Therapy programme
of Occupational Therapy before the first registration.

Students considering occupational therapy should consult with the School

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. 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

Satisfactory completion of academic grade 12 or equivalent at the
University-preparatory level with Grade 12 English, chemistry,
mathematics and biology
• A 75% overall average and 75% in the required subjects
• Transfer Students must have a minimum grade point average of 2.5
This programme primarily serves permanent residents of Nova Scotia but
each year a limited number of places are available for well-qualified
residents of other Canadian provinces and international students.

5.b Bachelor of Science (Nursing) for Registered Nurses

The requirements for admission to the BSN for registered nurses are:

• Diploma in Nursing
• Current practicing licence
• One letter of reference from a current employer or most recent place of
work if currently unemployed

5.c Diploma in Nurse Practitioner Studies for Remote and
Underserved Communities

Please contact the School of Nursing for information.

5.d Bachelor of Science (Nursing) (Arctic Nursing)

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

6. School of Occupational Therapy

6.a Bachelor of Science (Occupational Therapy)

Students considering occupational therapy should consult with the School
of Occupational Therapy before the first registration.

Students interested in applying to the Occupational Therapy programme
dalhousie University are advised that normal certification standards
will require a masters-degree in occupational therapy by 2010.
Accordingly, admission consideration to Occupational Therapy will be a

4-year undergraduate degree commencing in September 2006. The last
class was admitted into the BSc (OT) programme in 2004.

7. College of Pharmacy

7.a Bachelor of Science (Pharmacy)

Applicants to the BSc Pharmacy programme 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 or 1012.03
• BIOL 1020.03 or 1021.03
• MATH 1000 or MATH 1215
• STAT 1060 or STAT 2060
• BIOL 1010
• OR CHEM 1011

or equivalent

or equivalent

or equivalent

or equivalent

• ENGL 1011.03 or ENGL 1021.03 or equivalent
• Full year Science (one full credit 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 programme.
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 a 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 applicant (or spouse) has been employed full-time in the Maritime
provinces.
• The principal residence of the applicant’s parent(s) or guardian is
located in the Maritime provinces.
• 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 1 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. Initial screening will be
based on Full-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.
General Information

16. Admission Requirements

1. 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.

- 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 Programme will be considered to have withdrawn from the College unless they have written permission from the Admissions Committee.

4. Special Cases

In special 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

One year of academic study is required.

Suggested first-year classes for a BA programme include:
- 1 credit - Writing class (preferably English)
- 1 credit - Introductory Sociology
- 1 credit - Introductory Psychology
- 1 credit - Social Science subject such as Political Science, Women's Studies, Economics, History, or other social science
- 1 credit - (elective) - student's preference

Although there are no specific class prerequisites for the BSW program, recommended degrees for providing relevant preparation for Social Work are Bachelor of Arts, or a Bachelor of Science in Psychology.

Potential Social Work applicants are also advised to include social science content in the second and third years of their undergraduate study.

1.b Academic Pre-requisites

On-campus delivery (face-to-face instruction) or Distance Delivery (online instruction)

- no less than 5 general university credits (30 credit hours) in subject areas other than Social Work that provide suitable academic preparation for Social Work.
- a minimum cumulative grade point average of 2.70 (B- or 70%) on a 4.0 scale (includes all university credits).

1.c 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.d References

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

1.e 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 Admissions Committee in assessing the candidate's personal suitability and readiness for professional training in social work.

1.f Personal Suitability for Social Work

Applicants 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 behaviours may also be considered:

- unethical behaviour (as defined by the Nova Scotia Association of Social Workers Code of Ethics)
- any medical condition that effects an individual’s ability to perform as a social worker if that condition is chronic and/or effects 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, April 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 to be 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 ($31.00), the BSW supplementary forms and other required documents.

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 inkjet printer.

- Dalhousie Undergraduate Application for Admission
- BSW Application Information and Instructions
- BSW Applicant’s Checklist, Part B
5. Studying by Distance Delivery

Outside Canada: 204-983-3500 or 506-636-5064 (long distance charges apply)
Within Canada: 1-800-461-9999 (toll free)

Contact numbers for Canada Customs:
submit it with your application package.

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 as WebCT. Students are expected to participate in ongoing discussions in the courses. This requires students to post comments or 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 predetermined 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 4.4 for more information.

3. Selection criteria and process

Enrolment 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 applicants. 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 admission process unless specifically requested by the Admissions Committee.

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

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.

4a. Academic Eligibility

An initial screening is made on the basis of academic eligibility. Grades for all university courses are included in the cumulative academic average, including failures. Grades and grade point averages are interpreted according to the grading scale of the university attended, as stated in the transcript key. Grades currently in progress, calculations are made on the basis of Fall-term grades. Credits from non-university programmes 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.

4b. 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 as WebCT. Students are expected to participate in ongoing discussions in the courses. This requires students to post comments or 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 predetermined 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 4.4 for more information.

5a. Technical Requirements

Please refer to www.dal.ca/ilo for an updated list of technical requirements.

F. Faculty of Management

1. Bachelor of Commerce Co-op

• English
• Math **
• 3 other acceptable academic classes

Minimum final grades:
• English, Math - 65%
• Other subjects - 68%
• Overall Average - 70%

** Required Math for Commerce:
• NS - Math 12 (academic or Advanced) or Pre-Calculus 12
• PEI - Math 621 or 611
• NB - Math C4, C5, C6, C7
• NFLD - Math 3204 or MATH 3201/3207
• Western Canada - Math 12/Math 30/Math 40
• Ontario - Math 12 U or U/CEC

Transfer Students

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

Regardless of what programme 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 (full-year course)
• Micro Economics (full-year course)
• Introduction to Computers in Business (half-year course)
• Business Communications (written) (half-year course)
• Business Communications (oral) (half-year course)
• One other full-year (or two half-year) courses, in any areas of study
• Mathematics for Commerce (full 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 programme will not be allowed after September of the second year. Students transferring into this programme will be assessed a co-op transfer fee.

Students transferring into the Dalhousie Commerce Programme should note:
In order to ensure that all students pay the same co-op fee, students who transfer into the second year of the Bachelor of Commerce Co-op Programme will be charged a transfer fee equivalent to the co-op fee that would have been paid in the first year of the programme.

Due to the co-op structure of the program, a minimum of three years in the Dalhousie programme will be required in order to complete the Commerce Co-op degree.

To receive a major, more than half the major courses must be completed at Dalhousie.

Students transferring into the Commerce programme are permitted to transfer a maximum of four commerce electives.

International Students

The work term requirements of the Bachelor of Commerce Co-op programme 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 - 85%

Other subjects - 60%

Overall Average - 75%

Applicants who have not completed academic grade 12 Math may be admitted on the basis of the other admission requirements. In such cases the student entering the second year of the programme should have completed an Introduction to Business course as well as Introductory Micro and Macro Economics.

** Required Math for Bachelor of Management:

**

Engl 1024 1025 or 1026

Math 1200 or 1201

Math 1202

A minimum overall average of 80%

Mathematics 80%

English 75%

Additional Math 22, or an equivalent, must be completed prior to the student entering the second year of the programme.

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 Programme (DISP)

Satify requirements for Bachelor of Science

At least one grade 12 or OAC science class

Minimum grades:

English 70%

Mathematics 80%

Overall average 88%

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 programme that leads to a BSc in physics (20 credits) and the Diploma in Meteorology. (See the Physics Department entry, page 491 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 programme (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 the Section 7 on English Language Tests, page 9)

Supplementary information as required for specific programmes

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, BSc, BEd, BEng, BLDs, BMgmt, BComm and Special Student programmes. 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 programmes. There may also be some delay in admission decisions for programmes 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 pertaining 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 preparations for the class or programme involved, and by 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 the address changes.

5. Students who change their name while attending Dalhousie must provide proof of name change to the Registrar’s Office.

6. Students are bound by the regulations of the home faculty regardless of the faculty in which the student takes classes.

7. Students are expected to notify the Registrar in writing prior to May 1, for Spring examinations (or October 1 for Fall examinations), 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 until their accounts are paid in full.

8. In the interests of public health in the University, students are required to follow the regulations of the various schools or faculties which they are registered, and to pay the required fees and deposits before entering any class or taking any examinations.

9. Except for university purposes, transcripts, official, or unofficial, will be issued 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 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 until their accounts are paid in full.

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 Programme
Dalhousie University reserves the right to rescind any acceptance of an applicant into a programme or to rescind an offer of admission of an applicant into a programme. 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 except those which are indicated on the examination book(s). All books, papers, etc. not specified on the examination book are additional publications that are available to the student from the Registrar’s Office. Candidates are not permitted to leave the examination within the first thirty minutes.

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.

9. Alter 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.

University Regulations 19
Policy in the Event that a Formal Examination Cannot be Completed at the Regularly Scheduled Time

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

1. If more than fifty percent of the time allocated for the examination has elapsed, students' work up to the premature end of the examination, but not more than ninety minutes from the end of the examination, will be marked and returned to the student.

2. 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.register.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 mechanisms or 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.

A student requesting an alternative time for a final examination will be informed by the Registrar of the time and place of the rewrite on the Website of the Registrar (www.register.dal.ca).

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.

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.

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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 programmes 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 (FOIPPO) 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 FOIPPO Act or as otherwise required by law.

Release of Information About Students

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

I. Disclosure to students of their own records

1. Students have the right to inspect their academic record. An employee of the Registrar’s Office will be present during such an inspection.

2. Students will, on submission of a signed request and payment of a fee required by law.

3. 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 programme.

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

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. In accordance with provisions in the Human Rights Act, the University may also define essential requirements for professional performance for students in programmes, where these are appropriate, and this policy is not intended to replace or supersede those requirements.

6. Students with disabilities requiring assistance from the University shall:
   a) initiate contact with the Advisor to Students with Disabilities and make the nature of their disability and/or their needs known; and
   b) be expected to undertake a reasonable measure of self-advocacy to ensure they are provided with 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 programme modifications or accommodations that were deemed appropriate in the student’s last two years of schooling.
General Information

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 programme requirements (e.g., class substitutions);
3. Permit examinations to be proctored, read orally, dictated or typed;
4. Change the test format (e.g., multiple choice to essay);
5. Permit examinations to be proctored, read orally, dictated or typed;
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 programme 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 endeavors 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 counseling, academic counseling, 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 these 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/programmes, 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;
• 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 acknowledged vary from one field of study to another. Failure to comply with varying requirements 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 or 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 programme, 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.

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.

E. Misrepresentation

Any person who provides false or misleading information during an evaluation shall include the premise that the more senior the student in one's possession, material that is not specifically approved by the instructor;
General Information

• the peaceful and safe enjoyment of University facilities by other
• the integrity and proper functioning of the academic and non-academic

University Regulations

• the freedom of members of the University to participate reasonably in
the programmes of the University and in activities on the University's
• 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 non-academic
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 programmes where these are appropriate, and this Code is not
intended to replace or supersede such standards.

III. 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 programmes 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 issuance of a mark, grade or statement of
performance by the appropriate authority of the University;
b) the student alleges that there were irregularities or unfairness in
the application of the regulations in question.

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 knows or reasonably should have known would constitute
conduct prohibited under this Code.

5. Nothing in this Code shall be construed as intended 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 any activity which entitles the
person to the use of a University library, library materials, library
resources, computer facility or dataset.

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;

2. is subject to action as an alleged failure to meet standards of
professional conduct as required by a college, faculty or school;

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;

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 programme 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
programmes 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 University's programmes and services or for University-
approved events and activities.

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. restrictions 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 programme;

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
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
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
shall provide the University of King's College Registrar with particulars
of the offence and the sanction imposed.

Code of Student Conduct

I. Background

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involved in teaching, research, learning and other activities. Students are
members of the University for the period of their registration in an
academic programme 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
programmes 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 programmes of the University and in activities on the University's

• 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 non-academic
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 programmes where these are appropriate, and this Code is not
intended to replace or supersede such standards.

III. 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 programmes 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 issuance of a mark, grade or statement of
performance by the appropriate authority of the University or

b) the student alleges that there were irregularities or unfairness in
the application of the regulations in question.

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 knows or reasonably should have known would constitute
conduct prohibited under this Code.

5. Nothing in this Code shall be construed as intended 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
activities, programmes or services;

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;

2. is subject to action as an alleged failure to meet standards of
professional conduct as required by a college, faculty or school;

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;
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 unreasonably 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 origins, 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 unbecoming 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) unwarranted 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, entrapping 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 faculty, 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 unreasonably 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 a identification;
   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 programmes 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 officer 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 campus 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 programmes 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 his or her right to be represented throughout the process, including by a Student Advocate.

General Information
3. The Vice-President, Student Services, or designee 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 designee. 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 to 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 case 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, may be considered in evidence at the hearing. An accused student has the right to have a qualified person of his or her choosing present at the hearing.

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 on 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) Disciplinary Sanctions – Work assignments, service to the University or other assignments that are considered appropriate by the Discipline Committee.
   f) Conditions – Conditions may be imposed upon a student's continued attendance.

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 imposing 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 in the ownership 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 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 to a student pursuant to the Protection of Property Act prohibiting entry to all or any part of the premises or prohibiting a particular activity or activities on all or part of the premises, where circumstances warrant. Such a notice may be 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,
4. A Dalhousie University student may appeal any notice issued against him or her under the Province of Property Act in writing to the Vice-President, Student Services.

Suspension or Dismissal from a Programme 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 Deans, may suspend or terminate a student from a programme 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 deliberations held. 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;

   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 cooperate 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.

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 introductory classes at Dalhousie. Classes in the 2000, 3000 and 4000 series are normally numbered to indicate the student’s appropriate level. Students applying for academic programs 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.

2.2 Academic Advice

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.

2.3 Registration

1. It is a student’s responsibility to register. Registration material for September 2007 will be available on the web at www.registrar.dal.ca in late June. 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. 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 those in the preceding year of study earned a sessional GPA less than 3.0 shall not exceed five classes per term.

NOTES: University Exploration students may take a maximum of 4 full-credit courses per regular session.

3.1.2 School of Business

Five full credits (30 credit hours) 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.

Note that part of term I, May-July is a regular academic term.

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 2007 will be available on the web at www.registrar.dal.ca in late June. 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 to meet degree programme 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 programmes 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 must 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 Faculties of Architecture and Planning and Health Professions students who wish to withdraw from classes on the Web of www.dal.ca/online or written notification is received at the Office of 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 take the advanced work of the programme (i.e., at least half the credits taken in the advanced work of the concentration, major or honours or Commerce core area must be taken at Dalhousie. The concentration, major or honours must be appropriate to a student's academic programme 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 new classes not within the purview of a Dalhousie department/school/college, the Registrar's Office will review transfer credits. 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 programme. 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 fulfill degree requirements unless a waiver is granted. See Regulation 15, page 31 for information on other faculties.

No classes taken at another institution will be counted towards fulfilment of the concentration, major or honours in 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, must be taken while registered in the BEds programme.

6.5 Computer Science and Engineering

For the BEng degree, a minimum of one third of the credits required for the degree must be taken while registered in the BEng programme.

6.4 Architecture and Planning

For the BArch degree, a minimum of one third of the credits required for the degree must be taken while registered in the BArch programme.

6.6 Transfer Credits from Dental Hygiene

For the BDS degree, a minimum of one third of the credits required for the degree must be taken while registered in the BDS programme.

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 programme 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 programme. 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.

College of Arts and Science and Faculty of Management classes that are more than ten (10) years old may not be used to fulfill degree requirements unless a waiver is granted. See Regulation 15, page 31 for information on other faculties.

No classes taken at another institution will be counted towards fulfilment of the concentration, major or honours in 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, must be taken while registered in the BDS programme.

For the BArch degree, a minimum of one third of the credits required for the degree must be taken, of which at least eight (8) must be in the core area and include the three work term half class credits.

For the Bachelor of Management degree (BEng), 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.
9. Part-Time Students

Part-time students are reminded of the university policy that limits programmes 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 31 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 programmes 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 programmes 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 31), the opportunity for part-time study is limited in the majority of programmes.

The exceptions are the undergraduate programmes in the School of Health and Human Performance, the School of Social Work, and the Bachelor of Science (Nursing) programmes for Registered Nurses.

9.4 Faculty of Architecture and Planning

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

9.5 Faculty of Engineering

Part-time study is not available in the Bachelor of Computer Science (BEng) programme. Part-time study is limited to the Bachelor of Computer Science programme.

9.6 Faculty of Computer Science

Part-time students may be admitted to the Bachelor of Computer Science programme.

10. Audit of Courses

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 drop 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 at 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 Programmes; 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 30 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 28 for permitted work load.

13. International/Exchange Programmes

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 programmes 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 30.

There are two types of student exchange programmes at Dalhousie. University-wide programmes 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) 494-4360, Department/faculty-based programmes 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 programmes can be found at the following Website: internationalstudent.dal.ca

It is important to note that there are academic sessional deadlines for some of these programmes; plan to apply at least six months to one year prior to departure.

14. Preparation for Other Programmes

Work in the College of Arts and Science is a prerequisite for various programmes in other faculties and other institutions. A brief summary of the academic work required for admission to certain programmes 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 programme at Dalhousie or elsewhere. The normal requirement for admission to a graduate programme is an honours degree or the equivalent.

Architecture and Planning: Two years of university study are required for entry to the BEdS programme 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 programme leading to the Bachelor of Design degree in communication design at the Nova Scotia College of Art and Design.

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

Medicine: A BA, BSc, BComm, or BBMgmt 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 programmes. 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 science classes; five electives from any discipline.

15. Duration of Undergraduate Studies

15.1 College of Arts and Sciences/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 programmes 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.
# Student Exchange and Study Abroad Agreements

## Department-based Programme

<table>
<thead>
<tr>
<th>Department</th>
<th>Country</th>
<th>Name of University</th>
<th>Type/Status</th>
<th>Eligible Students</th>
<th>Duration</th>
<th>Fees paid to</th>
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<tbody>
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### Faculty of Management

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<th>Department</th>
<th>Country</th>
<th>Name of University</th>
<th>Type/Status</th>
<th>Eligible Students</th>
<th>Duration</th>
<th>Fees paid to:</th>
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<td>Student Exchange</td>
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<td>1 Term</td>
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<td>MBA</td>
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### School of Public Administration

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34 Academic Regulations
15.3 Faculty of Architecture and Planning

Students in the BEd degree programme are normally required to complete their degree within four consecutive years. Students in the Bachelor of Community Design programme must complete their degree within 4 years.

15.4 Faculty of Computer Science

Students in the BCS degree programme are normally required to complete their degree within 8 years.

15.5 Faculty of Engineering

Students in the BEng degree programme are normally required to complete their degree within 4 years. Students in the Bachelor of Engineering programme are normally required to complete their degree within 8 years.

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 fulfills 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 the appropriate faculty/school/college 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 case 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 these 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
- 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:

- BKR 2401, 3615, 3620, 3622, 3624, 3626, 3632, 3664, 3680
- ENV 5300, 3001, 3615, 3632, 4901, 4902; 7910
- NURS 2220, 2920 and 4240;
- PHAR 3000;
- SLWK 2001, 3002, 4002, 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 0.0 — it is a failing grade.

16.5 Supplementals

Faculties of Engineering and Health Professions

In classes where supplements 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 wording 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:

a. The class must offer a final examination as part of the normal evaluation process.

b. The supplemental exam is to be written within four calendar weeks following the original final examination at a time determined by the instructor of the class.

c. 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.

d. There is a $50.00 fee per exam.

e. 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 Programme 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 reassessment 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 fulfill academic requirements, and should include any 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 ILM 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 39.

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.

36 Academic Regulations
17.1 Grade Scale and Definitions

<table>
<thead>
<tr>
<th>Grade</th>
<th>Grade Point Value</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>4.00</td>
<td>Excellent</td>
</tr>
<tr>
<td>A</td>
<td>4.00</td>
<td>Outstanding</td>
</tr>
<tr>
<td>A-</td>
<td>3.70</td>
<td>Superior</td>
</tr>
<tr>
<td>B+</td>
<td>3.30</td>
<td>Very Good</td>
</tr>
<tr>
<td>B</td>
<td>3.00</td>
<td>Good</td>
</tr>
<tr>
<td>B-</td>
<td>2.70</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>C+</td>
<td>2.30</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>C</td>
<td>2.00</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>C-</td>
<td>1.70</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>D</td>
<td>1.00</td>
<td>Marginal Pass</td>
</tr>
<tr>
<td>D-</td>
<td>0.00</td>
<td>Inadequate</td>
</tr>
<tr>
<td>INC</td>
<td>0.00</td>
<td>Incomplete</td>
</tr>
<tr>
<td>FM</td>
<td>0.00</td>
<td>Failure</td>
</tr>
</tbody>
</table>

**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 not included 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 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 and 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 but greater than or equal to 1.70 who have completed at least four 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. NOTE: BC students who fail more than one work term will be dismissed.

BSW students who fail SLWK 4030 /Field II or who fail a repeated class, will be dismissed.

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

DHEC 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 at least twelve months.

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 term will not be readmitted to any engineering programme 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 programme 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 apply 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 programme at Dalhousie.

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

See University Regulations, page 27.

20.4 Policy on Academic Forgiveness

20.4.1 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 programme and have demonstrated acceptable academic performance following their return. The Academic Forgiveness policy is subject to the following regulations.

20.4.2 Regulations

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

20.4.2.2  - 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.

20.4.2.3  - 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.

20.4.2.4  - No punitive grades resulting from an Academic Discipline hearing will be forgiven.

20.4.2.5  - A student can have the Academic Forgiveness policy applied to his/her academic record only once.

With the approval of the Registrar or designee, 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 programmes, 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 programmes 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 programme from other Dalhousie programmes are included in final GPA calculations, credits from programmes outside Dalhousie taken prior to programme entry are not used in final GPA calculations. Credits taken on Letters of Permission...
while the programme 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 539, 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
May
June
July
August
September
October
November
December

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 21.

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 Management, or to the Director, Bachelor of Management, as appropriate.
Degree Requirements

Following is a list of the faculty requirements needed to satisfy degree programmes at Dalhousie University. 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 programme advice from a faculty advisor in the appropriate department. For the Commerce co-op programme, majors are declared in the final year of study.

Requirements for degree programmes not listed here can be found in the appropriate department/school/college/faculty listing.

I. College of Arts and Science—General

The following information applies generally to all of the programmes 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 programme 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 programme 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, biology, chemistry, computer science, earth sciences, economics, engineering, environmental science, mathematics, microbiology & immunology, neurosciences, oceanography, physics, psychology, science and statistics.

PLEASE NOTE:

a. 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 Programme and King's Foundation Year Programme. King's Foundation Year Programme: King's Foundation Year Programme: King's Foundation Year Programme (KING 1004, 1100.06) satisfies the humanities-language and social sciences requirements 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 Programme (DISP) satisfy the life sciences and physical sciences subject groupings. All DISP options except DISP 1502 (environmental) satisfy the social sciences subject grouping. The DISP option together with Philosophy 1050 satisfies half of the full year "Language and Humanities" requirement.

b. 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:

- CHRM 1000X.Y.06
- CLASS 1000X.Y.06, 1010X.Y.06, 1003X.Y.06
- Dalhousie Integrated Science Programme;
- ENGL 1000X.Y.06
- ENG-L 1010.03 and 1020.03 (both must be successfully completed in order to satisfy the Writing Requirement);
- GERM 1000X.Y.06, GERM 1090X.Y.06
- HIST 1000X.Y.06, HIST 1080X.Y.06
- King's Foundation Year;
- PBL 1000X.Y.06
- POLG 1100X.Y.06
- RUSN 1000X.Y.06, 1010X.Y.06 (both must be successfully completed in order to satisfy the Writing Requirement);
- RUSN 2001.05/2021.05 (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);
- SESR 1500X.Y.06
- THTA 1000X.Y.06, 1003X.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.

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 other than MATH 1001.03, 1002.03, 1003.03, 1100.03, 1120.03, or 1115.03. A class taken to satisfy this requirement cannot also satisfy the requirement of a class from section 3, page 48.

Students may also satisfy this requirement by completing the Dalhousie Integrated Science Programme 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:

- ABRK 1000X.Y.06 (Arabic);
- CHIN 1000X.Y.06 (Mandarin);
- CLASS 1730X.Y.06 (Czech), 1800X.Y.06 (Latvian), 1901.03 and 1902.03 (Hebrew); (both CLASS 1901.03 and 1902.03 must be successfully completed in order to satisfy the Language Requirement).
- EURN (language instruction class);
- GERK 1000X.Y.06, 1010X.Y.06, 1006X.Y.06;
- ITAL 1000X.Y.06, 1002X.Y.06;
- RUSK 1000X.Y.06
- SPAN 1000X.Y.06, 2000X.03/3000X.03 (both SPAN 2000X.03 and 3000X.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 3.
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 40.

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
- Five full credits in Engineering 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.

**BA/BSc**

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
- Five full credits in Engineering 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.

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., SCON 2260.03 cross-listed with MATH 2260.03 may count either as a mathematics class or economics class but not both.

II. College of Arts and Science–Programmes

A. BA/BSc 20-credit Programmes

The 20-credit degree is the standard BA or BSc degree. There are a variety of programmes within the 20-credit degree. Each is designed to develop some level of concentration of knowledge and expertise.

1. Major Programmes

A major programme focuses a student's studies, but not to the extent that a honours programme does. Unlike the honours degree, the major degree may not be adequate for admission to graduate programs. Students interested in a major programme 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 40)
  - One credit in a single language/humanities subject (see 1, page 40)
  - One credit in a single social science subject (see 2, page 40)
  - One credit in a single life or physical science subject (see 3, page 40)
  - One credit in a single language subject for (see page 40)
  - 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, philosophy, political science, 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 40)
- One credit in one or more language/humanities subjects (see 1, page 40)
- One credit in one or more social science subjects (see 2, page 40)
- One credit in math (see page 40)
- 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, biology, chemistry, earth sciences, economics, environmental science, marine biology, mathematics, microbiology & immunology, neuroscience, physics, psychology, or statistics.

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

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

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

- Four (4) co-op work terms

Co-operative Education in Science Programmes

The aim of co-op degree programmes is to enable students to combine their studies with work experience. The programmes are thus year-round, including Summer School, and will normally require from forty-eight to fifty-two months for completion. Co-op degree programmes conform to the requirements for the major degree.

The following departments currently offer co-op programmes: Biochemistry and Molecular Biology, Chemistry, Earth Sciences,
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 programmes
Students interested in the double major are advised to consult the departments concerned, before enrolling in the programme, 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 40)
  - One credit in a single language/humanities subject (see 1, page 40)
  - One credit in a single social science subject (see 2, page 40)
  - One credit in a single life or physical science subject (see 3, page 40)
  - One credit in a single language (see page 40)
  - Minimum of ten (10) and a maximum of thirteen (13) credits in the major subjects beyond the 2000 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.
  - 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 - 2.0
  - Graduation with distinction - 3.70

2.b BSc, Double Major (20-credit)
- One writing class (see page 40)
- One credit in one or more language/humanities subjects (see 1, page 40)
- One credit in one or more social science subjects (see 2, page 40)
- One credit in math (see page 40)
- 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.
- Total credits required above 1000 level - 12
- Total credits required for degree - 20
- Required GPA for graduation - 2.0
- 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 Cooperative Education in Science section, page 425. 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 programme.

2.c BSc Double Major (20-credit) in Environmental Science
The Faculty of Science offers a combined honours or double major degree with concentration in environmental science. Consult the Environmental Programmes section of this Calendar for details.

2.d BSc Double Major (20-credit) in Environmental Science & Community Design
Consult the Environmental Programmes section of this Calendar for details.

3. Honours Programmes
Honours programmes require a higher quality of work than is required by the other undergraduate programmes of the college (such as the 15-credit degree and 20-credit major). Ambitious and ambitious students are urged to enter these programmes. There are two types of honours programmes in the BA (concentrated and combined) and three types in the BSc (concentrated, combined, and multidisciplinary). Applications for admission to honours programmes must be made to the departments concerned or 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 late, it may be necessary to make up some work not previously taken.

For each individual student the entire honours programme, 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 programme is September 22.

3.1 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 40)
  - One credit in a single language/humanities subject (see 1, page 40)
  - One credit in a single social science subject (see 2, page 40)
  - One credit in a single life or physical science subject (see 3, page 40)
  - One credit in a single language (see page 40)
  - 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 programme 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 programme. 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.
3.3 BSc Concentrated Honours (20-credit)
• One writing class (see page 40)
• One credit in one or more language/humanities subjects (see 1, page 40)
• One credit in one or more social science subjects (see 2, page 40)
• One credit in a math (see page 40)
• 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 for degree - 20
• Honours Qualifying Examination: At the conclusion of an honours programme 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 programme. 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, biology, chemistry, earth sciences, economics, environmental science, marine biology, mathematics, microbiology & immunology, neuroscience, physics, psychology, and statistics.
3.4 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 40)
  • One credit in a single language/humanities subject (see 1, page 40)
  • One credit in a single social science subject (see 2, page 40)
  • One credit in a single life or physical science subject (see 3, page 40)
  • One credit in a single language for (see page 40)
  • 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 elected in the honours subject - 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 programme 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.
3.4 BSc Combined Honours (20-credit)
• One writing class (see page 40)
• One credit in one or more language/humanities subjects (see 1, page 40)
• One credit in one or more social science subjects (see 2, page 40)
• One credit in math (see page 40)
• 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 programme 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, 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.
3.4 BSc Combined Honours (20-credit) with Concentration in Environmental Science
The Faculty of Science offers a combined honours or double major degree with concentration in environmental science. Consult the Environmental Programmes section of the undergraduate calendar, page 443 for details.
3.5 BSc Multidisciplinary Honours (20-credit)
• One writing class (see page 40)
• One credit in one or more language/humanities subjects (see 1, page 40)
• One credit in one or more social science subjects (see 2, page 40)
• One credit in math (see page 40)
• One credit in a single life or physical science subject (see 3, page 40)
• 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
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. Minor in Community Design
The minor in community design is available to students registered in the BA, BSc 20-credit major and honours programmes. The requirements are as for the appropriate degree programme 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 88 for further details.

4. Minor in Computer Science
The minor in computer science is available to students registered in the BA 20-credit major and honours programmes. The requirements are as for the appropriate programme with the completion of the following classes:
- CSCI 1101.03
- CSCI 1201.03
- Either CSCI 1302.03 or CSCI 2302.03
- CSCI 1317.03
- One additional CSCI half-credit at or above the 2000 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 3105.03

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 programmes. The requirements are as for the appropriate degree programme with five of the electives being replaced by ENVS 1000 and four credits in environmental studies classes. See page 445 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 honours programmes. The requirements are as for the appropriate degree programme with four of the electives being replaced by film studies classes. See page 117 for further details.

4.g Minor in Health Studies
The minor in health studies is available to students registered in the BA, BSc 20-credit major and honours programmes. The requirements are as for the appropriate degree programme with completion of the following classes:
- JOUR 1001.06
- JOUR 2000.03
- 3.5 full journalism electives above the 2000 level
See page 175 for further details.

4.h Minor in Law & Society
The minor in law and society is available to students registered in the BA, BSc 20-credit major and honours programmes. The requirements are as for the appropriate degree programme with completion of the following classes:
- LAWS 2000.03, 2106
- A minimum grade of B- is required.
- The equivalent of three full classes from the list of approved classes.
- See page 175 for further details. To count towards the minor, a minimum grade of B- is required.

B. BA, 15-credit Programmes
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 single language/humanities subject (see 1, page 40)
One credit in a single arts or life science subject (see 1, page 40)
One credit in a single social science subject (see 2, page 40)
One credit in a single life or physical science subject (see 3, page 40)
One credit in a single language for (see page 40)
• 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 - 2.0
• 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, Russian studies, sociology and social anthropology, Spanish theatre, or any of the BSc subjects of concentration.

C. BSc 15-credit Programmes

1. With Concentration
   • One writing class (see page 40)
   • One credit in one or more language/humanities subjects (see 1, page 40)
   • One credit in one or more social science subjects (see 2, page 40)
   • One credit in math (see page 40)
   • 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 - 2.0
   • Graduation with distinction - 3.70

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 programme. 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) Programmes, the Registrar may be consulted, for admission to an Honours programme. 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 Programmes—College of Arts and Science

Students may in their second and third years follow a two-year integrated programme, or two one-year integrated programmes, of study. If two one-year programmes are chosen, they may be in different departments. All such coordinated programmes must be explicitly approved by the curriculum committee of the faculty. A department or group of departments offering coordinated programmes 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 programme form part of the calendar description of each programme.
3. That each two-year programme permits students at least one credit of their own choice in each of the second and third years.
4. That two-year programmes normally not be exclusively in a single discipline.
5. That the normal prerequisite for entry into a departmental one-year or two-year programme 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 programme should consult as early as possible with the departments concerned.

E. Concurrent Programmes

1. BSc/BEng
Students who meet the admission requirements for the Bachelor of Science programme and the Bachelor of Engineering programme 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 third year period, both the degree and the diploma will be awarded to successful candidates. This opportunity should appeal to students with career objectives in multidisciplinary 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 programmes).

2. BA/BEng
Students wishing to do so may complete the 15-credit BA degree programme 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 programmes).

Students who meet the admission requirements for the Bachelor of Arts and Bachelor of Engineering programmes 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.

<table>
<thead>
<tr>
<th>Term</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
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</thead>
<tbody>
<tr>
<td>Core</td>
<td>CHEM 1021.03</td>
<td>MATH 1000.03</td>
<td>ENGI 1100.03</td>
</tr>
<tr>
<td>Majors</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>BSc</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>BEng</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English, Chinese, Spanish</td>
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<td></td>
<td></td>
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<tr>
<td>Writing Class X/Y.06 (see page 260)</td>
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<tr>
<td>Language/humanities or social science elective X/Y.06</td>
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<tr>
<td>Two 3000-level classes in the subject of concentration</td>
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<tr>
<td>Two 3000-level classes in the subject of concentration</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Three engineering classes</td>
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<td></td>
<td></td>
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<tr>
<td>Three engineering classes</td>
<td></td>
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<td></td>
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<tr>
<td>Three 3000-level classes in the subject of concentration</td>
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<td></td>
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<tr>
<td>Three 3000-level classes in the subject of concentration</td>
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</tbody>
</table>

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

F. Individual Programmes

In cases where students feel their academic needs are not satisfied under the above requirements, individual programmes 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 Programmes

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 Programmes

1. Certificate of Proficiency in French
For the requirements for this certificate, see the French Department entry, page 120.

2. Certificate of Proficiency in Spanish
For the requirements for this certificate, see the Spanish Department entry, page 227.

3. Certificate of Proficiency in Russian
For the requirements for this certificate, see the Russian Studies Department entry, page 210.

4. Certificate in Forensic Psychology
For the requirements for this certificate, see the Psychology Department entry, page 499.

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 programmes 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 further round out the set of skills of many science graduates. They are presently available for students registered in the major or honours programmes 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.

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

7. Certificate in Applied and Computational Mathematics
For the requirements for this certificate, see the Mathematics and Statistics departmental entry.

III. Faculty of Management

A. Bachelor of Commerce
The Bachelor of Commerce co-op is a four-year programme comprising 7 academic terms and 3 work terms. The equivalent of 20 full credits (40 half credits) are required for graduation. Majors are available in the Bachelor of Commerce programme. See Commerce, page 374.

The classes in the programme are divided into five categories, as follows (all classes are half-credits except those designated as.06, which are full credits).

1. Required Core Area Classes
The equivalent of 10.5 full credits (twenty one half credits): COMM 1010.03, 1510.03, 1701.03, 1702.03, 2101.03, 2202.03, 2303.03, 2501.03, 2502.03, 2503.03, 2603.03, 3501.03, 3511.03, 4351.03 and 4352.03, ECON 1101.03, 1102.03, WBL 2801.03, MATH 1115.03, or one other suitable credit in Mathematics by permission of the Commerce Programme Manager.

NOTE: MATH 1115.03 is specifically designed for the Commerce Programme, and is not normally accepted as the prerequisite for upper level Mathematics, Science or Computer Science classes.

2. Commerce Electives
The equivalent of four full credits (eight half credits).

3. Non-Commerce Electives
The equivalent of four full credits (eight half credits) to be selected from all classes offered in the university except those designated as Commerce classes. One and a half credits must be above the 1000 level.

4. Work term Requirements
The equivalent of one and one-half full credits (three half credits) requires the satisfactory completion of three work terms.
5. Class Sequencing

The Bachelor of Commerce co-op is a structured programme, with most of its classes assigned to specific years and terms. The chart below summarizes the degree requirements and class sequencing through all seven of the academic terms and three work terms that constitute the Bachelor of Commerce co-op programme. (It will be noted that COMMB 1010.03, 1501.03 and 2101.03 will be offered in the spring and summer terms, to permit students an opportunity to make up academic deficiencies and proceed to Year II of the Bachelor of Commerce Programme.)

<table>
<thead>
<tr>
<th>Term</th>
<th>Fall Sept/Dec</th>
<th>Winter Jan/Apr</th>
<th>Summer June</th>
<th>Course Number</th>
<th>Credit (Half Credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year I</td>
<td>COMM 1010.03</td>
<td>ENVI 1100.06</td>
<td>MATH 1215.01</td>
<td>COMM 1010.03</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>SCIS 1060.03</td>
<td></td>
<td>MATH 1215.01</td>
<td>COMM 1010.03</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>ENVI 1100.06</td>
<td></td>
<td>MATH 1215.01</td>
<td>COMM 1010.03</td>
<td>1.5</td>
</tr>
</tbody>
</table>

Student's academic standing will be assessed at the end of each academic term (see Section 18, 19, and 20, Academic Regulations). Students are expected to ensure that the classes taken comply with the above.

B. Bachelor of Management

The Bachelor of Management is a four-year programme requiring 20 full credits (40 half credits) for graduation. This degree is for those who prefer an innovative, flexible approach to management studies. The Bachelor of Management is unique to Canada. The Faculty of Management is well positioned to launch a programme with this orientation. Collectively, its Schools of Business Administration, Public Administration, and Resource and Environmental Studies, have designed and will deliver this programme.

The classes in the programme are divided into core area classes and open electives. Through their elective choices, students are able to build major concentrations in one of three areas: Environmental Management, Public Administration, or social sciences. Please see the programme administrator for more information. The Bachelor of Management is also available combined with the Bachelor of Science (Recreation) degree. Under this arrangement, students can earn both degrees in five years. Students who have been admitted into the first year of the BMgt programme without the recommended math, must have the required Nova Scotia high school Grade 12 math before entering 2nd year. Students must have a grade of 65% or better to remain in the programme.

2. Open Electives

- The equivalent of eight full credits (sixteen half credits) chosen from all classes offered in the University.
- A maximum of four full credit (eight half credit) classes at the 1000 level is permitted.
- A maximum of 3 full credit (six half credit) classes in commerce is permitted.

C. Combined Degree, BSc (Recreation)/Bachelor of Management

The Bachelor of Science (Recreation)/Bachelor of Management is a five-year programme comprised of 25 full credits (50 half credits), of which 16 full credits (32 half credits) are required core classes, 3.5 full credits (7 half credits) are open electives, 2.5 credits (5 half credits) are an internship and 1 full credit (2 half credits) are designated electives.

1. Required Core Area Classes

The equivalent of 16 full credits (32 half credits): HAHP 1000.03, HAHP 1200.03, HAHP 2000.03, HAHP 3000.03, HAHP 3100.03, LEIS 1127.03, LEIS 2127.03, LEIS 2361.03, LEIS 2384.03, LEIS 3296.03, MGMT 3201.03, MGMT 3501.03, MGMT 4001.03, MGMT 4002.03, PUAD 2801.03, PUAD 2803.03, MGMT 3901.03, MGMT 4003.03, ECON 1101.03, ECON 1102.03, ENVI 1100.06, SOSA 1000.06 or SOSA 1050.06 or SOSA 1100.06 or SOSA 1200.06.

2. Open Electives

The equivalent of 3.5 (seven half credits) chosen from all classes offered in the University.

3. Designated Electives

The equivalent of 1.0 credit (two half credits) is required and can be chosen from the following subject groupings: languages and humanities, health professions or interdisciplinary health professions, health services administration, or social sciences.

4. Internship Requirement

The equivalent of 2.5 full credits (5 half credits) fulfills the internship requirement.

5. Class Sequencing

<table>
<thead>
<tr>
<th>Term</th>
<th>Fall Sept/Dec</th>
<th>Winter Jan/Apr</th>
<th>Summer June</th>
<th>Course Number</th>
<th>Credit (Half Credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year I</td>
<td>SCIS 2127.03</td>
<td>HAHP 1000.03</td>
<td>MGMT 1001.03</td>
<td>COMM 1010.03</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>SCIS 2127.03</td>
<td></td>
<td>MGMT 1001.03</td>
<td>COMM 1010.03</td>
<td>1.5</td>
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<tr>
<td></td>
<td>SCIS 2127.03</td>
<td></td>
<td>MGMT 1001.03</td>
<td>COMM 1010.03</td>
<td>1.5</td>
</tr>
</tbody>
</table>

Degree Requirements 47
Agriculture

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

Programmes Offered

1. Bachelor of Science in Agriculture

The BSc (Agr) is a four-year programme, designed to provide a sound education in the science of agriculture. Graduates of this programme 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://www.nsac.ca.

2. Bachelor of Technology

This programme 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 programmes 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://www.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 programme 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.

This degree is awarded by Dalhousie University in association with NSAC. Please refer to the NSAC calendar for details or consult their website: http://www.nsac.ca.
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 (MA), BEd, MEd (Dal), EdD (Toronto)
Novack, J., RComm, MFA (Dal)

Associate Professors
Day, L., BBA (SMU)
Holmes, S., BSA (Acadia), MEd (Dal)
MacDonald, G., BBA, BA (UNB), MFA (Dal)
MacLean, C., BBA (SFU), MBA (SMU), CMA
Williams, M.P., BA, MSc (Sask)

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 0011: Pre-Calculus and Math 0010: Pre-Calculus Plus are accepted in place of NS Math 12 Pre-Calculus and eligible students to pursue university math and science courses. Math 0009:08: Academic Math is accepted in place of NS Math 12 for entrance to the Faculty of Arts, Bachelor of Commerce, Management and Nursing programs. PHYS 0010:00: University Prep Physics is accepted by Dalhousie in place of NS Physics 12 and enables students to enter Physics 1100/F and Physics 1300.

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 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 28 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) 494-2375
Fax: (902) 494-3662
Website: http://collegeofcontinuinged.dal.ca

In a period 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
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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 in print-based distance education form:

- Certificate in Business Management
- Certificate in Financial Management
- Certificate in Human Resource Management
- Certificate in Municipal Governing
- Certificate in Environmental Management
- Certificate in Water Treatment Operations
- Certificate in Occupational Health & Safety Management
- Certificate in Ergonomic Program Management

5. Specialized Professional Development

- Certificate in Ergonomic Program Management

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 (CUCIC) Management Studies Program is offered in cooperation with CUSOURCE and designed for credit union employees across Canada.

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: 1935 Dresden Row, Ste. 201
Halifax, NS B3H 3J5
Phone: (902) 494-2526
Fax: (902) 494-3662
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: 1935 Dresden Row, Ste. 201
Halifax, NS B3H 3J5
Phone: (902) 494-2526
Fax: (902) 494-3662
Website: http://collegeofcontinuinged.dal.ca

For the past decade, the College has been a leader in policy development, applied research, program design and delivery to the self-employment and microentrepreneur 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. Currently, the College is a delivery agent for the Self Employment Benefit Program for HRM.

8. Dalhousie Negotiation and Conflict Management Program

Address: 1935 Dresden Row, Ste. 201
Halifax, NS B3H 3J5
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 conflict resolution and management 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:

1. Negotiating Agreements and Managing Conflicts: An Interest-Based Approach
2. Overcoming Resistance: Getting Past No
3. Managing Difficult Conversations
4. Facilitating Collaborative Problem Solving
5. Resolving Complex Organizational and Community Problems
6. Mediating Disputes: From Conflict to Creative Solutions
7. Individual Skills Assessment and Feedback

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

In addition to the 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 Seminar in Mediation, 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: 1555 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 professional credential. 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. 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. Students can concentrate on a particular interdisciplinary area of study in their undergraduate program; they can combine an interdisciplinary programme with study in a traditional discipline; or they can combine two interdisciplinary areas of study. In some cases, students can construct programmes that bring together classes in the Arts and Social Sciences with classes in the Sciences.

For more information regarding these programmes in the Faculty of Arts and Social Sciences, students should consult the entries in the calendar for the following:
- Canadian Studies, see page 77
- Community Design, see page 86
- Contemporary Studies, see page 92
- Early Modern Studies, see page 100
- European Studies, see page 114
- Film Studies, see page 117
- Gender and Women's Studies, see page 127
- Health Studies, see page 139
- History of Science and Technology, see page 158
- International Development Studies, see page 164
- Law and Society, see page 175
- Linguistics, see page 176

For more information regarding these programmes in the Faculty of Science, students should consult the entries in the calendar for the following:
- Dalhousie Integrated Science Programme (DISP), see page 426
- Environmental Programmes, see page 443
- History of Science and Technology, see page 158
- Science, Interdisciplinary Classes, see page 512

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 programmes have been established at universities across North America.

At Dalhousie University, students can currently choose among interdisciplinary programmes in Canadian Studies, Community Design, Contemporary Studies, Dalhousie Integrated Science Programme (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 programme; they can combine an interdisciplinary programme with study in a traditional discipline; or they can combine two interdisciplinary areas of study. In some cases, students can construct programmes that bring together classes in the Arts and Social Sciences with classes in the Sciences.
Entrepreneurial Skills Programme

I. Major Elements of Entrepreneurial Skills Programme

The Entrepreneurial Skills Programme (ESP) is an interdisciplinary initiative developed to foster and nurture the entrepreneurial (venturing) interests of undergraduate students at Dalhousie. Entrance into ESP is usually made at time of entry to university or at the start of second year. Designed for students registered in any faculty or discipline, ESP is a two- or three-year learning option which features coaching that helps students to integrate classroom instruction with four additional modes of learning (independent learning and venture planning; peer group association and discussion; mentoring with entrepreneurs; and experiential (hands-on) activities). Successful students will earn a certificate in entrepreneurship as well as graduate from Dalhousie with the degree appropriate to their academic field of study.

A. Required Classes

Required courses include: two single semester foundation classes MGMT 1000.03: Managing Organization Issues I and MGMT 1001.03: Managing Organization Issues II; a two-semester seminar series CSCI 2102: Initiating the Technology Venture; a third year course New Venture Creation MGMT 3907/COMM 3307; and a capstone course Managing the Venturing Process MGMT 4901/COMM 4301.

B. Support

Support will be provided through the Norman Newman Centre for Entrepreneurship.

C. Certification Requirements

ESP certification requires the attainment of certain competencies through classroom instruction and the four other modes of learning, e.g., creating and maintaining a business plan and a personal professional portfolio. Increased levels of competency are required as students progress through the programme.

II. Implementation

ESP is a joint initiative of Dalhousie University (School of Business, Faculty of Management), Cape Breton University, and (CEED) the Centre for Entrepreneurship Education and Development.
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
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Email: arch.office@dal.ca
Website: archplan.dal.ca

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Director, School of Planning
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I. Introduction

The Faculty of Architecture and Planning includes the School of Architecture and the School of Planning. The Faculty’s degree programmes 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 programme (BEdS/MArch) is described in the “Architecture” section of this calendar. The Bachelor of Community Design programme is described in the Planning section of this calendar. Please see the Graduate Studies calendar for a description of all graduate Architecture and Planning programmes.
School of Architecture

Location: Ralph M. Medjuck Building
9410 Spring Garden Road
Halifax, NS  B3J 1E7

Mail: School of Architecture
Dalhousie University
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Halifax, NS  B3J 2X4

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Email: brian.lilley@dal.ca
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(Fall and Winter)

Email: Steven.Mannell@dal.ca
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(Winter)

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Email: beverly.nightingale@dal.ca
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Undergraduate Coordinator, School of Architecture
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Graduate Coordinator, School of Architecture
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Graduate Coordinator, School of Architecture (Fall)
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Graduate Coordinator, School of Architecture (Winter)
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Undergraduate Coordinator, School of Architecture (Fall and Winter)
Lilley, B., BES (Manitoba), AADipl
Telephone: (902)494-5661
Email: brian.lilley@dal.ca

Professors Emeriti
Banassaud, L., BArch (Illinois), MA, PhD (Manchester), FRAC
Jackson, A., DiplArch (Poly London), ARIBA

Professors
Cavanagh, E., BArch (McGill), PhD (Leipzig). Coastal planning, material culture, and history of technology, focusing on change in small communities, vernacular building and construction methods, and architectural design.

Kraemer, R., BES (Manitoba), AADipl, ARUCUR. Sustainable building strategies; cultural continuity and invention, innovative construction in green wood, recyclable materials, and earth-formed structures.

Mackay-Lyons, B., BArch (TUNS), MArch (UCLA), FRAC, (Hon.), FAIA, NSAA, AIAPEL, OAA. Private practice-design work in private homes, urban design, public buildings, and artificial intelligence software design.

McCoy, C., RA (Arch) (Calif at Berkeley), MArch (MIT), Reg Arch WA. Modern architectural history and criticism, representation of cultural identity in architecture, public spaces, civic infrastructure, temporary urbanism, festival architecture and lightweight structures, architectural history and criticism.

Mannell, S., BES, BArch (Waterloo), NSAA, OAA. Building construction, professional practice; the architecture of public works, post-war modern architecture, contemporary architectural criticism.

Vonk, J.C., BArch, MArch (Toronto), MRAIC. Human condition and the role of architecture in improving quality of life; especially the history, design and development of decent and affordable housing; housing policy as an instrument of social and economic development; design studies of small towns and their territories.

Associate Professors
Lilley, B., BES (Manitoba), AA Dipl. Ecological and programmatic strategies in design, technical implementation as architectural device, material research in glass, assemblies, and natural ventilation, modernism and aesthetics; computer simulations and cinematic representations.

Molinsky, S., BArch. (Cal. Poly.), MArch. Cranbrook. Material process and creative imagination, phenomenological and psychological inhabitation, the relationship between body-architecture-landscape, places of memory, natural forms and systems.

Parcell, S., BArch (Toronto), MArch (Cranbrook). Work concept in architectural history and theory; parallels between modern musical discourse and architectural discourse, history and theory of architectural representation.

Sweeney, P., Dipl. Ing. (TU Berlin) Reg Archit. NRW, Professor in Germany. Design and building construction, sustainable building technologies, rammed earth construction and naturally lit long-span construction. Public buildings, urban densification, sustainable urban design, construction and building analysis.

Assistant Professors
Bonnemaison, S., BSc (Cancéral), BArch (Pratt), MSArch (MIT), PhD (UK). Lightweight and infill structures, motion studies in architecture, architectural installations, temporary urbanism of festivals, European and American architectural history and theory from 18th to 20th century.

Galvin, T., BArch, (FP) (TUNS), MArch (McGill), PhD (Penn). Theories of architecture and landscape from the 18th to 20th century, study of human settlements with an emphasis on urban design, international development, and appropriate technologies in developing countries.

Mullin, R., BArch (FP) (TUNS). Material detailing, composite materials, means and methods in design and building, representation in documentation, design, and construction.

Parsons, A., BSc (McGill), MES (Dal), SMBT (MIT). Wood technology, wood lot management, wood processing, wood construction; environmental impact of forest management practices, building performance of residential wood frame construction systems.

Savage, N. (Alberta), BArch, MArch (FP) (TUNS), NSAA. Private practice design work in residential buildings, public buildings, and affordable housing developments; architectural visualization and its graphic applications; building code studies.

Somerville Ventur, C., Cert. Eng. (Mc Allison), BFA (Toronto), MArch (C-SAC, AK NVF (Germany). Documentation, representation and analysis of the perceptual and spatial in architecture and the urban environment; private design practice: architectural, exhibition, interior, landscape, public space, urban, and graphic design.

Lecturers
Henry, P., BArch, BEd (TUNS), NSAA. Private practice design work in private homes and gardens, focusing on environmentally design strategies.

Kelly, F., BSc (Dal), MSc (TUNS). The use of multimedia tools in architectural design, geographical information system, and astroarchaeology (astronomical alignments of ancient structures).

Swantepple, T., BArch, MArch (FP) (TUNS), NSAA. Private practice design work in private homes, public buildings, and urban design.

Cross-Appointed Faculty
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 fulfill its original mandate, the School also contributes nationally and internationally to architecture. Its primary aim is to educate individuals who intend to become professional architects. The School's professional degree programme includes the two-year Bachelor of Environmental Design Studies degree and the two-year Master of Architecture degree. Most of the programme 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 programme is architectural design - the creative study of buildings and cities. In the School's design studies, students examine historical and contemporary buildings in Canada and abroad, and respond through the design of new architectural projects. From the core studies in the undergraduate programme to the elective studies and design thesis of the graduate programme, 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. Maudlin 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 programme includes two work terms that provide students with practical experience in building design and responsible professional practice. The School'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, France, Germany, Hong Kong, India, Ireland, Italy, Morocco, Netherlands, New Zealand, Norway, Peru, Singapore, Switzerland, Turkey, Turks and Caicos, United Kingdom and the United States.

Accreditation

The School's professional degree programme is fully accredited by the Canadian Architectural Certification Board. The entire six-year programme consists of two years of general studies at a recognized university, followed by two years of undergraduate study at the School of Architecture (BEDS) and two years of graduate study at the School of Architecture (MArch).

In Canada, all provincial associations recommend a degree from an accredited professional degree programme as a prerequisite for licensure. The Canadian Architectural Certification Board (CACB), which is the sole agency authorized to accredit Canadian professional degree programmes in architecture, recognizes two types of accredited degrees: the Bachelor of Architecture and the Master of Architecture. A programme 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 programmes may consist of a pre-professional undergraduate degree and a professional graduate degree, which, when earned sequentially, comprise an accredited professional education. However, the pre-professional degree is not, by itself, recognized as an accredited degree.

Professional Registration

After receiving the professional degree, a graduate may fulfill 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 programme 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 1000.03: Introduction to Architecture
- ARCH 1010.03: Science of the Built Environment
- ARCH 2000.03: Visual Thinking A
- ARCH 2001.03: Visual Thinking B

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 Programme

The Bachelor of Environmental Design Studies programme description is included here in the graduate calendar to provide an overview of the entire professional degree programme in the School of Architecture, which includes both the BEDS and the MArch degrees. Please refer to the undergraduate calendar for undergraduate regulations.

Bachelor of Environmental Design Studies

BEDS is a two-year, full-time, pre-professional programme 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 of the School of Architecture.

The BEDS programme 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 programme. The BEDS programme leads to the MArch programme, as well as to the Faculty's other graduate programmes 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 Admission Requirements

A. Admission Criteria

Each September, approximately sixty-five students are admitted into the BEDS programme. The Admissions Committee gives priority to applicants with a combination of academic performance and creative ability. Well-
mounded personal and academic experience is beneficial, as well as expertise in drawing, craft, and computer applications.

B. Minimum Academic Requirements
The minimum academic requirements for admission to the programme are:

- Two years of general studies (non-architectural subjects) in a university degree programme (normally, ten full-year classes), with a minimum 2.5 grade point average;
- A full-year university class in mathematics. Calculus is recommended. Other acceptable subjects are algebra, analytic geometry, trigonometry, or a class for which calculus is a prerequisite. Architectural technology or engineering courses that require substantial mathematical ability may be acceptable;
- A full-year class that emphasizes writing skills;
- Two half-year classes in humanities or social sciences (e.g., anthropology, art history, classics, literature, history, music history, philosophy, political science, psychology, or sociology).

Post-Secoundary 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 as a minimum.

Mature Students
An applicant who will be at least 25 years old at the time of registration in the BEDS programme and does not meet the minimum academic requirements for admission (two years of university, mathematics class, 2.5 GPA), may apply as a Mature Student. The applicant should describe related work experience, and any other pursuits and skills that may serve as grounds for admission. A portfolio of creative work and any post-secondary academic transcripts must also be submitted.

Transfer Students
The School of Architecture welcomes applications from students from other architecture schools in Canada and abroad. Level of entry is based on classes completed elsewhere that are equivalent to required classes at Dalhousie, on 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 undergraduate studies.

C. 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:
   - School of Architecture Undergraduate application form
   - Undergraduate application fee

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 B3H 4H6
   - Undergraduate academic transcript
   - Undergraduate application form
   - A letter written by the applicant, describing his/her interest in architecture and in the BEDS programme, 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.

D. Application Deadline
The deadline for receiving all application materials for admission to the undergraduate programme is March 1. The deadline for late applications is June 1.

V. Undergraduate Regulations
For academic regulations that apply to undergraduate students in the School of Architecture (including workload, class changes, withdrawal, transfer credits, extra-curricular classes, 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.

VI. Undergraduate Classes Offered
A. Professional Degree Programme
The following chart illustrates the distribution of terms throughout the four years of the professional degree programme 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.

<table>
<thead>
<tr>
<th>Term</th>
<th>BEDS</th>
<th>MArch</th>
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<tbody>
<tr>
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<td>MArch</td>
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<tr>
<td>B4</td>
<td>MArch</td>
<td>MArch</td>
</tr>
</tbody>
</table>

B. Bachelor of Environmental Design Studies

Year 3 - Term B1 (Fall)
- ARCH 3001.06: Design
- ARCH 3103.01: Foundations in Architectural History and Theory
- ARCH 3207.03: Building Technology
- ARCH 3500.01: Professional Practice
- ARCH 3501.03: Representation

Year 3 - Term B2 (Winter)
- ARCH 3102.06: Design
- ARCH 3103.01: Architectural History and Theory - 20th Century
- ARCH 3208.03: Building Technology
- ARCH 3502.01: Professional Practice
- ARCH 3502.03: Representation

Year 4 - Term B3 (Summer)
- ARCH 3102.06: Design
- ARCH 3103.01: Architectural History and Theory - 14th-16th Century
- ARCH 4211.03: Building Systems Integration
- ARCH 4301.01: Professional Practice
- ARCH 4401.03: Representation

Year 4 - Term B4 (Fall)
- ARCH 8992.03: Professional Practice (Co-op Work term)

Year 4 - Term B5 (Winter)
- ARCH 4408.06: Design

56 School of Architecture
• ARCH 4111.03: Architectural History and Theory - 19th Century
• ARCH 4122.03: Building Systems Integration
• ARCH 4304.01: Professional Practice
• ARCH 4502.03: Representation

VII. 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 year of study: Design (1), Humanities (2), Technology (3), Professional Practice (5), or Representation (6). Classes in the BEDS programme have various credit-hour extensions (03-06) that indicate the approximate class hours each week and reflect the appropriate balance of subjects for professional accreditation. Classes may be interconnected between academic terms, depending on the availability of instructors. Please consult the academic timetable for current listings. Instructors are listed only for classes that may be available to students from outside the Faculty of Architecture and Planning.

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


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 "commonsense" 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. Pitasinis
FORMAT: Lecture

ARCH 2000.03: Visual Thinking A.

Architects, scientists, political activists, manufacturers, and other 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 emphasized, 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. Jannech
FORMAT: Lecture/seminar
PREREQUISITE: Completion of first year university or permission of instructor

ARCH 2001.03: Visual Thinking B.

As the world becomes more visually oriented, a critical appreciation of visual information becomes indispensable. Students use charts, diagrams and other means of externalizing, developing, and sharing ideas. In doing so, they learn to analyze the form of graphic information as well as the content. Hands-on work is emphasized, but no prior experience in drawing or design is needed. This course is a more abstract and reflective complement to ARCH 2000.03.

INSTRUCTOR(S): E. Jannech
FORMAT: Lecture/seminar
PREREQUISITE: Completion of ARCH 2000.03 or permission of instructor

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 plan, 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 programme, 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. Foulk
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 3203.07: 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, constructive 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): Staff
FORMAT: Lecture/studio
RESTRICTION: Year 3 BEDS students
ARCH 3001.01: 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): C. Venant
FORMAT: Lecture/seminar
RESTRICTION: Year 3 BEDS students

ARCH 3002.01: Professional Practice
In this four-week 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 builds on the principles of drawing, modeling, imaging, and composition studied in ARCH 3501. Students use manual and digital media to interpret sites and programmes and to develop designs. Topics include perspective, collage, sequential photography, and digital modeling. Access to a computer with imaging and modeling software is required.
INSTRUCTOR(S): S. Melovsky
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. Students use manual and digital media to interpret sites and programmes and to develop designs. Topics include perspective, collage, sequential photography, and digital modeling. Access to a computer with imaging and modeling software is required.
INSTRUCTOR(S): C. Venant
FORMAT: Lecture/studio
RESTRICTION: Year 3 BEDS students

ARCH 3003.03: 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 programme 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 builds on the 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 programme 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 using historical sources and materials to interpret drawings and models.
INSTRUCTOR(S): T. Cavanagh
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): S. Mannell
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. Melovsky
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. Kroeke
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): T. Galvin
FORMAT: Lecture/seminar
RESTRICTION: Year 4 BEDS students

ARCH 4304.01: 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 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.

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

VIII. Graduate Degree Programmes

A. Master of Architecture
Master of Architecture is a two-year, full-time programme 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 programme. 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.

B. Master of Architecture (Post-Professional)
Master of Architecture (Post-Prof.) is a one-year programme for a student who has already obtained a professional degree in architecture. It may be taken through full-time or part-time study. Subject areas each year depend on faculty availability. For available subjects in 2007-2008, please refer to the "Graduate Programmes" page on the School of Architecture Website. Two options are available for completing the MArch (Post-Prof.) programme:
1. Eight half-credits of classes plus a MArch (Post-Prof.) Major Project equivalent to two half-credits.
2. Six half-credits of classes plus a MArch (Post-Prof.) Thesis equivalent to four half-credits.

C. Master of Environmental Design Studies
Master of Environmental Design Studies is a one-year, non-professional programme for a student who has completed an undergraduate degree in environmental design or a related field but does not intend to become a professional architect. It may be taken through full-time or part-time study. Subject areas each year depend on faculty availability. For available subjects in 2007-2008, please refer to the "Graduate Programmes" page on the School of Architecture Website.
Two options are available for completing the MEDS programme:
1. Eight half-credits of classes plus a MEDS Major Project equivalent to two half-credits.
2. Six half-credits of classes plus a MEDS Thesis equivalent to four half-credits.

IX. Graduate Admission Requirements

A. Minimum Academic Requirements
Candidates for all graduate programmes must meet the minimum admission requirements of the Faculty of Graduate Studies.

Master of Architecture
Admission is mainly on the applicant's design portfolio and academic record. For an applicant to be considered, a minimum of 4 years (eight academic terms) of study in architecture is required, including architectural studies equivalent to the Dalhousie BEDS degree, with a minimum B average (3.00 GPA) during the last two years (ten credits). A minimum B average in architectural design classes is also required. In assessing an application, the Admissions Committee looks for strong evidence of readiness to pursue graduate studies in design, humanities, technology, and professional practice. For external applicants, the committee looks for strengths equivalent to standards at the end of Dalhousie's BDES programme.
The Admissions Committee assesses transfer credits and recommends the level at which an applicant is eligible to enter the professional degree programme. To meet professional accreditation standards, the committee cannot offer a level of entry that would permit a student to obtain the professional degree with less than six full years of university, including two years of general studies. An applicant who is ineligible for Master of Architecture admission may be offered entry at an advanced level in the BDES programme or may be required to take qualifying courses.

Master of Architecture (Post-Professional)
An applicant must have a professional degree in architecture with high academic standing from a recognised university. Admission is based on the applicant's design portfolio, academic record and statement of intent, regarding one of the graduate positions announced on the School of Architecture Website. An application that does not specify an available position will not be accepted.

Master of Environmental Design Studies
An applicant must have an undergraduate degree with high academic standing from a recognised university. This degree must be either a Bachelor of Environmental Design Studies degree, a Bachelor's degree with honours, or a Bachelor's degree with a major in a subject related to the applicant's proposed field of study in the MEDS programme. Admission is based mainly on the applicant's academic record and statement of intent, regarding one of the graduate positions announced on the School of Architecture Website. An application that does not specify an available position will not be accepted.

B. Documents
An external applicant to one of the School's graduate degree programmes must submit all of the following documents before the application can be reviewed:
1. To be submitted to the Registrar's Office: Admission, Registrar's Office Dalhousie University Halifax, NS B3H 4R6
   - the appropriate application fee (see Graduate Studies Fees in this calendar)
   - a copy of the applicant's transcript
   - a resume
   - a statement of intent
   - two recommendation letters
   - the appropriate application fee
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, B3H 2X4
March Applicants:
   - an official academic transcript from all previous post-secondary institutions (to be sent directly by the institution)
   - evidence of competency in English for applicants whose native language is not English (see Graduate Studies Admission Requirements in this calendar)
• a letter written by the applicant, describing his/her interest in architecture and in the MArch programme, and giving the Admissions Committee some information about the applicant as a person: aspirations, interests, travel, etc. The letter must also include a brief description of a proposed topic for a thesis;  
• a portfolio of design work that demonstrates the applicant’s architectural design ability. 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;  
• two letters of recommendation, including at least one from an academic instructor with close personal knowledge of the applicant’s academic background.  

MArch (Post-Prof.) and MEDS applicants:  
• a letter that indicates the graduate position for which the applicant is applying (selected from the “Graduate Positions” page on the School of Architecture Website); summarizes the applicant’s previous academic work in this area, and describes his/her career aspirations;  
• MArch (Post-Prof.) applicants should include a portfolio of advanced architectural design work, especially work done in the proposed subject area. Additional design work (drawings, furniture, construction projects, etc.) may also be included. For MEDS applicants, a design portfolio is optional.  

To confirm receipt of the items above, please contact the Graduate Architectural Secretary, at gradarch.office@dal.ca or by telephone (902) 494-3973.  

Dalhousie Year 4 BEDS students who apply directly to the MArch programme are required to submit an application form and a statement about the proposed area of focus in the graduate programme to the Architecture office by February 1, followed by a design portfolio at the end of the winter term. An application fee, transcripts, introductory letter, and letters of recommendation are not required.  

Dalhousie Year 4 BEDS students who apply directly to the MArch programme are required to submit an application form and a statement about the proposed area of focus in the graduate programme to the Architecture office by February 1, followed by a design portfolio at the end of the winter term. An application fee, transcripts, introductory letter, and letters of recommendation are not required.  

C. Application Deadline  
For the Master of Architecture programme, the deadline for applications from Canada and the United States is February 1. The deadline for applications from all other countries is December 1. Students may begin the programme in May or September.  

Transfer students with a pre-professional architecture degree who may not have completed classes that are equivalent to all required Dalhousie BEDS subjects should apply by November 1 and anticipate taking one or more qualifying classes in the winter term.  

X. Graduate Regulations  
School of Architecture Regulations  
In addition to the Faculty of Graduate Studies regulations in this calendar, refer to the ‘Current Student’ section of the School of Architecture Website for academic regulations.  

XI. Graduate Classes Offered  
A. Master of Architecture  
Year 5 - Terms M3 and M4 (Fall -Winter or Winter-Summer)  
• ARCH 5308.03: Professional Practice (Co-op Work Term)  
• ARCH 5309.03: Professional Practice (Co-op Work Term)  
Students extending their work term register for ARCH 5310.00: Co-op Workterm.  

Before entering Year 6, a student must pass a Year 5 review to confirm that all Year 5 requirements and an approved thesis proposal have been completed. Year 6 begins in Fall or Winter, depending on the scheduled teaching terms of a student’s thesis supervisor. Students who enter MArch Winter extend their work term by registering for ARCH 5311.00: Co-op Work Term for the Fall term.  

Year 6 - Term M5 (Fall or Winter)  
• ARCH 0070.06: 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 0080.06: 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 Design 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  
• ARCH 5009.05: Design Seminar  
• ARCH 5009.06: International Exchange Design 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: Theorizing the Built Environment  
• ARCH 5108.03: Architectural Theory of the Enlightenment  
• ARCH 5109.03: Ephemeral Architecture  
• ARCH 5110.03: Architectural Exhibitions  
• ARCH 5112.03: Documentation and Conservation of the Modern Movement in Architecture  
• ARCH 5116.03: Humanities Seminar  
• ARCH 5119.03: International Exchange Humanities Seminar  

Core Classes - Technology  
• ARCH 5201.03: From Timber to Lumber  
• ARCH 5202.03: From Lumber to Structure  
• ARCH 5204.03: Composite Materials  
• ARCH 5205.03: Earth Construction  
• ARCH 5206.03: Natural Fibres  
• 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 5208.03: Technology Seminar  
• ARCH 5209.03: International Exchange Technology Seminar  

Year 5 - Terms M3 and M4 (Fall -Winter or Winter-Summer)  
• ARCH 5308.03: Professional Practice (Co-op Work Term)  
• ARCH 5309.03: Professional Practice (Co-op Work Term)  
Students extending their work term register for ARCH 5310.00: Co-op Workterm.
Additional Electives
- ARCH 5110.03: Integrated Coastal and Ocean Planning
- ARCH 6001.05: Design Seminar
- ARCH 6002.05: Free Lab
- ARCH 6121.05: Architecture and Archaeoastronomy
- ARCH 6221.05: Humanities Seminar
- ARCH 6261.05: Material Investigation
- ARCH 6262.05: Material Investigation in Wood
- ARCH 6211.05: Technology Seminar
- ARCH 6404.03: Entrepreneurship
- ARCH 6501.05: Permission to Build
- ARCH 6503.05: Professional Practice Seminar
- ARCH 6504.05: Graphic Design in Architecture
- ARCH 6505.05: Painting in Architecture
- ARCH 6506.05: Photography in Architecture
- ARCH 6507.05: Montage in Architecture
- ARCH 6508.05: Multimedia in Architecture
- ARCH 6509.05: Digital Form
- ARCH 6510.05: Architectural Documentation and Analysis
- ARCH 6511.05: Documentation of Historic Buildings
- ARCH 6512.05: Development in Architectural Representation
- ARCH 6513.05: Representation Seminar

For a graduate elective, a student may take a class offered by another department at Dalhousie University. The subject need not be directly related to architecture, but must be at a graduate level or equivalent. With a Letter of Permission, a student may also take a class at another university, if the class is not available at Dalhousie University.

Professional Programme

The following chart illustrates the distribution of terms throughout the four years of the professional degree programme 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.

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
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<td>GE</td>
<td>GE</td>
</tr>
<tr>
<td>Elective</td>
<td>Elective</td>
</tr>
</tbody>
</table>

B. Master of Architecture (Post-Professional)
- ARCH 7001.06: MArch (Post-Prof.) Major Project
- ARCH 7003.05: Continuation - MArch (Post-Prof.) Major Project
- ARCH 8002.08: MArch (Post-Prof.) Thesis
- ARCH 9003.05: Continuation - MArch (Post-Prof.) Thesis

Other available classes are listed in the Master of Architecture section above and in the Planning section of this calendar.

C. Master of Environmental Design Studies
- ARCH 7002.06: MEDS Major Project
- ARCH 7004.05: Continuation - MEDS Major Project
- ARCH 9003.06: MEDS Thesis
- ARCH 9004.06: Continuation - MEDS Thesis

Other available classes are listed in the Master of Architecture section above and in the Planning section of this calendar.

XII. Graduate Class Descriptions

Class Numbers
The first digit of an ARCH class number indicates whether it is a MArch core class (5), an additional elective (6), MArch (Post-Prof)/MEDS class (7), or Thesis (9). The second digit indicates the area of study: Design (0), Humanities (1), Technology (2), Professional Practice (3), or Representation (5). Classes have various credit-hour extensions (03-06) that indicate the approximate class hours each week and are based on the appropriate balance of subjects for professional accreditation. Required classes may be interchanged between academic terms, depending on the availability of instructors. Not all elective classes are offered every year. Please consult the academic timetable for current listings.

ARCH 5002.06: Urban Housing Studio.
This studio explores the aesthetic, technical, 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. Grant Wanzel
FORMAT: Studio
CO-REQUISITE: ARCH 5102.03 or ARCH 5103.03
RESTRICTION: Graduates - 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: Graduates - 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: Graduates - 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: Graduates - Architecture

ARCH 5006.06: Light Frame Building Studio.
This class studies the material and constructive orders of light-weight framing and cladding systems. Through drawing, modeling, 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: Graduates - 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. Liddell, N. Savage
FORMAT: Studio
RESTRICTION: Graduates - Architecture

ARCH 5008.06: Transhistorical Studio.
This studio uses historical interpretation and strategic design to speculate on what a notable architect from another place and time would do here.
and now, in twenty-first-century Halifax. This cross-cultural exercise invokes architectural issues such as cultural intention, historical circumstance, urban fabric, and architectural characteristics. 

ARCH 5009.06: Ephemeral Architecture Studio. 

This studio 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.

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.

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.

ARCH 5012.03: 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 the residential environment. A comparative analysis of significant past and current examples is used to provide insight into the way houses and neighborhoods are designed. This understanding is placed in the context of shifting economic, political and housing market situations.

ARCH 5013.03: Residential Real Estate Development. 

This seminar explores the interaction of the residential construction industry’s constituent parts: real estate, finance, government policy and programmes, 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.

ARCH 5014.03: Urban Systems. 

This studio 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.

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.

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 as a reflective and symbiotic manner.

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.

ARCH 5108.03: 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.

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.

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.

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
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 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.

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 origins, 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.

ARCH 5205.03: Earth Construction.

This class surveys the history of materials, focusing on natural and synthetic polymers, resins, and composite material systems. It studies their origins, 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.

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.

ARCH 5207.03: Light and Material.

This class examines characteristics of daylight and artificial light. It analyzes and experiments with how light is produced, 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 exterior space.

ARCH 5208.03: Acoustics.

This seminar studies principles of interior room acoustics and audiostreamal 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.

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.

ARCH 5210.03: Life Cycle Analysis.

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.

ARCH 5211.03: The Construction Detail.

This class examines 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.

ARCH 5212.03: From Principle to 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.
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. Bonnemaison
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

ARCH 5308.03: 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 5309.03: Professional Practice (Co-op Workterm).
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

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 workterm for up to three additional terms. While registered in ARCH 5310, a student's university status changes to part-time.
INSTRUCTOR(S): Staff
FORMAT: Work term
PREREQUISITE: ARCH 5308.03, ARCH 5309.03
RESTRICTION: MArch students

ARCH 5311.03: Professional Practice.
This class studies principles of professional ethics, partnerships, corporate practices, professional responsibilities, and legal aspects of architectural practice. It also considers issues in project 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 6119.03: Integrated Coastal and Ocean Planning.
This studio-based course introduces spatial planning of coasts and oceans. It integrates environmental design, planning, policy, and management. It emphasises 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. Creagh
FORMAT: Seminar/studio
CRINDEX-LISTING: MARCH 5114.03
RESTRICTION: Graduate students in the Faculty of Architecture and Planning or permission of instructor

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 Investigations 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
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 and Planning or permission of instructor

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., watercolor, gouache, acrylic, oil) is required.
INSTRUCTOR(S): Staff
FORMAT: Lecture/seminar
RESTRICTION: Graduate students - Architecture

ARCH 6503.03: Photography in Architecture.
This class examines architectural photography from the late nineteenth century to the present. By analyzing and applying various photographic styles and techniques, students learn about photographic representation in architecture.
INSTRUCTOR(S): K. kam
FORMAT: Lecture/seminar

ARCH 6504.03: Montage in Architecture.
This class examines the history, concepts, and uses of montage in architectural representation. It also considers how digital photography and computer technology can generate various forms of montage for analyzing and developing architectural designs.
INSTRUCTOR(S): K. kam
FORMAT: Seminar/studio
RESTRICTION: Graduate students - Architecture

ARCH 6505.03: Multimedia in Architecture.
This class examines the use of various technologies to visualize, develop, and display multimedia presentations of architecture that may include text, graphics, photographs, sound, voice, animation, and/or video. It also considers how architectural designs can be developed using multimedia. These topics may apply also to projects in urban planning.
INSTRUCTOR(S): P. Kelly
FORMAT: Lecture/seminar
RESTRICTION: Graduate students - Architecture and Planning or permission of instructor

ARCH 6506.03: Spatial Constructions in Digital Video.
This seminar investigates how digital audio and video can represent physical and spatial qualities of existing, architectural, urban, or rural conditions. It emphasizes the use of the video camera and digital software for recording, imaging, and editing.
INSTRUCTOR(S): C. venant
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 dreamed and what is built.
INSTRUCTOR(S): N. Savage
FORMAT: Lecture/studio
RESTRICTION: Graduate students - Architecture
ARCH 6513.03: Representation Seminar.
This class focuses on an advanced topic in architectural representation. The topic changes from year to year. It may emphasize medium, relation to design, or history and theory.
INSTRUCTOR(S): Staff
FORMAT: Seminar/studio
RESTRICTION: Graduate students - Architecture

ARCH 7001.04: MArch (Post-Prof.) Major Project.
A major project is intended to address a question of personal interest and relevance to the field of study. It may be a work of design (accompanied by a written document) or an entirely written document. The major project is guided by a supervisor and an advisor.
RESTRICTION: MArch (Post-Prof.) students

ARCH 7002.04: MEDS Major Project.
A major project is intended to address a question of personal interest and relevance to the field of study. It may be a work of design (accompanied by a written document) or an entirely written document. The major project is guided by a supervisor and an advisor.
RESTRICTION: MEDS students

ARCH 7003.00: Continuation - MArch (Post-Prof.) Project.
Continuation of ARCH 7001.04.
RESTRICTION: MArch (Post-Prof.) students

ARCH 7004.00: Continuation - MEDS Project.
Continuation of ARCH 7002.04.
RESTRICTION: MEDS students

ARCH 9002.08: MArch (Post-Prof.) Thesis.
A thesis is intended to address a question of personal interest and relevance to the field of study. It may be a work of design (accompanied by a written document) or an entirely written document. The thesis is guided by a supervisor and an advisor. The student presents the work at an oral examination, and the thesis document is prepared in accordance with university thesis standards and submitted to the University.
RESTRICTION: MArch (Post-Prof.) students

ARCH 9003.08: MEDS Thesis.
A thesis is intended to address a question of personal interest and relevance to the field of study. It may be a work of design (accompanied by a written document) or an entirely written document. The thesis is guided by a supervisor and an advisor. The student presents the work at an oral examination, and the thesis document is prepared in accordance with university thesis standards and submitted to the University.
RESTRICTION: MEDS students

ARCH 9005.00: Continuation - MArch (Post-Prof.) Thesis.
Continuation of ARCH 9002.08.
RESTRICTION: MArch (Post-Prof.) students

ARCH 9006.00: Continuation - MEDS Thesis.
Continuation of ARCH 9003.08.
RESTRICTION: MEDS students

ARCH 9007.06: MArch Thesis Preparation.
Within a seminar group, each student formulates a thesis question and 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 M Arch 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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Buszard, D., Biology Department
Cote, R., School of Resource and Environmental Studies
Detiege, P., School of Resource and Environmental Studies

Wright, T., Environmental Programmes Coordinator, Faculty of Science

I. Community Design

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

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, analyzing, 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 programme 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 programme may study an extra year to earn a major in either environmental planning or urban design studies. (See below)

Students wishing to enter the programme 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 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 programme include PLAN 1001.03, 1002.03, 2001.03, 2002.03, 2003.03, 2004.03, 2005.03. In your first year, students take PLAN 1001.03 and also select either ARCH 1000.06 or ENV 1000.06 Environmental Studies.

Programme requirements are as follows.

Year 1
- PLAN 1001.03: Introduction to Community Design
- PLAN 1002.03: Introduction to Community Design
- ERTH/GEOG 1030.03: Physical Geography
- Select from among: ARCH 1000.06 or ENV 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 1005.03 or 1006.03, or GEOG 1035.03 in their first year.

Year 2
- PLAN 2001.03: Landscape Analysis
- PLAN 2002.03: Community Design Methods
- PLAN 2003.03: 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 3002.13: Reading the City
- PLAN 3005.03: Cities and the Environment Through History
- PLAN 3006.03: Reading the Landscape
- Select one course (3 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 programme and then complete a fourth year of specialized study. The programme requires 20 full course equivalents, or 120 credit hours of course work.

The Honours programmes 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 (or higher) cumulative average coming out of year 3 in the general program. Students may apply for entry to the honours programme at any point after year one. Students...
in the honours programme must maintain a 3.0 or better cumulative average. (Places are limited in the Major programmes.)

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

**Major in Urban Design Studies**
- PLAN 4500.06: Urban Design Studio
- PLAN 4101.03: Community Design Internship
- PLAN 4100.06: Thesis Project
- Courses selected from “urban design studies” or “electives for either option” core elective list (total 15 credit hours)

**Major in Environmental Planning**
- PLAN 4001.06: Environmental Planning Studio
- PLAN 4103.03: Community Design Internship
- PLAN 4006.06: Thesis Project
- Courses selected from “environmental planning” or “electives for either option” core elective list (total 15 credit hours)

**Programme core electives for Bachelor of Community Design and Bachelor of Community Design (Honours)**

In addition to PLAN 1001.03 and 1002.03 and ERTH/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 3055.03, 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 your third, 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 1001.06: Environmental Law
- ENVS 3210.05: Administrative Law for Environmental Scientists
- ENVS 3300.03: Environmental Site Investigation
- ENVS 3401.03: Environmental and Ecosystem Health
- ENVS 3501.03: Environmental Problem Solving 1
- ENVS 3601.05: Environmental Problem Solving 2
- ENVS 4001.05: Environmental Impact Assessment
- BCKL 1011.03: Principles of Biology: Part I
- BCKL 2001.03: Introduction to Ecology
- BCKL 2003.03: Diversity of Plants and Animals
- BCKL 2601.03: The Flora of Nova Scotia
- BCKL 3041.03: Communities and Ecosystems
- BCKL 3064.05: Plant Ecology
- BCKL 3615.05: Nature Conservation
- BCKL 3625.03: Applied Coastal Ecology
- ENTH 1000.05: Geology I
- ENTH 1009.03: Geology II
- ENTH 2410.03: Environmental and Resource Geology
- ENTH/GEOG 2440:03: Introduction to Geomorphology
- PHIL 2400.03: Environmental Ethics
- HST 3370.03: North American Landscapes
- HST 4271.03: The Fisheries of Atlantic Canada
- POLI 3501.03: Politics of the Environment
- ENV 3412.03: Energy and Environment
- ENVE 3502.03: Water Management
- ECON 3330.03: Resource Economics
- ECON 3355.03: Environmental Economics
- PLAN 4108.03: History and Theory of Landscape Architecture

**Urban design studies core electives (B)**
- ARCH 1001.06: Introduction to Architecture
- ARCH 2001.03: Visual Thinking
- HST 1004.06: Introduction to European History
- HST 1501.03: Comparative global history
- HST 1502.03: Origins of Modern Global Society
- HST 2006.03: The Atlantic world 1450-1650: Colonization
- HST 2007.03: The Atlantic world 1650-1800: European Empires in the Americas
- HST 2122.03: Social History of Canada since 1870
- HST 2225.03: The caring society? Welfare in Canada since 1910
- ECON 2200.03/2201.03: Intermediate micro/macro
- ECON 2211.03: The Canadian Economy in the New Millennium
- ECON 2212.03: Policy in Canada
- ECON 2221.03: Policy in Canadian Social Science
- ECON 2410.03: Environmental Economics
- ECON 4102.03: Urban Economics
- ECON 4103.03: History and Theory of Urban Design

**Core electives that may count for either Major (C)**
- ARCH 1000.06: Science of the Built Environment
- GEOG 1055.03: Introduction to Human Geography
- POLI 1020.03: Governments and Democracy
- POLI 1025.03: The Political Process in Canada
- POLI 1103.06: Introduction to Government and Politics [var]
- POLI 2250.03: Local Government
- POLI 3220.03: Intergovernmental Relations
- POLI 3250.03: The Politics of Regionalism
- ECON 4220.03: Policy Analysis
- ECON 4240.03: Policy Formulation in Canada
- ECON 4241.03: Introduction to Policy Analysis
- ECON 1101.03: Principles Micro
- ECON 1102.03: Principles Macro
- ECON 2225.03: An Applied Class in Economic Development and the Environment

**Course electives**
- ARCH 1200.06: Science of the Built Environment
- GEOG 1055.03: Introduction to Human Geography
- POLI 1101.03: Governments and Democracy
- POLI 1025.03: The Political Process in Canada
- POLI 1103.06: Introduction to Government and Politics [var]
- POLI 2250.03: Local Government
- POLI 3220.03: Intergovernmental Relations
- POLI 3250.03: The Politics of Regionalism
- ECON 4220.03: Policy Analysis
- ECON 4240.03: Policy Formulation in Canada
- ECON 4241.03: Introduction to Policy Analysis
- ECON 1101.03: Principles Micro
- ECON 1102.03: Principles Macro
- ECON 2225.03: An Applied Class in Economic Development and the Environment

**ECON 2225.03** is an Applied Class in Economic Development of Communities and the Environment
- ECON 3330.03: 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 3103.03: Participatory Development: Methods and Practice
- INTD 3104.03: Community Development in Comparative Practice
- PUAD 2601.03: Government Structure
- PUAD 2602.03: Public Policy
- SOC 2100.06: Environment and Culture
- SOC 3200.03: Coastal Communities in the North Atlantic
- PHIL 2400.03: Environment and the Environment
- OC Trudeau:03: Occupation and Daily Life
- ENVS/ERTH/GEOG 3000.03: NCE 3601.03: Exploring Geographic Information Systems
- PLAN 3010.03: Urban Ecology
- PLAN 3013.03: Site Infrastructure
- PLAN 3080.03: Landscape Design
- PLAN 3025.03: Representation in Design
- PLAN 3086.03: Reading the Nutrients
- PLAN 3083.03: Community Design Practice

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- PLAN 3503.03: Topics in Community Design (Other topics included under 3501, 3502, 3503)
- PLAN 3505.03: Computers in Community Design and Planning
- ECAN 3505.03: Land Development Economics
- PLAN 4106.03: Transportation Planning
- PLAN 4111.03: Housing Theory
- PLAN 4150.03: Topics in Planning
- PLAN 4202.03: 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 Programme 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. Approval for the programme is required from the School of Planning and from the Coordinator of Environmental Programmes.

**Required Classes**

To earn the minor, students must complete:
- ENVS 1000.06: Introduction to Environmental Studies (or DISP)
- PHIL 2480.03: Environmental Ethics
- ENVS 2001.03: Environmental Law
- ENVS 3501.03: Environmental Problem Solving I
- ENVS 3502.03: Environmental Problem Solving II

**Elective Requirements**

Two full credits (12 credit hours) of classes from the following list:
- BCLL 3403.03: Nature Conservation
- CHEM 2505.03: Environmental Chemistry I
- CHEM 3203.03: Environmental Chemistry
- ECAN 3352.03: Resource Economics
- ECAN 3353.03: Environmental Economics
- ECAN 3363.05: Regional Development
- ENVS 3503.03: Environmental Site Investigation
- ENVS 3403.03: Environmental Health
- ENVS 3603.03: Geographic Information Systems
- EMBP 2205.03: Nature-Informed: Literature and Science in Early Modern Europe
- ESMIP 3404.05: The Study of Nature in Early Modern Europe
- ESMIP 3405.05: The Study of Nature in Early Modern Europe
- HST 1503.03: Origins of Modern Global Society
- HST 3303.05: Technology and History in North America.
- HST 3303.05: American Landscapes
- HST 4273.03: Fisheries of Atlantic Canada
- HLTH 1010.03: Women's Health and the Environment
- INTD 3021.03: Introduction to Development I and II
- OCEA 2003.03: Climate Change
- OCEA 2004.03: Oceanography
- OCEA 3170.03: Physics and Chemistry of the Ocean
- PHL 2485.03: Technology and the Environment
- POLI 3585.03: Site Infrastructure
- POLI 3920.03: Landscape Design
- POLI 3553.03: Representation in Design
- POLI 3503.03: Application of Planning Law
- POLI 3504.03: Reading the Suburbs
- POLI 3505.03: Community Design Practice
- POLI 3505.03: Topics in Community Design
- POLI 3505.03: Computers in Community Design and Planning
- PLAN 4001.06: Environmental Planning Studio
- PLAN 4002.06: Urban Design Studio
- PLAN 4010.03: 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 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 4203.03: Independent Study**

**Plan 4209.06: Thesis Project**

**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.

**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.

**Plan 1003.03: 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.

**Plan 2001.03: Community Design Methods.**

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.

**Plan 2002.03: Environmental Planning.**

This course provides opportunities to examine selected topical issues in planning in a seminar discussion. (Other topics included under 4151, 4152, 4153)

**Plan 4001.06: Environmental Planning Studio**

**Plan 4002.06: Urban Design Studio**

**Plan 4010.03: 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 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 4203.03: Independent Study**

**Plan 4209.06: Thesis Project**

**II. Classes Offered**

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

**III. Classes Offered**

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

**FORMAT: Lecture / seminar 3 hours (plus tutorial)**

This course introduces community design by exploring the characteristics of human and natural communities, the connections between them, and the types of interventions designers and planners can make to help people create good living environments. Community design involves applying scientific and creative approaches to helping communities accommodate human needs while respecting the environment.

**FORMAT: Lecture / lab 4 hours**

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.

**FORMAT: Lecture / seminar 3 hours (plus tutorial)**

This course provides opportunities to examine selected topical issues in planning in a seminar discussion. (Other topics included under 4151, 4152, 4153)

**FORMAT: Lecture / lab 4 hours**

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.

**FORMAT: Lecture / seminar 3 hours (plus tutorial)**

This course provides opportunities to examine selected topical issues in planning in a seminar discussion. (Other topics included under 4151, 4152, 4153)

**FORMAT: Lecture / lab 4 hours**

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.

**FORMAT: Lecture / seminar 3 hours (plus tutorial)**

This course provides opportunities to examine selected topical issues in planning in a seminar discussion. (Other topics included under 4151, 4152, 4153)
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. Grant
FORMAT: Lecture / lab 4 hours
PREREQUISITE: PLAN 1002.03 or concurrent

PLAN 2003.03: 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 our built environment and its impact on our day-to-day lives, and our cultural desires 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. Poulin or B. Zwicker
FORMAT: Lecture / seminar 3 hours
PREREQUISITE: PLAN 1001.03 or permission of instructor

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
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
FORMAT: Lecture / lab 4 hours
CROSS-LISTING: PLAN 5012.03

PLAN 3003.03: 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 3003.03

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 behavior and surroundings, compare 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.
This course explores 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. Grant
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: PLAN 3001.03 or CONCURRENT
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 4 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): L. Robins
FORMAT: Lecture / lab 3 hours
CROSS-LISTING: PLAN 5035.03

PLAN 3040.03: Reading the Suburbs.
An increasing proportion of Canadians live in the suburbs. This course explores issues related to planning and designing the suburbs, and develops techniques for analyzing and developing community form in the suburban environment.
INSTRUCTOR(S): J. Grant
FORMAT: Lecture / lab 3 hours
PREREQUISITE: PLAN 2003.03
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 of planning, building and development of projects from the perspective of the development industry.
INSTRUCTOR(S): Staff
FORMAT: Lecture 3 hours
PREREQUISITE: PLAN 3003.03 or concurrent
CROSS-LISTING: PLAN 5045.03

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

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PLAN 3051.03: Topics in Community Design 2.
The course provides opportunities to examine selected topical issues in community design.
FORMAT: Lecture/Seminar 3 hours
CROSS-LISTING: PLAN 3051.03

PLAN 3052.03: Topics in Community Design 3.
The course provides opportunities to examine selected topical issues in community design.
FORMAT: Lecture/Seminar 3 hours
CROSS-LISTING: PLAN 3052.03

PLAN 3053.03: Topics in Community Design 4.
The course provides opportunities to examine selected topical issues in community design.
INSTRUCTOR(S): Faculty
CROSS-LISTING: PLAN 3053.03

PLAN 3055.03: Computers in Community Design and Planning.
The course explores the opportunities for using computers in community design. Topics may include business applications, computer assisted design, and geographic information systems.
INSTRUCTOR(S): F. Kelly
FORMAT: Lecture/tutorial 3 hours
PREREQUISITE: PLAN 2001.01

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. Beaudet
FORMAT: Lecture, tutorial
PREREQUISITE: BIOL 1010.03 or BIOL 1020.03 (C- or better) and BIIOL 1011.03 or BIIOL 1021.03 (C- or better) or DISP or PLAN 2001.03
CROSS-LISTING: BIIOL 3225

PLAN 4001.06: Environmental Planning Studio.
The studio provides an applied context for analysing landscape issues and exploring environmental 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): J. Zuck
FORMAT: Studio 6 hours (one term)
PREREQUISITE: admission to Honours or graduate programme

PLAN 4002.06: Urban Design Studio.
The 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 programme

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 4002.06 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 concepts and frameworks.
INSTRUCTOR(S): F. Palermo
FORMAT: Lecture/seminar
CROSS-LISTING: PLAN 6101.01
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. Pouliot
FORMAT: Lecture/seminar
CROSS-LISTING: PLAN 6102.01
RESTRICTION: Honours or graduate students in the Faculty of Architecture and Planning, or permission of instructor

PLAN 4103.03: Land Development Economics.
The course applies basic techniques for analyzing the financial feasibility of land development projects. Case studies focus particular attention on methods of financing and organizing real-estate development within the planning framework.
INSTRUCTOR(S): Faculty
FORMAT: Lecture/seminar
CROSS-LISTING: PLAN 6103.01
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. Technically 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): S. Guppy
FORMAT: Lecture/seminar
CROSS-LISTING: PLAN 6106.01
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.
The 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 in 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 5101.03
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 6150.05

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 6151.05

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 6152.05

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 6153.05

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 Major)
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 programmes 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 Programmes in the Faculty of Science. There are several interdisciplinary programmes 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 programmes, and for diploma programmes in Meteorology and Costume Studies. The College is also responsible for the establishment of academic regulations governing students registered in its programmes.

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 programme of study.

BA and BSc degree programmes 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 programmes 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 programme 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 programmes with Honours in most subjects in which it also provides BSc Honours programmes and in providing BA and BSc degree programmes 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)
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 theater 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 perhaps 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 programmes. You may find everything you need within the disciplines grouped in this Faculty. Or perhaps you will seek out the programmes 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 programmes. Our goal is to help you to see differently, and to see your way to a bright future!

II. Departments and Programmes of the Faculty of Arts and Social Sciences

- Canadian Studies
- Chinese (Mandarin)
- Classics
- Community Design
- Comparative Religions
- 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
- Russian Studies
- Sociology and Social Anthropology
- Spanish
- Theatre
Dalhousie University offers a set of classes in different disciplines which focus on Africa. NOTE: This is not a programme leading to a degree in African Studies.

The Dalhousie Centre for African Studies, established in 1975, coordinates teaching, seminars, research, community and publications programmes in African Studies. Its faculty associates hold appointments in the social sciences, humanities and professional schools. Other classes with a broader Third World focus, which usually includes African content, are offered in Comparative Religion, 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 programmes in Economics, History, International Development Studies, Political Science and/or Sociology and Social Anthropology.

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 Arabic language. It also offers basic information regarding the Arabic 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 fulfills the BA language requirement.

INSTRUCTOR(S): D.R. Firanescu

FORMAT: Lecture

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

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 (vocabulary, 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.

INSTUCTORS: D.R. Firanescu

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.

INSTUCTORS: D.R. Firanescu

FORMAT: Lecture

PREREQUISITE: ARBC 3030 or permission of the instructor. This course may be taken by native speakers of Arabic.

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

FORMAT: Lecture, lab

CROSS-LISTING: CSCI 1200.03

EXCLUSION: COMP 1000.03, MGMT 1601.03, LIBS 1601.03, COMM 1501.05

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 programme.

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.

The practicum component of ASSC 3100 has been tied to ASSC 1100; students from ASSC 3100 have served as tutorial leaders for ASSC 1100. We envisage a new role for these mentors, to serve as peer mentors for first-year students. The change in title and description reflects this change, which is minor in terms of class content; it simply changes the practicum experience.

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, Killiam Library, 6225 University Avenue, Halifax, Nova Scotia B3H 4H8. Phone: (902) 494-3077.

INSTRUCTORS: Fraser, L.; Norman, W.
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.

FORMAT: Lecture/discussion

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 (UCLEx), 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 S 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

PRIEREQUISITE: 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 an 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.

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

Canadian Studies

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, F. (Sociology and Social Anthropology)
Carbert, L. (Political Science)
Dawson, C. (English)
Elson, C. (French)
Finbow, R. (Political Science)
Girard, P. (Law)
Irvine, D. (English)
Lesser, R. (Economics)
MacCallum, T. (History)
Noble, B. (Sociology and Social Anthropology)
Olive, I. (French)
Overtont, D. (Theatre)
Paella, T. (Law)
Smith, J. (Political Science)
Thorndill, E. (Law)
Tilton, S. (History)
Vaismorav, I.A. (English)
Zentilli, M. (Earth Sciences)

The Canadian Studies Programme

I. Introduction

Why Canadian Studies at Dalhousie? In this era of globalized economies and a growing sense of international citizenship and responsibilities, Canadian Studies programmes are enjoying something of a renaissance. Knowing ourselves and understanding our place in the world as Canadians remains a legitimate, even 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 Professors, Law, and the King’s School of Journalism. The new Dalhousie Canadian Studies Programme, 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
Faculty of Arts and Social Sciences

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be above the 2000-level:

A minimum of four full-credit classes above the 1000-level, two of them to be above the 2000-4000-level substituted, as a transfer credit).

One full-credit class in French (a class in an aboriginal language may be substituted, as a transfer credit).

II. Requirements

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 40 of this calendar.

1. BA and BSc with an Emphasis in Canadian Studies

   Two-and-one-half credits:
   - CANA 3000.03: The Idea of Canada: An Introduction
   - CANA 3010.03: Interdisciplinary Approaches to Current Canadian Themes
   - CANA 4000.03: Canadian Studies Senior Seminar

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 3010.03: Interdisciplinary Approaches to Current Canadian Themes
   - CANA 4000.03: Canadian Studies Senior Seminar

   Two Canadian-content classes "approved with Canadian Studies" as required.

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 3010.03: Interdisciplinary Approaches to Current Canadian Themes
   - CANA 4000.03: Canadian Studies Senior Seminar

   Further 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.


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 “mind-set,” and asking “What 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; ethno-religion, 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): Garber, L., Derozen, C., Elson C.

CANA 3010.03: Interdisciplinary Approaches to Canadian Themes.

Replaces CANA 3000.03. 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: Comparative Religion, Earth Sciences, 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): Staff

FORMAT: Lecture

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

CANA 4000.03: Seminar in Canadian Studies.

Replacing CANA 3000.03. 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: Comparative Religion, Earth Sciences, 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.

Replacing 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 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

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IV. Classes Approved with Canadian Studies

1. Comparative Religion Classes Approved with Canadian Studies
   - COMB 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 2216.03: The Canadian Economy in the New Millennium: Economic Policy Debates for the Next Decade
   - ECON 2215.03: 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 3352.03: Resource Economics
   - ECON 3335.03: 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 3231.03: Modern Canadian Literature
   - ENGL 3270.03: Contemporary Canadian Literature
   - ENGL 4400-4499: Studies in National Literatures
   - ENGL 2207X/Y.06: 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 2201.05/2202.05: Langue et culture/Langue et Culture (This is a multi-section class. Check with the French Department to determine which sections have Canadian content.)
   - FREN 2203.05: Approches du texte littéraire/Approches à la littérature
   - FREN 2205.05: Les Parlars-académique, Introduction linguistique/Linguistique Introduction to Académic Dialectology
   - FREN 3001.05/FREN 3001.03: La littérature canadienne-française/Canadian Literature
   - FREN 3010.05: Études académiques/Academic Studies
   - FREN 4402.05: Écritures québécoises/Contemporary Quebec Writers
   - FREN 4904.05: Écritures québécoises/Contemporary Quebec 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 4005.03: 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 1875
   - HIST 2221.03: Rough Justice: Disorder and Disorder and Canadian Popular Culture, to the 1890's
   - HIST 2222.03: Rough Justice: Disorder and Disorder and Canadian Popular Culture, 1900 to Present
   - HIST 2230X/Y.06: Canada in the Twentieth Century
   - HIST 2231.03: 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 3210.03: 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 3250.03: The Age of MacDonald and Laurier
   - HIST 3273.03: Nova Scotia: Post-Confederation
   - HIST 3274.03: Nova Scotia: Post-Confederation
   - HIST 3282.03: Wealth and Power in North America
   - HIST 3312.03: Technology and History in North America
   - HIST 3331.03: The United States, Canada and the World
   - HIST 3370.03: North American Landscapes
   - HIST 3373.01: History of Settling
   - HIST 4222.03: Topics in Canadian Social History
   - HIST 4223.03: The Fishermen 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
    - LAW 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 3602.05: Music in Canada to 1950
    - MUSC 3603.05: Music in Canada since 1950
    - MUSC 3604.05: 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 3201.05: Canadian Political Thought
    - POLI 3220.03: Intergovernmental Relationships in Canada
    - POLI 3224.03: Canadian Political Parties
    - POLI 3233.05: 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 4304.03: Policy Formulation in Canada
    - POLI 4441.03: Introduction to Policy Analysis
13. Sociology and Social Anthropology Classes Approved with Canadian Studies

- SOSA 3008.03: Canadian Society and Politics
- SOSA 3008.03: Public Opinion in Canada
- SOSA 3002.03: Native Peoples of Canada
- SOSA 3150.03: 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

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Chinese (Mandarin)

Location: Marion McCain Arts and Social Sciences Building
6135 University Avenue, Room 2101
Telephone: (902) 494-2980
Fax: (902) 494-2105

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

Coordinator
Luo, Shao-Pin (494-2980/6901)

Class Descriptions

CHIN 1030X/Y.06: Introduction to Chinese (Mandarin).
This class aims to provide basic competence in understanding and speaking Mandarin and reading Chinese characters. It is for students who have had no exposure to Mandarin or Cantonese. This class fulfills the BA language requirement.

NOTE: 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 class is a continuation of ASSC 1030.06 Introduction to Mandarin. All four language skills-listening, 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)
Classics

Location: 6135 University Ave., Room 1172
Halifax, NS, B3H 4P9
Telephone: (902) 494-5468
Fax: (902) 494-5468
Email: classics@dal.ca
Website: www.dal.ca/FASS

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

Chair
Hanley, W.J. (494-3464)

Undergraduate Advisor
MacLeod, L.M. (494-3460)

Professors Emeriti
Crouse, R.D., BA (Vind), STB (Harv), MT (Trinity), PhD (Harv), DD (Trinity)
Franch, R., BA, PhD (Ottawa)
Starnes, C.J., BA (Bishop’s), STB (Harv), MA (McGill), PhD (Dal)

Professors
Hanley, W.J., BA (Vind), MA (Toronto), DFh (Dublin)
Scully, S., BA, M.A. (Bristol), PhD (Toronto)

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

Assistant Professors
Cohen, S.T., BA (Yale), MA (Cantab.), MA, PhD (Chicago)
Firnacci, D.R., PhD (Buenos Aires)
MacLeod, L.M., BA (Brock), MA, PhD (Dal)
McCann, G.L., BA (Vind), MA (Dal), PhD (Harvard)
O’Bone, P.H., BA (Vind), MA (Dal), MA, PhD (BCU)

Lecturer
Fournier, M., BA, MA (Dal)

II. Degree Programmes

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 40 of this calendar.

A. BA Honours in Classics (20 credits)
The candidate may choose between three programmes: 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 9.5-11 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).
• 3 credits at the 3000 level or higher. From these credits, students may choose from:
  • 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.
  • 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 programmes. 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 programmes.

B. BA Combined Honours in Classics (20 credits)
Classics may be taken as part of a combined honours programme with other disciplines. Students interested in such programmes should consult the undergraduate advisors of the respective departments.

Students must complete between 3.5-4 courses in Classics at the 2000 level or higher. From these credits, students must take the following:
• 2 credits in Greek and/or Latin.
  • 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 programme (applications may be submitted after completion of one year of study onwards). Please consult undergraduate advisor.

C. BA with Major in Classics (20 credits)
Students must complete the faculty requirements for a major. These requirements include 6-8 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 programmes 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 programmes of all students majoring or honouring in the Department must be approved by the Undergraduate Adviser.

III. Class Descriptions

NOTES:
1. Not all courses 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 75 of the calendar.
4. Classes in Ancient Hebrew are sometimes available as electives at the advanced level. Students are encouraged to take two consecutive terms; credit will be given only if both are completed consecutively.

CLAS 0400.00: Honours Examination
Details available from the department.
PREREQUISITE: CLAS 2810X/Y.06 or CLAS 2710X/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 these 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 comic drama, 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: Lecture

CLAS 1700X/Y.06: Introductory Ancient Greek
An introduction to Ancient Greek through the study of its basic grammar. The aim of the class is to bring the student by the end of the year to read connected passages from Xenophon and other Greek prose writers.

NOTE: Students contemplating honours or combined honours should register in 2710X/Y.06, not 1700X/Y.06.

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 2720X/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

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

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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 these civilizations; the reception of these 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, byzography, 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.  
CROSS-LISTING: HIST 2089/03

CLAS 2200.03: Ancient Israel in Her Near Eastern Context.  
Students will become familiar with the broad outlines of ancient Israelite history with special attention to the political and social changes which occurred during this period, including the growth of urban society and the development of the major religious traditions of the Israelites from the times of the Patriarchs to the rise of the Persian Empire. Students may also choose to focus on those phases of Israelite history and the related religious developments that are special interest: the function of myth in shaping and expressing a culture’s ideological, social, political, and religious worldviews. The course focuses especially on the development of Israel’s distinctive religious and cultural traditions in interrelationships with other cultures in the Near East and the Mediterranean basin. This course will cover the period from the time of the Patriarchs to the Persian period.  
PREREQUISITE: Students must beyond the first year and have completed the writing requirement.  
CROSS-LISTING: HIST 2089/03

CLAS 2203.03: 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 that eventually led to both Rome’s rise and the Republic’s fall. 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 2204.03: The Roman Empire: Cycles of Collapse and Rebirth.  
This course will cover the period of the Roman Empire as it evolved and expanded to its greatest extent during the reign of Augustus and his successors. Among the major questions considered in this course will be the role 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 also consider the political, social and cultural changes which occurred during this period, including the growth of urban society and the development of the major religious traditions of the Romans from the time of Augustus to the end of the Principate. The course will cover topics such as the development of the Roman state, the role of the Roman Republic, the rise of autocracy, the fall of the Roman Empire, and the rise of Christianity. Students will be expected to familiarize themselves with both primary materials 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 2205.03: The Fall of the Roman Republic.  
This class covers the end of the Roman Republic 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: Seminar  
EXCLUSION: CLAS 1105X/Y.16

CLAS 2209.03: The Roman World from Constantine to Theodosius (312-395).  
This course 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 all first-year students. There is no foreign language requirement.  
FORMAT: Seminar  
CROSS-LISTING: HIST 2073/03

CLAS 2214.03: Greek Culture from Palace to Polis.  
A history of 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, politics, poetry, philosophy, and cultural interactions between the Greek world, the Near East, and Egypt. No knowledge of Greek is expected.  
INSTRUCTOR(S): G. McConnell  
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  
PREREQUISITE: Students must be beyond the first year and have completed the writing requirement.  
CROSS-LISTING: HIST 2086/03

CLAS 2216.03: Greek Culture from Polis to Cosmopolis.  
A history of Hellenistic culture from the end of the Ptolemaic 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 life and after death, of Alexander the Great.  
INSTRUCTOR(S): G. McConnell  
FORMAT: Lecture/discussion  
PREREQUISITE: Students must be beyond the first year and have completed the writing requirement.  
CROSS-LISTING: HIST 2087/03

CLAS 2220.03: Ancient Israel in Her Near Eastern Context.  
Students will become familiar with the broad outlines of ancient Israelite history with special attention to the political and social changes which occurred during this period, including the growth of urban society and the development of the major religious traditions of the Israelites from the times of the Patriarchs to the rise of the Persian Empire. Students may also choose to focus on those phases of Israelite history and the related religious developments that are special interest: the function of myth in shaping and expressing a culture’s ideological, social, political, and religious worldviews. The course focuses especially on the development of Israel’s distinctive religious and cultural traditions in interrelationships with other cultures in the Near East and the Mediterranean basin. This course will cover the period from the time of the Patriarchs to the Persian period.  
PREREQUISITE: Students must beyond the first year and have completed the writing requirement.  
CROSS-LISTING: HIST 2089/03

CLAS 2300X/Y.06: Meetings between Hellenism, Judaism, Christianity, and Islam from Philo Judeaus 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, Avi-by-Shappir, Cordoba and Granada, Naples, Monreale, Palermo, Paris, Burgos, and Florence. Texts from which selections may be taken will include Septuagint; Philo, Commentary on Genesis; New Testament; Plotinus, Enneads; Augustine, City of God and Confessions; Prudentius, The Succession of the Saints; Dionysius, The Mystical Theology; Boëthius, The Consolation of Philosophy; The Liber de causis; Averroes, The decisive treatise; Moses Maimonides, The Guide of the Perplexed; Aquinas, On the Trinity 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.

Classics 83
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.
INSTRUCTOR(S): D.K. House
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, Skepticism, Epicureanism, Pyrrhonism and Academic Skepticism, Middle Platonism, Neoplatonism.
INSTRUCTOR(S): D.K. House
FORMAT: Lecture
CROSS-LISTING: PHIL 2362.03

CLAS 2700X/Y.06: Intermediate Greek.
A continuation of the period 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. 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 2810X/Y.06

CLAS 2710X/Y.06: Greek Prose.
A study of texts which reflect the transformation of the ancient Greek grammar under the influence of the Latin grammar. Selections from al-Farabi, Moses Maimonides, Averroes, and Eriugena, but including selected writings of the Pseudo-Dionysius. Three elements and their opposed systematic relations. Students will ordinarily have some background in Ancient History and Philosophy. Three studies will normally be read in their entirety: Boethius, The Consolation of Philosophy; Anselm, Proslogion; Anselm, De Quantitate Animae; Aquinas, Summa Theologica. A study of texts, primarily within the Latin tradition from Augustine to Aquinas. 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. Three studies will normally be read in their entirety: Boethius, Consolation of Philosophy; Moses Maimonides, Mystical Theology; Anselm, Proslogion; St. Augustine, The City of God. The main focus is on the use and transformation of the philosophy of Plato, Aristotle, the Stoics and the Neoplatonists in this development.
INSTRUCTOR(S): W.J. Hankey
FORMAT: Lecture
CROSS-LISTING: PHIL 2370X/Y.06

CLAS 2900X/Y.06: Intermediate Hebrew.
A continuation of grammar study and translation of selected texts from the Hebrew scriptures.
ENROLLMENT: 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 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.
A study of 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. Three studies will normally be read in their entirety: Boethius, Consolation of Philosophy; Anselm, Proslogion; Anselm, De Quantitate Animae; Aquinas, Summa Theologica. A study of texts, primarily within the Latin tradition from Augustine to Aquinas. 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. Three studies will normally be read in their entirety: Boethius, Consolation of Philosophy; Moses Maimonides, Mystical Theology; Anselm, Proslogion; St. Augustine, The City of God. The main focus is on the use and transformation of the philosophy of Plato, Aristotle, the Stoics and the Neoplatonists in this development.
INSTRUCTOR(S): W. J. Hankey
FORMAT: Lecture
CROSS-LISTING: PHIL 2300X/Y.06

CLAS 3370X/Y.06: The Augustinian Tradition.
The class covers the period from Augustine to the philosophical and theological thought of late Antiquity and the Middle Ages. 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 works written in the Middle Ages of Latin Europe selected to illustrate the development of philosophy in the period. These texts will normally be read in their entirety: Boethius, The Consolation of Philosophy; Anselm, Proslogion; Bonaventure, Meditationes in Domum; Selections from other works will normally include Augustine, De Doctrina Christianae, Aquinas, Summa Theologica. Three studies will normally be read in their entirety: Boethius, Consolation of Philosophy; Moses Maimonides, Mystical Theology; Anselm, Proslogion; St. Augustine, The City of God. The main focus is on the use and transformation of the philosophy of Plato, Aristotle, the Stoics and the Neoplatonists in this development.
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 written in the Middle Ages of Latin Europe selected to illustrate the development of philosophy in the period. These texts will normally be read in their entirety: Boethius, Consolation of Philosophy; Moses Maimonides, Mystical Theology; Anselm, Proslogion; St. Augustine, The City of God. The main focus is on 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

CLAS 3382.03: Medieval Philosophy from Arabic and Jewish thinkers to Aquinas.
A study of texts which trace the transformation of the ancient philosophical tradition within the works of medieval Arab and Jewish thinkers and of the Latin Christians to whom they mediated ancient philosophy. Selections from al-Farabi, Moses Maimonides, Averroes, and...
EXCLUSION: CLAS 3380X/Y.06, PHIL 2380X/Y.06

FORMAT: Lecture
PREREQUISITE: CLAS 3381 or PHIL 2381 or permission of the instructor
EXCLUSION: CLAS 3380X/Y.06, PHIL 2380X/Y.06

CLASS 3400X/Y.06: The Dialogues of Plato.

This course 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.

INSTRUCTOR(S): D.K. House
FORMAT: Seminar

CLASS 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 came out of his Trinitarian-exegesis of the first chapters of Genesis (Part III). This course presupposes some knowledge of the history of Ancient Philosophy, and some of Latin. This class is given alternately with CLASS 3400X/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

CLASS 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. This 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 (Aenid), 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 CLASS 3410X/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

CLASS 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.

CLASS 3500X/Y.06: Aristotle.

This course 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.

NOTE: 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. K. House
FORMAT: Lecture/seminar

CLASS 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
PREREQUISITE: Students must be beyond first year
EXCLUSION: CLASS 3510X/Y.06

CLASS 3516.03: Ancient Comedy.

Ancient Comedy ranges from the boudoirs 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
PREREQUISITE: Students must be beyond first year
EXCLUSION: CLASS 3510X/Y.06

CLASS 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.

STYLE: Instructor(s): L. M. MacLeod
FORMAT: Lecture/discussion
PREREQUISITE: Students must be beyond first year
EXCLUSION: CLASS 3510X/Y.06

CLASS 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.

STYLE: Instructor(s): C. Mitchell
FORMAT: Lecture/discussion
PREREQUISITE: HIST 2502 or 2503 or CLAS 1010X/Y.06 or permission of instructor
CROSS-LISTING: HIST 3509.03

CLASS 3602.03: Ancient and Medieval History of the Persianate World.

Please see description for HIST 3511 in the History section of this calendar.

STYLE: 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

CLASS 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.

STYLE: Instructor(s): D.K. House
FORMAT: Seminar
PREREQUISITE: CLASS 2700X/Y.06

Classics 85
CLAS 3710X/Y.06: Greek Epic.
A study of the 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, Simonides 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

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.
NOTE: 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 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 moral 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

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 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 3900X/Y.06.
RECOMMENDED: CLAS 2601.03/2682.03
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 works, which is to offer consolation to the reader.
FORMAT: Seminar
PREREQUISITE: Three years of undergraduate Latin 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 alternatively 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 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 4500X/Y.06: Seminar on Neoplatonism. The class considers the origin and nature of Greek Neoplatonism. Given alternatively 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 neighbours — the Parthians and the Sassanians — from 33 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 4535X/Y.06, HIST 5535X/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
CROSS-LISTING: CLAS 5540.03

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: Special Topics. CLAS 4710.03/4720.03: Special Topics. 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
CROSS-LISTING: HIST 4110X/Y.06, HIST 5110X/Y.06, CLAS 5535X/Y.06

PREREQUISITE: CLAS 3810X/Y.06 or CLAS 3820X/Y.06, or permission of the instructor.
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 programme. The Minor may also be added to a Double Major or Combined Honours programme. When the Minor is added to either of these two-subject degree programmes, completing the requirements of Minor may entail taking slightly more than 20-credits for the whole of the degree programme.

Community design pays attention to the shape, patterns, processes, and issues in human and natural communities. The programme 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 2000.03: Community Design Context
- PLAN 3000.03: Landscape Ecology
- PLAN 3002.03: Reading the City
- PLAN 3003.03: Cities and the Environment in History
- PLAN 3006.03: Reading the Landscape
- PLAN 3011.03: Urban Ecology
- PLAN 3013.03: Site Information
- PLAN 3020.03: Landscape Design
- PLAN 3025.03: Site Planning
- PLAN 3030.03: Reading the Suburbs
- PLAN 3035.03: Communication Design Practice
- PLAN 3050.03: Topics in Community Design
- PLAN 3051.03: 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 4110.03: History and theory of landscape architecture
- PLAN 4111.03: Housing theory

Comparative Religion

I. Introduction

The University study of religion aims at an intellectual understanding of this more than intellectual reality. 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 grapple with problems arising in academic reflection concerning the relation between the personal and the objective, can find material to engage them in the classes described below.

Admission to programmes in Comparative Religion has been suspended. Some comparative religion classes are still being offered. Students currently registered in a Comparative Religion programme will be permitted to complete their degree within the normal period.

II. Degree Programmes

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 40 of this calendar.

A. 20-credit BA with Major in Comparative Religion

Departmental Requirements

1000 level
- Select one class from: COMR 1000.06, 1300.03

2000 level
- Select two classes from: COMR 2001.03, 2002.03, 2003.03
- Select two classes from: COMR 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. 15-credit BA with Concentration in Comparative Religion

Departmental Requirements

1000 level
- Select one class from: COMR 1001.01, 1002.01

2000 level
- Select two classes from: COMR 2001.03, 2002.03, 2003.03
- Select two classes from COMR 2011.03, 2012.03, 2013.03

3000 level
- At least one and one half credits at 3000 level or above

4000 level
- At least one half credit at 4000 level

This programme provides Comparative Religion 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, Comparative Religion majors are encouraged to enrol in related classes offered by other Departments. Programmes should be planned in consultation with the undergraduate advisor, Dr. Matthew Mitchell.

Please consult the current timetable to determine which classes are being offered.

C. Emphasis in Canadian Studies

Comparative Religion students interested in obtaining an Emphasis in Canadian Studies along with their Major or Concentration in Comparative Religion should consult the Canadian Studies calendar entry for information on requirements and for a list of Comparative Religion 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.

COMR 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

COMR 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

COMR 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

COMR 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 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

COMR 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

COMR 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

COMR 2004X/Y.06: Meetings between Hellenism, Judaism, Christianity, and Islam from Philo Judaeus to Dante.

Please see description for CLAS 2200 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 2200, HIST 3015

COMR 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

COMR 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

COMR 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 six 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.

**COMR 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 more canonical writings. The course will examine the first-century origins of Christianity in the Roman province of Judaea, and its movement into other regions such as Anatolia and the Italian peninsula.

**FORMAT:** Lecture

**RESTRICTION:** Second year or above

**EXCLUSION:** 1st year students and HIST 2501.03

**CROSS-LISTING:** PHIL 2205.03

**COMR 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

**INSTRUCTOR(S):** C.J. Neville

**CROSS-LISTING:** PHIL 2205.03

**EXCLUSION:** PHIL 2200X/Y.06

**PREREQUISITE:** At least one of COMR 2001.03, 2002.03, 2003.03, 2011.03, 2012.03, 2013.03 or permission of the instructor

**COMR 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.

**FORMAT:** Lecture/seminar

**INSTRUCTOR(S):** TBA

**CROSS-LISTING:** PHIL 2205.03

**EXCLUSION:** PHIL 2200X/Y.06

**PREREQUISITE:** At least one of COMR 2001.03, 2002.03, 2003.03, 2011.03, 2012.03, 2013.03 or permission of the instructor

**COMR 2205.03: Philosophy of Religion.**

Monotheistic religions (such as Islam, Christianity, and Judaism) assert the existence of a single God. This class addresses philosophical problems posed by traditional monotheism. Why is there a God? Is He omnipotent, omniscient, and benevolent? Why should we believe in God? What does it mean to talk about God? What is the best evidence for and against? What bearing does God have on human morality?

**FORMAT:** Lecture/seminar

**INSTRUCTOR(S):** TBA

**CROSS-LISTING:** PHIL 2205.03

**EXCLUSION:** PHIL 2200X/Y.06

**PREREQUISITE:** At least one of COMR 2001.03, 2002.03, 2003.03, 2011.03, 2012.03, 2013.03 or permission of the instructor

**COMR 2503.03: From Cordoba to Jakarta: Islamic Civilizations in a Global Perspective (Seventh-Eighteenth Centuries).**

This course will introduce students to the Iberian-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 Kedah 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 Indian Subcontinent, the Steppe and Southeast Asia. Another important theme will be the study of how various Islamic societies understood and resolved the age-old dynamic between centric society of Mecca and Medina had become an empire of the Holy Land and the collapse of the Sasanian Empire in Persia, the Arab-centric society of Mecca and Medina. 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 Indian Subcontinent, 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 HST 2501.03

**COMR 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 Comparative Religion.

**FORMAT:** Seminar

**INSTRUCTOR(S):** TBA

**PREREQUISITE:** At least one of COMR 2001.03, 2002.03, 2003.03, 2011.03, 2012.03, 2013.03 or permission of the instructor

**COMR 3005.03: Religion and War.**

Religious attitudes toward war have ranged from pacifism, through vigorous efforts to enforce limits on war’s destructive power, 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.

**FORMAT:** Lecture

**INSTRUCTOR(S):** M. Mitchell

**PREREQUISITE:** At least one of COMR 2001.03, 2002.03, 2003.03, 2011.03, 2012.03, 2013.03 or permission of the instructor

**COMR 3006.03: Western Spirituality - Mystics.**

Some have argued that the mystical 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 and Muslim spiritualities are studied in their historical context in this class. A detailed syllabus is available from the Department of Comparative Religion.

**FORMAT:** Lecture/seminar

**INSTRUCTOR(S):** TBA

**PREREQUISITE:** At least one of COMR 2001.03, 2002.03, 2003.03, 2011.03, 2012.03, 2013.03 or permission of the instructor

**COMR 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 Comparative Religion.

**FORMAT:** Seminar

**INSTRUCTOR(S):** TBA

**PREREQUISITE:** At least one of COMR 2001.03, COMR 2002.03, COMR 2003.03 or permission of the instructor

**COMR 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, trinity 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.

**FORMAT:** Lecture/discussion

**INSTRUCTOR(S):** C.J. Neville

**PREREQUISITE:** HIST 2001.03 or HST 2002.03 or HST 2120.03

**CROSS-LISTING:** HIST 3002.03

**EXCLUSION:** Former HIST 3002.03 and 3003.03 students

**PREREQUISITE:** At least one of COMR 2001.03, 2002.03, 2003.03, 2011.03, 2012.03, 2013.03 or permission of the instructor

**COMR 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
Comparative Religion

Faculty of Arts and Social Sciences

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, COMR 1000.06, or permission of the instructor
CROSS-LISTING: SOSA 3003.03

COMR 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 Comparative Religion or the permission of the instructor

COMR 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 Comparative Religion course at the second year level, or one of COMR 1000.06, GWST 1010.03, GWST 1015.03, or permission of the instructor
CROSS-LISTING: GWST 3016.03

COMR 3050.03: The Dead Sea Scrolls.
This course is designed as an introduction to the literary and physical remains of Qumran, particularly the writings known as the Qumran 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 COMR, CLAS, HIST, ENGL, or permission of the instructor

COMR 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 Table. The course will examine the interpretation of this 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

COMR 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 COMR course or permission of the instructor
EXCLUSION: COMR 3002.03

COMR 4310.03: Topics in Comparative Religion/
COMR 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, Feminism 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 Comparative Religion, though other students may then be admitted to the class upon application to the instructor. These classes permit the student majoring in Comparative Religion to integrate the work of many precious classes and lines of study while examining some chosen topic in the academic study of religion.
FORMAT: Seminar
I. The Contemporary Studies Programme

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 programme in Contemporary Studies (CSP). This combined honours BA programme brings together departmental offerings in arts and social sciences at Dalhousie and joins them with Contemporary Studies classes—enabling a required “core” class for each upper year of study at King’s. The King’s portion of this interdisciplinary degree programme 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 Programme 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 difference 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 Programme 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 Programme students will take an active role in organizing certain events each year, including lectures, debates, and exhibitions.

II. Degree Programmes

The departmental offerings at Dalhousie, within the Contemporary Studies Programme, include the other honours subject and a number of possible electives. The other honours subject must be selected from the following list of Dalhousie department and programme offerings.

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 programmes 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 Programme. Because it is an honours programme, the quality of work required is higher than that required in a 15-credit concentration or 20-credit major programme.

Applications for admission must be made to the Dalhousie department concerned and to the Contemporary Studies Office at King’s in the first instance. The procedures to be followed are indicated in the Registrar’s Handbook for both Kings and Dalhousie.

The joint Dalhousie/King’s Contemporary Studies programme is based on the general requirement that the 20 credits required to graduate include:

1. Completion of either the King’s Foundation Year Programme (either the three- or the four-class version) or at least two appropriate first- or second-year full classes at Dalhousie;
2. A minimum of three full classes at King’s;
3. Four full elective classes in subjects other than the two offered to satisfy the requirement in (3) below is reduced to two or three full classes.
4. A minimum of nine or more full classes at Dalhousie and at King’s.

A. The Dalhousie portion of the honours programme consists of the following:

1. A three- or four-class major Programme is available.
2. A minimum of nine or more full classes at Dalhousie.
3. Electives may be taken in any of the above-mentioned departments and programmes.
4. Completion of the Dalhousie portion of the degree programme is subject to supervision and approval by the Dalhousie department concerned and by the Contemporary Studies teaching staff.

The joint Dalhousie/King’s Contemporary Studies programme is based on the general requirement that the 20 credits required to graduate include:

1. Completion of either the King’s Foundation Year Programme (either the three- or the four-class version) or at least two appropriate first- or second-year full classes at Dalhousie;
2. A minimum of three full classes at King’s;
3. Four full elective classes in subjects other than the two offered to satisfy the requirement in (3) below is reduced to two or three full classes.
4. A minimum of nine or more full classes at Dalhousie.

B. The King’s portion of the honours programme consists of the following:

1. A three- or four-class major Programme is available.
2. A minimum of nine or more full classes at King’s.
3. Electives may be taken in any of the above-mentioned departments and programmes.
4. Completion of the King’s portion of the degree programme is subject to supervision and approval by the King’s department concerned and by the Contemporary Studies teaching staff.

The joint Dalhousie/King’s Contemporary Studies programme is based on the general requirement that the 20 credits required to graduate include:

1. Completion of either the King’s Foundation Year Programme (either the three- or the four-class version) or at least two appropriate first- or second-year full classes at Dalhousie;
2. A minimum of three full classes at King’s;
3. Four full elective classes in subjects other than the two offered to satisfy the requirement in (3) below is reduced to two or three full classes.
4. A minimum of nine or more full classes at Dalhousie.

C. The joint Dalhousie/King’s Contemporary Studies programme is based on the general requirement that the 20 credits required to graduate include:

1. Completion of either the King’s Foundation Year Programme (either the three- or the four-class version) or at least two appropriate first- or second-year full classes at Dalhousie;
2. A minimum of three full classes at King’s;
3. Four full elective classes in subjects other than the two offered to satisfy the requirement in (3) below is reduced to two or three full classes.
4. A minimum of nine or more full classes at Dalhousie.

D. The joint Dalhousie/King’s Contemporary Studies programme is based on the general requirement that the 20 credits required to graduate include:

1. Completion of either the King’s Foundation Year Programme (either the three- or the four-class version) or at least two appropriate first- or second-year full classes at Dalhousie;
2. A minimum of three full classes at King’s;
3. Four full elective classes in subjects other than the two offered to satisfy the requirement in (3) below is reduced to two or three full classes.
4. A minimum of nine or more full classes at Dalhousie.
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 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 nineteenth-century context of these debates will be explored, but the class will also highlight ideas and developments in the twentieth 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 of upper-level study. Each class will consist of thirteen bi-weekly evening lectures given by specialists from Atlantic Canada and beyond. The lectures 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

CTMP 2100.03: Revolution, Politics, History I.

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 Kant. The course 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 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 Kant. The course 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 2150.03: Society, Politics, and Literature.

The contemporary era has been one in which humans have become conscious of wholesale transformations 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 to be read in this class have been selected for their insights into the dilemmas of the individual living in an age formed by political and economic revolutions and whose new collective forces have been brought into play.

INSTRUCTOR(S): P. Hoffer
FORMAT: Lecture/tutorial

CTMP 2170.03: 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 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 2113.03

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 to biology and culture determine what it to be human? Drawing on theorists ranging from Foucault and Flancking to Chomsky and Steven Pinker, this course will examine the recent political, medical and existential issues raised by attempts to answer that question. Topics will include moral and political thought, the construction of modern human, hypnosis, the placebo effect, genetic screening, bioengineering, animal minds, the commodification of life, and the spectre of determinism.

INSTRUCTOR(S): Staff
FORMAT: Lectures and student workshops

EXCLUSION: CTMP 2202.05

CTMP 3011.04: Seminar in Contemporary Studies.

This course will focus on a current theme of interest to students in the College of Humanities, Social Science, and Education. The specific topic will vary from year to year. Students will be expected to participate actively in class discussions and to prepare written materials for presentation to the class. The course is taught on a tutorial basis by a member of the teaching staff and has an associated tutorial (CTMP 3010, 4010) which students may take for credit toward their degree program.

INSTRUCTOR(S): Staff
FORMAT: Seminar/tutorial
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 might be considered, examined, and articulated: discursive pracises 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 neuroscience, psychiatry 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 pleasure; the expression 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, Borensztein, Felys, Senghor, Soyinka, Mahapatra, Tin-Tai, Jaar, 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

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 Lacan's psychoanalytic theory 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, Derrida, Baudrillard, Cixous, 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 current 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. Cantar
FORMAT: Lecture/seminar

CTMP 2311.03: From Symbolism and Surrealism to the New Noveland Beyond.
This class will address questions of perception, image, and presence. We will analyze the intersecting perceptions of self and world, word and image, in the literature and art of modernity, from Rimbaud and Mallarmé, Guattari and Vasarely, through Surrealism and Cubism, to Camus and Sartre and beyond to the new novel and new wave film, Barthes, Borensztein, 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 otherwise has 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 ethnic writers and writers of fiction.

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 relation to others. The readings include theoretical material (Heidegger, Levinas, Bhabha, T. M. Bhabha, Kristeva) as well as literature (Kazuo Ishiguro, Ahab).  

INSTRUCTOR(S): D. Głowacka
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 critical 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. Głowacka
FORMAT: Lecture/reading

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 his/her 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 issue in such varied contexts as pre-war Europe, the Weimar Republic, Nazi Germany, post-war Japan, contemporary Canada, and 1970s Britain. The works of such thinkers and artists as Kant, Wittgenstein, Sartre, Natusu, Mishima, and the Sex Pistols will be considered mainly through written texts, but also in art forms such as music and film.

INSTRUCTOR(S): R. Kore
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 re-invention of art and life, the relations of the Avant-Garde to romanticism and modernism, the institutions 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 Bürger’s Theory of the Avant-Garde, but we will also examine selected writings by Lukacs, Brecht, Benjamin, Knoerzer, Pöggel, Dewald, Habermas, Lyotard, and Agamben.

INSTRUCTOR(S): R. Boss
FORMAT: Lecture/seminar

CTMP 3300XY.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 philosophy of scientific methods, 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.
CROSS-LISTING: EMSP 3210.03
INSTRUCTOR(S): K. Kierans

...enlightened reason could properly reflect the formal divisions of culture. This class will consider how these differencescompiled European philosophers and theologians, artists and social theorists, to develop and expand their self-understanding to the point where Enlightenment. By the end of the eighteenth century, many Europeans began to question the self-understanding evoked by the principle of critical reason. This class will consider how enlightened reason itself. 

PREREQUISITE: One of: CTMP 2000.06, CTMP 2100.03, CTMP 3100.03, EMSP 3230.03, EMSP 4000.06
FORMAT: Seminar
INSTRUCTOR(S): G. McOuat
CROSS-LISTING: EMSP 3220.03

CTMP 3110.03: The Dialectic of Enlightenment

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 are now seen as different realities 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 compiled 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. Indeed, they sometimes shed more light on the interpreter than the interpretation. Thus, we shall critically analyse the radical reconstructions of early modern thought as faithful scholarly commentary. This class will examine several interpretations of early modern thought, 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 how the relationship between religion and the demand that the unifying force in culture come from a dialectic resulting in the principle of enlightened reason itself.

INSTRUCTOR(S): G. McOuat
FORMAT: Seminar
CROSS-LISTING: EMSP 3210.03

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: Seminar/lecture/ laboratory

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 reconstruciton of early modern thought as faithfully scholarly commentary. Indeed, they sometimes shed more light on the interpreter than the thinkers being interpreted. Thus, we shall critically analyse the radical reconstructions of early modern texts that were undertaken in order to make these works relevant to social and political questions centuries later.

INSTRUCTOR(S): S. Burns
FORMAT: Seminar
PREREQUISITE: One of: CTMP 2000.06, CTMP 2100.03, CTMP 3100.03, EMSP 2000.06, EMSP 2400.03, EMSP 3210.03, EMSP 3220.03, EMSP 3400.03, EMSP 4000.06, PHIL 2210.03, PHIL 2220.03, PHIL 2250.03, 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 even 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 consider 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 Havelock 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 demystifying and sanctifying historicism 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, Weiss 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/lecture
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 have been traced from the rise of Darwinism in the early nineteenth century to the contemporary postmodern age. From an examination of nineteenth-century “Scientific 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 concerns 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

PHIL 2220.03, PHIL 2270.03, POLI 2400.03, POLI 2410.03, POLI 2420.03 or instructor’s permission.
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 will examine three different strategies for overcoming this view. We will 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 will discuss attempts by radical ecologists to establish a nondualistic view of the relation between humans and nature. In the concluding section of the course, we will examine some postmodern strategies for overcoming dualistic thinking about culture and nature.

INSTRUCTOR(S): S. Boos
FORMAT: Lecture/seminar
EXCLUSION: CTMP 3410.03 for the 2004/2005 academic year 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 works by Donna Haraway, Sandra Harding, Evelyn Fox Keller, Helen Longino, and Hilary Rose.

INSTRUCTOR(S): K. Morris
FORMAT: Seminar
CROSS-LISTING: CTMP 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 art and the aesthetics of nature. 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 1960s, the aesthetic aspect of the environment was revalued 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 3230.03: 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 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. Gwaszczak
FORMAT: Seminar

CTMP 3232.03: 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 burdens 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 Landmann’s Schindler), 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. Gwaszczak
FORMAT: Seminar

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

CTMP 3322.03: Representations of the Holocaust II: Remembrance.

CTMP 3340.03: Home and Homelessness.
This class takes the current social problem of homelessness as a starting point to look at the history and development of contiguous ideas 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 uncertain, for example. These diagnoses have been applied both to psychological conditions and to actual social phenomena of mass displacements, refugees, immigration and exile. The sociological 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 ‘homelessness’ and of its strange double, the uncanny (unheimlich), and the stakes that post-war philosophy has in the contexts of rootlessness, place and dwelling.

INSTRUCTOR(S): E. Edwards
FORMAT: Seminar

CTMP 3345.03: The Theory of the Gift.

CTMP 3344.03: The Theory of the Gift.
If it is 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 the 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 use 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 inegalitarian 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 feminist voices to penetrate in ways in which women's subjectivity has always been constructed through male-oriented processes of signification. The course will explore the theoretical and practical implications 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 expression 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 4105 for the 2004/2005 academic year only
CTMP 4115.X/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, Alasdair 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
This class explores some of the key figures and movements in French intellectual life in this century. The course 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 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 1923 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 USA, 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 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.

**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 ‘natural’ science of phenomenology. The method of phenomenology, the intentionality of consciousness, perception, and the Lebenswelt are among the topics we will consider. We will 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.  

**FORMAT:** Lecture/seminar  
**INSTRUCTOR(S):** S. Boos  
**FORMAT:** Lecture/seminar  
**CTMP 4200.03: Philosophies of Technology I: From Techno to Technology**  

What does it mean to live in a “technological society”? In a certain sense, technology forms the very ground of what it means to be “modern”. We moderns are technological beings. This class will explore the history, structure and associated problems of our coming to be technological, beginning with technical arts and instrumental reasoning of Enlightenment and industrial ideology. Post-Enlightenment critiques polarizing around the place of “machine” and alienation in Karl Marx, and in the “question concerning technology” in Martin Heidegger will then be examined, leading up to the present state of technological discourse. In each case, we shall mark the importance of contextualising the debate by examining the actual historical evolution of technology. Weekly lectures will be devoted to presenting a social and historical background to the development of modern technologies. Student-led seminars will focus on the reading of primary texts in the field.  

**FORMAT:** Lecture/seminar  
**INSTRUCTOR(S):** G. McOuat  
**FORMAT:** Lecture/seminar  
**CROSS-LISTING:** HFEC 4200.03  
**CTMP 4201.03: Philosophies of Technology II: Questions Concerning Technology**  

This class will expand on 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? Themes and topics include: technology as a form of colonization; the politics of technology; the “technological sublime” 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.

**FORMAT:** Seminar/lecture  
**INSTRUCTOR(S):** G. McOuat  
**FORMAT:** Lecture/seminar  
**CROSS-LISTING:** HFEC 4201.03  

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**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 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 liberal 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 Foucauldian methodologies will also be considered.

**FORMAT:** Lecture/seminar  
**INSTRUCTOR(S):** E. Edwards  
**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 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.

**FORMAT:** Lecture/seminar  
**INSTRUCTOR(S):** E. Edwards  

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**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. Important to feminist, queer theory, and postcolonialism, Lacanian psychoanalysis has recently been employed in the understanding of nationalism, ethnic conflict and religious fundamentalism through such categories as identification, recognition and trauma. At the same time, Freudian and Lacanian psychoanalytical thought is the subject of a number of critics, particularly around the centrality of the Oedipal myth. The course will begin with some key texts by Freud and Lacan, and then move through a survey of the 20th century conjunction of psychoanalytic and political theory.

**FORMAT:** Seminar  
**INSTRUCTOR(S):** P. Heller  
**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 this atrocity and its impact on humanity. It has taken decades, however, for others (such as Emil Fackenheim, Jürgen Habermas) to confront “Auschwitz.” The class will concern the way in which the individual subject is incorporated in symbolic practices. The recent attack on Freud and Foucauldian methodologies will also be considered.

**FORMAT:** Lecture/seminar  
**INSTRUCTOR(S):** D. Glazacka  
**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: “Heidegger,” “Feminist Theory,” “Contemporary Marxism,” and “Arendt.”
NOTE: No more than two special topics classes (one full credit) can be taken for credit towards the Contemporary Studies Programme. Students can enrol only once in CTMP 4410.03.
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 Programme. Students can enrol only once in CTMP 4411.03.
FORMAT: Seminar
PREREQUISITE: Students must complete at least 2 years of university study (minimum 10 full credits) prior to enrollment.

CTMP 4415.03: Special Topics in Contemporary Aesthetic and Critical Theories.
The Special Topics classes focus on one author or one particular school of thought in an interdisciplinary context. Topics vary each year. 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 Programme. Students can enrol only once in CTMP 4415.03.
FORMAT: Seminar
PREREQUISITE: Students must complete at least 2 years of university study (minimum 10 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.
Early Modern Studies Programme

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 modernity so complex and so diverse? 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 Programme.

I. Early Modern Studies Programme

The Early Modern Studies Programme (EMSP) is a combined Honours BA programme offered jointly by Dalhousie University and the University of King’s College. This programme 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 interdisciplinary degree programme consists of interdepartmental 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 cover 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.

II. Degree Programme

The departmental offerings within the 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 programmes: 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 programmes 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 programme 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 40. Because it is an Honours Programme, the quality of work required in it is higher than that required in a 13-credit concentration or 20-credit major Programme.

Applications for admission must be made to the Dalhousie department concerned and to the Early Modern Studies Office at King’s. Students should apply to the programme 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 programme, 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 Programme is based on the general requirement that the 20 full credits needed to graduate include:

1. Completion of either the King’s Foundation Year Programme (either the three- or the four-year version) or at least two appropriate four-year full credits at Dalhousie which involve the study of pre-19th century values or institutions (that is, Classics, CLAS 1000, Y.06, CLAS 1010X/Y.06, CLAS 1020X/Y.06) or the History of Science and Technology Programmes, HIST 1662.X/Y.06, HIST 1863.X/Y.06; Comparative Religion, COMR 1000.X/Y.06/2000X/Y.06; English, ENGL 1000.X/Y.06; History, HIST 1000.X/Y.06, HIST 1801.X/Y.06, HIST 1802.X/Y.06, HIST 1862.X/Y.06, HIST 1863.X/Y.06; Music, MUSC 1000.X/Y.06, MUSC 1500.X/Y.06, MUSC 2000.X/Y.06; Philosophy, PHIL 1000.X/Y.06, PHIL 1025.X/Y.06; Political Science, POLI 1000.X/Y.06, POLI 1010.X/Y.06, POLI 1020.X/Y.06; Sociology and Social Anthropology, SOCA 1000.X/Y.06, SOCA 1025.X/Y.06, SOCA 1030.X/Y.06, SOCA 1040.X/Y.06, Mathematics, MATH 1001.X/Y.06 and MATH 1002.X/Y.06.

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 as an honour’s subject in the Early Modern Studies Programme, 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 fulfill 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 Programme 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 programme 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 Programme 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 2000Y.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 Romantic scepticism. The development and often diverse explorations of the self in the Early Modern period will be considered through an examination of the philosophical and literary texts as well as other aesthetic phenomena. To help probe a sense of what the modern self implies, continued attention will be made to its relation to social and economic developments, to a changing perception of gender and to institutional authority, particularly governmental and ecclesiastical. NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be awarded only if both are completed consecutively.

INSTRUCTOR(S): N. Robertson
FORMAT: Lectures and tutorials
PREREQUISITE: Either King’s Foundation Year Programme or two first-year credits at Dalhousie which involve the study of pre-19th century ideas or institutions

EMSP 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?

In order to answer questions such as these, I propose that we arrange our study under three broad headings: 1. iconography; 2. style; 3. festival. Under iconography, we will analyze patterns of symbolic meaning that occur in both verbal and visual media; the related figures of Venus and Cupid will be points of departure. Under style we will study the distinguishing features of the Renaissance, Manet, and Baroque phases of early modern art and literature. Under festival we will examine some of the ways in which the intellectual and social forces contributed to, and commented upon, particular events; the wedding (as a cultural practice and as an event in the lives of specific early modern people) will serve as an example of the artistic investment in fertility.

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 favourable light, then use whatever methods are available to us to critically assess them. The amount of reading material will not be large but what there is will be the subject of close study. Written assignments, papers, class participation and term tests will be the method of evaluation.

INSTRUCTOR(S): T. Vinci
FORMAT: Seminar

EMSP 2250.03: 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 transcends 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 contradictions introduced 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 Encyclopedie: 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 Encyclopedie, but some consideration will also be given to the movement in these other European countries. Course readings will include a number of articles from the Encyclopedie, our Dictionnaire Raisonne des Sciences, des Arts et des Metiers, whose publication was overseen by Denis Diderot and Jean le Rond d’Alembert
from 1571-1772, 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 enrollment.

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 Marmot, Teresa lo Sien. The main texts will then be considered as examples of the extraordinary reception of the genre, as continuation, elaboration and alteration 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 (Frey, Baldwin, 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 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 intersects and defines 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, consider 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 1300 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/seminar

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 license 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, and at the same time used to uphold, various social and political contexts. Questions that will be addressed include: How did early modern scientists think about witchcraft? The class will examine the ways in which science was portrayed as a new and progressive science, and at the same time used to uphold, various political and cultural contexts.

INSTRUCTOR(S): K. Morris
FORMAT: Lecture/seminar
EXCLUSION: EMSP 2340.00 and HSTC 2360.03

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 center 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. We will pay special attention to the ways in which early modern writers used these tales to speculate on philosophical, political, and scientific issues.

INSTRUCTOR(S): J. Crowley
FORMAT: Colloquium

EMSP 2420.03: Virtue, Vice, and the Commercial Society in Early Modern Literature.
An important development in early modern Europe is the emergence of the commercial society in the seventeenth and eighteenth centuries. The increasing power of the state, the rising middle class, and growing trade within and without Europe were accompanied by significant changes in religious, social, and political thought. The class will consider literary works by 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 representations 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.

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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 argued, for example, on a political level, in the American constitution. While others argued against the identification of happiness with pleasure. This class will examine various literary and philosophical texts in which the pursuit of happiness in its diverse senses is an important theme, with particular reference to the individual and 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 2450.03: The East is Read: Early Modern Conceptions of Asian Thought

This class will consider 18th and early 19th century European interpretations of Asia. 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 critique 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 2460.02: Images of Modesty 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 15th to late 18th centuries through the study of film. The motion pictures to be screened dramatize such events, themes, and/or stories as Luther (2003), A Man for All Seasons (1966), The Chimes at Midnight (1966), Elizabeth (1998), The Seven Samurai (1954), Cyrano de Bergerac (1990), King Lear (1960), Black Books (1991), The Wild Child (1978), The Beauty (1984), and Racille (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 3000/X/Y.06: The Study of Nature in Early Modern Culture

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 natural setting, the principal emphasis 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 critiquing tradition and integrating the experience of Renaissance and the Reformation, in responding to the beginnings of modern natural sciences 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 judgments 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. Karmans
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 dialectical result in the principle of enlightened reason itself.

INSTRUCTOR(S): K. Karmans
FORMAT: Seminar
CROSS-LISTING: CTMP 3110.03

EMSP 3230.03: Impersonations: Theatre, Performance and Identity in Early Modern England.

In his celebrated “Enlightenment in the Age of Wonders,” Paro delia Miranda argued man’s ability to “take like a chameleon the colour of all those things to which he is most attached” is what he most lacked. In a play or a performance, character is the performance, the mask, the illusion, the zombie, the zombie costume, and the whole world stage. Impersonation is not an event or a moment; it is a way of life in an age of impersonation.

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 judgments 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.

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 dialectical result in the principle of enlightened reason itself.

INSTRUCTOR(S): K. Karmans
FORMAT: Seminar
CROSS-LISTING: CTMP 3110.03

EMSP 3310.03: Hidden Worlds: Microscopy in Early Modern Europe.

Microscopes were introduced into Europe at the beginning of the seventeenth century. In the words of Robert Hooke, the microscope...
opened up a "new visible World" to the understanding—a strange new landscape populated by vast numbers of new creatures. This class will explore the influence the microscope, and the micro world that it opened up, on 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 sciences. 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 and 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 astronomy and divination, this course moves through a treatment of the centrality of theology to Medieval science on to the natural theology and the "Watchmaker" Design Argument of the seventeenth and eighteenth centuries. Models of conflict, harmony and complementarity offered in characteristic 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 conflations (notably Protestantism and its dissenting offspring) facilitated the rise of modern science are also appraised. Science-religion relations are examined from both the point of view of mainsteam 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 Judaeo-Christian tradition. Special features include a focus on primary texts and guest lectures by scientists.

INSTRUCTOR(S): S. Snobelen
FORMAT: Seminar
CROSS-LISTING: HSTC 3320.03, HIST 3075.03

Modern science 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 1400-1650) was highly influential in laying the foundations for each modern connections, even as it seemed 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 3340.03

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 harmonising religious interpretations with a particular conception of political order. 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 punishment and social control. In this class, we shall examine a number of texts which reflect the diversity of philosophic 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 "normalisation 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 philosophy 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 analyse the radical transformations of early modern texts that were undertaken in order to make these works relevant to social and political questions centuries later.

INSTRUCTOR(S): S. Kow
FORMAT: Seminar
CROSS-LISTING: HSTC 3315.03

EMSP 3501XY.03/3511XY.03/3515XY.06/4510.03/4515XY.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
CROSS-LISTING: Honours registration in Early Modern Studies, permission of the instructor and the Director of the Programme. Restricted to students in 3rd year and above.

EMSP 3610.03: Studies in Early Modern Subjectivities.
In this class, students will explore a focused 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 "Religion and Subjectivity in Early Modern Thought".

NOTE: Not more than one of each course number can be taken for credit towards the Early Modern Studies Programme.

INSTRUCTOR(S): Staff
FORMAT: Lecture/discussion
EMSP 3620.03: Studies in Early Modern Natural Philosophy.
In this class, students will explore a focused topic in an interdisciplinary context. Topics vary each year. Some of the topics are "Teleology", "Exploration and Early Modern Natural Philosophy", and "Mathematics and Metaphysics in the Seventeenth Century". NOTE: Not more than one of each course number can be taken for credit towards the Early Modern Studies Programme.
INSTRUCTOR(S): Staff
FORMAT: Lecture/discussion

EMSP 3630.03: Studies in Early Modern Social and Political Thought.
In this class, students will explore a focused topic in an interdisciplinary context. Topics vary each year. Some of the topics are "States of Nature in Early Modern Political Thought", "The Seventeenth-Century Discovery of Sovereignty", "The Concept of the State", and "Apocalyptic Thought in the Early Modern Period".
NOTE: Not more than one of each course number can be taken for credit towards the Early Modern Studies Programme.
INSTRUCTOR(S): Staff
FORMAT: Lecture/discussion

EMSP 3640.03: Studies in Early Modern Aesthetics.
In this class, students will explore a focused 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 Stigma".
NOTE: Not more than one of each course number can be taken for credit towards the Early Modern Studies Programme.
INSTRUCTOR(S): Staff
FORMAT: Lecture/discussion

EMSP 4000X/Y.06: Conceptions of State, Society, and Revolution in the Early Modern Period.
This class involves a close study 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 dissolution 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 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, Hegel, 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): N. Robertson
FORMAT: Individual instruction
PREREQUISITE: Honours registration in Early Modern Studies, permission of the instructor and the Director of the Programme

While the arts have been a topic of theoretical concern since antiquity, it is only in the Early Modern period that aesthetic 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 seminar, art and literature of the period will be studied in conjunction with theoretical texts.
This class may be designated as fulfilling the honours qualifying examination requirements for an EMSP Combined Honours BA (see section 6 of Degree Programme above). Students are also welcome to take this course as an elective with the permission of the instructor.
NOTE: 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: Seminar

EMSP 4510.03: 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-Claire correspondence (1717), anti-Newtonians and eighteenth-century popularizations of Newtonianism such as Voltaire's Philosophical letters (1733) and Macleuran's Account of Newton's discoveries (1748). Attention is paid to the social, cultural and political aspects of Newtonianism and new interdisciplinary knowledge required.
INSTRUCTOR(S): S. Snobelen
FORMAT: Lecture/discussion

EMSP 4561.03: 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 Programme.
INSTRUCTOR(S): Staff
FORMAT: Seminar

EMSP 4562.03: 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 Programme.
INSTRUCTOR(S): Staff
FORMAT: Seminar

EMSP 4563.03: Special Topics in Early Modern Social and Political Thought.
This special class focuses 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".
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 Programme.
INSTRUCTOR(S): Staff
FORMAT: Seminar

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;
II. Degree Programmes

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 40 of this calendar.

Please note that the following requirements apply to students entering the respective programme during the 2007-2008 academic year. Students who declared their English programme 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 = 8 credit hours) in English above the 1000 level; within these 9-11 credits, students must take the following:

1. at least one of 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, 3013.03, 3015.03)
   b) Restoration, Eighteenth-Century, Romantic, Victorian, American (pre 1914) (ENGL 3017.03, 3019.03, 3020.03, 3022, 3025.06, 3029.03, 3031.03, 3032.03, 3034.03, 3042.03)
3. 0451.00 Introduction to Literary Research (non-credit class)
4. 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:

1. at least one of 3000.03, 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, 3013.03, 3015.03)
   b) Restoration, Eighteenth-Century, Romantic, Victorian, American (pre 1914) (ENGL 3017.03, 3019.03, 3020.03, 3022, 3025.06, 3029.03, 3031.03, 3032.03, 3034.03, 3042.03)
3. 0451.00 Introduction to Literary Research (non-credit class)
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, 3013.03, 3015.03)
   b) Restoration, Eighteenth-Century, Romantic, Victorian, American (pre 1914) (ENGL 3017.03, 3019.03, 3020.03, 3022, 3025.06, 3029.03, 3031.03, 3032.03, 3034.03, 3042.03)
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 3000.03, 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, 3013.03, 3015.03)
   b) Restoration, Eighteenth-Century, Romantic, Victorian, American (pre 1914)
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, 3013.03, 3015.03)
   b) Restoration, Eighteenth-Century, Romantic, Victorian, American (pre 1914) (ENGL 3017.03, 3019.03, 3020.03, 3022, 3025.06, 3029.03, 3031.03, 3032.03, 3034.03, 3042.03)

Students who began a 15-credit concentration programme 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, 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.

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 Programme

The new Creative Writing programme 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 programme would fulfill a BA (20-credit) Double Major programme with creative writing as the secondary area, or a BA (15-credit) Combined Honours programme with creative writing as a secondary area.

Programme Prerequisite

• CRWR 200.06 (The Creative Process)
• Equivalent of two full credits from:
  • CRWR 3000.03 (Poetry)—20 students (cap)
  • CRWR 3001.03 (Fiction)—20 students (cap)
  • Theatre 3000.06 (Playwriting)—15 students (cap)
  • Journalism 3460.03X/3441.03Y (Narrative Non-Fiction at University of King’s College)—20 students (cap)
I. Creative Writing Class Descriptions


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. Students taking this class must register in both X and Y. Credit will be given only if both are completed successfully.

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.

PREREQUISITE: ENGL 3098.03

CRWR 3001.03: Creative Writing: Fiction.

Following the emphasis on short story writing in ENGL 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.

PREREQUISITE: ENGL 3099.03

JOUR 3440.03: Introduction to Narrative Nonfiction.

Narrative nonfiction writing includes literary journalism, memoir and essay. 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 B(H) students.

THEA 3600XY.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 works on 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 successfully.

II. English Class Descriptions

ENGL 0451.00: Introduction to Literary Research.

A departmental (i.e. non-university and non-credit) 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, listserves, and the World Wide Web. The class will also include an introduction to the History of the Book, including printing, papermaking, and binding. Students will be taken on a tour of the Dawson printing shop, and occasional guest speakers will lecture on relevant topics. Successful completion of assignments and the final exam at Christmas along with regular attendance of lectures one hour a week will constitute fulfilment of requirements for this class.

FORMAT: Lecture, first term only

ENGL 1000XY.06: Introduction to Literature.

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 varies from section to section. Detailed syllabuses of all sections are available on the department’s Web site. Practice in writing is carried out throughout the year in regular essays. Each section meets three hours. In addition, the tutors attached to each session 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 both, 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 successfully.

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. These classes, when taken together, satisfy the writing requirement. The classes need not be taken sequentially.

FORMAT: Lecture /discussion. Writing Requirement (1010 and 1020 together)

EXCLUSION: ENGL 1000XY, 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.

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PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06

ENGL 2018.03: Arthur.
A sampling of many stories of King Arthur and his Round Table including some of Sir Thomas Malory’s Morte D’Arthur; earlier texts will be read in translation.
FORMAT: Lecture/discussion
PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06
EXCLUSION: ENGL 2018.03

ENGL 2020.03: Sampling Medieval Literature.
A properly medieval title for this class would be “Danse Macabre”! It considers works important in 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, play, 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
EXCLUSION: ENGL 2226.06

ENGL 2028.03: Short Poems in English.
Forms and themes in the short poem are studied by means of critical readings of poems written in English. Topics may include the following: the sonnet in the short poem; other persons, public events, love, nature, the city, the machine, 'vit, myth, traditional forms, free verse, the Hokkai, 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

ENGL 2029.03: Framed Narratives.
The 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

ENGL 2030.03: Literature, Health and Healing.
The 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 madness; and biological healing practices.
INSTRUCTOR(S): M. Show
FORMAT: Lecture/disussion
PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06

ENGL 2034.03: The Short Story.
The class attempts to combine detailed consideration of a wide range of the best short stories of the last 150 years with discussion of general questions about the nature of the genre itself. As much as anything else it is a class in reading and writing: intended to improve reading ability and to develop the capacity to understand and interpret literature.
FORMAT: Lecture/discussion
PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06

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

ENGL 2050.03: Literature and Propaganda.
The class explores the relation of literary art to propaganda through the study of selected writings in different genres. Among the forms and concepts that may be considered are didacticism, rhetoric, ideology, pornography and censorship.
FORMAT: Lecture/discussion
PREREQUISITE: ENGL 1000X/Y.06

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 “scaped-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

ENGL 2095.03: Narrative in the Cinema.
The 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-filmic 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

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: Lecture
CROSS-LISTING: CSC 2100.03
EXCLUSION: COMM 2701.03

ENGL 2110.03: Introduction to Professional Writing.
In this introduction to various fields of professional writing, students learn to analyze rhetorical situations, adapt to generic conventions, and adapt the languages of distinct discourse communities. They learn how to determine what constitutes “good writing” in a specific field and to improve the structure and style of their prose to fit a given professional context. Because it is project-based, this course gives students the opportunity to research and produce specialized forms of writing. Examples might include case studies, white papers, press releases, business plans, web sites, and user manuals.
FORMAT: Lecture/discussion
PREREQUISITE: Any faculty-approved Writing Class
ENGL 2201X/Y.06: The English Language.
This class, concerning the 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
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. This class is a requirement for all students taking English Major or Concentration in English. It is normally taken in the second 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: Lecture/discussion

PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1008X/Y.06

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 1008X/Y.06

ENGL 2212.03: World Literature.
The term "Anglophone World Literature" describes writing in English from former British colonies as different as Nigeria and New Zealand. Instead of literally taking on the world, this class offers a window onto the fiction and culture of one postcolonial context: possibilities include South Africa, Australia, the Caribbean, and India. Although the texts and novelistic writing will vary depending 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 1008X/Y.06

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 1008X/Y.06

ENGL 2214X/Y.06: Shakespeare.
An introduction to Shakespeare's career as a playwright, through discussion and interpretation of a dozen or more of his plays.

NOTE: 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 1008X/Y.06

ENGL 2218.03: Gothic Fiction.
This class examines a selection of gothic fiction from Horace Walpole onwards. Attention is paid to the Romantic novelists (Radcliffe, Lewis, Brontë and Maturin) as well as their Victorian and twentieth-century successors (e.g. Bram Stoker and Patrick McCabe). Among the many subjects that may be considered are Jekyll/Hyde schizophranics, 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 1008X/Y.06

EXCLUSION: ENGL 2216.08, ENGL 3216.06

ENGL 2221X/Y.06: Fictions of Development.
A study of a variety of literary works that 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 1008X/Y.06

ENGL 2222.03: Satire.
A survey of traditional satire from early Irvingian to contemporary counterparts. This class chiefly examines conventional forms of verse and prose satires but attention is also paid to the visual and dramatic. Students are introduced to a wide range of specific modes (e.g., the character sketch, mock encomium, travesty, parody, lampoons) and satiris 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 1008X/Y.06

ENGL 2223X/Y.06: Science Fiction.
Selected works of speculative fiction are read for pleasure and studied for 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 1008X/Y.06

ENGL 2224X/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 revolved 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 these desires into narrative, hierarchal 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 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06

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 subversive acts against the American government. This class will study a selection of texts that impacted on 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

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. This class is a requirement for all English 3-credit concentration, 20-credit Major and 20-credit Honours students and is normally taken at the beginning of the third year.

FORMAT: Writing intensive, lecture/discussion

PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06

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

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

EXCLUSION: ENGL 2244.06

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 crew of people on pilgrimage, from idealistic knight and prosa 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

EXCLUSION: ENGL 3291.06

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

EXCLUSION: ENGL 4250X/Y.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

EXCLUSION: ENGL 4500.03

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

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 emblematic English writers (John Donne) and to argue about the view of human nature encoded in one of the most contested English texts (Pavlov's Leap). 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 Marshall), 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

EXCLUSION: ENGL 3224.06

EXCLUSION: ENGL 3244.06

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

EXCLUSION: ENGL 3664.06

EXCLUSION: ENGL 3664.06

ENGL 3017.03: English Poetry and Prose, 1660-1740.

A survey of poetry and prose from the Restoration and early eighteenth-century. The class studies works by authors such as Dryden, Rochester, 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
ENGL 3019.03: Poetry and Prose, 1740-1789.
A survey of poetry and prose from the mid-18th to late-eighteenth century. The class studies the works of Samuel Johnson and his circle, the poets of sensibility, the Stuarts and Sackville, and sturdy other authors. It covers a wide range of genres and movements (odes, imitation, poems, aesthetic treatises, fables) to 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
EXCLUSION: ENGL 325X/Y.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 in the burning of the Haymarket theatre in 1709, 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
EXCLUSION: ENGL 325X.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 a 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
EXCLUSION: ENGL 2208.06

ENGL 3025XY.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 poetry, plays, philosophies, movements, and the prose of political controversies. 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 3.5 and 4.7 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
EXCLUSION: ENGL 3251.06

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 1900s. Authors studied will include Tennyson, Robert and Elizabeth Barrett Browning, Matthew Arnold, Emily Bronte, 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

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 literature'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
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
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

ENGL 3062.03: American Literature, 1865-1914.
A survey of the major writers of the United States from the close of 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

ENGL 3070.03: Twentieth-Century 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 ethnic-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

ENGL 3086.03: Post-Colonial Literatures.
This class studies a cross-section of literature written in English from India, Africa, the Caribbean, Australia, and other former British colonies. In an attempt to develop a nuanced understanding of the nature and impact of inherited power relations, as represented in selected twentieth-century texts, it pays close attention to the ways that individual authors conceptualize notions of violence and resistance. Other topics to be explored include memory, madness, alienation, gender, and cultural and racial stereotyping.

FORMAT: Lecture
PREREQUISITE: ENGL 1000.06 or 1010.03/1020.03 or their equivalent
EXCLUSION: ENGL 3085.06
ENGL 3098.03: Creative Writing: Poetry.
This course is for students interested in writing poetry. 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, 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, and by permission of the instructor, on the basis of submission and assessment of a portfolio of work.
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.
EXCLUSION: ENGL 3221.03.
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.
EXCLUSION: ENGL 3220.03.
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.
EXCLUSION: ENGL 3232.06.
ENGL 3232.03: 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.
EXCLUSION: ENGL 3238.06.
ENGL 3233.03: 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.
EXCLUSION: ENGL 3239.06.
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, Stoppard, Pirandello, and O’Neill.
FORMAT: Lecture/Discussion
PREREQUISITE: ENGL 1000X/Y.06, or ENGL 1010.03 & ENGL 1020.03
EXCLUSION: ENGL 3210.03, ENGL 3236.03.
ENGL 3241.03: Contemporary Drama.
The 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 1000X/Y.06, or ENGL 1010.03 & ENGL 1020.03
EXCLUSION: ENGL 3210.03, ENGL 3236.03.
ENGL 3242.03: Poetry of the Earlier Twentieth Century.
An introduction to poetry in English from 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.
EXCLUSION: ENGL 3243.03.
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.
EXCLUSION: ENGL 3250.03.
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.
CROSS-LISTING: GWST 3050.03
EXCLUSION: ENGL 3209.06.
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. EXCLUSION: ENGL 3200.03

ENGL 3300.03: TV: Theory and Criticism. This class considers television as a uniquely powerful source of cultural production, presenting students with some of the theoretical questions it raises and some of the critical methods that have been developed for engaging it. The class will explore the way TV mediates cultural attempts to understand the contemporary world. FORMAT: Lecture PREREQUISITE: ENGL 1000.06 or any Writing Requirement Class

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.

European Studies

Contact Persons
Betty Bednarski, French (494-6903)
John Bingham, History (494-3641)
Robert Boardman, Political Science (494-6602) (Coordinator)
Stefan Burns, Philosophy (494-3638)
Francois Cadot, Italian (494-6279)
Dorota Glowacka, King’s College (422-1271, ext. 206)
Finn Laursen, Political Science (494-6611)
Jolanta Pekacz, History (494-3698)
Judith Sidler, German (494-1094)
Julia Wright, English (494-6902)

I. Introduction
The European Studies programme 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 programme and a 20-credit Major. Because it is already a multidisciplinary programme, European Studies cannot be combined with other subjects to form a combined honours degree.

II. Degree Programmes
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 Programme satisfies the first-year requirements for European Studies, with the exception of the language class and the natural science 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 programme consists of 15 further classes including an Honours project. The general requirements for the programme are:
- Classes in two contemporary European languages other than English are required. One of these languages is studied up to 300/4000 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. At this is a multidisciplinary programme, 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 programmes. 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:

- History and Politics (e.g. from the departments of History, Political Science, Sociology and Social Anthropology, and Economics).
- Literature and ideas (e.g. from language departments, Philosophy, Comparative Religion, and Classics).
- Fine Arts (e.g. from the departments of Music, Theatre, and Architecture, and the Programme in Film Studies).

In conjunction with the Honours project a 4th year multidisciplinary seminar is required.

- A term of study in the honours programme 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. A 1000 level (Europe), 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 Programme 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 form 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 different 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 is 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 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 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.

#### Approved Classes

**Classics**

All classes.

**Comparative Religion**

- COMR 2020.03: Christianity
- COMR 3008.03: Medieval Church

**Contemporary Studies**

- CTMP 2101.03: Narrative and Meta-Narrative
- CTMP 3102.03: Wagner
- CTMP 3105.03: Weil
- CTMP 3109.03: The Holocaust
- CTMP 3105.03: Deconstruction
- CTMP 4103.03: French Feminist Theory
- CTMP 4401.03: Contemporary Social and Political Thought
- CTMP 4901.03: 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 2226.03: Industrial Revolution in Europe
- ECON 2229.03: European Economy in Historical Perspective

**English**

- ENGL 2018.03: Arthur
- ENGL 2020.03: Sampling Medieval Literature
- ENGL 2029.03: Short Poems in English
- ENGL 2039.03: Frame Narratives
- ENGL 2040.03: 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 2239.03: Satire
- ENGL 2240.06: Popular Culture and Modernity
- ENGL 3001.03: History of Literary Criticism
- ENGL 3022.03: Contemporary Critical Theory
- ENGL 3023.03: Red and Green Tales
- ENGL 3030.03: Introduction to Nordic Saga
- ENGL 3031.03: Renaissance Poetry and Culture I/II
- ENGL 3035.03: Renaissance Drama
- ENGL 3037.03: English Poetry and Prose, 1660-1740
- ENGL 3039.03: Poetry and Prose, 1740-1799
- ENGL 3040.03: English Drama, 1660-1800
- ENGL 3042.03: English Fiction to 1850
- ENGL 3052.06: Literature of the Romantic Era 1789-1832
- ENGL 3059.03: Victorian Poetry
- ENGL 3061.03: 19th Century Fiction from Austen to Dickens
- ENGL 3062.03: 19th Century Fiction from Dickens to Hardy
- ENGL 3063.03: Modern Drama
- ENGL 3254.03: British Literature of the Earlier Twentieth Century
- ENGL 3255.03: British Literature of the Later Twentieth Century

**French**

- FREN all classes (except classes on linguistics, and on Quebec, Aradian and other non-European francophone literature and culture)

**Gender and Women’s Studies**

- GWST 3003.03: Sex and Gender in Reformation Europe
- GWST 3250.03: French Women Writers
- GWST 4413.03: Recent French Feminist Theory
- GWST 4503.03: Literary Women of French Classicism

**German**

- GERMAN all classes
History
- HIST 1040.06: Introduction to European History
- HIST 2011.03: Early Medieval Europe
- HIST 2021.06: Later Medieval Europe
- HIST 2050.03: Europe 1400-1559
- HIST 2060.03/2007.03: The Atlantic World
- HIST 2013.03: War and Society in Early Modern Europe, 1550-1750
- HIST 2019.06: Early Modern Europe, 1400-1660
- 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 2041.06: 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 2116.03: Tudor and Stuart England, 1485-1689
- HIST 2117.03: Modern Britain to 1884
- HIST 2118.03: Modern Britain from 1884 to present
- HIST 2119.03: History of the Scottish People
- HIST 3003.05: Medieval Church
- HIST 3005.03: 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 3043.03: French Revolution
- HIST 3050.03: Europe and World War II
- HIST 3051.03: 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 3093.03: History of ideas in Russia
- HIST 3101.03: Tudor History
- HIST 3103.03: Stuart History
- HIST 3104.03: English Civil War
- HIST 3105.03: English Family
- HIST 3108.03/3109.03: Topics in the Social and Cultural History of England
- HIST 3112.03: English 1567-1914
- 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 3117.03: Medieval Civilization
- HIST 4060.03: Topics in the Civilization of Baroque Italy
- HIST 4061.03: English Civil War
- HIST 4063.03: Topics in Early Modern English History
- HIST 4065.03: Britain, Appropriation 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 (to 1600)
- MUSC 1351.03: History of Music II (Baroque)
- MUSC 2351.03: History of Music III (1750-1830)
- MUSC 2352.03: History of Music IV (1830-1950)
- MUSC 3061.03: Women, Gender and Music
- MUSC 3314.03: History of Opera
- MUSC 3315.03: Music Since 1940
- MUSC 3355.03: Chamber Music Literature
- MUSC 3356.03: Piano Literature

Philosophy
- PHL 2010.03: History of Philosophy I, II
- PHL 2011.03: Existentialism
- PHL 3030.03: Kant
- PHL 3035.03: 18th Century Philosophy
- PHL 3036.03: Modern Philosophy
- PHL 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 3403.03: Political Philosophy of Plato
- POLI 3435.03: Machiavelli
- POLI 4478.03: Liberalism

Russian Studies
All classes

Spanish
All classes

Theatre
- THA 2110.03: Classical Theatres
- THA 2111.03: 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 3356.05: Regional Development
- ECON 3357.03: Classical Political Economy
- ECON 3348.03: Modern Economic Thought

Music
- MUSC 2015.06: Music and Cinema

Philosophy
- PHL 2200.03: Philosophy of Art
- PHL 2700.03: Philosophy in Literature
- PHL 3170.03: Theories of Feminism
- PHL 3603.03: 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 3453.03: Contemporary Political Thought
- POLI 3473.03: Democratic Theory
- POLI 3483.03: Politics through Film and Literature

Sociology and Social Anthropology
- SOSA 2200.06: Family in Comparative Perspective
- SOSA 3055.03: Does Industrial Society Have a Future?

Theatre
- THA 2300.06: Film Study
- THA 2310.06: Film Genres
- THA 2301.06: History of Musical Theatre
- THA 3500.06: Modern Theatre
- THA 3600.06: Playwright in the Theatre
- THA 3611.03: Gender in Theatre: A Cross-Cultural Survey
- THA 4011.03: Contemporary Theatre
Film Studies

Chair of Film Studies Committee

Varga, D., NSCAD, 494-8187 (dvarga@nscad.ca)

Dalhousie Contact Person

Jiménez, María M.
Department of Spanish, 494-6954, Room 3105

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 programme - 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 programme 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 programme 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: Introduction to Film Study 0.5 credits or MSVU FA2293 Introduction to Film Language 0.5 credits
- DAL THEA 2312.03: Issues of Film Aesthetics 0.5 credits or MSVU FA2295 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: Music and Cinema: Composer/Director Collaborations 0.5 credits
- DAL THEA 2312.03: Issues of Film Aesthetics 0.5 credits
- DAL THEA 2313.03: Contemporary Film 0.5 credits
- DAL SPAN 3805.03: Seminar in Latin American Film (taught in Spanish) 0.5 credits
- DAL SPAN 3815 Survey in Hispanic American Film (taught in English) 0.5 credits
- DAL ITAL 3900.03: Italian Neorealism Cinema 0.5 credits
- MSVU ENG 2213 Contemporary Film 0.5 credits
- NSCAD AHIS 3805 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 4400.1
- SMU ST Images of Christ in Film 22412

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, request a Film Studies flyer from the Dalhousie contact person, or the Chair of the Film Studies Committee. For additional information, visit our website at http://hfxfilm.textstyle.ca/
French

Faculty of Arts and Social Sciences

118 French language study. The role of French in Canada and in the Maritimes is designed for students who are interested in translation, or other areas of skills: speaking, listening, reading, and writing. Other classes are specially language who wish to improve and maintain any or all of the following. Classes are available for beginners and for those with a background in the French.

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.

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 Programme 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.

Please consult the French Department for more information and details.
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 programme, 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 $500. 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 Programme 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, Senegal. This specially designed programme, 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)

D. Martinique/Guadeloupe (see Department for details)

IV. Degree Programmes

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 40-41 of this catalog.

Requirements for the four degree programmes 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 sections of this calendar.

Emphasis in Canadian Studies

French students interested in obtaining an Emphasis in Canadian Studies should consult the Canadian Studies Calendar entry for information on requirements and for a list of French classes approved with Canadian Studies.

A. BA with Honours in French

This programme offers systematic, comprehensive and individualized study of French language, literature, linguistics and other programme 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 programmes.

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 2045.06
- FREN 2020.03

2000 level

- 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 4047.03 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 4053.00 (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 176), not fewer than 5 nor more than 9 may be chosen in French. Minimum requirements for the Combined Honours Programme are as follows: 2045.06, 2201.03, 2202.03, 3045.06, 4017.03 and 4046.05 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 4053 (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 programme 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 Programme, 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
Faculty of Arts and Social Sciences

120 French develops all four language skills: speaking & writing, and listening & reading comprehension. Emphasis is on the acquisition of skills that facilitate reading and writing, and listening & reading comprehension. 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 1005X/Y.06

FREN 1045X/Y.06: Français intermédiaire/Intermediate French. This class develops the ability to read contemporary French prose with ease and accuracy. Emphasis is on on the acquisition of skills that facilitate reading and writing, and listening & reading comprehension. 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.

FORMAT: Lecture

PREREQUISITE: Online Placement Test required: www.dal.ca/frenchtest

EXCLUSION: FREN 1005X/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. 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.

INSTRUCTOR(S): Staff

FORMAT: Lecture

PREREQUISITE: Online Placement Test required: www.dal.ca/frenchtest

EXCLUSION: FREN 1005X/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 on the acquisition of skills that facilitate reading and writing. Students are encouraged to become familiar with the best French-language 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 where 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 1060X/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 as 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): P. Mitchell, K. Waterson, V. Frigerio

FORMAT: Lecture

Note: Most classes above this level are given entirely in French.

Exceptions: FREN 2060.03, FREN 2275.03, FREN 2805.03, FREN 2810.03, FREN 3125.03, FREN 3175.03, FREN 4106.06 (these classes do not satisfy the Bachelor of Arts Language Requirement).
the French degree programme 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 dialectal 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, CD, DVD) and interactive technology will be integrated into the class.

FORMAT: Lecture/discussion
PREREQUISITE: FREN 1060X/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: Lectures/participatory activities
PREREQUISITE: FREN 1060X/Y.06 or FREN 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 linguistic 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 permission
EXCLUSION: FREN 2020.06

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 course designation of FREN 2021.03 and 2022.03. Approved in part with Canadian Studies (topics 4 and 7).

FORMAT: Lecture/discussion
PREREQUISITE: FREN 1045X/Y.06 or 1050X/Y.06 or 2000-level Placement Test result, or instructor’s consent

FREN 2060.03: Advanced Readings in French/Pratique de la lecture, niveau supérieur.

This class will continue the work of FREN 1045. 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 also be taken as an elective by students in the French Major or Honours programmes.

INSTRUCTOR(S): K. Waterson

FORMAT: Lecture/tutorial (in computer lab)
PREREQUISITE: FREN 1060X/Y.06 (final grade of B or above), FREN 1050X/Y.06 (final grade of B or above), or 2000-level Placement Test result

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 1050X/Y.06 or 2000-level Placement Test result; or instructor’s permission

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 Quebec 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 Cultural Studies.

INSTRUCTOR(S): L. Cote

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, Pessin, 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 programme requirements. French Majors and Honours students may take this class as an elective.

FORMAT: Lecture

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, Renoirs, Duras, Godard, Rohmer, Chabrol, etc. 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 programme requirements. This class does not satisfy the French degree programme 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. Eison

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 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 Francophone 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 Godard, Rohmer, Chabrol, etc. Actors as varied in technique as Asphyx, 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 programme requirements. This class does not satisfy the French degree programme 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. Eison

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 format. This class is intended to build vocabulary, perfect facility of expression (flourish) and style. Reading and research are necessary for the oral presentations.

FORMAT: Lecture/discussion

PREREQUISITE: FREN 2023.01 or 2000-level French class

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 analyse 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: it will be given only if both are completed consecutively.

INSTRUCTOR(S): J. Majchrowski, R. Mepofo

FORMAT: Lecture

PREREQUISITE: FREN 2021.03

EXCLUSION: FREN 3020.01

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.

FORMAT: Lecture

PREREQUISITE: FREN 2021.03

EXCLUSION: FREN 3020.01

FREN 3022.03: Semantique/Semantics.

This class builds upon the elements of semantics introduced in FREN 2021.03. It focuses on the acquisition of fundamental semantic concepts (sememe, semantic predicate/object, semantic decomposition, semantic & lexical relations) and their application to semantic descriptions of fragments of particular language, in our case, of French.

FORMAT: Lecture

PREREQUISITE: FREN 2021.03

EXCLUSION: FREN 3020.01

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 Quebecois. 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. Mepofo

FORMAT: Lecture
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; specific usage 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 as consecutive terms; credit will be given only if both are completed consecutively.

INSTRUCTOR(S): R. Mopoho, Staff
FORMAT: Lecture
PREREQUISITE: 2000-level French class or instructor’s permission

FREN 3045X/Y.06: Expression écrite /Written Expression I.
This class focuses on test grammar. It introduces the students to different types of tests and their communicative function(s). Students learn how to analyze these tests and how to produce them in similar written communicative situations. Grammar is hence taught in the natural context provided by the tests. Students work with a corpus of authentic documents and with electronic tools to support their test 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 as 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. Belanger, staff
FORMAT: Lecture/discussion
PREREQUISITE: 2000-level French class
EXCLUSION: FREN 3103X/Y.06

FREN 3125.03: The French-Speaking World/La 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 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. This class does not satisfy the French degree programme requirements.

INSTRUCTOR(S): R. Mopoho
FORMAT: Lecture
PREREQUISITE: 2000-level French class or instructor’s permission

CROSS-LISTING: INTD 3125.03

FREN 3150.03: Thèmes de la francophonie.
This course explores the political, economic, cultural, social and language perspective of regions of the Francophone World. Study of the organization known as La Francophonie, 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. This class does not satisfy the French degree programme requirements.

INSTRUCTOR(S): R. Mopoho, Staff
FORMAT: Lecture
PREREQUISITE: FREN 3125.03 or FREN 3150.03, or instructor’s permission

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 indepth 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 programme requirements.

INSTRUCTOR(S): R. Mopoho, Staff
FORMAT: Lecture
PREREQUISITE: FREN 3125.03 or FREN 3150.03, or instructor’s permission

FREN 3225.03: L’Epistolarie/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 bounds between letter writing and diary as well as the interactions 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 18th-Centuries correspondences.

INSTRUCTOR(S): R. Mopoho
FORMAT: Lecture and seminar
PREREQUISITE: FREN 2203.03/2202.03

FREN 3250.03: Écrivaines françaises/French Women writers.
This course 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): P. De Meen, staff
FORMAT: Lecture/discussion
PREREQUISITE: Recommended. FREN 2201.03/2202.03
CROSS-LISTING: GWST 3203.03

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, Toure, to name only a few possibilities.

In addition to essays 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 Meen, staff
FORMAT: Lecture/discussion
PREREQUISITE: FREN 2203.03/2202.03
CROSS-LISTING: GWST 3203.03

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 clausure de guerre to François Villon (most texts in modern French translations). The discussion of the
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origins and the development of a national French literature provide a convenient introduction to critical approaches to literary texts.

INSTRUCTOR(S): H. Rante, staff
FORMAT: Lecture/discussion
PREREQUISITE: FREN 2201.03/2202.03

FREN 3400.03: La littérature du seizième siècle/16th Century French Literature. A convenient introduction to critical approaches to literary texts. The sixteenth century witnessed the emergence of a national French literature with a primary focus on representative works by such authors as Ronsard, Montaigne, and the poets of the baroque. The sixteenth century 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 such dramatists as 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. Wietenberg, 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 Mme de Staël. Each year the readings and class discussions will be centered 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): P. DeMets, V. Figueroa
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 19th century witnessed 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 serial fiction 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 fils, Eugène Sue, Balzac, Frédéric Soulié, Paul Féval, Jules Verne) will be analyzed and discussed, in the light of theoretical works on the development of modern mass culture (Umberto Eco, René Guise, Daniel Conquyus, Lisa Quatrefies).

INSTRUCTOR(S): V. Figueroa
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 Dapin and Michal Degozy, 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, Duras, Le Clézio and Cixous. Parallel discussion will be centered upon the literary theory of critics such as Bachelard, Pudat, Sambrelnka, Barthes and Derrida.

INSTRUCTOR(S): M. Bishop, C. Elson
FORMAT: Lecture/discussion
PREREQUISITE: FREN 2201.03/2202.03

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. Each class deals with a specific genre (e.g., FREN 3900.03, Poetry, FREN 3901.03, Novel) and choice of genre may differ from year to year. Approved with Canadian Studies.

INSTRUCTOR(S): R. Mopoho, J. Milicevic
FORMAT: Lecture/discussion
PREREQUISITE: FREN 2201.03/2202.03


INSTRUCTOR(S): H. Rante, staff
FORMAT: Lecture/discussions
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; palaeography; historical phonetics, morphology and syntax; the cultural-literary context of linguistic development; etc. Approved with Linguistics.

INSTRUCTOR(S): R. Mopoho, H. Rante, 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 (Réfétançiers, the Baroque, Préciosité, the Revolution, scientific French, etc). Approved with Linguistics.

INSTRUCTOR(S): R. Mopoho, H. Rante, 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 3021.06 or FREN 2021.03 and 3021.03 or 3022.03, or instructor's permission

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FREN 4013.03: Pragmatique/Pragmatics.
INSTRUCTOR(S): R. Mopoho, J. Milicevic
FORMAT: Lecture
PREREQUISITE: FREN 3045X/Y.06 or equivalent or instructor’s permission

FREN 4014.03: Langue et société/ Language and Society.
INSTRUCTOR(S): R. Mopoho
FORMAT: Lecture
PREREQUISITE: FREN 3020.06 or 2020.03 and 3021.03 or 3022.03, or 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.
NOTE: 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.

FREN 4017.03: Tradition générale/General Translation.
Students taking this class will be familiarized with essential notions of translation theory, and will be introduced to professional translation practice. Emphasis will be placed on the translation of relatively short texts in a wide variety of subjects and fields, from English into French and from French into English. Assessment will be carried out through weekly assignments, as well as in-class exams.
INSTRUCTOR(S): 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 test 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, concordances and speech synthesizers/recorders. 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): P. De Miers, staff
FORMAT: Lecture
PREREQUISITE: FREN 3045.06 or instructor’s permission
EXCLUSION: FREN 4015.06

FREN 4300.03: Le roman courtois/ Courtly Novels.
INSTRUCTOR(S): H. Bourse, staff
FORMAT: Seminar
PREREQUISITE: 3000-level French literature class

FREN 4301.03: La Poesie 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. Bourse, staff
FORMAT: Seminar
PREREQUISITE: 3000-level French literature class

FREN 4401.03: La pensee 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 siecle/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 4503.03: La Femme de lettres au Grand Siecle/ Literary Women of French Classicism.
This class explores 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 Néron 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 contains the ambient moeurs of the period (for example: Molière’s L’École des femmes and La Bruyère’s Cæcile). 
INSTRUCTOR(S): K. Waterson
FORMAT: Lecture/discussion/group activities
PREREQUISITE: 3000-level French literature class or instructor’s permission

CROSS-LISTING: GWSY 4503.03

French 125
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 expose 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): P. De Meo, V. Fingerio
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 exposes.
INSTRUCTOR(S): P. DiBello, V. Fingerio
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 Lautrecq, through the period of Jarry and Dada, to the aspirations and paradoxes of Surrealism viewed, principally, through the work of Breton, Eluard, Aragon and Denos.
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, Severely, Claudel, Char, Frénaud, Senghor, Tchicaya, Zola, Glissant, Miron and others.
INSTRUCTOR(S): M. Bishop, C. Elson, staff

FREN 4902.03: FREN 4903.03: Écrivains québécois/Contemporary Quebec Writers.
In depth study of one or more contemporary Quebec 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 Quebec 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 full 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 programme.

FREN 4994.03: FREN 4995.03B, FREN 4996.03/FREN 4997.03B, FREN 4998.03/FREN 4999.03: Recherches independantes/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 9999.X/Y: France Year Abroad.
Gender and Women's Studies

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 science, language, literature, and culture from critical and illuminating perspectives.

Students in the Dalhousie Gender and Women's Studies programmes 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 interacts 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 with 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 Programmes

Gender and Women's Studies programmes provide preparation for careers in a variety of fields, as well as for professional schools or graduate programmes. 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, workplace conditions, personnel relations, publishing, and editorial work, and public relations.

For students interested in a preparatory degree, Gender and Women's Studies programmes provide appropriate preparation for professional schools and programmes in the fields of education, social work, counselling, journalism, the health professions, and certain areas of law. They also provide suitable preparation for graduate programmes 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 programme.

Students may enter Gender and Women's Studies programmes 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 programmes that are cross-listed with Gender and Women's Studies core classes.

Students can currently enter four programmes in Gender and Women's Studies: a BA with Combined Honours, a 20-credit BA with Major in Gender and Women's Studies, a 20-credit BA with Double Major in Gender and Women's Studies with a traditional discipline or with another interdisciplinary programme 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 40 of this calendar.

A. 15-credit BA with Concentration in Gender and Women's Studies

3-year, 15-credit programme

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.

Gender and Women's Studies

Location: Marion McCain Arts and Social Sciences Building, Room 209, Multidisciplinary Centre, 6135 University Avenue, Halifax, NS, B3H 4P3

Telephone: (902) 494-2980
Fax: (902) 494-1926

Email: gwsyllabus@dal.ca
Website: www.dal.ca/gws

Dean

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

Coordinator

Warwick, J. (494-2980/1926)

Faculty

Bar, J. (Music)
Barber, J.P. (Sociology & Social Anthropology)
Bednarski, B. (French/Canadian Studies)
Binkley, M. (Sociology & Social Anthropology)
Biver, C. (School of Social Work)
Campbell, J. (Sociology & Social Anthropology)
Campbell, T. (History)
Cass, M. (Public Administration)
Carbull, L. (Political Science)
Cass, M. (Public Administration)
Gallagher, J. (Health & Human Performance)
Gardiner Barber, J.P. (Sociology & Social Anthropology)
Goff, D. (Law)
Glazerbrok, P. (Philosophy)
Glowacka, D. (Contemporary Studies)
Heller, P. (Contemporary Studies)
Jackson, L. (Health & Human Performance)
Jones, K. (History)
Kaye, C. (English)
McCallum, T. (History)
Meynell, L. (Philosophy)
Mitchell, M. (Comparative Religion)
Morris, K. (Early Modern Studies)
Ore, L. (French)
Richard, B. (School of Social Work)
Shervin, S. (Philosophy)
Stone, M. (English)
Thomas Bernard, W. (School of Social Work)
Thomson, J. (Law)
Tassan, R. (International Development Studies)
Tolstoy, S. (History)
Ulcki, T. (International Development Studies)
Warwick, J. (Music)
Whalen, Emma (Sociology & Social Anthropology)
Whalen, E. (Sociology & Social Anthropology)
Warwick, J. (494-2980/1926)

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Warwick, J. (494-2980/1926)
Dept of Arts and Social

4-year, 20-credit programme

Studies

128 Gender and Women’s Studies

full credits in the major subject and six (6) full credits in the allied subject.

the major subject and five (5) full credits in the allied subject or seven (7)

can be broken down further into a combination of eight (8) full credits in

minimum of four (4) full credits in the allied subject. This particular option

approval, a maximum of nine (9) full credits in the major subject with a

major or allied subject group. The Second Option, with departmental

subject. In addition, four (4) full elective credits which are not from the

the major subject with a minimum of four (4) full credits in the allied subject. This particular option

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 programmes such as Law

Social Work.

Departmental Requirements

1. 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

level

level

2. 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 programme

This programme 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

programmes should enter a four-year degree programme.

Departmental Requirements

1. 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.

2. 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 programme

Students can combine a concentration of Gender and Women’s Studies

classes with classes either in a traditional discipline or with another

interdisciplinary programme such as International Development Studies,

Canadian Studies, or Contemporary Studies.

Departmental Requirements

1. 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.

2. At least two credits in each of the two subjects chosen shall be beyond

the 2000 level.

3. 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 programme

Students can enter a BA with Combined Honours programme in Gender

and Women’s Studies and a range of other subjects including Biology,

Classes, 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 other subject group. The Second Option, with departmental

requirements:

1. At least three different disciplines must be represented in a students'

selection of cross-listed Gender and Women’s Studies classes.

2. At least three different disciplines shall be represented in a student’s

selection of cross-listed Gender and Women’s Studies classes.

3. Gender and Women’s Studies classes must be taken beyond the

2000 level.

4. At least three different disciplines must be represented in a students’

selection of Gender and Women’s Studies classes (to disciplines other

than the allied subject).

5. 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 programme).

b) At least one half-credit from the following: GWST 3066.03, 3500.03,

3600.03, 3680.03, 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 programme.)

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 includes 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.

1. 2 full credits of GWST electives at or above the 2000 level

2. 2 additional full credits of GWST electives at or above the 3000 level

3. 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.

1. At least three different disciplines shall be represented in a student’s

selection of cross-listed Gender and Women’s Studies classes.

2. At least three different disciplines shall be represented in a student’s

selection of cross-listed Gender and Women’s Studies classes.

3. Gender and Women’s Studies classes must be taken beyond the

2000 level.

4. At least three different disciplines must be represented in a students’

selection of Gender and Women’s Studies classes (to disciplines other

than the allied subject).

5. 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 programme).

b) At least one half-credit from the following: GWST 3066.03, 3500.03,

3600.03, 3680.03, 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 programme.)

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 includes 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.

1. 2 full credits of GWST electives at or above the 2000 level

2. 2 additional full credits of GWST electives at or above the 3000 level

3. 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’s 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,
GWST 1015.03: Gender and Diversity.

This course examines the diverse and fascinating ways of Western cultures have shaped the meanings of gender. The history of women is examined in the context of the once little-known history of femininity. And, as a result, academic changes in definitions of masculinity become visible. The meanings of gender are explored in this class through topics such as the development of separate spheres, respectability, the family, the sexual, the religious, the legal, welfare dependency, and intimacy. INSTRUCTOR(S): Staff

FORMAT: Lecture translated

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 hominocentric traditions, images of the ideal woman in literature and popular tradition, and recent debates over the appropriateness 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/semester

PREREQUISITE: Second year or above

GWST 2066.03: Women, Gender and Music.

This course 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, performers and listeners; musical constructions of gender; race, class and sexuality; and feminist criticism in recent musical discourse. No formal training in music is required.

FORMAT: Lecture

GWST 2200/X.Y.06: Fictions of Development.

This course is a study of a variety of literary works (chiefly novels) written during much of their adult life cycle. Topics may 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; the impact of work on family life and the impact of work on family life in contemporary times; 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.

NOTE: 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/translated

PREREQUISITE: ENG 1000/Y.06 or permission of the instructor

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. 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 reproduction. 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): R. Morris

FORMAT: Lecture/translated

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 reproduction. 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): R. Morris

FORMAT: Lecture/translated

RESTRICTION: Preference is given to majors in Gender and Women's Studies and English.


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; 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.

NOTE: 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/translated

PREREQUISITE: ENG 1000/Y.06 or permission of the instructor

RESTRICTION: Preference is given to majors in Gender and Women's Studies and English.
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 or 1200X/Y.06
CROSS-LISTING: SOSA 2800X/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 in consultation with an appropriate faculty member, and the Coordinator.

NOTE: Students taking GWST 3001X/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 gendered dynamics of work— waged 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 state policies. 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 2410X, SOSA 2411X

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 means of attempts to regulate sexuality and marriage. Topics include: divorce, adultery, marriage, family and gender roles, and prostitution.

INSTRUCTOR(S): K. Kelleher

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: One previous history class
CROSS-LISTING: COMR 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 poetic and poetic practices, from the end of the twentieth to the beginning of the twenty-first centuries.

FORMAT: Lecture/discussion
CROSS-LISTING: SOA 3050.03

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: SOA 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, HIST 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 3303.03

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 femininity under theory in light of recent debates over gender and development issues. INSTRUCTOR(S): J. Farhart. 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 imitable 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 feminist 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 Kathy Acker, Angela Carter, Marianne Hauer, Ostava Butler, and others, exemplify aesthetic subversions of phallocentric discourses. Literary texts will be supplemented with works by leading feminist/post-structuralist thinkers such as Judith Butler, Darcilia 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, nationalities, 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 in the ways women have expressed their thought. This course 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/5. Sherwin. 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 3570.03, PHIL 5573.03, GWST 5570.03

GWST 3650.03: 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 can the role done politics differ from men? This class examines the historical context of feminism; with attention to its impact on conventional approaches to social and political thought. INSTRUCTOR(S): L. Carbert. FORMAT: Seminar. PREREQUISITE: POLI 2400X/Y.06/2401X/Y.06 or instructor's permission. CROSS-LISTING: POLI 3420.03

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 the 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 ways of constructing and challenging it; the gendering of particular health problems and health professions; the medicalization of womanhood and, more recently, masculinity; and relationships between gender and other forms of social classification (e.g. race, class, sexual orientation). FORMAT: Lecture. PREREQUISITE: One of SOCA 1000X/Y.06, 1005X/Y.06, 1105X/Y.06 or 1200X/Y.06. CROSS-LISTING: SOCA 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, femininity about the aging process exacerbates the difficulties facing women in modern society. Disempowering older women is usually accomplished in small steps. "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, devalued 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: SOCA 1000X/Y.06, 1005X/Y.06, 1100X/Y.06 or 1200X/Y.06, or 2 credits in Women's Studies. CROSS-LISTING: SOCA 3245.03, NURS 4570/5580.05.
GWST 3911.03: Gender in Theatre: A Cross-Cultural Performance.
This seminar class examines the roles gender 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/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, Helene Cixous, Luce Irigaray, Julia Kristeva, Judith Butler, Peggy Phelan and Camillo Paglia, among others. Alongside these works, we will examine contemporary performances, from the popular (for example, Buffy the Vampire Slayer, Queer as Folk, The L Word, The Simpsons, and the music videos of Madonna) to the oppositional (for instance, the theatre of Split Britches and Sky Gilbert, the performance art of Diamanda Galas 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 4100.03 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 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: 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, J. Oure
FORMAT: Lecture/discussion
CROSS-LISTING: FREN 4004.03
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. Tenenbaum
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 3152.03
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 criticisms 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): J. Parpart
CROSS-LISTING: HIST 4320.03, HIST 5320, INTD 4320.05
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 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, S. Sherwin, 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 roles, la prostitution, 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 Sallé's maxims); examples of literature written by men which counters the ambient misogyny of the period (for example: Molière's L'Ecole des femmes and La Bruyère's Caractères).
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 programme office for offerings.
Classes Offered at Mount Saint Vincent University and Saint Mary's University
Classes offered within the Women's Studies programmes 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
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 Programme Coordinator).
German

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 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.

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 and 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" programme which brings distinguished scholars from Germany to Dalhousie.

For students of German for Business, the Department offers access without fee to one of the most prestigious MBA-programmes in International Industrial Management in Germany at the FH-Esslingen in co-operation with Daimler-Chrysler and Bosch.

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.

III. Degree Programmes

A. BA with Honours in German

1000 level: Seven credits at or above the 1000 level
3000 level: Two credits at the 3000 level or higher

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 programme.
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.

GERM 1001X/Y.06: German: A Practical Course for Beginners.
This class satisfies 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.
INSTRUCTOR(S): C. Hether
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.

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, Wieland and Handle will be included on the reading list. All tests 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, Schönhöffer, 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 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. Sailer
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: Seminar

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 to aid 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 1010.03, GERM 2011.03

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 2300X/Y.06 and GERM 2010X/Y.06

GERM 2000X/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

PREREQUISITE: GERM 2000X/Y.06 or a reading knowledge of German

GERM 2200X/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 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 2100X/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, Hume, Kant and Schiller. This class is taught in English using English translations.

FORMAT: Seminar

INSTRUCTOR(S): H.-G. Schwarz

PREREQUISITE: A general introduction to literature, culture or philosophy

EXCLUSION: GERM 2000X/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

INSTRUCTOR(S): H.-G. Schwarz

PREREQUISITE: GERM 2000X/Y.06 or GERM 2000X/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 and Drang movement put 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.
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 Fazlul 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 Henrik 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 Bichner's works. Finally, the existential crisis of modern man finds its most representative expression in the works of Franz Kafka. Tests 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. INSTRUCTOR(S): H.-G. Schwarz
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 discourse skills and idiomatic expression, build vocabulary, memorise 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 discussions 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
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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
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 and Drang movement used the works of Shakespeare as its inspiration to create a radical anti-Aristotelian concept of drama and of man. Writers of this period created an "open form" of drama which foreshadowed the plays of Büchner and Brecht. The new concept of man spread throughout Europe, becoming the basis for European Romanticism. German Romanticism, however, is quite different from its European counterparts 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. Representative works from the Baroque Age to the 20th Century are studied and the principles of the genre discussed. The course is designed to provide a comprehensive overview of the development of the novel in Germany. The course is designed to provide a comprehensive overview of the development of the novel in Germany. The course is designed to provide a comprehensive overview of the development of the novel in Germany. The course is designed to provide a comprehensive overview of the development of the novel in Germany. The course is designed to provide a comprehensive overview of the development of the novel in Germany. The course is designed to provide a comprehensive overview of the development of the novel in Germany. The course is designed to provide a comprehensive overview of the development of the novel in Germany. 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I. Minor in Health Studies

The Minor in Health Studies is a four credit (24 credit hour) Minor taken in conjunction with either a 25-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.

- COMR 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
- PHIL 3806.06: Human Physiology.
- POLI 3147.03: The Politics of Health Care in Canada
- SASA 2400.06: Health and Illness Across Cultures
- SASA 2401.06: Sociology of Health and Illness
- SASA 2135.06: The Social Organization of Health Care
- SASA 3143.06: Sociology of Mental Disorders
- SASA 3145.06: Health, Illness, and the World
- SASA 3145.06: Gender and Health (cross-listed with GWST 3145.03)
- SASA 3147.03: Social Gerontology
- SASA 3146.03: The Sociology of Addiction
- SASA 3150.03: Sociology and Anthropology of the Body
- SASA 3155.03: Sociology and Anthropology of Emotion
- SASA 3203.03: Psychological Anthropology
- SASA 3245.03: Women and Aging, (cross-listed with GWST 3810.03)
- SASA 4061.03: Issues in Health and Illness

Faculty of Science

- ANAT 1020.03: Basic Human Anatomy
- BIOC 1300.03: Introduction to the History of Science
- BIOC 3601.03: Nature Conservation
- "CHEM 1000.06: The Chemical World"
- "CHEM 1410.03: Intro to Chemistry Related to Human Health"
- ECON 2213.03: Health Economics
- ENV 3401.05: Environmental & Environmental Health
- "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"
- "PSYO 3410.03: Intro to Stats for Science and Health Sciences (cross-listed with MATH 1080.03)"

University of King's College

- CTMP 2010.03: Pain
- "JMBP 3110.03: Hidden Worlds: Microscopy in Early Modern Europe (cross-listed with HSTC 3110.03)"
- "HSTC 3300.06: History of Biology"

Faculty of Engineering

- "FOSC 4090.03: Food Hygiene and Public Health"

Faculty of Health Professions

- "HAHF 1200.03: Introduction to Health Promotion"
- "HAHF 1210.03: Communication"
- "HAHF 3000.03: Human Growth and Development"
- "HAHF 3003.03: Community Development"
- "HPRO 1195.03: Introduction to Health Promotion"
- "HPRO 2210.03: Health Promotion Theory"
- "HPRO 2220.03: Health Promotion Policy"
- "HPRO 2361.03: Program Planning"
- "HPRO 3325.03: Mental Health Promotion"
- "HPRO 3367.03: Community Health Promotion Strategies"

Faculty of Computer Science

- "SKCT 1204.03: Computer Science 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

History

I. Introduction

II. Degree Programmes
• A grade of B- or better is required on 9 full History credits.
• A grade of B- or better is required on the honour 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 programmes, students must meet the Faculty degree requirements for Combined Honours (20-Credit). Students must take 15-15 credits in two subjects beyond the 1000-level, with at least seven (7) in one of them and no more than three (3) or 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 students, 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 programmes, 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 each 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 programme is a general liberal arts degree with concentration in History. It permits a wide range of choice in the selection of courses. 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 formats, 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 allows for in-depth 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 enrollments 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 1004XY/XY: 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.
• 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 1005.03, 1002.03, 1003.03

HIST 1005XY/XY: 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.
• Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
INSTRUCTORS: J. Bingham, K. Kowatson
FORMAT: Writing requirement. Lecture/discussion
EXCLUSION: HIST 1004XY/XY

HIST 1501.03: Comparative Global History.
Global history — the story 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 1500.08

HIST 1502.03: Origins of Modern Global Society.
The contemporary world is both intrinsically connected and intensely confusing. To make some sense of the global stage on which we now live, historians have recently redoubled their efforts to explore the development of these connections, especially over 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 reveal the ties which bind us together.
FORMAT: Lecture/tutorial 3 hours
EXCLUSION: HIST 1500.08

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 birth 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 histories.
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, and the campaigns by subordinate races and women for equality on both sides of the border. Grades are based on a series of assignments and examinations.

NOTE: 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.T. O’Brien/C. Campbell
FORMAT: Lecture
EXCLUSION: HIST 2200/2201/2202/2203/2204/2205/2206
HIST 1867X/Y.06: North Americans in Transition.
This class explores central features of Canadian and American history since the 1850s. 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 Controversy, 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 104X/104Y.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 104X/104Y.06 and/or 2001.03
INSTRUCTOR(S): C.J. Neville
FORMAT: Lecture/tutorial
HIST 2003.03: The Fall of the Roman Empire.
See class description for CLAS 2211.03 in Classics section of this calendar.

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 diplomacy, 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 104X/104Y.06, 1501.03
FORMAT: Lecture/discussion
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 104X/104Y.06, HIST 1501.03, HIST 2006.03
INSTRUCTOR(S): J. Brenner
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. Peake
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 impact 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 2213.03 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 2200.03 in the Classics section of this calendar.

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 Reformation, to the end of the great conflicts of 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 1081.03 or 1102/03 or 1150/06 or 1401/06
and the changes in the international balance of power 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, Indochina, Korea, and the Middle East.

**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 2222.03
**EXCLUSION:** HIST 2202X/Y.06

**HIST 2022.03: Imperial Russia.**
Equivalent to the first half of HIST 2202.06. Chronologically covers the imperial period of Russian history, from Peter the Great to the Revolution of 1917.
**FORMAT:** Lecture/discussion
**CROSS-LISTING:** RUSN 2222.03
**EXCLUSION:** HIST 2202X/Y.06, RUSN 2202X/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 existed 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
**EXCLUSION:** HIST 2203X/Y.06

**HIST 2032.03: Twentieth Century Germany.**
Across two catastrophic world wars and a revolution, as empire, quasi-socialist republic, Cold War outpost, and the showcase 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 2203X/Y.06

**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 1040X/Y.06
**INSTRUCTOR(S):** G. Hanlon
**FORMAT:** Lecture/tutorial
**EXCLUSION:** HIST 2204X/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, Indochina, Korea, and the Middle East.

**HIST 2060XY.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 (audio-visual facilities as needed)
**CROSS-LISTING:** ITAL 2101X/Y.06
**EXCLUSION:** HIST 2201.05

**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 2201.05

**HIST 2074XY.06: Introduction of the History of Science.**
See class description for HISTC 1200X/Y.06 in the History of Science section of this calendar.

**HIST 2081XY.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 1061.03, or HIST 1062.03, or HIST 1063.03, or HIST 1064.03
**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):** J. Bingham
**FORMAT:** Lecture/tutorial (audio-visual facilities as needed)
**EXCLUSION:** HIST 2202.05

**HIST 2082.03: 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 1061.03 or HIST 1062.03 or HIST 1063.03 or HIST 1064.06
**INSTRUCTOR(S):** J. Bingham
**FORMAT:** Lecture/tutorial (audio-visual facilities as needed)
**EXCLUSION:** HIST 2202.05

**HIST 2088.03: Greek Culture from Palace to Polis.**
See class description for CLAS 2214.05 in the Classics section of this calendar.
HIST 2089.03: Greek Culture from Polis to Cosmopolis.
See class description for CLAS 2261.03 in the Classics section of this calendar.

HIST 2090.03: The Rise of Rome: 1000-31 BCE.
See class description for CLAS 2211.03 in the Classics section of this calendar.

HIST 2091.03: The Roman Empire: Cycles of Collapse and Rebirth.
See class description for CLAS 2252.03 in the Classics section of this calendar.

A survey of English history from the Norman Conquest to the late 1980s. Topics include the role of the monarchy, the arts and culture, and social and economic changes. NOTE: Students taking this course must register in both X and Y in the same academic year, credit will be given only of both are completed consecutively.
INSTRUCTOR(S): K.J. Kesselring
FORMAT: Lecture/tutorial
EXCLUSION: HIST 2100.03, HIST 2101.03, HIST 2102.03, 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 of the封国 and the 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 2100.06

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 2100.06, HIST 2101.06, HIST 2104.06, HIST 2105.06

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 protest, political reform, the growth of empires, 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 1880 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 upheaval of the 1960s and 1970s 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 manifestations of the European witch-hunt, the “problem” of the Highlands, and pre-Reformation religious, social and political life. Emphasis is placed 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 2211.X/Y.06

HIST 2212.03: Social History of Canada since 1870.
This class examines the social history of Canada since Conquestion 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
EXCLUSION: HIST 2212.X/Y.06

HIST 2221.03: Rough Justice - Order, Disorder and Canadian Popular Culture to the 1890s.
This class investegates 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
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
HIST 2211.03: Atlantic Canada to Confederation.
This course surveys the history of Atlantic Canada since the origins of human habitation to the early 1860s. Emphasis is placed on how 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
INSTRUCTOR(S): J. Bannister
EXCLUSION: HIST 2210/Y.06

HIST 2212.03: Atlantic Canada since Confederation.
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 national personality. Approved with Canadian Studies.
FORMAT: Lecture/tutorial
EXCLUSION: HIST 2220/Y.06

HIST 2213.03: History of Canadian Culture.
The 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
INSTRUCTOR(S): J. Bannister
EXCLUSION: HIST 2210/Y.06

HIST 2214.03: The Making of Modern Canada: Canadian Political History, 1896 to the Present.
This course surveys the major political developments in Canadian history since 1896. Topics to be examined include: regionalism and the emergence of third-party movements; French-English relations; federal-provincial relations; and the transformation of the liberal state in the post-1945 era.
FORMAT: Lecture/discussion
INSTRUCTOR(S): R. Blaisdale
EXCLUSION: HIST 2220/Y.06

HIST 2215.03: History of Canadian Culture.
The 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
INSTRUCTOR(S): J. Bannister
EXCLUSION: HIST 2210/Y.06

HIST 2216.03: 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 had for Canadian political life. Top will include: the Progressive movement; the CCP and NDP; Communism and Fascism; Social Credit; the radical right and the New Left; the Reform Party. Approved with Canadian Studies.
FORMAT: Lecture/tutorial
EXCLUSION: HIST 2220/Y.06

HIST 2217.03: 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: A survey class in U.S. history
FORMAT: Lecture
EXCLUSION: HIST 2235/Y.06

HIST 2331.03: Creation of an American Republic: The United States, 1580-1865.
This course 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 division.
INSTRUCTOR(S): J.T. O’Brien
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; b) the growth and expansion, and technological change; c) race and economic values and political culture; d) World War II; e) suburbanization; f) the Vietnam War; g) the Civil War; h) the rise of big business; i) the Great Depression; j) the Cold War; k) 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 course traces the domestic political history of the United States from the turn of the century to the end of the Cold War. Particular emphasis is placed on broad trends of change in these 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
FORMAT: Lecture
EXCLUSION: HIST 2355/Y.06

HIST 2334.03: Modern American Culture.
This course surveys the history of American culture since the late 19th century. Themes include: the displacement of indigenous peoples; the rise of mass culture in the United States; the origins and effects of immigration; and the development of American popular culture. Topics will include: the American Century; cultural imperialism; the role of mass media; and popular culture in the United States.
INSTRUCTOR(S): J. Bannister
FORMAT: Lecture and discussion
EXCLUSION: HIST 2220/Y.06

HIST 2335.03: Modern American Culture.
This course surveys the history of American culture since the late 19th century. Themes include: the displacement of indigenous peoples; the rise of mass culture in the United States; the origins and effects of immigration; and the development of American popular culture. Topics will include: the American Century; cultural imperialism; the role of mass media; and popular culture in the United States.
INSTRUCTOR(S): J. Bannister
FORMAT: Lecture and discussion
EXCLUSION: HIST 2220/Y.06
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, Dezono, and the end of the American-Soviet rivalry.

INSTRUCTOR(S): S.J. Corkie
FORMAT: Lecture

HIST 2381.03: Latin America.
This course survey 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.
The 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 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 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-Saharan frontier, the Atlantic and Oceano slave trades, Indian Ocean connections, the spread of Islam, and the early stages of colonial rule.
INSTRUCTOR(S): P.S. Zachemuk/G. Kynoch
FORMAT: Lecture/tutorial
EXCLUSION: HIST 2410.03 and 2421.03

HIST 2426.03: Africa Since 1900.
This course 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 quotas for national stability? How have all these affected men’s and women’s lives?
INSTRUCTOR(S): G. Kynoch/P.S. Zachemuk
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 empire.
FORMAT: Lecture/discussion
EXCLUSION: First-year students

HIST 2503.03: From Cordoba to Jakarta: Islamic Civilizations in a Global Perspective (Seventh-Eighteenth Centuries).
This course will introduce students to the Iberian-Levant 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 displacement of Byzantine control in the Holy Land and the collapse of the Sasanian Empire in Persia, the Arab-centric society in Mecca and Medina had become an empire of unprecedented size and ethnic complexity. The class will examine the respective Un regelmäßig and Arabid dynasties, as well as the slave states of the Suleyman and Manrulok. The final portion of the course will focus on the gunpowder empires of the Ottomans, Safavid, 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 Maghrib, the Iberian Peninsula, 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: COMR 2503.03
EXCLUSION: First-year students and HIST 2501.03

HIST 2504.03: History of the Modern Middle East in the 20th century.
This course 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-Israel conflict.
INSTRUCTOR(S): C. Mitchell/A. Gnewat
FORMAT: Lecture
EXCLUSION: First-year students

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 2615.03: 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 explored in this class through topics such as: the doctrine of separate spheres, the family wage, the homosexual, imperialism, citizenship, welfare dependency, and interrelated. 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. FORMAT: Lecture


After World War II, African and Asian nationalists proved how 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 actors 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 spread of disease and to prohibit the entry of women, and the scientific background to their views. FORMAT: Lecture/discussion CROSS-LISTING: BIOL 3404.05 EXCLUSION: HIST 2995.03

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 reforms; 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: A 1000- or 2000-level class in medieval history CROSS-LISTING: COM 3006.05 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 crowns 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 kinship, the law, the church at the end of the first millennium, 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 civilization of the period, the reading of contemporary works (in translation) constitutes an integral part of the class. INSTRUCTOR(S): C.J. Neville FORMAT: Lecture/discussion PREREQUISITE: A 1000- or 2000-level class in medieval history CROSS-LISTING: HIST 3003.03

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 3005.03, 2010.03

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): I.T. Finkenz FORMAT: Seminar PREREQUISITE: One European History course EXCLUSION: HIST 3012.03
HIST 3013.03: Sex and Gender in Reformation Europe.

This course 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 reformation. 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): G. Hanlon
FORMAT: Seminar
PREREQUISITE: one previous history class

HIST 3040X/Y.06: Culture and Behaviour in France, 1550-1750.

This course, 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 behavior studies. No French language study 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

HIST 3043.03: 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 1980s, and the attempts to resolve the controversy in the most recent scholarship; the current reinterpretation 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): G. Hanlon
FORMAT: Seminar
PREREQUISITE: One European history course

HIST 3049.03: The First World War.

This course will examine the origins, course and consequences of the First World War on a thematic basis. The major military, diplomatic and political developments will be treated, in addition to the social and economic dimensions of the conflict. Lecture topics will include the origins of the war and the July crisis, the Western Front, Gallipoli and the Middle East; economic mobilisation and the home front; the Eastern Front; the war at sea; the peace treaties and the impact of the war.

FORMAT: Lecture

HIST 3050.03: Europe and World War Two.

This course will examine the origins, course and consequences of the Second World War as an 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. The course will consider the sources of war, the Holocaust, the origins of the Cold War, and the Cold War's historical context.

RECOMMENDED-HIST 2013X/Y.06, 2040X/Y.06, 2021.03, 2012.03
INSTRUCTOR(S): C. Bull
FORMAT: Lecture/discussion
PREREQUISITE: One 2000 level course in European or modern British history

HIST 3051X/Y.06: Fascist and National Socialist Movements in Europe, 1900-1945.

This course examines 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: Fascist 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 this simultaneously threatening and fascinating historical problem.

CROSS-LISTING: HIST 3056.03

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 antisemitism, 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.

INSTRUCTOR(S): J. Bingham
FORMAT: Seminar
PREREQUISITE: One 2000 level course in European or modern British History
EXCLUSION: HIST 1990.06, HIST 3055.06

HIST 3073.03: History of Marine Sciences.

See class description for MAR 1644.05 in the Marine Biology section of this calendar.

HIST 3075.03: Science and Religion: Historical Perspectives.

See class description for HIST 2203.03 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, 2001.06
INSTRUCTOR(S): N.O. Perina
FORMAT: Seminar
PREREQUISITE: Reading knowledge of Russian (at least two years of language study) and some Russian history
CROSS-LISTING: HIST 5060.03, RUSN 3060.03

HIST 3093.02: Russian Topics.

Topics to be studied and researched will vary from year to year. They may include the sources of Bolshevik/Leninist, 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 2021.06 or RUSN 2202.03/2023.03
INSTRUCTOR(S): N.O. Perina
HIST 3094.03: Vladimir Lenin and Leon Trotsky: Their Life and Works.
This course 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): N. Pereira
FORMAT: Seminar
CROSS-LISTING: RUSN 3094.03

HIST 3096.03: The History of Ideas in Russia - From Official Nationality to Solzhenitsyn's Neo-Slavophilism.
This course 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 (Sukhovo), and neo-Slavophilism (Solzhenitsyn).

RECOMMENDED: HIST 3321.03
INSTRUCTOR(S): N.G.O. Pereira
FORMAT: Lecture/discussion
CROSS-LISTING: RUSN 3096.03

HIST 3102.03: Seminar in Tudor History, 1485-1603.
This course 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 course examines in depth the principal events of seventeenth-century English history. Topics include the feuds of Catholicism at home and abroad; the causes and course of the civil war; 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 2104

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 course ponderes the origins of the modern Western family by tracing the history of household organization, family and sexual relations in England between 1500 and 1800. Historians' attempts to define the family and to identify shifts in patterns of family life over time have often sparked controversy, as those who advocate grand explanatory narratives of change have had their views challenged by others who emphasize continuity and complexity. This class will analyze and assess these ongoing debates while encouraging students to make their own contributions through a careful reading of diaries, autobiographical writings, published court records, plays and other primary source materials.

RECOMMENDED: HIST 2104.03, 2105.03
FORMAT: Seminar
PREREQUISITE: Any second-year class in British or European history

HIST 3108.03: Topics in the Social and Cultural History of England, c. 1500-1850: Madness and Marginality.
"Marginality" is a sociological term that describes the situation of groups of people who are excluded or persecuted by the dominant culture. This class will examine such groups as witches, prostitutes, vagrants, and those deemed mentally ill. It will study the processes and politics of exclusion and regulation. It will ask how and why groups become labeled as beyond the boundaries of acceptable society and how such labeling affects practice and experience.

INSTRUCTOR(S): K.J. Kesselring
FORMAT: Seminar
PREREQUISITE: One previous history class

Aspects of daily life are often assumed to be "outside" of History, either unchanging or altered simply by natural forces of progress. This class will challenge such assumptions and look at the historically contingent practices surrounding such things as death, marriage, sport, fertility, medicine, and education as experienced in early modern England. The class will address how and why such daily practices change, and the effects of such changes on the larger society.

INSTRUCTOR(S): K.J. Kesselring
FORMAT: Seminar
PREREQUISITE: One previous history class

HIST 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; 3114.03, 3116.03; 2030X/Y.06; 2038X/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; 2038X/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 Laundrette, 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-social 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 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 “yes, 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: Seminar
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 culture; 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

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; conflicts and differences between welfare and women's lives; charitable fund-raising; promoters and opponents of government social programmes; financing the welfare state; gender, race, constitutional, and class issues in welfare. Approved with Canadian Studies.
INSTRUCTOR(S): S. Tillotson
FORMAT: Lecture/historical seminar
PREREQUISITE: HIST 1862X/Y.06, HIST 1867X/Y.06 or HIST 2212.03 or HIST 2218X/Y.06 or HIST 2219X/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 explanation 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. Blaisdale
FORMAT: Lecture/discussion
EXCLUSION: HIST 3260.03

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 particular 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. Blaisdale
FORMAT: Lecture/discussion
EXCLUSION: HIST 3260.03

HIST 3228X/Y.06: Religion in Canada.
See class description for COMR 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 nationalism in its social, cultural, and ideological 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 previous 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 2260.03

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 3270.03 Y in 2005-2006

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 malleable 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 Canadian History class or instructor's consent
EXCLUSION: HIST 3293X.03

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 role of women in the era of mechanical reproduction. NOTE: Students taking this class must register in both X and Y if both are completed consecutively. FORMAT: Seminar
PREREQUISITE: At least one previous History credit; second-year standing or better
EXCLUSION: HIST 3992

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 3311.03: 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 class we will examine a number of issues including: the origins of the crises; the Korean War; the Cuban Missile Crisis; the Nuclear Arms Race debate; 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.
FORMAT: Lecture/discussion
PREREQUISITE: Any 3000 or 4000 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
FORMAT: Seminar

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 political and social order.
FORMAT: Lecture/Discussion
PREREQUISITE: One second-year United States history class

HIST 3381.03: 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 class we will examine a number of issues including: the origins of the crises; the Korean War; the Cuban Missile Crisis; the Nuclear Arms Race debate; 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.
FORMAT: Lecture/discussion
PREREQUISITE: Any 3000 or 4000 level North American history course

HIST 3382.03: Public History.
This course explores major issues and debates in the practice of history outside the academy. Against such theoretical concepts as the malleable 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 3393X/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 role of women in the era of mechanical reproduction. NOTE: Students taking this class must register in both X and Y if both are completed consecutively. FORMAT: Seminar
PREREQUISITE: At least one previous History credit; second-year standing or better
EXCLUSION: HIST 3992

HIST 3392.03: 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 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 seminar is 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 to interpret the American experience in Vietnam.

CROS-LISTING: HIST 5365.03
INSTRUCTOR(S): S. J. Corke
FORMAT: Lecture/discussion
PREREQUISITE: HIST 1300X/Y.06 or second-year United States history class

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 1959. We will begin the course by examining the socio-political repression that came to embody American society in the 1950s. Topics covered will include McCarthyism, conformity, ideology, and the limits of intellectual and political freedom. These questions will be discussed in order to get at the factors that shaped and created the culture of conformity that characterized 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 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 to 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: HIST 1300X/Y.06 or second-year United States history class

HIST 3369.03: America in the 1960s.
This 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 ties into the larger histories of Canada and the United States.

INSTRUCTOR(S): C. Campbell
FORMAT: Lecture/seminar
CROS-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.

INSTRUCTOR(S): P. Zachernuk
FORMAT: Lecture/discussion
CROSS-LISTING: HIST 5390.03

HIST 3393.03: Indigenous Movements in Latin America.
This course considers the historical experiences of Latin American indigenous peoples. We explore four periods in post-colonial Latin American indigenous history: the early republican era (1810s–1910); the rise of progressive indigenous politics and activism (1920s–1950s); the subversion of indigenous issues to a class-based agenda (1964–1979); and the return of indigenous movements (1980s–present).

INSTRUCTOR(S): J. Heilman
FORMAT: Lecture/discussion

European colonial rulers and business interests laid out the framework of the sub-Saharan African colonial order from about 1850 to 1930, seeking ways to exploit African labour and natural resources. But imperial plans were limited and sometimes frustrated by African interests, and by historical dynamics within Africa, such as the rise of new merchants and Islamic revolution. This class assesses how the realities of Africa intersected with European imperial ambitions to fundamentally change African society during this early colonial period.

INSTRUCTOR(S): P. Zachernuk
FORMAT: Lecture/discussion
CROSS-LISTING: HIST 5433.03

HIST 3341.03: Strategies in The City: Labour, Migration and Urban Life in Colonial Africa.
There were many important urban centres in post-colonial Africa; however, colonialism and industrialization changed both the pace and nature of urbanisation. Old cities grew and new cities and mining settlements were established. Africans came to labour in these colonial cities for a host of reasons - some were forced off their homesteads when settlers and colonial governments appropriated vast tracts of land; others needed to enter the labour market to provide for families that had been uprooted by the movement for independence. 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 urbanisation, the creation of new social, political, economic and criminal networks, conflict and cooperation amongst urbanites, and the nature of colonial oppression and control in the cities.

INSTRUCTOR(S): G. Kynoch, P. Zachernuk
FORMAT: Lecture/discussion
CROSS-LISTING: HIST 5431.03
HIST 3435.03: The Rise and Fall of African Slavery.
Many African societies, like pre-industrial societies elsewhere, used slaves as well as other forms of labour for a variety of purposes. The rise of external slave trades after 1570 — notably across the Atlantic and Saharan — transformed many African societies into specialized slave exporters. As external slave trades declined in the 18th century, many African economies used extensive internal slave labour to produce exports, a pattern colonial governments were slow to change in the 20th century. This class examines these changes in African slavery, and how they affected such issues as gender relations and class structure.

INSTRUCTOR(S): P. Zachernuk
FORMAT: Lecture/discussion
HIST 3451.03: Southern Africa to 1860. Examine 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-speaking, Dutch settlement and administration of the Cape area, the rise of the Zulu, Shaka’s empire and the Zululand, 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 3450.03, 3450.04
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, 3451.04, 3452.04
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 3450.03, 3450.04
HIST 3461.03: 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 analyses the way women and men construct their lives, participate in political and economic processes and contest and redefine the definitions of virility and masculinity in various African societies. The class will examine development and feminist/gender theory in the light of recent debates over gender and development issues.

FORMAT: Seminar
PREREQUISITE: Any 2000-level African history class or permission of the instructor
CROSS-LISTING: CWS 3310.03, HIST 5461.03
HIST 3462.03: Distortion or Development - African Economic History. An examination of economic change in tropical Africa, with particular attention to the question of economic development and underdevelopment. It adopts a broad approach to economic change, viewing the economy as deeply interconnected to political, social and cultural forces. It explains African economies and economic change from this broad perspective, looking at the period from the precolonialist period to the current conjuncture.

FORMAT: Seminar
PREREQUISITE: Any 2000-level African history class or permission of the instructor
CROSS-LISTING: HIST 5462.03
HIST 3470.03: Wars and Revolutions in Nineteenth-Century Africa. Africa in the nineteenth century was profoundly reshaped by a complex set of events. Muhammad Ali undertook to modernise Egypt. New Islamic states founded in the west developed plantation economies of unrioted scale. On the Atlantic coast, the great power trading companies made their fortunes by supplying tropical goods for Europe’s Industrial Revolution. In Central Africa the search for slaves and ivory both revealed hazards 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 well 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? How 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 related to these topics which comprise a multi-regional, global theme in the early modern and modern era. 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 3500.03: Caliphs and Khans: Islamic Civilization in the Abbasid 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 caliphs and sultanes across Spain, North Africa, the Levant, Iraq, Central Asia, and South Asia between 750 and 1400. Emphasis will be placed on the role of the Abbasid migrations and the corresponding rise in Islamic societies such as the Seljuqs and the Chams 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 Mulalituline (rationalist) thought, notably in physical sciences, political studies, and philosophy, and how such syncretism was also reflected in terms of mysticism, art,

INSTRUCTOR(S): P. Zachernuk
FORMAT: Lecture/discussion
CROSS-LISTING: HIST 5500.03
HIST 3560.03: Asia and the West. This course will take a broad perspective on the interactions between European and Asian cultures during the five centuries before the first contact. The focus will be on China, Japan, and the Islamic world, as well as on Europe, in order to understand the differences and similarities between these regions. The course will explore the economic, cultural, and political changes that took place in these regions during this period, as well as the ways in which these changes were influenced by external pressures and interactions. The course will also examine the impact of these changes on the development of modern societies in Asia and Europe.

FORMAT: Lecture
PREREQUISITE: Instructor permission
HIST 3510.03: Sultans and Shahs: Politics and Religion in the Islamic Gunpowder Age (1550 - 1800).

Until the devastating Mongol invasions of the 13th century, the principal centers of Islamic power, culture, and thought had been located 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 Nuri ‘Alibod aliphate. Religious heterodoxy, combined with the perspectives of the Shi’i and the Sufi, will help us understand the emergence of a number of unique Turkmen states in Western Asia, the most famous being the Ottoman Turks of Anatolia. By 1500, innovations in military technology and the paper-making industry allowed for the emergence of centralized and bureaucratically-sophisticated gunpowder empires in eastern and south Asia. This class will discuss the three most significant of these: the Ottoman Turks (based in Istanbul), the Safavid Persians (based in Isfahan), and the Mughal Indians (based in Delhi).

Areas of focus will include: issues of political legitimacy, use of military ‘slaves’ 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
CROSS-LISTING: CLAS 3510.03, HIST 5503.03
EXCLUSION: HIST 3513.03

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 was 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 appearance of the Achaimenid 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 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 Sasanian, Seljuk, Fatimids, and Safavid 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 Persians to the development of the Islamic world 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
CROSS-LISTING: CLAS 3512.03
EXCLUSION: HIST 2503.03

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 1905, the rise and establishment of the Pahlavi regime, and the course of Iranian politics in an era of burgeoning nationalism as seen in the Mozaffard period and the subsequent CIA-orchestrated coup d’etat 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
CROSS-LISTING: CLAS 3512.03
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. Chazal
FORMAT: Lecture/discussion
CROSS-LISTING: CLAS 3513.03
EXCLUSION: HIST 3515.03

HIST 3515.03: History of Seafaring.

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 role of the state, capital, and labour, and the features of seafaring culture. Special emphasis is given to the shipping industries and maritime traditions of this region. Approved with Canadian Studies.

FORMAT: Lecture/discussion
PREREQUISITE: One class in history or permission of the instructor

HIST 3985.03: The Human Record: A Short 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 historical centres, to the problems of historical evidence and to the historiographical cultures of non-western societies, especially Chinese and Islamic. (Recommended for History Majors and Honours students.)

FORMAT: Lecture/seminar
PREREQUISITES: HIST 2019.06 or HIST 2040.06 or HIST 2041.03 or permission of the instructor

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.

FORMAT: Lecture/seminar
PREREQUISITE: HIST 2019.06 or HIST 2040.06 or HIST 2041.03 or permission of the instructor

每一个问题都是一个变化，它们的效应可以是小到微不足道，大到人类历史上前所未有的事情。
HIST 4104.03: Crime and Society in Post-Conquest England.
This class explores the development of the criminal law in England between 1066 and 1585. After some introductory lectures by the instructor on the legacy of Anglo-Saxon legal notions and the creation of the modern system of justice known as the “eye,” 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, 2101.03 or HIST 3003.03
CROSS-LISTING: HIST 5704.03
EXCLUSION: HIST 3004.03, 3007.03, 3009.03, and 3011.06

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 to deal with the turmoil wrought by reformation, war, and industrialisation. 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 legitimise 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. Keselwing
FORMAT: Seminar
PREREQUISITE: Any class in pre-20th-century British History
CROSS-LISTING: HIST 5104

An advanced class on one of the most tumultuous and eventual 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 popular culture. 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): C.J. Neville
FORMAT: Seminar
PREREQUISITE: Any class in pre-20th-century British History
CROSS-LISTING: HIST 5105

HIST 4110.03: Topics in Early Modern English History.
Topics to be studied will vary from year to year, and may include the religious reformation, 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 seventeenth centuries.

FORMAT: Seminar
PREREQUISITE: HIST 2106
CROSS-LISTING: HIST 5106

HIST 4110XY.06: Rome and the East.
This class will consider relations between Rome and her eastern neighbours – the Parthians and the Persians – from 54 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: Seminar
CROSS-LISTING: CLASS 4535X/Y.06, HIST 5110X/Y.06, CLASS 5535X/Y.06

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 record.

INSTRUCTOR(S): C.M. Bell
FORMAT: Seminar

HIST 4160X/06: 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 USA/Canada 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 4733.06

HIST 4162XY.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 art and sculpture; the “classical” and Baroque architecture; Baroque and Rococo gardens; Baroque music; and the history of Central Europe.

INSTRUCTOR(S): G. Hanlon, R. Barker
FORMAT: Lecture/tutorial
CROSS-LISTING: THEA 4735.06
EXCLUSION: THEA 4735.03, HIST 4160X.06

HIST 4223.03: 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 culture; the relationship of order and disorder; the family, gender relations; and social classes. Approved with Canadian Studies.

INSTRUCTOR(S): Staff
FORMAT: Seminar
CROSS-LISTING: HIST 5223.X3

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 how 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...
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 Sciences, 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 2220/5.06 or by consultation with instructor
CROSS-LISTING: HIST 5475.03
EXCLUSION: HIST 4500.03
HIST 4500.03: Topics in Modern History. This seminar is specifically intended for students in the 20-credit Major and Honours degree programmes 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. It may include an historiographical, comparative, or interdisciplinary dimension.

FORMAT: Seminar
PREREQUISITE: HIST 2111.03 or HIST 2122.03 or permission of the instructor
CROSS-LISTING: HIST 5500.03
HIST 4510.03: Topics in Islamic and Middle East History. This is a special course dedicated to a topic dealing with the Islamic world/Middle East from the medieval era to the present. Topics will vary, but possible course themes include: political thought in Islam, slavery in Islamic civilization, Nationalism and Ethnicity in the Middle East, and Women in the Islamic world.

FORMAT: Seminar
PREREQUISITE: Permission of the instructor
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, Persians, Indians). Muslim concepts of authority, however, were and still are defined by prophetic genealogies and charisme, 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 reformed and reappropriated 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 religious-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 ‘Orientalism’ 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, Said—who have commented on these discourses. Equal attention will be given to those Muslim scholars—Shaykhuddin, Soroush, al-Ahmad—who have written and commented on these dynamics between Western and Islamic civilization.

FORMAT: Seminar
INSTRUCTOR(S): C. Mitchell
HIST 4600.03: Topics in Late Nineteenth- and Twentieth-Century American and British History.
This class will, depending upon the staffing in any particular year, examine a selection of themes in late 19th and 20th century British and American history, including, for instance, labour/labour history, political history (including state formation), cultural history, and history of race and national identity. Depending upon staffing, this class may concentrate upon the history of one country or may offer a comparative aspect. It will be intended for graduate or senior undergraduate students with some background in either British, American or Canadian history. Evaluation will be through research papers and, possibly, a final exam.
FORMAT: Seminar
PREREQUISITE: 3000-level class in modern British, American or Canadian history.
CROSS-LISTING: HIST 3603.03

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, discourse, and communities.
INSTRUCTOR(S): T. McCallum
FORMAT: Seminar
CROSS-LISTING: CROST 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 4696X/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 4966X/Y, or instructor's permission

HIST 4878.03: The Historiography of American Foreign Relations, 1776-1495.
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 4888.03: 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 US policy.
INSTRUCTOR(S): S.J. Corke
FORMAT: Seminar
PREREQUISITE: Concurrent enrolment in HIST 4866X/Y or the permission of the Undergraduate Coordinator.

HIST 4966X/Y.06: Honours Essay in History.
All History Honours students and those in combined Honours programmes 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 Programme
History of Science & Technology

Location: University of King’s College
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Mills, E., BSc (Carleton), MA, PhD (Yale), FLS, Ingil Professor (King’s)
Wigleworth, J., MA (Calgary), PhD (Sask)

I. History of Science and Technology Programme

The history of science and technology cuts across traditional disciplines of the sciences and humanities, intertwining 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 programme develops an interdisciplinary understanding of the character and development of science and technology, tracing the roots and trajectories of primary conceptions of nature and 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 members.

The History of Science and Technology Programme is a Combined Honours BA or BSc programme offered jointly by Dalhousie University and the University of King’s College. This programme brings together established departmental offerings in the arts, social sciences and science at Dalhousie and joins those 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 programme 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, 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.

II. Degree Programme

The Dalhousie departmental offerings within the History of Science and Technology Programme include the others honours subject, a number of possible electives, and certain cross-listed classes. The others honours subject must be selected from the following list of Dalhousie departments and Programmes: 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, Medical Microbiology and Immunology, Neuroscience, Physics, Psychology, and Statistics. Electives may be taken in any of the above-mentioned departments and programmes 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 programme concerned as soon 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 41. Because it is an honours programme, the quality of work required in the programme is higher than that required in a 15-credit or 20-credit major programme.

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 programme 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 programme, 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 Programme 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 BA degree, a normal requirement of twelve full credits beyond the 1000-level in the two honours subjects, split evenly between the History of Science and 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 2000X, HSTC 3000X, HSTC 4000X.
4. One credit in a writing class (See Writing Class, page 40) in the Degree Requirements sections of this calendar.
5. One credit in a single language/humanities subject (Degree Requirements section 2, page 40).
6. One credit in a single social science subject (See Degree Requirements, page 40).
7. One credit in a single life or physical science subject (See Degree Requirements section 3, page 40).
8. One credit in a single language for Bachelor of Arts (see Degree Requirements, page 40).
9. One credit in maths for a Bachelor of Science (See Degree Requirements, page 40).
10. No more than three (3) full credit equivalents of the first five credits taken may be 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 Programmes, completion of the Honours Seminar (HSTC 4500.06) fulfills the requirement of the honours qualifying examination, or, with the approval of the director, an honours thesis (HSTC 4550.06) may also serve to fulfill 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 if 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 Programme is necessary in order to take one of these classes, and their availability is strictly limited.

II. 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.

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 of whatever 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): Staff
FORMAT: Lecture/seminar

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 Hellenistic, 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 “techne”.

NOTE: 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

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 of whatever 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): S. Snobelen, G. McOuat, I. Stewart
FORMAT: Lecture/tutorial

CROSS-LISTING: HSTC 2000X/Y.06, HSTC 2200X/Y.06, BOL. 3500X-Y.06, SCIE 2000X/Y.06
EXCLUSION: HSTC 2201.03, BOL. 3502.03, HST 3232.03, HST 3043/4.03, SCIE 4000X-Y.06

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 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 medical text, 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 medical text, 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 medical text, 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 medical text, 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 medical text, 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 medical text, 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 medical text, 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

INSTRUCTOR(S): S. Snobelen, G. McOuat, I. Stewart
FORMAT: Lecture/tutorial

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 course 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 is biology and culture determine what it is to be human? Drawing on theorists ranging from Cruccu and Joa 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 sociology, 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.

One of the most radical and 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 to the present, paying particular attention to issues surrounding the nature of life and consciousness. Topics will include the “mechanical philosophy” of the 17th and 18th centuries, artificial intelligence, and recent developments in neuroscience.

INSTRUCTOR(S): A. LeBlanc
FORMAT: Lecture

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 other sentient beings. We will also consider 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 alien beings. We will also consider the ways in which the “plurality” theme was developed in some of the earliest works of science fiction.

INSTRUCTOR(S): S. Snobelen
FORMAT: Lecture/Seminar

Cross-listing: EMP 2340.03

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 spread and understanding of science. This course provides a history of science in the media from the ancient and medieval use of geometrical diagrams, astronomical figures and astronomical illustration through early modern printed texts, popular broadsheets and colour botanical plates all the way to the utilitarian 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 technosapiens, Soviet era technological iconography, the different realizations of science fiction and the social and cultural implications of the first depictions of the future society.

INSTRUCTOR(S): S. Snobelen
FORMAT: Lecture/Seminar

Cross-listing: EMP 2400.03

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 nature of the transition from the old to the new, the role played by social and political factors, the role of ideas and the role of the individual innovator, and the role of the state in fostering scientific progress. We will consider the ways in which the new science was received and resisted, and the role of the institution in the development of the new science. We will also consider the ways in which the new science was received and resisted, and the role of the institution in the development of the new science.

INSTRUCTOR(S): Staff
FORMAT: Lecture/seminar

HSTC 3100.03: Aristotle’s Physics.

The Physics defined nature and its study both for Aristotle and for much of the development of science and philosophy of nature in the west. This 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 Pro-Scopians 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: The Ancient Alchemists. 
This course explores the ancient origins of alchemical philosophies and experimentation in the world of Greco-Roman Egypt. Alchemy is approached as the prelude to the ancient cultural fusion of Greek Philosophies (especially Platonism and Stoicism), Hermetic-Gnostic initiatory religions, and Egyptian metallurgical technologies. The alchemical view of the universe is understood as a coherent, though strange perspective, in which philosophical, technological and spiritual dimensions co-exist. The tests studies range from technical survivals in papyri, which are essentially recipes for fusing and disting base metals, to the high aesthetic and visionary works of the Hermetic philospher Zosimus. The relation between these technical and occult dimensions will be of central concern.
INSTRUCTOR(S): K. Fraser
FORMAT: Lecture/seminar
CROSS-LISTING: CTMP 3201.03
FORMAT: Lecture/seminar
HSTC 3121.03: The Stone and the Elixir: The History of Alchemy in the Latin West. 
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, aesthetic 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 alchemetical 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 conceived as a companion to HSTC 3120. The Ancient Alchemists, and the two courses are normally offered in alternating years. However, there are no formal prerequisites. The course is open to all students interested in the intersections of science, magic and mysticism.
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 Timaeus, this course moves through a treatment of the centrality of theology to Medieval scholasticism and the "Watchmaker" Design Argument of the seventeenth and eighteenth centuries. Models of conflict, harmony and complementarity are applied to religious relations between science and religion. The Galileo controversy with the Church and the intimation of the natural world as a book written by God as a unique perspective, in which philosophical, technological and spiritual dimensions co-exist. The tests studies range from technical survivals in papyri, which are essentially recipes for fusing and disting base metals, to the high aesthetic and visionary works of the Hermetic philospher Zosimus. The relation between these technical and occult dimensions will be of central concern.
INSTRUCTOR(S): S. Snieben
FORMAT: Lecture/seminar
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 Christianity in the early eleventh century to the contemporary postmodern age. From an examination of eleventh-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, bioterror, evolutionary psychology, class 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 accompanied by examples of harmony and interdependence between science and religion in the careers of 19th and 20th century scientists, alongside phenomena like the new Ag Deity Design (ED) 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. Snieben
FORMAT: Lecture/seminar
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 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
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 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 evolution 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
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. This course 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 390.03
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 worlds, 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 understanding of 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-LISTED: HSTC 3073.03, BIDK 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 spring. 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 study by contemporary feminist theorists. The course will examine the various feminist critiques of natural science. Will the repressive 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

CR085-LISTING: GST 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 nature, Egyptian conceptions, and the encounter between linear and circular time in Judaic thought. The vision of Greece will be brought out through epic narrative, in Pro-Socratic thought, in Greek historical texts. The course will trace some central texts, in Plato on the concept of time in the soul, in Aristotle, where time becomes the measure of motion, in the Hellenistic period, and in the later Middle Ages. The course will also consider 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 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 goes on to time, not a mediating role but an absolute in Darwin, Marx, Nietzsche. It is an everlasting duration, as disclosed in the second law of thermodynamics, or it is the illusion found up with indifferent necessity? Does relativity leave us with a coherent concept of time left a presentation of the phenomenon, a way of being, as for Husserl, Menne-Peyt 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: Lecture/discussion

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", "Philemy", "Ancient Method", "Embryology", "Presocratic philosophy", etc. For descriptions of the current year's studies topics, please contact the History of Science and Technology Programme.

NOTE: Not more than two studies courses (one full credit) and no more than one of each course number, can be taken for credit towards the History of Science and Technology Programme.

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion

HSTC 3611.03: Studies in Early Modern Science (1500-1800). Topics vary each year. Some of the topics are: "Science and Society", "Population", "Settlement", "Science and Religion", "Technology and Scientific instruments", etc. For descriptions of the current year's studies topics, please contact the History of Science and Technology Programme.

NOTE: Not more than two studies courses (one full credit) and no more than one of each course number, can be taken for credit towards the History of Science and Technology Programme.

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion

HSTC 3615.03: Studies in Science and Nature in the Modern Period. Topics vary each year. Some of the topics are "The Century of the Gene", "Cytogenetics", "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 Programme.

NOTE: Not more than two studies courses (one full credit) and no more than one of each course number, can be taken for credit towards the History of Science and Technology Programme.

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion

HSTC 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 attempt to come to terms with contemporary science and its notions of "scientific method" and natural law. The rise of the "scientific" and its varieties in the world, the triumph of the "new physics" of quantum mechanics and relativistic theory and the construction of narratives 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.
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:

- What did the ancients see in 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): G. McOuat
FORMAT: Seminar

HSTC 4200.03: Histories and Practices of Technology I. From Techno 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 “techno” in the ancients and its modernization 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 counterhalving 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): G. McOuat
FORMAT: Lecture/tutorial
CROSS-LISTING: CTMP 4201.03

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 determination in history; feminist critiques, technology and development; the meaning of expertise, technology 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): G. McOuat
FORMAT: Seminar
CROSS-LISTING: CTMP 4201.03

HSTC 4300.03: Nature and Romanticism.
Kant’s “Copernican Revolution” in philosophy, ironically, marked a reassertion of a full-blown “idealized” 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 endeavor for the growth of romanticism, vitalism and our modern picture of “nature”. It begins with a re-reading of the ambiguous heritage presented by Kant’s writings on nature and proceeds through the attempts to develop a complete programme of idealized Naturphilosophie and its spread throughout European thought by the medium of romanticist art and natural philosophy.

INSTRUCTOR(S): G. McOuat
FORMAT: Lecture/tutorial
CROSS-LISTING: HST 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 biblical theology, his attempts to unravel the Apocalypse, his role in British statecraft and his autocratic rule of the Royal Society. A taxonomy of the Newtonianism that emerged after Newton’s death also allows an exploration of iconographical and apologetic uses of Newton, and his differing legacies in the British and Franc.

INSTRUCTOR(S): G. McOuat
FORMAT: Seminar
CROSS-LISTING: EMSP 4310.01

HSTC 4500X/Y.06: Honours Seminar in the History of Science and Technology.
This half-year 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.

FORMAT: Individual instruction
PREREQUISITE: Honours registration in History of Science and Technology, permission of instructor and Director of programme. Students must complete 60 credit hours before registering in this class.

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 programme. Students must complete 60 credit hours before registering in this class.

HSTC 4511.03: Independent Readings in History of Science and Technology.
Independent reading classes will be offered annually. The student is assigned to a member of the staff for regular meetings to discuss readings in a selected area. Papers and research projects are expected.

FORMAT: Individual instruction
PREREQUISITE: Honours registration in the History of Science and Technology Programme, permission of the instructor and the Director of the programme. 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.

FORMAT: Individual instruction
PREREQUISITE: Honours registration in the History of Science and Technology Programme, permission of the instructor and the Director of the programme. Students must complete 60 credit hours before registering in this class.

HSTC 4550XT/XY.08: 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 programme.
International Development Studies

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**Professors Emeriti**

**Assistant Professors**

**Cross-Appointed Faculty**

**Adjunct Professors**

**I. Introduction**

International Development Studies is an interdisciplinary programme involving the study of inequality, social change and justice in a global world. The IDS programme is structured around two broad areas: 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 more than 30 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 Haiti, 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 Maritime regional center 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 programmes (whether locally or abroad) in their third year of study. The IDS programme offers a number of study abroad options administered through the department including a term abroad in Cuba (Fall or Winter) with FLACSO/Facultad Latino Americana de Ciencias Sociales Programme Cuba, and the University of Havana as well as summer programmes in Cuba and Uganda.

As an interdisciplinary program, IDS recommends students consider combined degree programs. Students are therefore encouraged to enter combined degree programs.
the combined honours or double major programmes, 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 provide additional opportunities for students to pursue graduate studies in more than one area.

Students with backgrounds in sciences are also welcome in this programme as we want an experiential development cut across all disciplines from anthropology to zoology. The interdisciplinary nature of the programme 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 core course offerings including weekly seminar series called the Global Development Seminar Series and the African Studies Seminar Series. Other activities, events and activities will be advertised on the IDS website or information can be obtained from the IDS office.

The IDS programme 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 Programmes

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 40 of this calendar.

A. BA with Honours in International Development Studies

Honours programmes 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 those who want an intensive research project, the Honours essay. Students are encouraged to apply for either the Honours or Combined Honours programmes. In the case of a Combined Honours the thesis course will be determined by the area of study with the highest marks in this programme. Students must complete the requirements for the BA with major in International Development Studies and fulfill the following additional requirements:

- Admission to programmes is based on academic performance. Applicants normally should have achieved an overall Grade Point Average (GPA) of at least 3.0 (B-) or better and 3.0 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 4001 or 4011 Advanced Seminar.
- Applications are encouraged. Students may count INTD 3001.03/3002.03 within this group as well as 3000 level, other than INTD 3001.03/3002.03.

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 programmes 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 programmes or in discussing other possible programmes should consult initially with the Honours Advisor of the selected department.

To obtain a BA with Combined Honours, an emphasis upon International Developmental 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 169)
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 4011 or 4022) and an Advanced Seminar Course (INTD 4011 or 4022).

4. INTD 4011.03 or 4022.03: Advanced Senior Seminar

5. INTD 4021.03 or 4022.03: 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 169)
4. An additional full credit at the 3000 level or above from the IDS offerings in another discipline (see list in section IV, page 169).

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 programme if they meet the usual conditions for admission to the Honours programme. Students must complete the full set of Honours requirements usually by taking five (5) additional full credits. Students interested in this programme should consult with their Honours 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 (20 full credits)

- COMS 1000X/Y.06, 1070X/Y.06/1300.03, ECON 1100X/Y.06/1102.03, ERTH 1030X/Y.06/1040.03, HIST 1030X/Y.06, 1040X/Y.06, 1500X/Y.06, 1503X/Y.06, 1504X/Y.06, 1862X/Y.06; POLI 1010.03, 1015.03, 1020.03, 1025.03, 1030.03/1060.03, 1100X/Y.06, 1103X/Y.06; RNSN 1020X/Y.06, 1107.03; ENVN 1000X/Y.06, SCBSA 1000X/Y.06, 1050X/Y.06, 1500X/Y.06
- or completion of King’s Foundation Year Programme

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 (including approved classes from other disciplines) at or above the 2000 level (see list in section IV, page 169)
- The equivalent of two additional credits from the 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)
- COMM 1001/Y.06, 1070/1300; ECON 1101/3102; ERTH 1070/1302; ERTH 1080/1101; CRGC 1010/3103; HIST 1040X/Y.06, 1082X/Y.06, 1101/1502; PHIL 1000X/Y.06; POLI 1010/13/1025/1520, 1030/1303, 1040/1305, 1100X/Y.06; 1105X/Y.06, 1105X/Y.06
- or completion of King’s Foundation Year Programme

Advanced Classes Required

- INTD 2001/2002/03
- INTD 3001/3002/03
- At least one full credit at or above the 3000 level from the IDS list below (including list in section IV, page 169)
- At least one full credit at or above the 2000 level in each of two IDS disciplines or equivalent (see list in section IV, page 169)
- 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 42 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 programme: 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)
- COMM 1001/Y.06, 1070/1300; ECON 1101/3102; ERTH 1070/1302; ERTH 1080/1101; CRGC 1010/3103; HIST 1040X/Y.06, 1082X/Y.06, 1101/1502; PHIL 1000X/Y.06; POLI 1010/13/1025/1520, 1030/1303, 1040/1305, 1100X/Y.06, 1105X/Y.06, 1105X/Y.06
- or completion of King’s Foundation Year Programme

Advanced Classes Required

- INTD 2001/2002/03
- INTD 3001/3002/03
- 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 169)

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: Lecture/historical PREREQUISITE: Strongly advised; completion of at least two of the following first-year classes or equivalents: COMM 1001/Y.06, 1070/1300; ECON 1101/3102; ERTH 1070/1302; ERTH 1080/1101; CRGC 1010/3103; HIST 1040X/Y.06, 1082X/Y.06, 1101/1502; PHIL 1000X/Y.06; POLI 1010/13/1025/1520, 1030/1303, 1040/1305, 1100X/Y.06, 1105X/Y.06, 1105X/Y.06; or completion of King’s Foundation Year Programme

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: Lecture/tutorial PREREQUISITE: Completion of at least two of the following first-year classes or equivalents: COMM 1001/Y.06, 1070/1300; ECON 1101/3102; ERTH 1070/1302; ERTH 1080/1101; CRGC 1010/3103; HIST 1040X/Y.06, 1082X/Y.06, 1101/1502; PHIL 1000X/Y.06; POLI 1010/13/1025/1520, 1030/1303, 1040/1305, 1100X/Y.06, 1105X/Y.06, 1105X/Y.06; ENVI 1000X/Y.06; SOC 1001X/1002X; or completion of King’s Foundation Year Programme

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.

FORMAT: Seminar

INTD 4011.03: Fall 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 honour’s 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 honour’s students in IDS.
INTD 4012.03: Winter Honours Thesis Course B.
The honours thesis class is open only to those students who have been accepted into the IDS honours programme. 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

INTD 4021.03: Fall Honours Thesis Course A.
The honours thesis class is open only to those students who have been accepted into the IDS honours programme. 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: Winter 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. Elective Classes

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. One half credit is completed over the course of a full academic year. Prerequisites: students must have already secured a place in an overseas experiential learning program. Students who have completed INTD 1201X.Y.06 in the previous year are not eligible to enrol in this course. INTD 3109.X.Y.03: Experiential Learning: Abroad.

This course is open to only those students who have been accepted into the IDS honours programme. 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

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 chosen to use the term ‘experiential learning’ because it reflects the interplay between academic and practical skills development that this program offers.

INTD 3109.03: Experiential Learning: Abroad.
The experiential learning abroad course is open to International Development Studies students who wish to obtain academic credit for an overseas placement, volunteer experience or internship. Students who have already secured a place in an overseas experiential learning program can register for this half credit. Special permission to register for this course is required and an application for this course must be completed prior to registration (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, 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: 1st year Arts and/or science class
CROSS-LISTING: SOC 3110.03

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 programme. 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 3001.03/3002.03

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.X.03: Experiential Learning: Abroad.
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 chosen to use 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 volunteer work experience in a community organization in Halifax or other parts of Canada. You are required to volunteer for a minimum of 30 hours for the term, or approximately 6 hours/week. In addition to this, 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 for an overseas placement, volunteer experience or internship. Students who have already secured a place in an overseas experiential learning program can register for this half credit. Special permission to register for this course is required and an application for this course must be completed prior to registration (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.
INTD 3110.03: 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 constantly 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.

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 in 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.

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 lecture 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.

INTD 3150.03: Aspects de la francophonie/Aspects of the Francophone World. Taught in French.

INTD 3203.06: Field School in Africa. This course involves a combination of lecture, discussion and field placement with NGOs in Africa. The programme is 4 weeks in duration in Africa. Currently, the programme is conducted in collaboration with Makerere University of Science & Technology in Uganda. The course is preceeded by pre-departure briefings in Halifax.

INTD 3301.03: Spanish Language and Grammar: The Cuban Dialect. 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 workers, 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 political practice 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 principal strategies, including the economic crisis and Cuba's reinsertion in the international economic arena.

INTD 3304.03: Sustainable Development in Cuba. This 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.

INTD 3310.06: Cuban Culture and Society. A study of Cuban culture and society. This course consists of briefing and debriefing sessions in Havana 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.

INTD 3330.03: Development and Community Programmes, Social Class Dynamics and its Linkages with Sustainable Development. Field work will be undertaken in one of the following three areas:

INTD 4001.03/ 4002.03/ 4003.06/4100.06: Special Topics in International Development Studies. See course description for INTD 3103.03, 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. CREDIT-LISTING: SPAN 4001.03/4002.03/4003.06/4100.06

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 Programmes, Social Class Dynamics and Economic Strategies. The class will be taught in Spanish. Classes will involve the reading, presentation, and discussion of selected readings.
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.
INTD 4320.03: Empowerment, Gender and Development.
Feminist scholarship and activism has generated a number of theoretical constructs to explain gender inequalities. In the last decade, post-structuralist 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.

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 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.
- BXL 3040.03: Environmental Ecology
- BXL 3050.03: Communities and Ecosystems
- BXL 3060.03: Agroecosystems
- BXL 3070.03: Nature Conservation
- BXL 4065.03: Sustainability and Global Change
- BXL 4140.03: Political Ecology

2. Comparative Religion
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.
- COMR 2011.03: Judaism
- COMR 2021.03: Christianity
- COMR 2031.03: Islam
- COMR 2041.03: Hinduism and Japanese Religions
- COMR 2051.03: Buddhism
- COMR 3040.03: Religion and International Development
- COMR 3041.03: Comparative Mysticism
- COMR 3052.03: Myths, Symbols and Ritual
- COMR 3055.03: Science and the Sacred

3. Earth Sciences
Geology lies behind many of the environmental problems facing humanity today — if only energy and mineral resources provide an underpinning of many of the development plans of Third World nations.
- ERTH 2410.03: Environmental and Resource Geology
- ERTH 3401.03: Environmental Geology

4. 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 2251.03: Applied Development Economics - An applied class in economic development and environment — concepts, policies and projects.
- ECON 2252.03: Applied Development Economics II - An applied class in the economic development of communities and the environment.
- ECON 2254.05: Globalization and Economic Development: Current Debates
- ECON 2241.05: Comparative Economic Systems
- ECON 3017.03: Poverty and Inequality
- ECON 3030.03: International Trade
- ECON 3115.03: Theories of Economic Development
- ECON 3345.05: Economic Development - Recent Debates, Controversy and Conflicts.
- ECON 3355.03: Environmental Economics
- ECON 3306.03: Regional Development
- ECON 3307.03: Social Cost Benefit Analysis
- ECON 4491.03: International Finance

5. 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 programme encourages students to study one additional (relevant) language to English.

- ENGL 2212.03: World Literature in English: Fiction
- ENGL 2213.03: World Literature in English: Poetry
- ENGL 2215.06: Fictions of Development
- ENGL 3083X/Y.06: Post Colonial Literature
- FREN 3103.03: La Monde francophone/The French-Speaking World
- FREN 3104.03: Aspects de la francophonie/Aspects of the Francophone World

Please note: Some courses in the French Department’s Senegal Semester Abroad Programme are likely to be eligible for IDS credit. Consult the undergraduate advisor to determine eligibility.

- Spanish
- SPAN 2081.05: Central America to 1979
- SPAN 2070.03: Area Studies Mexico and Central America
- SPAN 2100.05: Cuba from Colonial Times to 1983
- SPAN 2110.05: The Culture of Latin America Revolution
- SPAN 2130.03: Contemporary Latin American Dictators in the Novel
- SPAN 2200.03: La Civilization de Hispanoamérica
- SPAN 2201.05: Contemporary Latin American Prose, Part I
- SPAN 2204.05: Contemporary Latin American Prose, Part II
- SPAN 3098X/Y.06: Culture and Society of the Dominican Republic

- French
- FREN 2101.03: Le Monde francophone/The French-Speaking World
- FREN 3103.03/3104.03/3105.03/3106.03: Aspects de la francophonie/Aspects of the Francophone World

- English
- ENGL 3210.03: World Literature in English: Fiction
- ENGL 2212.03: World Literature in English: Poetry
- ENGL 3083X/Y.06: Post Colonial Literature

- French
- FREN 3103.03: La Monde francophone/The French-Speaking World
- FREN 3104.03: Aspects de la francophonie/Aspects of the Francophone World

- Spanish
- SPAN 2081.05: Central America to 1979
- SPAN 2070.03: Area Studies Mexico and Central America
- SPAN 2100.05: Cuba from Colonial Times to 1983
- SPAN 2110.05: The Culture of Latin America Revolution
- SPAN 2130.03: Contemporary Latin American Dictators in the Novel
- SPAN 2200.03: La Civilization de Hispanoamérica
- SPAN 2201.05: Contemporary Latin American Prose, Part I
- SPAN 2204.05: Contemporary Latin American Prose, Part II
- SPAN 3098X/Y.06: Culture and Society of the Dominican Republic

- French
- FREN 2101.03: Le Monde francophone/The French-Speaking World
- FREN 3103.03/3104.03/3105.03/3106.03: Aspects de la francophonie/Aspects of the Francophone World

- Spanish
- SPAN 2081.05: Central America to 1979
- SPAN 2070.03: Area Studies Mexico and Central America
- SPAN 2100.05: Cuba from Colonial Times to 1983
- SPAN 2110.05: The Culture of Latin America Revolution
- SPAN 2130.03: Contemporary Latin American Dictators in the Novel
- SPAN 2200.03: La Civilization de Hispanoamérica
- SPAN 2201.05: Contemporary Latin American Prose, Part I
- SPAN 2204.05: Contemporary Latin American Prose, Part II
- SPAN 3098X/Y.06: Culture and Society of the Dominican Republic

- French
- FREN 2101.03: Le Monde francophone/The French-Speaking World
- FREN 3103.03/3104.03/3105.03/3106.03: Aspects de la francophonie/Aspects of the Francophone World

Please note: Some courses in the French Department’s Senegal Semester Abroad Programme are likely to be eligible for IDS credit. Consult the undergraduate advisor to determine eligibility.
6. 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 programmes that also provide courses emphasizing environmental subjects include Earth Sciences (geology and hydrogeology), ECON 2251.03, ECON 2252.03, marine biology and PCLI 3558.03.

• PCLI 3001: Environmental Science Internship
• 3201.03: Introduction to Environmental Law
• 3211.03: Environmental Law II: Natural Justice and Unnatural Acts
• 3401.03: Environmental and Ecosystem Health
• 3511.03: Environmental Problem Solving I
• 3521.03: Environmental Problem Solving II: The Campus as a Living Laboratory.
• ECHR 2410.03: Environmental and Resource Geology
• ECHR 3410.03: Enhanced Environmental Geology
• PHIL 2481.03: Environmental Ethics
• PHIL 2482.03: Technology and the Environment
• PCLI 3575/Y.06: Management and Conservation of Marine Resources
• PCLI 3585/Y.06: Politics of the Environment
• PCLI 3586.03: Politics of the Sea

7. 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 2200X/Y.06: Feminisms of Development
• GWST 2400X/Y.06: Work and Occupations in a Changing World
• GWST 3001.X6/Y.06: Comparative Perspectives on Gender
• GWST 3006.03: Comparative Perspectives on Gender and Work
• GWST 3301.03: Gender and Development in Africa
• GWST 4201.03: Empowerment, Gender, and Development

8. 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 3001.03: The Atlantic World, 1450-1650: European Colonization of the Americas
• HIST 3005.03: The Atlantic World, 1650-1800: European Empires in the Americas
• HIST 2021.03: Soviet Russia
• HIST 2022.03: Soviet Russia
• HIST 2271.03: Atlantic Canada to Confederation
• HIST 2386.03: Central Asia to 1979
• HIST 2388.03: Area Studies on Mexico and Central America
• HIST 2389.03: 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 2521.03: History of the Middle East: 1979-Present
• HIST 2523.03: From Cordoba to Jakarta: Islamic Civilization in a Global Perspective (nineteenth - eighteenth centuries)
• HIST 2542.03: Contemporary History of Turkey, Iran, Israel, and the Arab-Speaking lands (nineteenth-twentieth centuries)
• HIST 2901.03: Russian Society
• HIST 3002.03: Russian Society
• HIST 3003.03: Indigenous Movements in Latin America
• HIST 3401.03: The Making of Colonial Africa, c. 1850-1900
• HIST 3403.03: Urban Life in Colonial Africa
• HIST 3451.03: The Rise and Fall of African Slavery
• HIST 3452.03: Southern Africa since 1860
• HIST 3453.03: Southern Africa since 1860
• HIST 3461.03: Gender and Development in Africa
• HIST 3470.03: Wars and Revolutions in Nineteenth Century Africa
• HIST 3471.03: Wars and Revolution in Twentieth Century Africa
• HIST 3510.03: Sultans and Shabs: Politics and Religion in the Islamic Gunpowder Age (1300-1800)
• HIST 3512.03: Modern History of Iran, Central Asia, and the Caucasus
• HIST 3471.03: The Fisheries of Atlantic Canada's Society and Ecology in Historical Perspective
• PCLI 3558.03: Empowerment, Gender, and Development
• HIST 4410.03: Topics in African History
• HIST 4479.03: Human Development and the Modern Experience

9. 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 2401.03: Ethics in the World of Business
• PHIL 2403.03: Eastern Philosophy
• PHIL 2405.03: Environmental Ethics
• PHIL 2406.03: Technology and the Environment

10. 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 2305.03: World Politics
• POLI 2306.03: Introduction to Foreign Policy
• POLI 3301.03: Comparative Development Administration
• POLI 3303.03: Human Rights: Political Issues
• POLI 3311.03: Sport and Politics
• POLI 3313.03: African Politics
• POLI 3317.03: Politics in Southern Africa
• POLI 3501.03: Governance and Globalization
• POLI 3502.03: Politics in Latin America
• POLI 3525.03: Comparative Foreign Policy Simulation
• POLI 3531.03: The UN and World Politics
• POLI 3532.03: The New International Division of Labour
• POLI 3533.03: Management and Conservation of Marine Resources (summer only)
• POLI 3541.03: Foreign Policies of Third World States
• POLI 3551.03: Japanese Foreign Policy
• POLI 3590.03: Human Development/Society at the Start of the Twenty-first Century
• POLI 3591.03: Diplomacy and Negotiation
• POLI 3593.03: Politics of the Environment
• POLI 3596.03: International Political Economy
• POLI 3597.03: Explaining Global Conflict and Violence
• POLI 3598.03/Y.06: Political Science Through the Pearson Peacekeeping Centre
• POLI 3599.03: Political Science Through the Pearson Peacekeeping Centre
• POLI 4604.03: Nationalism and Statecraft

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 2021.03: Imperial Russia
• RUSN 2022.03: Soviet Russia
• RUSN 2041.03: Russian Modernism
• RUSN 2042.03: Literature of Revolution - The 1920’s in Russian Literature
• RUSN 2050.03: Russian Literature and Culture since Stalin’s Death
• RUSN 2060.03: Russian Society Today
• RUSN 3002.03: Russian Topics
• RUSN 3006.03: The History of Ideas in Russia - From Official Nationality to Tolstoyanism'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 200X.Y/06**: Ethnography in a Global Context
- **SOSA 202X.Y/06**: Environment and Culture
- **SOSA 203X.Y/06**: Work and Occupations in a Changing World
- **SOSA 210W.Y/06**: Comparative Perspectives on Gender
- **SOSA 240X.Y/06**: Health and Illness Across Cultures
- **SOSA 300X.Y/06**: Comparative Perspectives on Gender and Work
- **SOSA 301X.Y/06**: Befriending Cultures and Class
- **SOSA 301X.Y/06**: Popular Memory
- **SOSA 304X.Y/06**: Social Change and Development
- **SOSA 314X.Y/06**: Health, Illness and the World
- **SOSA 314W.Y/06**: Childhood/Cross-Cultural Perspectives
- **SOSA 315X.Y/06**: Peoples and Cultures of the World: Selected Area Studies
- **SOSA 316X/03**: Issues/LatAm American Society
- **SOSA 316Y/03**: Southern Africa: Comparative Societies and Institutions
- **SOSA 317X/03**: Issues in the Study of Native Peoples of North America
- **SOSA 320X/03**: Ethnicity, Nationalism, and Race
- **SOSA 321X/03**: Continuity and Change in Rural Societies
- **SOSA 322X/03**: Migration and Identity
- **SOSA 325X/03**: Culture, Rights & Power
- **SOSA 328X/05**: Ritual Systems: Symbols, Myth and Meaning
- **SOSA 329X/05**: Psychological Anthropology
- **SOSA 331X/03**: Indian Society: Change and Continuity
- **SOSA 403X/03**: Contemporary Perspectives in Ethnography
- **SOSA 423X/05**: Tourism and Development

13. Theatre

**THEA 4952.03**: Cross-Cultural Theatres

Seminars and Conferences

All IDS students are encouraged to attend the 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 programmes, classes which enable them to take advantage of Dalhousie's commitment to ocean studies, health and sustainable development.

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**Italian Studies**

**NOTE:** Classes in Italian studies are administered by the French Department (page 118).

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 Programmes

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 40 of this calendar.

A. BA (20-Credit) Double Major

A minimum of 4 full credits (24 credit-hours) in Italian studies above the 1000 level, combined with one of the Major subjects in the BA programme. 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) Combined Honours

A minimum of 4 full credits (24 credit-hours) in Italian studies above the 1000 level, combined with one of the Combined Honours subjects in the BA programme. Within those 4 credits, students must include ITAL 2010.06 and ITAL 3010.06.

**NOTE:** Italian studies can only be the second subject for the Double Major or Combined Honours. It cannot be the primary subject for these programmes.

C. BA (15-Credit) Area of Concentration

A minimum of 4 full credits (24 credit-hours) 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.

III. Class Descriptions

**ITAL 1010X/Y.06:** Italian for Beginners.

**ITAL 1011X/Y.06:** Italian for Beginners.

**ITAL 1012X/Y.06:** Reading Italian.

This class is a study of the basic structures of 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.
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 5200.03: 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. Sciuscia, 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 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 commodification, 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 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 present an oral presentation on a selected theme that elects 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 is the New Wave of Italian cinema, which received international recognition since the 1980s. Its aim is to investigate current Italian film production within the social and cultural climate of contemporary Italy.

FORMAT: Lecture/senior 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 writing). Compositions will address Italian literary and cinematic works. Students will work in small and individual groups.

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.
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 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.
INSTRUCTOR(S): Staff
FORMAT: Seminar
ITAL 4999.03: Independent Study.
Individually directed research and writing under the supervision of a member of department.
INSTRUCTOR(S): Staff
FORMAT: Seminar

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.

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.
PREREQUISITE: JOUR 1001.06
RESTRICTION: This class is not available to students in the BJH programme.
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:
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 programme.
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 2001.06
RESTRICTION: This class is not available to B(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. Issues 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 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 B(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 2001.03 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 1001.06 or permission of the 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 - bundling 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 1001.06 or permission of the Instructor

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 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.
PREREQUISITE: JOUR 1001.06 or permission of the instructor
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 programmes 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 to 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. To count towards the Minor, classes must be passed with a minimum of B-. Additions to the following list will be made as the programme develops.

• HIST 221.03: Rough Justice - to the 1890s
• HIST 222.03: 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 2010.03: Legal Thinking
• 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 Federation
• POLI 2520.03: World Politics
• POLI 3209.03: Constitutional Issues in Canadian Politics
• POLI 3301.03: Human rights: Philosophical Issues
• POLI 3401.03: Human rights: Political Issues
• POLI 3420.03/GWST 3690.09*: Women as Citizens
• POLI 3581.03: Diplomacy and Negotiations
• SOSA 2386.03: Sociology of Criminal Law
• SOSA 2395.03: Society and the Police

*fulfills the PHIL requirement even if taken as GWST 3690
**fulfills the POLI requirement even if taken as GWST 3650

Other Approved Electives

• JOUR 3333.03: News Media and the Courts
• LAWS 2112.03/2123.03: Canadian Legal History
• PSYO 3224.03: Forensic Psychology
• PSYO 4000.03: Senior Seminar (on a forensic topic)
• SCIE 3280.03: Environmental Law

Other Approved Electives

• JOUR 3333.03: News Media and the Courts
• LAWS 2112.03/2123.03: Canadian Legal History
• PSYO 3224.03: Forensic Psychology
• PSYO 4000.03: Senior Seminar (on a forensic topic)
• SCIE 3280.03: Environmental Law

Other Approved Electives

• JOUR 3333.03: News Media and the Courts
• LAWS 2112.03/2123.03: Canadian Legal History
• PSYO 3224.03: Forensic Psychology
• PSYO 4000.03: Senior Seminar (on a forensic topic)
• SCIE 3280.03: Environmental Law
Linguistics

Location: 6135 University Ave, Halifax, NS B3H 4P9
Telephone: (902) 494-1440
Fax: (902) 494-2989

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

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

Dalhousie Faculty
Barrett, J., Russian Studies, Associate Professor
Deacon, H., Psychology, Assistant Professor
De Mello, F., French, Professor
Furrow, M., English, Professor
Gordon, T.W., French, Adjunct Professor
Hamel, M-J., French, Associate Professor
Hymers, M., Philosophy, Associate Professor
Mazurczew, J., French, Assistant Professor
Mestrovic, R., French, Associate Professor
Yoon, M., Psychology, Adjunct Professor

I. Halifax Interuniversity Programme in Linguistics

Halifax area universities offer a joint programme in linguistics. Students enrolled in this programme take classes from Dalhousie, Saint Mary’s and Mount Saint Vincent University to fulfill 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 30). Interested students should contact the programme 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. Students who study linguistics write the descriptions language teachers use and linguistics programmes encourage to enter the 20-credit Major degree programme. Consult the programme coordinator. Programme Requirements

A minimum of 10 credits. These must include:
• Two of the half-credit classes (or equivalent), listed under Core Programme Requirements (above);
• A two semester (full credit equivalent) Introduction to Linguistics, listed under Core Programme Requirements (above);
• A minimum of six full credits, at least 3 credits of which must be at the 3000 level or above. These must include:
  • 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).

II. Degree Programmes

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 programme, and must maintain a GPA of 3.0 or better in classes contributing to their honours degree in linguistics.

All Dalhousie honours programmes must include Honours Qualifying Examination in Linguistics, this usually takes the form of a research paper. Consult the programme coordinator.

Programme Requirements

A minimum of 15 credits. These must include:
• Two semester (full credit equivalent) Introduction to Linguistics, listed under Core Programme Requirements (above);
• All four of the half-credit classes (or equivalent), listed under Core Programme Requirements (above);
• One credit selected with the advice of the programme 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 programmes 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 Programme are encouraged to enter the 20-credit Major degree programme. Consult the programme coordinator.

Programme Requirements

A minimum of six full credits, at least 3 credits of which must be at the 300 level or above. These must include:
• A two semester (full credit equivalent) Introduction to Linguistics, listed under Core Programme Requirements (above);
• Two of the half-credit classes (or equivalent), listed under Core Programme Requirements (above).
The equivalent of one full credit selected with the advice of the programme 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

Programme 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 Programme Requirements (above);

Two of the half-credit classes (or equivalent), listed under Core Programme Requirements (above);

The equivalent of one full credit selected with the advice of the programme 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

Programme 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 Programme Requirements (above);

Two of the half-credit classes (or equivalent), listed under Core Programme Requirements (above);

The equivalent of one full credit selected with the advice of the programme 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 programmes 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 2381.03: Seminars
- 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 305.05: Linguistics: Introduction to Acadian Dialectology
- FREN 350.05: Quebec French
- FREN 400.05: History of French: The Middle Ages
- FREN 401.05: History of French: The Modern Period
- FREN 401.05: Lexicology
- FREN 402.05: Aspects of French Structure
- FREN 403.05: Pragmatics
- FREN 404.05: Language and Society
- FREN 405.06: Advanced Translation into English
- FREN 406.06: Introduction to Applied Linguistics and Language Teaching (taught in English)
- FREN 407.03: General Translation
- FREN 408.03: Electronic Tools and Resources for French (taught in English)

Philosophy
- PHIL 303.03: Philosophy of Language
- PHIL 450.03: Topics in the Philosophy of Language

Psychology
- PSYD 290.03: Psycholinguistics
- PSYD 390.03: Neurolinguistics
- PSYD 393.03: Language & Literacy

Russian
- RUSH 4001.06: The Structure of Contemporary Standard Russian

Sociology
- SOCS 304.03: Sociolinguistics

B. Classes offered at Saint Mary’s University (SMU) and Mount Saint Vincent University (MSVU)

Anthropology
- SMU ANT 2391.1(2): Introduction to Human Communication
- SMU ANT 2392.1(2): Introduction to Linguistic Anthropology
- SMU ANT 2393.1(2): Language, Culture and Society
- SMU ANT 3398.1(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 LIN 2281.1(2): Language and Culture

Education
- MSU LIN 3385.1(2): Teaching English as a Second Language I
- MSU LIN 3386.1(2): Teaching English as a Second Language II

English
- SMU EML 2311.1(2): Modern English Language
- SMU EML 3312.1(2): Modern English Language in Canada
- SMU EML 3420.1: History of the English Language
- SMU EML 2308.1(2): English Prose Style from 1300
- SMU EML 4490.0: Discourse Analysis

French
- SMU FRE 3312.1(2): French Phonetics
- SMU FRE 3313.1(2): Linguistic Study of French
- SMU FRE 3355.1(2): Acadian Language and Culture
- SMU FRE 4485.1(2): Canadian French: Sociolinguistic Perspectives
- MSVU LIN 3372.1(2): Structure and Variety in Contemporary French II: Grammar
- MSU LIN 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 3341.1(2): Special Topics in Linguistics I
- SMU LIN 3343.1(2): Advanced Morphology
- SMU LIN 3342.1(2): Comparative Linguistics

Political Studies
- MSU LIN 3308.1(2): Language and Politics

Philosophy
- SMU PHIL 40.1(2): Philosophy of Language: Meaning
- SMU PHIL 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 3361.1(2): Field Methods in Linguistics I
- SMU SOC 3367.1(2): Field Methods in Linguistics II *
- SMU SOC 4475.1: Seminar on Endangered Languages

Women's Studies
- SMU WMS/egl 3326.1(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
Baur, S. (494-692)

Professors
Schwicker, D.P., BMus, BA, MA (Western) PhD (Cantab), (History)  
Servant, G. W., BMus (Dal), MMus, DMA (Hartt), Artist Diploma (Opernhaus Zurich), (Voice, Opera Workshop)

Associate Professors
Bain, J., BMus (Wilfrid Laurier), MA (McGill), PhD (SUNY Stony Brook), (Theory)

Djokic, P., BMus, MMus (Sarah Longy), (Violin, Viola, Conducting)

Stock, L., BMus (Cho), MMus (Juilliard), (Piano)

Swanston, M., BMus (York), Opera Program (Guildhall School of Music and Drama, London, U.K.), (Voice)

Assistant Professors
Allen, P., BMus (Mt. Allison), MMus (York), (Violin)

Baur, S., BA (Music) (Loyola Marymount), MA (UCLA), (Popular Music, History, Jazz History)

Blais, J., BMus (McGill), MMus (Montreal), (Theory and Composition)

Warwick, J., BMus (Toronto), MA (York), PhD (UCLA), (History, Popular Music)

Sessional Lecturers
Reach, D., BMus (Dalhousie), (Guitar History and Performance, Guitar)

Mitchell, C., ( Saxophone, Improvisation)

Instructor
Esson, G. BMusEd (Dal), (Aural Skills, Foundational Studies, and Choral)

Part-Time Instructors
Adams, G., BEd, MEd (Acadia), (Band Director)

Bradshaw, D., BMus (Toronto), MMus (Toronto), (Keyboard Skills)

Chang, T., BMus (UBC), MMus (Minnnesota), (Keyboard Skills)

Fennell, A., BMus, MMus, (New England Conservatory, (Music Appreciation)

Sheppard, C., BMus (Dal) (Electroacoustic Music)

Redmond, P., BA, BEd (Mt. St. Vincent)

Part-Time Applied Skills Instructors
Guitar: Reach, D. (see Sessional Lecturers); Scott, M., BMus (Dal);  
Sutherland, B.

Flute: Coughlan, F., BMus (Toronto); Dalbota, E., BMus (Rochester), MMus (Emperor State);  
Featherstone, C., BMus (Toronto), MMus (Juilliard)

Oboe: Lemerus, S., BMus (Ottawa), MMus (Michigan)

Organ: TBA
Classes offered as arts electives for non-majors are as follows:

- MUSC 1002.03: Introduction to College Music Theory
- MUSC 1001.03: Materials of Music
- MUSC 1071X/Y.03: Foundational Aural Perception
- MUSC 1070X/Y.03: Foundational Keyboard Proficiency
- MUSC 1100X/Y.06: Foundational Applied Skills
- MUSC 1071X/Y.06: Modern Guitar
- MUSC 1070X/Y.06: History of Musical Theatre
- MUSC 3365.03: Narrative Strategies in 19th-Century Music (cross-listed with GWST 2066.03: Women, Gender and Music (MUSC 3066.03 for Music Majors)
- MUSC 3360.03: Narrative Strategies in 18th-Century Music (cross-listed with GWST 3303.05: Women, Gender and Music (MUSC 3066.03 for Music Majors))

Other classes in Music may be taken by special permission of the department. Applied skills classes may be taken subject to an audition, and available space.

B. Academic Dismissal/Voluntary Withdrawal

Students required to apply for readmission to a university degree programme in Music must also submit to the department a supplementary readmission form. When a student in a Music degree programme has been dismissed on academic grounds and one of the classes failed is Applied Skills, that student must take a new audition upon application for readmission. When a student formerly registered in a music degree programme has been absent from the university for more than two years for reasons other than academic dismissal, it shall be within the discretion of the Music Department to require a new audition and/or validation tests before continuing in that programme.

C. Interrupted/Deferred Applied Skills

Any student successfully auditioning for a music programme or an applied skills elective class (instrument or voice) during the times normally set aside for auditions for a specific academic year, is deemed to have successfully auditioned for the specified academic year only. Any student wishing to defer applied skills classes for one or more academic years may, at the discretion of the Music Department, be required to re-audition. Likewise, any student who successfully auditions for and registers in an applied skills class, but who does not successfully complete the class within one academic year, may, at the discretion of the Music Department, be required to re-audition.

D. Interrupted/Deferred Sequential Classes

Regardless of the Music degree program, any student absent from the University Music Department for one or more academic years for whatever reason may, at the discretion of the Music Department, be required to take an equivalency examination in sequential core classes in theory, aural skills and keyboard, before advancing to further study in subsequent parts of the curriculum. Any equivalency test taken for a specific academic year is deemed to refer to that academic year only.

E. Transfer Students

Students wishing to transfer from another institution into any Music degree programme must complete an audition, including entrance tests and equivalency testing (as appropriate), in order to determine a level of study and appropriate transfer credits for music classes in applied skills, theory, aural skills and/or keyboard.

II. Degree Programmes

At the time of printing, the department is updating curriculum and degree options. Please check the online calendar at http://ww.registrar.dal.ca for the most up-to-date information.

A. Foundational Classes

These classes are for those prospective music-degree programme students who, in the opinion of the auditioning faculty, indicate University-level achievement or aptitude in performance but who are in need of more prolonged exposure to pre-major levels of music theory and related skills. Students admitted to this level enrol in the BA pre-Music Integrated Foundational Music Programme, and may take a maximum of five full-credit classes.

Curriculum

- MUSC 1001.03: Materials of Music
- MUSC 1002.03: Introduction to College Music Theory
- MUSC 1070X/Y.03: Foundational Aural Perception
- MUSC 1071X/Y.03: Foundational Keyboard Proficiency
- MUSC 1100X/Y.06: Foundational Applied Skills
The BMus is a four-year programme with sixteen out of twenty credits in music. Upon successful completion of the second year, students may choose to concentrate in performance, music history and literature, composition, or instruction, or elect the self-directed programme.

I. Common Curriculum

First-Year

- MUSC 1000-level Applied Skills (MUSC 1101X/Y.06 to MUSC 1121X/Y.06)
- MUSC 1201.03: Theory I
- MUSC 1202.03: Theory II
- MUSC 1270X/Y.03: Aural Perception I
- MUSC 1271X/Y.03: Keyboard Skills I
- MUSC 1290.03: History of Music I (Med. - Baroque)
- MUSC 1300.X/Y.03: History of Music II (Baroque)
- Arts and Social Sciences or Science Elective, one full credit (Writing Class)
- Each Elective, one full credit

Second-Year

- MUSC 2000-level Applied Skills (MUSC 2101X/Y.06 to MUSC 2131X/Y.06)
- MUSC 2201.03: Theory III
- MUSC 2202.03: Theory IV
- MUSC 2270X/Y.03: Aural Perception II
- MUSC 2271X/Y.03: Keyboard Skills II
- MUSC 2301.03: History of Music III (Classical)
- MUSC 2351.03: History of Music IV (Romantic)
- Arts and Social Sciences or Science Elective, one full credit.

II. Concentration in Performance

NOTE: The various levels of applied study indicate the year of study in the Department and are not intended solely as an indication of relative standard. Term gradings are based upon progress as well as upon the actual performing standard displayed in the jury examination. Prospective students are advised to consult with their applied skills instructor regarding consideration of this area of concentration. Students must meet minimum standards (refer to 8. Standards and Standards Chart, page 182) including a B+ average in applied studies, and must receive the written recommendation of their applied skills instructor.

Classes offered in all hand and orchestral instruments, guitar and lute, piano, organ, harpsichord, recorder, voice. Normally all students receive a one-hour weekly individual lesson in their major performance idiom. In addition to the one-hour lesson, and appropriate to the idiom, group instruction in technique and repertoire may be a required part of all sequences of Applied Skills classes.

Third-Year

- MUSC-3000 level Applied Skills (MUSC 3101X/Y.06 to MUSC 3121X/Y.06)
- MUSC 3199.03: Recital
- MUSC 3280.03: Introduction to Music or 3284.03: Tonal Counterpoint
- MUSC 3281.03: Form and Analysis I
- MUSC 3282X/Y.03: Orchestration
- MUSC 3351.03: Music Since 1945
- Music Elective, one full credit
- Arts and Social Sciences or Science Elective, one full credit

Fourth-Year

- MUSC 4000-level Applied Skills (MUSC 4101X/Y.06 to MUSC 4121X/Y.06)
- MUSC 4199.03: Area Graduation Requirement (Recital)
- MUSC 4280.03: Form and Analysis II
- Music Elective, 2 full credits
- Arts and Social Sciences or Science Elective, one full credit.

NOTE: Church Music Option - Organ majors may complete a curriculum in church music by successful achievement in the following classes taken in the third- and fourth-years: MUSC 4271X/Y.06, MUSC 4701X/Y.06, MUSC 4708X/Y.03, and the credit-hour class in church music offered at the Atlantic School of Theology and taken through letter of permission.

3. Concentration in Performance, Contemporary Musics

Prospective students should consult with the Student Advisor regarding the options within this area of concentration, and must receive permission in writing from the appropriate faculty member(s) responsible for Electroacoustic or Improvisation studies.

Third-Year

- MUSC 3000-level Applied Skills (MUSC 3101X/Y.06 to MUSC 3121X/Y.06)
- MUSC 3199.03: Recital
- MUSC 3280.03: Modal Counterpoint or 3284.03: Tonal Counterpoint
- MUSC 3281.03: Form and Analysis II
- MUSC 3282X/Y.03: Orchestration
- MUSC 3351.03: Music Since 1945
- MUSC 3631.03: Electroacoustic Music
- Arts and Social Sciences or Science Elective, one full credit.

Fourth-Year

- MUSC 4000-level Applied Skills (MUSC 4101X/Y.06 to MUSC 4121X/Y.06)
- MUSC 4281.03: Form and Analysis II
- One of
  - MUSC 4607X/Y.03: Electroacoustic Studio
  - MUSC 4175X/Y.03: Improvisation Techniques and Practice
- MUSC 4699.03: Graduation Requirement, Contemporary Musics
- Music Electives, one and one-half credits
- Arts and Social Sciences or Science Elective, one full credit.

4. Concentration in Composition

Prospective students must achieve the required minimum grades in Core Curriculum Classes (refer to 8. Standards and Standards Chart, page 182). Students must submit a portfolio of original compositions (normally prepared in Second-Year Portfolio tutorials) and must complete a satisfactory interview with the composition faculty member.

Third-Year

- MUSC 3000-level Applied Skills (MUSC 3101X/Y.06 to MUSC 3121X/Y.06)
- MUSC 3280.03: Modal Counterpoint or MUSC 3284.03: Tonal Counterpoint
• MUSC 3281.03: Form and Analysis I
• MUSC 3282X/Y.03: Orchestration
• MUSC 3283.03: Modal Counterpoint or 3284.03: Tonal Counterpoint
• MUSC 3161.03: Choral Techniques
• MUSC 4403.05: Band Instruments
• MUSC 4413.05: Introduction to the Principles of School Band Music
• MUSC 4451.03: String Instruments
• MUSC 4462.03: Choral Arranging
• MUSC 4475.03: Contemporary Music in the Classroom
• MUSC 4480X/Y.03: Cell Method & Practice: Level I - An Introduction
• MUSC 4489X/Y.03: Orff Method & Practice: Level I - Continuation
• MUSC 4496X/Y.06: Orff Method and Practice, Level II Intermediate
• One half-credit elective in Music
• Arts and Social Sciences or Science Elective, one full credit

NOTE: Successful completion of this programme does not lead directly to certification by the Nova Scotia Department of Education. Graduates must apply for Teacher Certification training through a College of Education BEd in Music with a second teachable subject. Students interested in pursuing a career in classroom teaching are advised to use their Arts and Social Sciences or Science electives to develop either the necessary three full credits for a second teachable subject (more for French and Visual Arts), Secondary School Teaching, or the package of credits required for Elementary School Teaching; one full credit each in English, Science, and a half credit in Mathematics.

6. Self-Directed Programme

Students should consult with the Student Advisor regarding the options within the Graduation Requirement and the most suitable class selection leading to it. Permission of the Department to proceed into this area of concentration must then be secured through the successful submission to the Student Advisor of a written Study Proposal.

Third-Year
• MUSC 4400-level Applied Skills (MUSC 4101X/Y.06 to MUSC 4121X/Y.06)
• MUSC 4281.03: Form and Analysis
• MUSC 4380X/Y.03: Band Instruments
• MUSC 4390X/Y.03: Area Graduation Requirement (Thesis)
• Music Elective, one credit
• Arts and Social Sciences or Science Elective, one full credit.

Fourth-Year
• MUSC 4400-level Applied Skills (MUSC 4101X/Y.06 to MUSC 4121X/Y.06)
• MUSC 4281.03: Form and Analysis
• MUSC 4380X/Y.03: Band Instruments
• MUSC 4390X/Y.03: Area Graduation Requirement (Self-Directed)
• Music Elective, two full credits
• Arts and Social Sciences or Science Elective, one full credit.

8. Standards (Please refer to Standards Chart below.)

All students wishing to enter third-year required Music classes other than MUSC 3051.03 in the BMus programme must successfully complete their MUSC 2000-level Applied Skills and MUSC 2202.03, MUSC 2270X/Y.05 and MUSC 2271X/Y.05 and achieve an overall average of B- in the music classes of the first- and second-years, including a minimum standing of C in MUSC 1201.03, B- in MUSC 1202.03 and each of their MUSC 2000-level Applied Skills, MUSC 2270X/Y.03, 2271X/Y.05, MUSC 2270X/Y.03 and 2271X/Y.05, and B in MUSC 2202.03 and MUSC 2203.03.

Students failing to demonstrate the required standards in MUSC 2270X/Y.01 must repeat the class, but, with the permission of the Department, those with an otherwise satisfactory academic achievement may do so concurrently with their third-year curriculum, within the five full classes or as an approved overload.
Students wishing to enter the concentration in Performance must achieve an average of B+ in their MUSC 1000- and MUSC 2000-level Applied Skills and must also receive the written recommendation of their applied skills instructor; an average of B+ in History and Literature, an average of B+ in MUSC 1350.03, MUSC 1351.03, MUSC 2350.03 and MUSC 2351.03 and demonstrate acceptable writing ability; in Composition, a minimum of B in MUSC 1202.03, 1270X/Y.03 and 1271X/Y.03, and B+ in MUSC 2201.03, 2202.03, 2270X/Y.03, and 2271X/Y.03, and also successfully complete a portfolio of original compositions and a satisfactory interview with the composition faculty; in Instruction, the permission of the Department, through an interview with the music faculty to assess the student’s aptitude and ability for teaching-related vocations. Students wishing to elect the Self-Directed Studies option must secure the permission of the Department, through the successful submission of a written Study Proposal.

Students in the BMus programme must maintain a minimum standing of B- in each of the music classes of the third- and fourth-years. Students may not enrol in the Bachelor of Music Graduation Requirements classes (MUSC 4199 - MUSC 4699) until the successful submission of a written Study Proposal. Students may not enrol in BMus graduation requirement classes (MUSC 4199 - MUSC 4699) until the fourth year of the programme. Students who at the end of the third year have not obtained at least five credits of B or better in their music classes above the 1000 level will not be admitted to the fourth year without the explicit recommendation of the Department and the prior approval of the Committee on Studies. Students must achieve a minimum standing of B- in each of their Arts and Social Sciences or Science electives.

### BA with Combined Honours in Music and Theatre

The four-year Bachelor of Arts Combined Honours in Music and Theatre combines 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 programme each year. The graduate of this programme will advance toward a professional career in the performing arts equipped with a solid foundation in academic, vocal, and stage skills.

Students wishing to enter this programme must advise the Theatre Department Student Advisor. To qualify for graduation, a student must participate with a significant role in at least one staged musical production (either as an integral part of Theatre Productions, or Opera workshop, or as a separate ensemble recital). Students planning to take this programme must advise the Theatre Department Student Advisor. NOTE: Students having to withdraw from this Programme through failure to achieve the required standards in Theatre classes must re-audition if desiring a Degree Programme in Music. Students having to withdraw from this Programme through failure to achieve the required standards in
Music classes must re-apply to the Department of Theatre if desiring a degree Programme in Theatre.

Year One
- MUSC 1001X/Y.03 Voice I
- MUSC 1201.03: Music Theory I
- MUSC 1202.03: Music Theory II
- MUSC 1270X/Y.03: Aural Perception I
- MUSC 1271X/Y.03: Keyboard Skills I
- THEA 1000X/Y.06: A Survey of Dramatic Literature [Writing Requirement]
- THEA 1001X/Y.06: An Introduction to Acting in Performance
- Ensemble: Chamber Choir/Opera Workshop

Year Two
- MUSC 2010X/Y.06: Voice II
- MUSC 2201X/Y.03: Music Theory III
- MUSC 2202.03: Music Theory IV
- MUSC 2270X/Y.03: Aural Perception II
- MUSC 2271X/Y.03: Keyboard Skills II
- THEA 2000X/Y.06: Acting II
- THEA 2020X/Y.06: Dance & Movement II
- Ensemble: Chamber Choir/Opera Workshop

Year Three
- MUSC 3101X/Y.06: Voice III
- MUSC 3102X/Y.06: MUSC 3102X/Y.06: The History of Musical Theatre
- MUSC 3000X/Y.06: Acting III
- THEA 3020X/Y.06: Dance & Movement III
- Arts & Social Science: One of 1000-level Life or Physical Science, Social Science, or Language Class Requirement
- Ensemble: Chamber Choir/Opera Workshop

Year Four
- MUSC 4010X/Y.06: Voice IV
- THEA 4000X/Y.06: Acting IV
- THEA 4040X/Y.06: Advanced Performance Techniques
- Arts & Social Science: Two remaining 1000-level Life or Physical Science, Social Science, or Language Class Requirement
- Arts & Social Science: Full-credit elective above the 1000 level in Music Theatre, Language or related Subject approved by Departments
- Ensemble: Chamber Choir/Opera Workshop

Honours Music and Theatre students will be awarded the 21st credit for their satisfactory participation in a Dalhousie Production.

D. 15-credit BA with Concentration 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

1000 level
- Music 1000-level Applied Skills (MUSC 1100X/Y.06 to MUSC 1212X/Y.06)
- MUSC 1201.03
- MUSC 1202.03
- MUSC 1270X/Y.03
- MUSC 1271X/Y.03

2000 level
- At least 2 credits

3000 level
- At least 2 credits

Among the above, two half-credit classes in Music History must be completed (chosen from MUSC 1501.03, 1581.03, 2501.03, 2551.03, 3511.03)

Classes in subjects other than Music, to a maximum total of 6 full credit classes including the writing class (in compliance with Degree Requirements 1.2), may be selected in consultation with the Department to suit a student’s individual needs and interests. Foundational Music classes are not considered applicable to this degree. Students in the BA (15-credit) programme enrolled in Applied Skills classes are required to pass jury examinations.

E. Bachelor of Arts and Bachelor of Science (Combined Honours Programmes)

Students may enroll in a combined honours programme with the joint approval of the Music Department and the department of the allied subject (in compliance with the Combined Honours degree requirements detailed in the Degree Requirements section of this calendar). Minimum departmental requirements are the same as those for the BA (15-credit) above.

NOTE: Students considering Honours programmes must meet with the Music Student Adviser as soon as possible in their programme, 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.

F. Cooperative Degree Programmes with the University of King’s College

The following degree programmes are offered in cooperation with the University of King’s College; curriculum and registration details available from the Office of the Registrar, King’s College Bachelor of Music with Foundation Year, Bachelor of Journalism with Music History Option.

III. Class Descriptions

NOTE: Not all classes are offered every year. Please consult the current timetable to determine current offerings.

MUSC 1001.03: Materials of Music.
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: the phenomena 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. Ever
FORMAT: Lecture 2 hours, lab

MUSC 1002.03: Introductory Music Theory.
A continuation of MUSC 1001.03 for foundational students and non-majors. Rhythm and phrase structure, "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) chordings, elementary diatonic harmony: preceding 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. Ever
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 late nineteenth century. We will consider: music and image; music and the
MUSC 1070X/Y.03: Foundational Keyboard Proficiency.
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 non-major Music Foundational Classes Programme
CO-REQUISITE: MUSC 1001.03, MUSC 1002.03, MUSC 1071X/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 musical theatre production experience is required.NOTE: Successful completion of Conservatory Theory Grades III-V does not guarantee exemption from this class.
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: Foundational Applied Skills.
For students in the Foundational Classes Programme. 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 Skills 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 1270X/Y.03: Aural Perception I.
A study of music in Western Civilization to 1600, including style, cultural contexts, and non-Western influences. SIGNATURE REQUIRED
PREREQUISITE: Permission of Department; MUSC 1001.03/1002.03 or equivalent
FORMAT: Lab 2 hours
INSTRUCTOR(S): D. Bradshaw, G. Eaves
NOTE: 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 1350.03: History of Music I.
A study of music in Western Civilization to 1600, including style, cultural contexts, and non-Western influences. SIGNATURE REQUIRED
PREREQUISITE: Permission of the instructor
FORMAT: Lecture 3 hours
INSTRUCTOR(S): D. Bradshaw
NOTE: 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 1351.03: History of Music II.
A study of the Baroque period (c. 1600-1750) with an emphasis on the development of style and performance practices. SIGNATURE REQUIRED
PREREQUISITE: MUSC 1350.03 or equivalent
FORMAT: Lecture 3 hours
INSTRUCTOR(S): J. Warwick
NOTE: 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 2007X/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, clinching, and arranging. SIGNATURE REQUIRED
PREREQUISITE: MUSC 2007.06
FORMAT: Lab/Lecture, 2 hours
INSTRUCTOR(S): D. Reach
NOTE: 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 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 effect, music as subject, and music in popular film. The focus is on feature-length films, but some animations and experimental films will be included. INSTRUCTOR(S): D. Schroeder
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. INSTRUCTOR(S): D. Schroeder
FORMAT: Lab/Screening/Lecture, 4 hours
EXCLUSION: MUSC 2015X/Y.06

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. INSTRUCTOR(S): S. Bear
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. INSTRUCTOR(S): S. Bear
FORMAT: Lecture/discussion, 3 hours

MUSC 2020.03: The History of Jazz.
This course is a survey of the origins and development of jazz, concentrating on the historical and social contexts of music and musicians. No work is required, students will be expected to listen closely to selected music and contribute to class discussions. The films included may be early or recent, from the United States or abroad. The focus is on feature-length films, but some animations and experimental films will be included. INSTRUCTOR(S): S. Bear
FORMAT: Lecture/discussion, 3 hours
EXCLUSION: MUSC 2015X/Y.06

MUSC 2000-level Applied Skills.
Individual studio instruction. May be taken as elective class subject to audition and available space. Please note that all applied skills classes require an audition. Please contact the Department for audition dates or visit website http://music.dal.ca. Auxilliary fees apply. Co-requisite ensemble participation is required.
• MUSC 2101X/Y.06: Voice I
• MUSC 2102X/Y.06: Guitar I
• MUSC 2103X/Y.06: Piano I
• MUSC 2104X/Y.06: Organ II
• MUSC 2105X/Y.06: Violin I
• MUSC 2106X/Y.06: Viola II
• MUSC 2107X/Y.06: Cello II
• MUSC 2108X/Y.06: Double Bass II

Music 185
• MUSC 2108X/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
INSTRUCTOR(S): J. Bain
NOTE: 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 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 programme.
NOTE: 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
INSTRUCTOR(S): M. Swanston
PREREQUISITE: Permission of the instructor
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 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.
NOTE: 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
INSTRUCTOR(S): J. Bain
PREREQUISITE: MUSC 2200X/Y.06
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 2202.03: Music Theory IV.
The study of chromatic harmony and complex modulation. Exercises may include some texture other than four-part chorale style, and analysis includes forms such as binary, ternary, sonata, rondo and variation.
NOTE: 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
INSTRUCTOR(S): J. Bain
PREREQUISITE: MUSC 2201X/Y.03
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 2270X/Y.03: Aural Perception II.
This class provides further practice in melodic and harmonic dictation and sight-singing; it correlates with MUSC 2201X/Y.03 and 2202X. A special component deals with solmization skills in sight 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.

MUSC 2271X/Y.03: Keyboard Skills II.
A continuation of MUSC 2271X/Y.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: Lab-2 hours
PREREQUISITE: MUSC 2270X/Y.03, 2272X/Y.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.

MUSC 2275X/Y.03: Keyboard Skills III.
A continuation of MUSC 2275X/Y.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: Lab-2 hours
PREREQUISITE: MUSC 2274X/Y.03, 2275X/Y.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.

MUSC 2280.03: History of Music III.
A detailed study of the history, literature and cultural contexts of music from C. 1570 to 1680.
NOTE: 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: Permission of the instructor
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 2290X/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
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 3000-level Applied Skills.
Individual studio instruction. May be taken as elective class subject to audition and available space. Please note that all applied skills 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 3100X/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: Cello III
• MUSC 3107X/Y.06: Double Bass III
• MUSC 3108X/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 3100X/Y.06: Percussion III
• MUSC 3119X/06: Lute III
• MUSC 3120X/Y.06: Harpsichord III
• MUSC 3121X/Y.06: Recorder III

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.
FORMAT: Lecture and lab
PREREQUISITE: Permission of the instructor
EXCLUSION: MUSC 2060.03/2660.03

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.
FORMAT: Lab and seminar, 3 hours
PREREQUISITE: MUSC 3060.03, 3660.03, or its equivalent; permission of the instructor
EXCLUSION: MUSC 2661.03, 2661.03

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 2022.03, 1353.03, 1351.03, 2355.03, 2351.03
CROSS-LISTING: GWST 2066.03

MUSC 3103X/Y.06: Jazz Dance II (Spring Session Only).
The class is the continued practical exploration into the Luigi Dance Technique at the intermediate level. Emphasis is on the development of personal expression through the medium of dance. Students are expected 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 2310X/Y.06 or approval of instructor (interview)
CROSS-LISTING: THEA 3302X/Y.06 Jazz Dance II

MUSC 3160.03: Conducting.
A practical introduction to the basic techniques of conducting.
SIGNATURE REQUIRED
INSTRUCTOR(S): J. Dekler
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 a 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 basic pedagogies of the Italian, German, French and English schools of singing. Spectrogram analysis of vowel and glottal formant and fiberoptic video analysis of laryngeal function will be studied as well. Students will apply the techniques studied through a supervised practicum.
SIGNATURE REQUIRED
INSTRUCTOR(S): G. Servant
FORMAT: Lecture
PREREQUISITE: MUSC 2201.06 and permission of the instructor
CROSS-REQUISITE: MUSC 3106.06 or 4105.06

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.
SIGNATURE REQUIRED
INSTRUCTOR(S): M. Swanston
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 3193X/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 3 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: Lecture

MUSC 3281.03: Form and Analysis I.
Analytical study of the historical context of selected late-eighteenth and nineteenth century compositions in various styles and idioms.
SIGNATURE REQUIRED
INSTRUCTOR(S): J. Bain
FORMAT: Lecture 2 hours
PREREQUISITE: MUSC 2261X/Y.06, 2503X/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
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 Lassus, Palestrina, Victoria and others. SIGNATURE REQUIRED
INSTRUCTOR(S): J. Blais
FORMAT: Lecture 3 hours
PREREQUISITE: MUSC 2202.03
EXCLUSION: MUSC 2202.03

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 2202.03

MUSC 3285.03: Late 19th century chromaticism.
A seminar exploring chromaticism as it was practiced in the late 19th century. Through selected readings, we will examine various independent chords, progressions and sequences, the interaction of different "scalar" collections and chromaticism, the changing nature of harmonic function, and the role of transformation and large-scale key relationships. FORMAT: Seminar
PREREQUISITE: MUSC 2202 or permission of the instructor

MUSC 3286X/Y.06: Modern Guitar.
A course for students with a serious interest in preparing for studio guitar playing. The course includes jazz, folk, rock and accompanying idioms. Students will receive instruction and participate in ensemble playing; improvisation, score reading, chordology, 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. Racch
FORMAT: Lab 2 hours
PREREQUISITE: MUSC 1102, MUSC 2102
EXCLUSION: MUSC 2088

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 1500 and MU/SC 151, or permission of the instructor
EXCLUSION: MUSC 2041.06 and MUSC 3111.06

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.
INSTRUCTOR(S): D. Overton
FORMAT: Lecture 3 hours
CROSS-LISTING: THEA 3010X/Y.06

MUSC 3351.03: Music Since 1945.
The 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

MUSC 3353.03: Chamber Music Literature.
A study in depth of chamber music from the Eighteenth century to the contemporary schools. INSTRUCTOR(S): P. Djokic
FORMAT: Lecture 3 hours
PREREQUISITE: MUSC 2511.03 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. Stoeldt
FORMAT: Lecture 3 hours
PREREQUISITE: MUSC 2511.03 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.
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 3 hours; individual tutorial
PREREQUISITE: MUSC 1500, 2502, 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 classrooms: 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 pianos for the school setting; functional instruments in the classrooms including recorder and guitar.
FORMAT: Lecture 3 hours; lab 2 hours plus field observation
PREREQUISITE: Permission of the instructor and an interview with the Class Coordinator

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 400-level Applied Skills. 
Individual studio instruction. May be taken as elective class subject to audition and available space. Please note that all applied skills 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 4100X/Y:06: Voice IV
- MUSC 4110X/Y:06: Violin IV
- MUSC 4120X/Y:06: Viola IV
- MUSC 4130X/Y:06: Cello IV
- MUSC 4140X/Y:06: Double Bass IV
- MUSC 4150X/Y:06: Flute IV
- MUSC 4160X/Y:06: Oboe IV
- MUSC 4170X/Y:06: Clarinet IV
- MUSC 4180X/Y:06: Bassoon IV
- MUSC 4190X/Y:06: Saxophone IV
- MUSC 4210X/Y:06: French Horn IV
- MUSC 4220X/Y:06: Trumpet IV
- MUSC 4230X/Y:06: Trombone IV
- MUSC 4240X/Y:06: Tuba IV
- MUSC 4250X/Y:06: Percussion IV
- MUSC 4260X/Y:06: Lute IV
- MUSC 4270X/Y:06: Harpsichord IV
- MUSC 4280X/Y:06: Recorder IV

NOTE: 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 4150X/Y.06: Advanced Applied Skill. 
By special permission of the Department a student may enrol in a fifth year of an applied skill, subject to enrolment quotas and budget. 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 4160X/Y.03: Applied Skills (Instruction). 
Students in the fourth year of the Bachelor of Music Concentration in Performance (Contemporary Musics) enrol in this class, consisting of thirteen bi-weekly one-hour studio lessons plus repertoire class as ensemble as appropriate to their particular Applied Skills 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 4161X/Y.03: Applied Skills (Contemporary Musics). 
Students in the fourth year of the Bachelor of Music Concentration in Performance (Contemporary Musics) enrol in this class, consisting of thirteen bi-weekly one-hour studio lessons plus repertoire class as ensemble as appropriate to their particular Applied Skills 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.

PREREQUISITE: 3000-level applied skills 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 attitude 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 signal 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

MUSC 4191X/Y.03: Area Graduation Requirement (Performance: Recital).
For fourth-year students in the BMus Programme. 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 4192X/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.

MUSC 4210X/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.

MUSC 4270X/Y.03: Advanced Aural Perception.
For fourth-year students in the Bachelor of Music Programme, or for students with equivalent prerequisites. Building on imagery and
MUSC 4386.03: Special Studies. 
Individually directed research and writing under the supervision of an appropriate member of the Department. 
SIGNATURE REQUIRED; 
PREREQUISITE: MUSC 2590.03; 2591.03; and 3591.03 
MUSC 4369.03: Special Studies. 
See class description under MUSC 4368.03. 
MUSC 4399X/Y.03: Graduation Requirement (History and Literature - Thesis). 
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively. 
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 4451.03: School Band Music. 
Pedagogical aspects of band instruction in the High School: conducting, literature, arranging, programme management; field observation. Practical experience will be gained in university and community settings. 
FORMAT: Lecture 2 hours, field observation and practice experience 
PREREQUISITE: Permission of the Department and MUSC 2480X/Y.03 
MUSC 4461X/Y.03: School String Instruments. 
A practical introduction in group lessons to the instruments of the string orchestra. A survey of literature and string methods for schools and purchase and maintenance of string instruments; observations in the school setting. This class normally is restricted to students majoring in a string instrument. 
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 
MUSC 4482.03: Choral Arranging. 
Arranging for school choral 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. 
SIGNATURE REQUIRED; 
PREREQUISITE: MUSC 2202.03, permission of the Department, and an interview with the instructor 
MUSC 4499X/Y.03: Graduation Requirement, Instruction. 
Students in the BMus Concentration Instruction must receive Departmental Approval to fulfill 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 4505.06: Advanced Applied Studies. 
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. 
FORMAT: Individual Instruction and Performance Class 
PREREQUISITE: MUSC 45XX or MUSC 47XX and permission of the instructor, subject to budget and current studio capacity 
EXCLUSION: MUSC 4510
MUSC 4599X/Y.03: Graduation Requirement, Self-Directed.
Students in the Self-Directed BMus General degree programme must receive Departmental approval to fulfill 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 or lecture. The written project(s) and lecture must demonstrate an in-depth study of theoretical, practical, historical and/or philosophical aspects of music; library and/or 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.

MUSC 4670X/Y.03: Electroacoustic Studio.
Supervised creative work and performance activity in the Electroacoustic Studio, using extended sequencing and synthesis techniques; object-oriented programming; alternative controllers; random access audio editing and assembly; multimedia; cross-disciplinary and experimental strategies.

NOTE: 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 and individual lab
PREREQUISITE: MUSC 3660.03, 3661.03 and permission of instructor

MUSC 4699X/Y.03: Graduation Requirement (Contemporary Musics).
Students in the BMus Concentration in Contemporary Musics will fulfill their graduation requirements by giving a graduation performance or public presentation of 60 to 75 minutes duration appropriate to their particular focus within the concentration, as determined in consultation with their principal advisor. Normal preference will be given to innovative, mixed media, and collaborative performances or presentations.

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

Ensembles
Participation in both large and small ensembles is required of all students whose major field of study is music in each of the years of the degree programmes. Details of specific participation requirements are available in the Department of Music.

MUSIC 4599X/Y.03: Graduation Requirement, Self-Directed.

Ensembles
Participation in both large and small ensembles is required of all students whose major field of study is music in each of the years of the degree programmes. Details of specific participation requirements are available in the Department of Music.

Following is a list of the ensembles sponsored by the Department of Music:

- Dalhousie Concert Choir
- Dalhousie Chamber Choir
- Dalhousie Symphonic Wind Ensemble (G. Adams)
- Dalhousie Chamber Orchestra (R. Sutherby)
- Dalhousie Jazz Ensemble (J. Faraday)
- Dalhousie Percussion Ensemble (J. Stern)
- Dalhousie Guitar Ensemble (B. Satherby)
- Small Ensembles (staff coaches)
- Accompanying (staff coaches)
- Dalhousie Orchestra (by audition)
- Voice Chamber Ensemble (M. Swanston)

Philosophy

Location: 6105 University Avenue, Room 1142
Telephone: (902) 494-3810
Fax: (902) 494-3518
Email dalphil@dal.ca
Website: philosophy.dal.ca

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

Chair
Brett, N.C.

Undergraduate Advisor
Vinci, T.

Honours Advisor
MacIntosh, D.

Professors Emeriti
Burns, S.A.M., BA (Acadia), MA (Alberta), PhD (London)
Campbell, R.M., BA (Harvard), PhD (Cornell) (Munro Chair in Philosophy)
Campbell, R.M., BA (Harvard), PhD (Cornell) (Munro Chair in Philosophy)

Professors
Baril, F., BA (McGill), MA, PhD (Western) (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 (Alberta), PhD (Toronto)
Scholich, P.K., PhD (Waterloo)
Sheaves, S.E., BA (York), PhD (St. Andrews) (Cross-appointed with the Faculty of Medicine), (Canada Research Chair in Bioethics and Philosophy)
Thomson, C.T., PhD (British Columbia)

Associate Professors
Abramson, D., BA (Toronto), MSc, PhD (India) (Cross-appointed with the Faculty of Medicine), (Canada Research Chair in Bioethics and Philosophy)
Adams, N., BA (McGill), MA (British Columbia), PhD (Cambridge)

Assistant Professors
Abramson, D., BA (Toronto), MSc, PhD (India) (Cross-appointed with the Faculty of Medicine), (Canada Research Chair in Bioethics and Philosophy)
Adams, N., BA (McGill), MA (British Columbia), PhD (Cambridge)

Adjunct Professors
Barnes, S.A.M., BA (Ottawa), MA (Alberta), PhD (London)
Maitzen, S.A., BA (Toronto), MA, PhD (Cornell)
Watkins, M., BSc (McGill), PhD (Cambridge)

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 1001.06) 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, but for the 1000 level in philosophy (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 2000 level and beyond usually have further requirements. See the class descriptions below.

II. Degree Programmes

A. BA in Philosophy

• At least one half credit from the following:
  • Philosophy (logic) half-credit: 2130.03, 2660.03, 3160.03, 3140.03, 3165.03,
  • Philosophy (history) half-credit: 2350.03, 2370.03, 2610.03, 2620.03, 3630.03,
  • At least one credit from the following:
  • Philosophy (logic) half-credit: 2130.03, 2660.03, 3060.03, 3140.03, 3165.03,
  • Philosophy (history) half-credit: 2350.03, 2370.03, 2610.03, 2620.03, 3630.03,
  • At least one half credit from the following:
  • Philosophy (logic) half-credit: 2130.03, 2660.03, 3060.03, 3140.03, 3165.03,
  • Philosophy (history) half-credit: 2350.03, 2370.03, 2610.03, 2620.03, 3630.03,

B. BA with Honours in Philosophy

See BA Concentrated Honours under Degree Requirements.

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,

Select at least one credit from the following:

• Philosophy (history) half-credit: 2350.03, 2370.03, 2610.03, 2620.03, 3630.03,
  • 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.

Hons. 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 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.

Select at least one half credit from the following:

• Philosophy (logic) half-credit: 2130.03, 2660.03, 3060.03, 3140.03, 3160.03,
  • Philosophy (history) half-credit: 2350.03, 2370.03, 2610.03, 2620.03, 3630.03,
  • At least one half credit from the following:
  • Philosophy (logic) half-credit: 2130.03, 2660.03, 3060.03, 3140.03, 3160.03,

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, 3160.03,
  • Philosophy (history) half-credit: 2350.03, 2370.03, 2610.03, 2620.03, 3630.03,
  • 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 3101.06).

D. 20-credit BA with Double Major

See BA Double 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, 3160.03, 3140.03, 3165.03,
  • Philosophy (history) half-credit: 2350.03, 2370.03, 2610.03, 2620.03, 3630.03,
  • 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 or 3101.03)

E. 15-credit BA with Concentration in Philosophy

See BA (15-credit) under Degree Requirements.

Departmental Requirements

At least 4 and no more than 6 credits in Philosophy beyond the 2000 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, 3160.03,
  • Philosophy (history) half-credit: 2350.03, 2370.03, 2610.03, 2620.03, 3630.03,
  • 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.

Select at least one half credit from the following:

• Philosophy (logic) half-credit: 2130.03, 2660.03, 3060.03, 3140.03, 3160.03,
  • Philosophy (history) half-credit: 2350.03, 2370.03, 2610.03, 2620.03, 3630.03,
  • At least two credits at or above the 3000 level including at least a half-credit in epistemology (3051.03) and a half-credit in ethics (3105.03 or 3101.03).
At least two full credits at or above the third year level, including at least a half-credit in epistemology (305.03) or a half-credit in ethics (310.03).

III. Class Descriptions

NOTE: Many classes are listed as being exclusionary to one another. This means that students may not take both classes as designated.

PHIL 1000/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 one especially suits 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 2040/2050.
PHIL 1010/Y.06: Introduction to Philosophy.
See description for PHIL 1000/Y.06. This class does satisfy the Faculty Writing Requirement. Since PHIL 1010/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 1000/1001, PHIL 2401/2050.
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 will involve both lecture and discussion. Assignments include essays and oral presentations. It will serve as one-half of the writing requirement for first year students. Available to DSIP students only.
INSTRUCTOR(S): S. Sherwin
FORMAT: Lecture/discussion
EXCLUSION: PHIL 2600.03, PHIL 2670.03
PHIL 1080.03: Reasoning Skills.
A systematic introduction to the operations of formal deductive logic, with 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
PHIL 2020.03: Legal Thinking.
Should the state prevent people from ending their lives to escape the pain of terminal illness? Should we allow 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. 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. Shereske
FORMAT: Lecture/discussion
EXCLUSION: PHIL 1100/1101
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 1000/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 1000/Y.06 and PHIL 1010/Y.06
PHIL 2070/Y.06: Foundations of Political Thought II: Rights, Rationality, and Democracy.
See class description for POL 2401/Y.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 illuminate 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. Gladbrook
FORMAT: Lecture/discussion
EXCLUSION: PHIL 2800/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 1113/Y.06, PHIL 1112.03 and PHIL 2110/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. Sherwin, S. Campbell, L. Maynell
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.
Monothestic 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, a single God's existence? Which is the best evidence for and against? What bearing does God have on human morality?
INSTRUCTOR(S): Staff
FORMAT: Lecture/discussion
CROSS-LISTING: COMB 2205.03
EXCLUSION: PHIL 2200/Y.06
PHIL 2210.03: Crisis and Consent: Foundations of Political Thought: 1651-1776.
See class description for POLI 2210.01, in the Political Science section of this Calendar.
INSTRUCTOR(S): K. Ferlbeck
FORMAT: Lecture/tutorial
PREREQUISITE: No previous knowledge of computing or of philosophy is assumed. Some familiarity with computers is an advantage.

PHIL 2220.03: Revolution and Rationality: Foundations of Political Thought: 1789-1900.
See class description for POLI 2230.01, in the Political Science section of this Calendar.
INSTRUCTOR(S): T. Vinci
FORMAT: Lecture/tutorial
PREREQUISITE: No previous knowledge of computing or of philosophy is assumed. Some familiarity with computers is an advantage.

PHIL 2240.03: 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.

PHIL 2250.03: 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 2350.03: History of Philosophy: Ancient. The philosophy of Descartes, Spinoza, and Leibniz.
INSTRUCTOR(S): D. Abramson
FORMAT: Lecture/discussion
PREREQUISITE: One previous credit in philosophy or permission of the instructor

PHIL 2361.03: Classical and Early Christian Philosophy. The philosophy of pre-Socratics, Plato, and Aristotle.
INSTRUCTOR(S): T. Vinci
FORMAT: Lecture/tutorial
PREREQUISITE: An introductory class in Philosophy or Political Science is assumed. Some familiarity with computers is an advantage.

PHIL 2370.03: Social and Political Issues in Computer Science. Computers can enable people to do things that our present laws and policies were not formulated to cover (tracking, 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.

PHIL 2380X/Y.06: Medieval Philosophy. See class descriptions for CLAS 2361.03B and CLAS 2362.03, 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 2400.03: 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.

PHIL 2410.03: 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? This course takes a philosophically, 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: COMP 3090.03
CROSS-LISTING: CSCI 3103.03
EXCLUSION: COMP 3380.05

PHIL 2440.03: Revolution and Rationality: Foundations of Political Thought: 1789-1900. Of particular importance will be the moral or ethical obligations which humanity may have towards the natural environment.

PHIL 2450.03: 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 these problems themselves a direct result of using 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/disussion
CROSS-LISTING: INTO 2450.03

PHIL 2460.03: 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? This course takes a philosophically, 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: COMP 3090.03
CROSS-LISTING: CSCI 3103.03
EXCLUSION: COMP 3380.05

PHIL 2470.03: Justice in Global Perspective. "What should we do about the suffering of 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 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): S. Campbell
FORMAT: Lecture/disussion

PHIL 2475.03: Justice in Global Perspective. Can fear be a reasonable fear? Can music be a language?
INSTRUCTOR(S): P. Glazebrook
FORMAT: Lecture/disussion
CROSS-LISTING: INTO 2475.03

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.

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 these problems themselves a direct result of using 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/disussion
CROSS-LISTING: INTO 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 (tracking, 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.

PHIL 2500.03: 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? This course takes a philosophically, 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: COMP 3090.03
CROSS-LISTING: CSCI 3103.03
EXCLUSION: COMP 3380.05

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? This course takes a philosophically, 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: COMP 3090.03

PHIL 2610.03: History of Philosophy: The Rationalists. The philosophy of Descartes, Spinoza, and Leibniz.
INSTRUCTOR(S): S. Campbell, T. Vinci
FORMAT: Lecture/disussion
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 discussions 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): P.K. Schotch
FORMAT: Lecture/discussion
EXCLUSION: PHIL 2800X/Y.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 death as for ourselves and find self-deception in our ways of avoiding choice. 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, Nietzsche, Ortega y Gasset, Sartre, and Camus.
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 as they are to lead lives that are fulfilling.
INSTRUCTOR(S): G. Scherksoske
FORMAT: Lecture/discussion
PREREQUISITE: Students must have completed their University Writing Requirement and one Philosophy course.

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 values 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 2805.03.
INSTRUCTOR(S): S. Sherwin
FORMAT: Lecture/discussion
EXCLUSION: PHIL 2805.07, 2805.06

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): S. Sherwin
FORMAT: Lecture/discussion
EXCLUSION: PHIL 2805.07, 2805.06

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 are questions about our knowledge of ourselves and other people.
INSTRUCTOR(S): M. Hymans, D. MacIntosh, 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 3050.03

PHIL 3105.03: Ethics.
A systematic study of the foundation of morality, including readings from Kant, Foundations of the Metaphysics of Morals and Hume, A Treatise of Human Nature.
INSTRUCTOR(S): N. Brett, D. MacIntosh, G. Scherksoske
FORMAT: Lecture/discussion
PREREQUISITE: Two previous credits in philosophy or permission of the instructor
CROSS-LISTING: PHIL 5105.03
EXCLUSION: PHIL 3050.03

PHIL 3110.03: History of Ethics: Plato to Epicurus.
In this class we will carefully read a number of seminal works in the history of Western Moral Philosophy covering Plato, Aristotle, Stoicism and Epicureanism.
INSTRUCTOR(S): G. Scherksoske, 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. Scherksoske, D. MacIntosh
FORMAT: Seminar with class discussion
PREREQUISITE: Two previous credits in philosophy

PHIL 3140.03: Logic: Logical Theory I.
An introduction to logic, 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.
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, or permission of the instructor
CROSS-LISTING: PHIL 3211.03
PHIL 3200.03: 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 3200.03
PHIL 3440.03: History of Philosophy: 19th-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): T. Vinci
FORMAT: Lecture/discussion
PREREQUISITE: PHIL 2610.03 or 2620.03 or permission of the instructor
CROSS-LISTING: PHIL 5630.03
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, Amele Rorty and Roland De Souza 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 psychos-evolutionary approaches; emotion and animal cognition; 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 5450.03
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 3455.03
PHIL 3470.03: Human Rights: Philosophical Issues.
See class description for POLI 3470.03 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 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.
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): T. Vinci
FORMAT: Lecture/discussion
PREREQUISITE: PHIL 2603.03 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, Forrester, Darwins, Freud, Wolfenstein, Freud). 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 2603.03 or PHIL 2620.03
CROSS-LISTING: PHIL 5635.03
PHIL 3640.03: History of Philosophy: Twentieth-Century Philosophy.
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): D. Macintosh
FORMAT: Lecture/discussion
PREREQUISITE: PHIL 2603.03 or PHIL 2620.03
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): M. Hymers, T. Vinci
FORMAT: Lecture/discussion
PREREQUISITE: PHIL 4100.03, 4200.03 or permission of the instructor
CROSS-LISTING: PHIL 5640.03

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 Kenny 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 5650.03

PHIL 3850.03: 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: At least two previous credits in philosophy, including PHIL 2000.06 or PHIL 2100.06 or PHIL 2110.06 or PHIL 2610.03 or PHIL 2620.03
CROSS-LISTING: PHIL 5850.03

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 departmental 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, J. Abraham
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): M. Hymers
FORMAT: Seminar
PREREQUISITE: At least two previous credits in philosophy or permission of the instructor
CROSS-LISTING: PHIL 5190.03

PHIL 4191.03: Topics in the History of Philosophy II.

In this seminar class, students focus on a particular topic in Modern Philosophy (e.g., the work of Descartes or Spinoza) and investigate it in detail. When the class is offered, the topic is assigned by the Department at the end of the preceding academic year and is then posted at the Department and in the Faculty’s timetable on the Web.

INSTRUCTOR(S): Staff
FORMAT: Seminar
PREREQUISITE: At least two previous credits in philosophy or permission of the instructor
CROSS-LISTING: PHIL 5191.03

PHIL 4192.03: Topics in the History of Philosophy III.

In this seminar class, students focus on a particular topic in Modern Philosophy (e.g., the work of Locke or Hume) and investigate it in detail.
PHIL 4215.03: Contemporary Liberalism and Democracy.

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): S. Burn, N. Brett, P. Glazebrook, G. Scherkoske
FORMAT: Seminar
PREREQUISITE: At least two previous credits in philosophy or permission of the instructor
CROSS-LISTING: PHIL 5220.03

PHIL 4400.03: Topics in Feminist Philosophy.

In this seminar class, students focus on a particular topic in Feminist 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): S. Sherwin
FORMAT: Seminar
PREREQUISITE: At least two previous credits in philosophy or permission of the instructor
CROSS-LISTING: PHIL 5855.03

PHIL 4401.03: 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): M. Hymers
FORMAT: Seminar
PREREQUISITE: At least two previous credits in philosophy or permission of the instructor
CROSS-LISTING: PHIL 5680.03

PHIL 4450.03: Topics in the Philosophy of Social Choice Theory.

A socio-economic theory 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. Schets
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 4501.03: 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): M. Hymers
FORMAT: Seminar
PREREQUISITE: At least two previous credits in philosophy or permission of the instructor
CROSS-LISTING: PHIL 5500.03

PHIL 4801.03: 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): S. Sherwin
FORMAT: Seminar
PREREQUISITE: PHIL 2800.06 or 2805.03 AND 2810.03 or permission of the instructor
CROSS-LISTING: PHIL 5760.03, BOTT 5760.03

PHIL 4855.03: 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

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 Greek political philosophers concerned themselves with creating a good society, and balancing justice with order. Today Political Scientists still study these philosophers’ concerns as well, the differences between their system of government and others. Beyond this, Political Science is an especially useful preparation for students who wish to pursue careers in teaching, law, public service, or policy making. Dalhousie University’s approach to Political Science is a blend of traditional and modern analysis. The Department offers work in classical political philosophy and modern classes emphasizing government structure and policy making, including domestic public administration and foreign policy. Other classes deal with political behavior 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.

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 programme 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 Programmes

Students concentrating in Political Science may take a 15-credit concentration programme, 20-credit major, or 20-credit honours programme. 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 programme are chosen in consultation with the undergraduate advisor.

A student’s programme 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 programmes tailored to their own particular interests and circumstances. They should, however, seek advice early in their programme 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 40 of this calendar.

In introductory:

• POLI 1010.03, 1015.03, 1020.03, 1025.03, 1030.03, 1035.03, 1100X/Y.06, 1105X/Y.06

Canadian Government and Politics

• POLI 2210.03, 2220.03, 2230.03

Comparative Government and Politics

• POLI 2300X/Y.06

• POLI 3302.03, 3303.03, 3304.03, 3311.03, 3313.03, 3320.03, 3321.03, 3323.03, 3325.03, 3324.03, 3340.03, 3345.03, 3346.03, 3347.03, 3348.03, 3349.03, 3350.03

Political Theory and Methodology

• POLI 2410.03, 2420.03

• POLI 3400.03, 3401.03, 3402.03, 3403.03, 3404.03, 3410.03, 3411.03, 3413.03, 3415.03, 3416.03, 3417.03, 3418.03

• POLI 4475.03, 4480.03, 4490.03

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International Politics and Foreign Policy
- POLI 2320.03, 2330.03, 2340.03
- POLI 3322.03, 3323.03, 3325.03, 3333.03, 3357X/Y.06, 3340.03, 3343.03, 3350.03, 3370X/Y.06, 3374.03, 3375.03, 3377.03, 3381.03, 3383.03, 3387.03, 3389.03, 3391.03, 3392.03, 3396.03
- POLI 4306.03, 4360.03

Reading Classes (with permission of individual instructor)
- POLI 3401X/Y.06, 3602.03, 3603.03

Special Topics (offered occasionally)
- POLI 3181.03, 3820.03
- POLI 3831.03, 3832.03

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 Programme
An honours programme normally consists of a first year class, or two half-credit classes, and not less than five or more than eleven additional classes, or equivalent in full-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 programme 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 exceptions 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 programme in these cases. Students seeking entry to the Honours Programme are advised to see the Honours Advisor in the spring term of their 3rd year.

Core Classes
For purposes of the honours programme the Department has designated a number of second year classes as honour core classes. These core classes represent the political science subfields of Canadian government and policy, 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 2500.03 and POLI 2550.03

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 3402.03 (or equivalent)
- POLI 3405.03

4000 level
- POLI 4402X/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 programme, students must have:
1. A B average in their last ten credits
2. A B- average in a group of four Political Science classes, or equivalent, which must include:
   - Two core classes, or equivalent (which must include POLI 2410.03 and POLI 2420.03)
   - POLI 3402.03 and 3405.03
   - One full credit, or equivalent, at the 3000-level Political Science

Students should consult the Honours Application Form (available from the Registrar) and submit it to the Political Science Honours coordinator.

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 classes that graduate students and correspond to the same core 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.

To gain admittance into the Combined Honours programme, 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 3402.03 (or equivalent) and 3405.03);
- At least two full credits at an advanced level in Political Science (in addition to 3402.03 and 3405.03); and
- POLI 4402X/Y.06

To gain admittance into the Combined Honours programme, with an emphasis upon Political Science, students must have:
- A B- average in a group of four Political Science classes, or equivalent, which must include:
- Two core classes, or equivalent (which must include POLI 2410.03 and POLI 2420.03)
- ONE core class in Political Science (note that the prerequisite for core classes in an introductory class in Political Science);
- POLI 3402.03 (or equivalent) quantitative methods class (approved by the Department) and POLI 3405.03;
- One full credit in Political Science at an advanced level; and
- One other full-credit Political Science class beyond the 1000 level.
C. 20-credit BA with Major in Political Science
The Major programme offers the opportunity for students to design a more focused study within a specific subfield of Political Science. The Major programme 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 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 Programme.

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 1010.05, 1015.03, 1020.03, 1025.03, 1030.03, 1035.03, 1300X/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 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 Programme

Equivalents
- Classes equivalent to POLI 3492 are STAT 1010, SOSC 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 Programme 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.

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 1000X/Y.06, 1100X/Y.06, 1020.03, 1035.03

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 1000X/Y.06, 1100X/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 1000X/Y.06, 1100X/Y.06, 1010.03, 1035.03

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 1000X/Y.06, 1100X/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.06, 1100Y.06, 10100X/03, 10200X/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, the U.S.

FORMAT: Lecture
EXCLUSION: POLI 1100X/Y.06, 1100Y.06, 10100X/03, 10200X/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. 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 1100X/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. 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 has alienated from Ottawa. Nova Scotia wants a better deal on equalization. Aboriginal peoples are pressuring for self-government and the courts say they have a right to 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 “robbed” as one recent FM 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 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 citizens 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 2200X/Y.06

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. Credit will be given only if both are completed consecutively.

FORMAT: Lecture/disussion
PREREQUISITE: Introductory political science class or instructors’ permission

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. This class follows up 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
EXCLUSION: POLI 2420X/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 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
EXCLUSION: POLI 2420X/Y.06

POLI 2520.03: World Politics.
Why do states fight wars? Commit genocide? Sign treaties? Acquire and sell ballistic missiles 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 just a source of controversy? How should Canada relate to Thailand, Kosovo, Rwanda, and/or Iraq? Is the U.S. National Missile Defense programme something we should welcome or fear? Is globalization 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 subject 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 2500 X/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 2500 X/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 without being aware of American cultural influences. The American political scientist has described his country’s “soft power”. This class will consider how Canadians are affected by these and other influences from south of the border, and 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 2510 X/Y 06, 2512 X/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: 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 2400.03/2420.03
CROSS-LISTING: POLI 5220.03

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 5226.03

POLI 3208.03: Canadian Provincial Policies. An analysis of the roles 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 programmes), 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 emphasised 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 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 with 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 political 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
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 cover competing explanations for differences in economic development among Canada's regions with special emphasis on intermittent 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 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 6790.03

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 politics, with a special 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 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 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 2300X/Y.06 or POLI 2520.03 or POLI 2520.06 or instructor's permission
CROSS-LISTING: POLI 5311.03

POLI 3313.03: 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 reforms, 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 5313.03

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 lost apartheid and later post-apartheid transitions, issues of governance and regional conflict as well as more positive trends that towards advancements 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 economic 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

204 Political Science
POLI 3320.03: European Politics. 

The 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 nationalism, immigration politics, and changing state-society relations. 

FORMAT: Seminar 

PREREQUISITE: A class in Political Science or instructor’s permission. 

EXCLUSION: POLI 3323.01/Y.01 

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 procedures. The class examines these important developments in the context of theories of integration. Among topics discussed are: the Common foreign and security policy, the Common agricultural policy, 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 3322.01/Y.01 

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 Treaty of Rome 1957) and the reforms of these treaties in the Merger treaty (1966), the budget treaty (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). Have sweeping changes taken place compared to the original treaties? How many would like to see more reform? FORMAT: Seminar 

PREREQUISITE: POLI 2900.03 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 trans-nationalisation of production and increased capital mobility, as well as the rise in numbers and influence of NGOs and new social movements. Hence, “new” forms of governance emerging out of decentralisation and/or disintegration 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. national, ethnic, gender, cosmopolitan; the growing relevance of regionalisms and the nature of and prospects for democracy and citizenship.
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 CROS-LISTING: POLI 5428.03

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 CROS-LISTING: POLI 5475.03

POLI 3492.03: Political Inquiry: 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 CROS-LISTING: POLI 3492.03 (political science honours students only)

POLI 3493.03: Political Inquiry: 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 CROS-LISTING: POLI 3493.03

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 multiplatform communications. FORMAT: Seminar PREREQUISITE: POLI 2520.03/2530.03 CROS-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 CROS-LISTING: POLI 5531.03

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 CROS-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. It focuses on 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 Breton 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 organizations. 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 programmes and conditionality 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 foreign/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: POLI 2520.03 and POLI 2530.03, 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 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 (Barber 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 ways 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-U.S. 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: Policies 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 dimensions 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.
CROSS-LISTING: POLI 5585.03
POLI 3590.03: 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: POLI 2520.03 or equivalent. Students should feel comfortable with economic theory as well, otherwise by instructor's permission.


This course will take a multi-disciplinary approach to contemporary issues in maritime security. It will examine the political strategic, institutional, and legal bases, and then move to address maritime security from the Canadian perspective.

FORMAT: Lecture/semester
CROSS-LISTING: POLI 5591.03
EXCLUSION: POLI 3590.06

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 permission of instructor.

POLI 3601XY.06: Readings in Political Science.

A full year reading class, taught only by special arrangement between individual students and individual instructors.

NOTE: 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.

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.

CROSS-LISTING: POLI 5603.03

POLI 3810.03: The Political Economy of National Security.

This seminar-format course will explore the traditional and modern relationships between politics and economics in regards to security issues. It will first begin with an introduction that briefly traces the traditional theories that attempt to explain the relationship between economics and security for nation states. Next it will explore the economic bases of military power by examining state wealth, natural resources and strategies like international trade and conquest that help to increase or maintain the material requirements for defense. These topics will then be examined in light of the era of growing economic interdependence between nation states and the new political economies. With the rapid growth of civil societies (NGOs, etc.), regionalism and new markets, the traditional bases of power in the international system have arguably shifted away from the grasp of the nation state. Topics covered will include material resource security (water, energy, mining hot spots (conflict diamonds), etc.). Issues will be studied with examples from new global arms issues, human security, private non-state armies and organized crime.

POLI 4204XY.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 5204XY.06
RESTRICTION: Restricted to Students in their fourth year.

POLI 4228.03: Interest Groups: Function and Management.

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 programmes. 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
POLI 4566.03: Oil, Natural Gas and Government: The Political Economy of Regulation.

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

CROSS-LISTING: POLI 5656.03

RESTRICTION: Restricted to students in their fourth 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 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

CROSS-LISTING: PHIL 4479.03, ECON 4446.03/5446.03, POLI 5479.03

POLI 4650X/Y.06: Honours Essay.

Political Science undergraduates in the Honours programme 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.

INSTRUCTORS: Honours Co-ordinator.

RESTRICTION: Restricted to Political Science Honours students in their final year.
Religion

See “Comparative Religion” entry (page 80).

Russian Studies

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

Chair
Barnstead, J.A.

Undergraduate Advisor
Barnstead, J.A. (494-6951)

Associate Professor
Barnstead, J.A., BA (Oakland), AM (Harvard)

Assistant Professor
Leving, Y., BA, MA, PhD (Hebrew University)

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 humanitarian 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 Russian and English 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 Programme, 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 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 Programmes

Classes in the Russian Studies Department are open to students either (1) as electives in any degree programme; (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 programmes 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 40 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
• 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 Programme

Coordinator
Pereira, N.G.O. (494-6952)

Assistant to the Coordinator
Neklioudova, T. (494-3473)

1. Introduction
The Intensive Russian Programme (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 programme 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 programme 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.

3. Classes at St. Petersburg State University (January to May)
• RUSN 3011.03: Grammar I;
• RUSN 3012.03: Grammar II;
• RUSN 3021.03: Conversation;
• RUSN 3022.03: Translation;
• RUSN 3055.03: 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.
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: 3 Writing Requirement (when taken in combination with RUSN 1020.03)
RUSN 1070.03: Modern Russian Culture and Civilization.
Conducted in English. The culture history of 20th-century Russia.
FORMAT: Writing Requirement (when taken in combination with RUSN 1020.03)
RUSN 2001.06: Intensive Second Year Russian.
The material covered in RUSN 2002 and RUSN 2003 presented in a single semester.
FORMAT: Instruction (drill) 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) PREREQUISITE: C- or higher in RUSN 1000X/Y.06 or permission of instructor
RUSN 2003.03: Intermediate Russian II.
A continuation of RUSN 2002.03.
FORMAT: Instruction (drill) 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 Russian practice 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 discussions 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 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 2020X/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” (1950-1966), concentrating on the development of the main genres and styles of Russian and Soviet cinema and its major directors.
FORMAT: Lecture/discussion
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
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 2340.03
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 (pyley); 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.

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.

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.

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.

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. This class traces the influence of Western ideas on Dostoevsky and his influence on such Western thinkers as Nietzsche and Freud.

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. Tests are read extensively and intensively. Discussion and compositions are based on the assigned readings.

RUSN 3003.03: Advanced Russian II. A continuation of RUSN 3002.03.

RUSN 3011.03: Grammar I. This class is offered in Russian only as part of the Intensive Russian Programme in Russia. Intensive study of the finer points of Russian grammar. Topics include verbs of motion, aspect, impersonal constructions, government and agreement, and other themes. EXCLUSION: RUSN 3011.06

RUSN 3012.03: Grammar II. This class is offered in Russian only as part of the Intensive Russian Programme in Russia. Continuation of RUSN 3011.03.

RUSN 3029.03: Conversation. Conducted in English. An emphasis on conversational skills and vocabulary building.

RUSN 3030.03: Conversation. 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.

RUSN 3031.03: Conversation. Conducted in Russian only as part of the Intensive Russian Programme in Russia. Systematic development of conversational ability on everyday themes: transport, city services, theatre, sport, shopping, the library, the educational system, the structure of the government, etc.

RUSN 3032.03: Translation. Conducted in Russian only as part of the Intensive Russian Programme in Russia. Work on translation of literary, business and journalistic texts.

RUSN 3035.03: Literature: Reading and Analysis. Conducted in Russian only as part of the Intensive Russian Programme in Russia. Reading and analysis of literary texts.

RUSN 3090.03: Russian Society Today. 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.

RUSN 3092.03: Russian Topics. Topics to be studied and researched will vary from year to year. May include the sources of Bolshevik/Leninism, the doctrine of peaceful coexistence, the position of national minorities, the role of literature (official and samizdat) and the concept of Personality, Khrushchev's "Thaw", Brezhnev's "Glasnost", and Yeltsin.

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 (Sukharev), and neo-Slavophilism (Solzhenitsyn).

RUSN 3099.03: Solzhenitsyn Seminar. Alexander I Solzhenitsyn is one of the most controversial and influential Russian writers of the twentieth century. He has spanned the entire Soviet period and even now his creative output continues unabated. Solzhenitsyn's books are an unique blend of literary imagination, philosophical reflections, memoirs and witness-bearing, historical perception 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.

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RUSN 3099.03: Solzhenitsyn Seminar. Alexander I Solzhenitsyn is one of the most controversial and influential Russian writers of the twentieth century. He has spanned the entire Soviet period and even now his creative output continues unabated. Solzhenitsyn's books are an unique blend of literary imagination, philosophical reflections, memoirs and witness-bearing, historical perception 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.
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, *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 2103.03
EXCLUSION: RUSN 3108.03

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, *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, Solzhenitsyn, Chukovsky, Bunin, Nabokov, Krzhizhanovsky, Bulgakov, Babel, Zoshchenko, Khruhn, Eppel, Dovlatov, Polevin, and Serebrennikov.

FORMAT: Lecture/discussion

RUSN 3520.03: Chekhov and Turgenev. Conducted in English. Close analysis and discussion of the major works of Turgenev and Chekhov, sensitive portrayors of socio-political and psychological issues of the second half of the nineteenth century in Russia, and Chekhov, unequaled short-story writer and radical innovator in modern theatre.

FORMAT: Lecture/discussion

RUSN 3800.03: 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
PREREQUISITE: RUSN 3800.06 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 4950.03, 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 programme should consult the chair of 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.
PREREQUISITE: Permission of the Instructor
Sociology and Social Anthropology

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 programme 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 behavior 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 programme is the concentration upon Social Anthropology, the area most complementary to Sociology. Social Anthropology, with its emphasis 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 programme 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 Programmes

The Department's BA degree programme 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 programmes 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 programmes 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 40 of this calendar for complete details.

NOTE: Revisions to the requirements for all degree programmes were made in 1994. Students who registered in the honours programme before 1994 should consult the Undergraduate Advisor about changes to their programme to meet new requirements. Majors and honours students who have already taken any one of the previously required classes SOSA 2010.03, SOSA 2240.03, SOSA 2250.03, SOSA 2011.0, are exempted from the 2000 level requirements stated below.

NOTE: Revisions to the requirements for all degree programmes were made in 1994. Students who registered in the honours programme before 1994 should consult the Undergraduate Advisor about changes to their programme to meet new requirements. Majors and honours students who have already taken any one of the previously required classes SOSA 2011.0, 2033.03, 2216.03, 2229.03, 2233.03, SOSA 2211.0, are exempted from the 2000 level requirements stated below.

NOTE: No more than one credit may be obtained for introductory classes from SOSA 1000.06, 1050.06, 1100.06, 1200.06.

1. 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 2011.06 and 2012.06, and those proposing to apply to the honours programme are particularly encouraged to acquire a foundation in both disciplines.

A. Concentrated Honours BA Programme

The Department's honours programmes are designed for students with an interest in, and demonstrated aptitude for, advanced study in either Sociology or Social Anthropology. Admission to these programmes is based solely on academic performance. More specifically, the Department
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social science programmes. Since statistical competence is often required as a component of graduate
advised to take either STAT 1060.03 or SOSA 4002.03: Social Statistics, 
NOTE: Students considering graduate work in Sociology are strongly
beyond the 1000 level are required. 
In total a minimum of nine (9) and a maximum of eleven (11) SOSA credits 
• A minimum of one additional SOSA 4000-level seminar (0.5 credit). 
• SOSA 4500X/Y.06 
• SOSA 4003.03 
• SOSA 4001.03 (recommended) or 4003.03 
4000 level 
• SOSA 4003.03 (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 in Sociology as the primary subject: 
1000 level 
• One of: SOSA 1009.06, 1050.06, 1100.06, 1200.06 or King's Foundation 
Year Programme. 
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 
• SOSA 3405.03 
4000 level 
• SOSA 4000.06 
• SOSA 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 in Social Anthropology as the secondary subject: 
1000 level 
• One of: SOSA 1009.06, 1050.06, 1100.06, 1200.06 or King's Foundation 
Year Programme. 
2000 level 
• SOSA 2002.06 (recommended) or 2001.06 
3000 level 
• SOSA 3400.03 
• SOSA 3402.03 
• SOSA 3405.03 
4000 level 
• SOSA 4003.03 (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 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 1009.06, 1050.06, 1100.06, 1200.06 or King's Foundation 
Year Programme. 
2000 level 
• SOSA 2002.06 (recommended) or 2001.06 
3000 level 
• SOSA 3400.03 
• SOSA 3402.03 
• SOSA 3405.03 
• SOSA 3403.03 
• 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
at least 4 credits must be in the other honours subject. 

Classes required in Combined Honours with Social Anthropology as the secondary subject: 
1000 level 
• One of: SOSA 1009.06, 1050.06, 1100.06, 1200.06 or King's Foundation 
Year Programme. 
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
at least 4 credits must be in SOSA courses.
C. Honours Conversion in Sociology or Social Anthropology
This programme 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 the 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 1000X.06, 1050X.06, 1100X.06, 1200X.06, or King’s Foundation Year Programme.
2000 level
• Either SOSA 2001X.06 or 2002X.06
• At least one additional 2000 level credit.
3000/4000 level
• Total of three full SOSA credits.
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 1000X.06, 1050X.06, 1100X.06, 1200X.06, or King’s Foundation Year Programme.
2000 level
• Either SOSA 2001X.06 or 2002X.06
• At least one additional 2000 level credit.
3000/4000 level
• Total of two full SOSA credits.

F. 20-credit Major in Sociology and Social Anthropology Conversion
This programme 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 1000X.06, 1050X.06, 1100X.06, 1200X.06, or King’s Foundation Year Programme.
2000 level
• Either SOSA 2001X.06 or 2002X.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.

H. Interdisciplinary Studies
The department co-sponsors with other departments in the Faculty to offer two interdisciplinary programmes. Some classes are cross-listed. Students interested in these programmes must take at least one major or combined honours degree, with Sociology and Social Anthropology as a component. Consult the Undergraduate Coordinator for details of the following programmes: Canadian Studies and Women’s Studies. International Development Studies has become a separate academic department. Many SOSA classes remain on the IDS approved list.

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 1000X.06, 1050X.06, 1100X.06, 1200X.06.
3. King’s Foundation Year Programme 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 prerequisites for enrolment in upper level classes in sociology and social anthropology. Students are required to register for one of the scheduled 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.

FORMAT: Writing Requirement, lecture, tutorial meeting

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 people’s 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, law, art, and human rights.
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
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.

NOTE: 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 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 bases 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 relationships with the United States; prospects for the future of English-French relations; centralization, decentralization and the diversity, the role of the cities 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 integrated in an approach which is designed to help students understand why sources of unity and diversity 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: One of SOSA 1000X/Y.06, SOSA 1050X/Y.06, SOSA 1100X/Y.06, SOSA 1200X/Y.06.


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: CWST 2400X/Y.06
EXCLUSION: SOSA 2360X/05.

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 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 areas of social order and human justice.

NOTE: 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, 1005X/Y.06, 1100X/Y.06 or 1200X/Y.06

EXCLUSION: SOSA 2210.05

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, 1005X/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 do families change? 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 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, 1005X/Y.06, 1100X/Y.06 or 1200X/Y.06

CROSS-LISTING: GWST 2800X/Y.06

SOSA 2291X/Y.06: Goblins, Ghosts, Gods, Gurus.

Society 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 common sense? What are magic, witchcraft? What are the relations between belief and action? 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, 1005X/Y.06, 1100X/Y.06 or 1200X/Y.06

EXCLUSION: SOSA 2220.05

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, SOSA 1050X/Y.06, SOSA 1100X/Y.06 or SOSA 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 topic 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, 1005X/Y.06, 1100X/Y.06 or 1200X/Y.06

SOSA 2410X/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, carnalism, the symbolic meaning of eating and food, and vagans 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
SOSA 2501X/Y.06: Sociology of Health and Illness.
This course provides an introduction to the sociology of health, illness, and healing. We will analyze 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 2500/0.03

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 2500/0.03

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 in 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 emerging of a “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, and in particular emphasis being devoted to discuss issues in contemporary political economy.
FORMAT: Lecture
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06
EXCLUSION: SOSA 2500/0.03, 2501/0.06

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 stratification. The context will be the changing global political economy and its consequences for the strategies of different groups (such as nations 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: GWST 3006.03
EXCLUSION: SOSA 2501/0.06, 2502/0.06

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 behaved or acted in one way or another. Sociology has helped to understand Canada in terms of conflicts and cumulative life which has shaped the evolution of society as we know it. The class explores issues, events, discourses 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
EXCLUSION: SOSA 2110X/Y.06

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 bases 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: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 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, COMR 1000/0.6, permission of the instructor
CROSS-LISTING: GWST 3003

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?
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 how culture is formulated 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 conditions of office: official public history, public history (museums, national monuments), “history from below,” and oral history. Cases will be taken from across the globe.
FORMAT: Lecture
PREREQUISITE: SOSA 1000X/Y.06, SOSA 1050X/Y.06, SOSA 1100X/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 normative 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.
FORM: Lecture
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06
EXCLUSION: SOSA 3030X/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.
FORM: Lecture
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06 or IDS 2000X/Y.06

SOSA 3071.03: Human Nature and Anthropology/
Sociology.
Do social anthropology and sociology suffer from "Stepophobia"? 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 fingerprint 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", "Biocentrism", "Darwinian Anthropology", "Darwinian Psychology", and "Darwinian Medicine".
FORM: Lecture
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06 or an introductory class in either Psychology or Biology
EXCLUSION: SOSA 3070X/Y.06

SOSA 3091.03: The Sociology of Culture.
Does culture permeate all aspects of social life or are there specialized social domains which are "cultural"? What is the connection between societies and "cultures" and the "culture" of music or art? The course explores the questions 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 an analysis of the intersection of the fields of sociology and cultural studies.
FORM: 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.
FORM: Lecture
PREREQUISITE: SOSA 1000X, SOSA 1050X, SOSA 1100X, SOSA 1200X, 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.
FORM: 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, conflict, and Marxist theories of conflict. This class is also concerned with conflict in contemporary society, with special reference to patterns of conflict and change in Canada.
FORM: 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.
FORM: 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 are both a social and sociological problem. Social factors in the definition, incidence, etiology, and treatment of mental disorders are examined. Societal trends 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.
FORM: Lecture
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06
EXCLUSION: SOSA 3140X/Y.06

SOSA 3143.03: Health, Illness and the World.
Placing the political economic bases of health and illness in an ethnocritical 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 capitalist and wage labour movement (e.g. HIV, AIDS, SARs? 5) how do market pressures and profit seeking retard 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.
FORM: 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,
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 programmes 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: GWST 3800.03
EXCLUSION: SOSA 2360.03

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 and SOOA 1050X or SOSA 1050Y or SOSA 1100X and SOSA 1100Y or SOSA 1200X and SOSA 1200Y
EXCLUSION: HLTH 4900.03

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 these 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.
FORMAT: Lecture
PREREQUISITE: SOSA 1000X, SOSA 1050X, SOSA 1100X, SOSA 1200X

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 limits of physical attractiveness, stigmatization, prosocial behavior, 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

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 interpretative interfaces between emotion and society. Emphasizing both theoretical and empirical work, some topics covered by this class include: managing emotions and the body, emotion and the body, emotion and gender the political economy of emotions, emotion and the self, the mass media and emotion, and emotional aspects of self presentation. Special attention will be paid to the interrelationships 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, 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
EXCLUSION: NOA 2370.03

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.
FORMAT: Lecture
PREREQUISITE: SOSA 1000X/Y.06, SOSA 1100X/Y.06, SOSA 1200X/Y.06
EXCLUSION: SOSA 2370.03

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. Encapsulating rich resources, Southern Africa has been the heart 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 ethnohistoric 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.
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.

SOSA 3180.03: Issues in the Study of Society. The general topic of an intensive examination of a selected substantive issue within Sociology and/or 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: Lecture PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, SOSA 1100X/Y.06, or SOSA 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 which receives special treatment 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, 1050X/Y.06, 1100X/Y.06 or 1200X/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. FORMAT: Lecture PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06 EXCLUSION: SOSA 3180X/Y.06.

SOSA 3190.03: Social Movements. The general topic of an intensive examination of a selected substantive issue within Sociology and/or 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: 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 across 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 Russia, and more 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 cultural settings 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, SOSA 1100X/Y.06 or 1200X/Y.06 or INTD 2000X/Y.06 EXCLUSION: SOSA 3210X/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 transactional, 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 examines 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 discussed in the course are diaspora, transnationalism, and ethnoscape. 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.

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 those issues across societies and social groups. Exampes may be drawn from social and cultural groups within or outside of Canada. Approved with International Development Studies. FORMAT: Lecture
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 myths, religion and symbols, religion and healing, magic, sorcery, and witchcraft, and how all these phenomena relate to cultural and social change.

**FORMAT:** Lecture

**PREREQUISITE:** One of SOSA 1000X/Y.06, 1050X/Y.06 or 1200X/Y.06

Exclusion: SOSA 2280X/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 thinking, 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

Exclusion: SOSA 2230X/Y.06, 3220X/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 ways in which theologies 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 habitats and identity, the substances we eat and the entertainment 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 we 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 two classes in Gender and Women’s Studies

Cross-listing: GWST 3810.03, NURS 4370.03

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. professionalization, rationalization). The class focuses on how outside pressures modify, and are channelled by, the criminal justice system.

**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 Offences 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.

**FORMAT:** Lecture

**PREREQUISITE:** One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

Exclusion: SOSA 2280X/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.

**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 included. The course topics include: the History of Social 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; or one of the following: GWST 2201X/Y.06, GWST 2202X/Y.06

Exclusion: SOSA 2280X/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. Primarily given to the understanding that humans are social beings, their lives and thoughts are shaped and patterned by their social environments. This approach formed the basis for a new discipline of study eventually named Sociology. This class considers some of the main ideas of the earliest contributers 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 two classes in Gender and Women’s Studies

Exclusion: SOSA 2280X/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
concentrate on the assumptions motivating quantitative analysis. The
This course will focus on the use of quantitative methods in social science
Sciences II.
SOSA 4002.03: Quantitative Analysis for the Social
EXCLUSION: SOSA 3115.03
CROSS-LISTING: SOSA 5001.03
PREREQUISITE: SOSA 3402.03 and fourth year Major or Honours standing in Sociology and/or Social Anthropology CROSS-LISTING: SOSA 5002.03
EXCLUSION: SOSA 3403.03
SOSA 4003.03: Contemporary 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 4005.03: 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 thought?
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 4000/X/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 as 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 4880.00).
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 3401, SOSA 3402 and 3403, or permission of the instructor.
SOSA 4001.03: Quantitative Analysis for the Social Sciences I.
This course 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 bivariate 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 4001.03
EXCLUSION: SOSA 3415.03
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 focus on teaching 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 3402.03
EXCLUSION: SOSA 3403.03
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.
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 3403.03
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.
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.
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 4012.03: Issues in Sociology and Social Anthropology.
This seminar consists of an intensive examination of selected substantive issues 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
PRE-REQUISITES: 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, environment-deterministic ideology that today requires reevaluation with the enormous advances in recent decades in research and theory that have occurred in evolutionary biology, psychology, ethology, behavioural ecology and primates behaviour. Specific topics may include but will not be limited to biophilia, social/cultural constructionism, morality and ethics, religion, aesthetics and literature, evolutionary approaches to feminist theory, and Darwinian approaches to social problems (including ethnocentrism, racism, sexism, and crime).

FORMAT: Seminar
PRE-REQUISITE: SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06, or 1200X/Y.06; and SOSA 3072.03; 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 behaviour 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
PRE-REQUISITE: 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 5072.03

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 sea 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, enviromomentalism, and globalization.

FORMAT: Seminar
PRE-REQUISITE: 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 5072.03

SOSA 4211: Embodying the Body: The Human Body for Anatomists and Humanists.
This course explores form and function of the human body and how these relate to broader issues associated with what it means to be human. The course begins with an anatomical exploration of the body, then expands into contemporary issues about the body and embodiment, including gender identity, beauty, etc. (This course does not fulfill the 400 level elective requirement for Sociology and Social Anthropology honours students.)

FORMAT: Lecture/labs
PRE-REQUISITES: SOSA 2503X/Y or SOSA 3150, permission of the instructor required.
CROSS-LISTING: ANAT 5555

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, consulting, 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 the application of what Michael Schwelb refers to as “sociological mindfulness” to students’ university and life experiences, vocational plans beyond university, and responsibilities as a citizen in democratic society. Each student will be required to prepare two “sociological autobiographies”—one general in scope and one concentrating on how education has affected biz/her life. Work in the second term of the class will revolve around the choosing, planning, execution, and analysis of an experimental 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. Admission to the class will be by application: Students seeking to enroll in this class must be in good academic standing and supply two letters of reference, at least one of which should be from a faculty member in the Department 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 successfully.

FORMAT: Seminar
PRE-REQUISITE: SOSA 2001X/Y.06 or 2002X/Y.06 and fourth-year standing in the SOSA 20-credit major/double major programme.
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 selecting 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 third-year and fourth-year standing in Sociology and Social Anthropology, and/or 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 successfully.

FORMAT: Seminar
PRE-REQUISITE: 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: 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
Spanish

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 programme, 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: SPAN 3010.03, 3020.03 and 3060.03 (or equivalent)

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 websites: https://www.DocuWeb.ca/SpaininCanada/english/educat/dele.html and www.diplomas.cervantes.es

IV. Degree Programmes
In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 40 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 Programme 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
  • SPAN 3060.03 / SPAN 4990.03
  • One credit in Latin American and Spanish Literature
  • Three 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
  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 3010.03 / SPAN 3015.03 / SPAN 3015.03 / SPAN 3020X/Y.06 / SPAN 3020X/Y.06 / SPAN 3020X/Y.06 / 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 programmes 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.

Spanish
students in the same programme 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. Programmes and Classes Abroad

A. The Salamanca Programme at the Universidad de
Salamanca
The Salamanca Programme is a special inter-disciplinary programme of
instruction designed to allow Dalhousie students to undertake both an
intensive study of the Spanish language and classes in Spanish culture. In
order to participate, students must normally have completed SPAN
2020.06 with at least a standing of “B”. The programme 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.
Enquiries and applications should be addressed to the coordinator of the
Programme.

Students must take the equivalent of 3 full classes.

Compulsory classes:
• SPAN 3100.06: Advanced Grammar I (1 credit)
• SPAN 3100.06: Advanced Grammar I (1 credit)
• SPAN 3401.06: Global Communicative Practice (½ credit)
• Students must also select one half class from each of the following two
options

Option 1
• SPAN 3160.03: Spanish Culture (1½ credit)
• SPAN 3163.03: Spanish Literature (1½ credit)
• SPAN 3170.03: History of Contemporary Spain (½ credit)
• SPAN 3175.03: Practice of Written Skills (½ credit)

Option 2
• SPAN 3180.03: History of Spanish Art (½ credit)
• SPAN 3185.03: Spanish for Business (½ credit)
• SPAN 3190.03: Practice of Oral Skills (½ credit)

B. The Cuba Programme at FLACSO/Havana
This programme 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”. The programme takes place during the fall, winter, spring or summer term, and is offered at the Universidad
Autónoma de
Campeche, in the southwest of the Yucatán peninsula, in Mexico. It
was founded in 1548. The cities of Hidalgo and Campeche thrived 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 3110.06: Advanced Grammar II (1 credit)

C. The Mexico Programme at the University of
Campeche
This programme, 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. 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 1548. The city of Hidalgo and Campeche thrived 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 3110.06: Advanced Grammar II (1 credit)

D. The Dominican Republic Programme at the
PUCAIMA University
This three credit programme is available either in the fall or the winter
semesters and takes place at the Pontificia Universidad Católica Madre y
Maestra (PUCAIMA) located in Santiago de los Caballeros, the second
largest city in the country.

The programme is open to any student having successfully completed
second year Spanish with a B average.

Classes taken at the PUCAMAIMA are:
• SPAN 3301.06: Advanced Grammar I (1 credit)
• SPAN 3420.03: Art and Folklore of the Dominican Republic
(½ credit)
• SPAN 3430.03: Dominican History (½ credit)
• SPAN 3430.03: Dominican Culture (½ credit)

E. Advanced Grammar II.
SPAN 3310.06: Advanced Grammar II.

This class is designed for advanced students who have already completed
one such programme abroad which included SPAN 3100.06 (Advanced
Grammar I), and who are now undertaking another, more advanced class.
The skills of Spanish language performance, both active and passive, are
practiced and enhanced through various means of instruction in an
environment of total immersion.

FORMAT: Lecture
PREREQUISITE: SPAN 3100.06

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

SPAN 1020X/Y.06: Beginning Spanish.

For students wishing to achieve proficiency in both spoken and written
Spanish.
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 English

PREREQUISITE: SPAN 2020X/Y.06 or equivalent.

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

SPAN 2020X/Y.06: Intermediate Spanish.
This class continues the work done in SPAN 1010X or SPAN 1020X. Supplementary readings as necessary.

INSTRUCTOR(S): M.J. Giménez
FORMAT: Discussion/conversación/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 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 2020X/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 prerequisites. Open to students in all departments. No knowledge of Spanish necessary.
CROSS-LISTING: HIST 2382.03

SPAN 2070.03: Area Studies in 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 Sumoza dynasty, Nicaragua under the Somoza, 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 2385.03

SPAN 2100.03: La Civilización de España.
This class is an introduction to Spanish literature presenting selected works of prose, poetry and theater from Spain. This is a survey of 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.

INSTRUCTOR(S): J. Kirk
FORMAT: Lecture/discussion, conducted in English
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 athleticism. 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 2120.03: 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.

INSTRUCTOR(S): J. Kirk
FORMAT: Lecture/discussion, conducted in English
CROSS-LISTING: HIST 2385.03

SPAN 2200.03: La Civilización de Hispanoamérica.
The aim of this class is to provide a basic understanding of this vast and historic area. The class examines the history and 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 2020X/Y.06 or the equivalent, or permission of the instructor
CROSS-LISTING: HIST 2385.03

SPAN 2220.03: Contemporary Spanish American Prose (in translation), Part I.
This class surveys short stories and novels of contemporary prose writers throughout Latin America. Included are works by such outstanding experimental writers as Julio Cortazar, Juan Tabo de, Carlos Fuentes, Alud, Carpenter, Garcia 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 reawakening in prose art of global consequence.

INSTRUCTOR(S): J. Kirk
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 2220.03, 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 common language and computer assisted language learning as needed.

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 1960s, 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 2120.03: 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.

INSTRUCTOR(S): J. Kirk
FORMAT: Lecture/discussion, conducted in English
SPAN 2510.03: Introducción a la literatura Hispanoamericana.
Study of illustrative works.
INSTRUCTOR(S): M. J. Giménez
FORMAT: Lecture/discussion, conducted in Spanish
PREREQUISITE: SPAN 3000.03 or equivalent

SPAN 3005.03: Workshop in Advanced Oral Spanish II.
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 English
PREREQUISITE: SPAN 3000.03 or equivalent

SPAN 3015.03: Workshop in Advanced Oral Spanish II.
This class, intended for students who have already participated in any of our programmes 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 enroll in this class.
FORMAT: Discussions/presentations, conducted in Spanish
PREREQUISITE: SPAN 3010.03, participation in our semester programmes 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 2020/X.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, phonetic, 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 and to encourage the creative aspects of the process.
INSTRUCTOR(S): E. Santos-Montero
FORMAT: Lecture/discussion
PREREQUISITE: SPAN 3000.03 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 2020/X.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., pron., para, set/or, use of the subjunctive, etc.
INSTRUCTOR(S): D. Rogers
FORMAT: Lecture/discussion
PREREQUISITE: SPAN 2020/X.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 2020/X.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). Topos 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 modernisms, criollismo and the prose of Quiroga and the Regionalist authors, as well as the more recent inheritors of these traditions. Narada, Valleys, Paz and novels of the “Boom” generation.
FORMAT: Lecture/discussion, conducted in Spanish
PREREQUISITE: SPAN 2020/X.Y.06 or equivalent

SPAN 3225.03: Seminario de literatura de la generación del 98.
This class offers a panoramic study of the evolution of spoken Latin into modern Spanish (no prior knowledge of Latin required). Topos 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 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 3000.03/3001.03

Spanish 231
SPAN 3510.03: Literatura Hispanoamericana contemporánea.
A study of representative works.
PREREQUISITE: SPAN 3010.03/3030.03 or equivalent
FORMAT: Lecture/discussion, conducted in Spanish
INSTRUCTOR(S): M. Giménez
This course is designed for advanced students who have taken the available classes at the 2000 level or equivalent. During this course students will be exposed to a wide range of Latin American literature, including works from the 19th century to the present day. 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 specific areas of Hispanic literature focusing on the specific themes included in novels and essays.

SPAN 3525.03: Historia e historias: la literatura como alternativa.
This course is designed for advanced students who have taken the available classes at the 2000 level or equivalent. During this course students will be exposed to a wide range of Latin American literature, including works from the 19th century to the present day. 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 specific areas of Hispanic literature focusing on the specific themes included in novels and essays.

SPAN 3550.03: Utopia y exilio en la literatura hispanoamericana.
This course 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 Hispanic/Canadian writers. The aim of this course is to introduce students to a specific area of Hispanic literature focusing on two fundamental realities of the 20th century: exile and utopia.

SPAN 3800.03: Seminario de cine español.
This class provides students with the basic elements of cinematic language and helps them to analyze different films to critically assess the Spanish film production from the 1930s to the present day. The works of directors such as Luis Buñuel, Carlos Saura, Victor Erice, Mastro Camus, Pedro Almodóvar, and others are previously viewed by the students and discussed in class.

SPAN 3805.03: 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. Subela, Paul Leguizamón, Tomas Gutiérrez-Alaiz, Fernando Perez and Sara Gomez, among others, will be previously viewed by the students and analyzed in class.
FORMAT: Seminar, conducted in English
PREREQUISITE: THEA 2311 or MSVU fine 2205 or professor's approval.
EXCLUSION: SPAN 3810.03

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. Subela, Paul Leguizamón, Tomas Gutiérrez-Alaiz, Fernando Perez and Sara Gomez, among others, will be previously viewed by the students and analyzed in class.
FORMAT: Seminar, conducted in English
PREREQUISITE: THEA 2311 or MSVU fine 2205 or professor's approval.
EXCLUSION: SPAN 3810.03

SPAN 3900.03: Introducción a los estudios hispánicos.
This course is an introduction to the critical reading of selected literary works. Students will be introduced to some of the trends of critical literary analysis. The course will be taught in a wide variety of works (fragments of novels, short stories, essays, newspaper articles, etc.) leading to discussions in class, and will ultimately awaken the students to the sensitive appreciation of literature. The aim of this course is to awaken the students to an artistic appreciation of literature though an in-depth knowledge of language and its relationship with its most elaborate literary works. This is normally taken in the third or fourth year of study, and is entirely conducted in Spanish.
INSTRUCTOR(S): M. Giménez
FORMAT: Lecture/discussion, conducted in Spanish
PREREQUISITE: SPAN 3010.03/3030.03 or previous participation in one of my programmes abroad, or instructor's permission

SPAN 3905.06: Estudios hispánicos avanzados.
This course is 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 3950.03: 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 from the Spanish Golden Age: Renaissance (16th century), and Baroque (17th century), by studying such authors as Boscán, Carvajal de la Vega, Fray Luis de León, San Juan de la Cruz, Góngora, Quevedo, and San Juanín 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 most important periods in Spanish literature. This course is entirely conducted in Spanish.
INSTRUCTOR(S): M. Giménez
FORMAT: Lecture/discussion, conducted in Spanish
PREREQUISITE: SPAN 3010.03/3030.03 or previous participation in one of my programmes abroad, 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) 494-4899
Website: theatre.dal.ca

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

Chair
Stackhouse, S. (494-2234)

Undergraduate Advisor
Please consult department (494-2233)

Professors
Overton, D.R., BA, MA (L'ec), PhD (Calif)
Perlin, P., MA, Dip. Scenography (Prague)

Associate Professors
Barker, R., BA (King's), MA (Dal), PhD (Birmingham)
Cortese, J., BA, MA (Dalhousie), PhD (Toronto)
Sorge, L., BA (King's), MA (NYU)
Stackhouse, S., BA (Dal), Dip. (NTSC), Adv. Dip. (CSID)

Assistant Professors
McClurel, 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., BEd (MBU), DCS (Dal), MSc (Manitoba)

Special Instructors
MacLennan, B., BA (Dal)
Raff, M. Dipl. (Borland)
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 programmes that lead to a university degree: an Honours or Combined Honours BA (4 years), a BA with a Major (4 years), a General BA (3 years).

2. You can enrol in a Diploma programme 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 enrol in one class, from a special group, as part-time or extension student.

The degree programmes involve a curriculum of Theatre classes and a selection of other classes in different disciplines. The University has Academic Regulations which specify how these programmes 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.

II. Degree Programmes

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 40 of this Calendar.

A. BA with Honours in Theatre

1. Theatre Studies

   A. BA with Honours in Theatre

   i. Introduction

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   ii. 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.

   iii. Undergraduate Advisor

   Please consult department (494-2233)

   iv. Professors

   Overton, D.R., BA, MA (L'ec), PhD (Calif)
   Perlin, P., MA, Dip. Scenography (Prague)

   v. Associate Professors

   Barker, R., BA (King's), MA (Dal), PhD (Birmingham)
   Cortese, J., BA, MA (Dalhousie), PhD (Toronto)
   Sorge, L., BA (King's), MA (NYU)

   vi. Assistant Professors

   McClurel, R., BA (Queen's), BEd (Toronto), MA (Toronto), Dip. (NTSC)
   Siebrits, H., BA (PE Technikon, RSA), BFA (UCLA), MFA (UCLA)

   vii. Lecturer

   Edgett, K.

   viii. Instructor

   Kristoff, D., BEd (MBU), DCS (Dal), MSc (Manitoba)

   ix. Special Instructors

   MacLennan, B., BA (Dal)
   Raff, M. Dipl. (Borland)
   Thomson, I.

ii. Courses

   A. BA with Honours in Theatre

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   4. You can enrol in one class, from a special group, as part-time or extension student.

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   vi. Assistant Professors

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   Raff, M. Dipl. (Borland)
   Thomson, I.

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   Siebrits, H., BA (PE Technikon, RSA), BFA (UCLA), MFA (UCLA)

   vii. Lecturer

   Edgett, K.

   viii. Instructor

   Kristoff, D., BEd (MBU), DCS (Dal), MSc (Manitoba)

   ix. Special Instructors

   MacLennan, B., BA (Dal)
   Raff, M. Dipl. (Borland)
   Thomson, I.
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 Programme classes, and be recommended by the acting faculty in order to advance to the next year’s course of study. The programme 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 1001X/Y.06
- 3 full classes in other subjects

Year 2
- THEA 2011.03
- THEA 2012.03
- THEA 2000X/Y.06
- THEA 2010X/Y.06
- THEA 2050X/Y.06
- 1 full elective in other subject

Year 3
- THEA 3000X/Y.06
- THEA 3010X/Y.06
- MUSC 1000X/Y.06
- THEA 3020X/Y.06
- 1.5 classes in other subjects

Year 4
- THEA 4000X/Y.06
- THEA 4010X/Y.06
- MUSC 1010X/Y.06
- 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 class 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 a specially tailored curriculum, and should contact the scenography professor to work out a suitable programme 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 1001X/Y.06
- 3 full classes in other subjects

Year 2
- THEA 2011.03
- THEA 2012.03
- THEA 2000X/Y.06
- THEA 2010X/Y.06
- THEA 2050X/Y.06
- 1 full elective in other subject

Year 3
- THEA 3000X/Y.06
- THEA 3010X/Y.06
- THEA 3020X/Y.06
- THEA 3030X/Y.03
- 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 programme 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 1010X/Y.06
- 3 full classes in other subjects

Year 2
- THEA 2011.03
- THEA 2012.03
- THEA 2000X/Y.06
- THEA 2010X/Y.06
- THEA 2050X/Y.06
- 1 full elective in other subjects

Year 3
- THEA 3000X/Y.06
- THEA 3010X/Y.06
- THEA 3020X/Y.06
- THEA 3030X/Y.03
- 1 full elective in other subjects

Year 4
- THEA 4000X/Y.06
- THEA 4010X/Y.06
- THEA 4020X/Y.06
- THEA 4030X/Y.06
- THEA 4040X/Y.06
- 2 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 class 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 fulfill 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 programme each year. The graduate of this programme 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 auditions/entrance tests for the first year of the Music Programme, and have an interview with the Theatre Department. Permission to continue in this programme is subject to a successful completion of THEA 1000X/Y.06 and the securing of a place in THEA2000X/Y.06.

Students planning to take this programme 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 Programme through failure to achieve the required standards in Theatre classes must re-audition if they wish to complete a Degree Programme in Music. Students having to withdraw from this Programme 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 Programme 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
- Ensemble: Chamber Choir/Opera Workshop

Year 2
- MUSC 2101X/Y.06
- MUSC 2201.03
- MUSC 2202.03
- MUSC 2270X/Y.03
- MUSC 2271X/Y.03
- THEA 2000X/Y.06
- THEA 2010X/Y.06
- Ensemble: Chamber Choir/Opera Workshop

Year 3
- MUSC 3101X/Y.06
- MUSC 3210X/Y.06 (THEA 3010X/Y.06)
- MUSC 3200X/Y.06
- THEA 2200X/Y.06
- 1 required full elective
- Ensemble: Chamber Choir/Opera Workshop

Year 4
- MUSC 4101X/Y.06
- THEA 4000X/Y.06
- THEA 4001X/Y.06
- 2 remaining required full electives
- Ensemble: Chamber Choir/Opera Workshop
- Honours Musical 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 programme 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 fulfill 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

Year 2 and 3
- THEA 2011.03
- THEA 2012.03
- THEA 3000X/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

Students with at least two years of prior university-level experience can enroll in the two-year Diploma in Costume Studies programme (DCS). After successful completion of this programme, these 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 1400X/Y.06
- THEA 2400X/Y.06
- THEA 2401X/Y.06
- THEA 2403X/Y.03
- TEXL 200 (NSCAD)
- TEXL 210 (NSCAD)

Year 2
- THEA 2400X/Y.06
- THEA 3408.03
- THEA 3409.03
- THEA 3410.03
- THEA 3412.03
- THEA 4400X/Y.06
- THEA 4401.03
- THEA 4402.03

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 10000X/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 Dalhousie Theatre 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: 4 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 are taught and students are introduced to research, properties, sound, lighting and costume of the stage. This class is a prerequisite for upper level technical scenography classes. Students are expected to work with power tools and are required to work one 8-hour shift per week. Both modern and historical costume creation techniques are explored and mastered by students in preparation for more advanced classes. Scenography is discussed and explored. With 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.

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. This class serves as an introduction to costume in its broadest context, enabling students to acquire a basic understanding of creating costume for the stage. Both modern and historical costume creation techniques are explored and mastered by students in preparation for more advanced study of costume in subsequent years of the Costume Studies Programme. This class is a prerequisite for all other Costume Studies classes. Students are expected to develop an awareness of dance terminology and vocabulary. Lecture periods are concerned with 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. This class is concerned with the more complex problems of the stage. This class is in a sense the sequel to THEA 1050X/Y.06, 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 and/or dance is an advantage. This class is the practical application of THEA 2060X/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 core 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.

THEA 2300X/Y.06: Film Study.
This class is designed to provide experience in performance outside the Acting Programme. Through practical theatre exercises and performance assignments, the student is exposed to character development, group improvisation exercises aimed at developing awareness and sensitivity, ultimately working towards dramatic text. 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 core responsibilities in department productions. Students are expected to work during one 8-hour shift per week. Both modern and historical costume creation techniques are explored and mastered by students in preparation for more advanced study of costume in subsequent years of the Costume Studies Programme. This class is a prerequisite for all other Costume Studies classes. Scenography is discussed and explored. With 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.

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
and develop characters, leading to a better understanding of theatrical
student will learn how to design costumes, choose fabrics, interpret scripts
costumes for the theatre. Through lecture and practical application, the
This class explores components of costume design, offering a discourse on
color theory, structure, and decoration as they relate to costumes for the theatre. Through lecture and practical application, the
this class may be taken by general BA students, and is also a part of the Costume Studies Programme.
FORM: 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
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) will be discussed in class.
FORM: Lecture/discussion
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 techniques to analyze
selected documentary, experimental and animated film. Seven films (viewed by the students outside of class time) will be discussed in class.
FORM: Lecture/discussion
NOTE: 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 2400X/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.
FORM: 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 Programme 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 adequate grades in all acting
programme 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 Programme introduces students to classical theatre performance approaches through the exploration of the works of
William Shakespeare. Using his sonnets, soliloquies and scenes, students will
discern and critique the author's text. The year is divided into four
sections: The Elizabethan Period, Shakespeare's Sonnets, The Jacobean Period, and The Restoration. This class will teach students to
understand the text, create believable characters and develop
performances. 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 adequate grades in all acting
programme 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.
FORM: Lecture/lab 6 hours
THEA 2810X/Y.06: Voice and Speech II.
This class focuses on the development of the speaking voice. It is an introduction to
the 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 tension in the region, producing a supple
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: Lecture/lab 3 hours
PREREQUISITE: THEA 1800X/Y.06 and audition
CO-REQUISITE: THEA 2800X/Y.06, THEA 2820X/Y.06

THEA 2820X/Y.06: Dance and Movement II.
The class is designed to develop and enhance the actor's practical knowledge of movement through the discipline of dance. This is manifested 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 2820X/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 theatre and its 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 1800X/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 3019X/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 3100X/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: Lab 6 hours
PREREQUISITE: THEA 2060X/Y.06, THEA 2070X/Y.06
CO-REQUISITE: THEA 3050X/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) productions staged under Departmental supervision. These productions will require work outside of class time, on evenings and weekends. Each student also serves as a crew head where possible for at least two (2) productions staged under Departmental supervision.

NOTE: 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 2090X/Y.06 and permission of instructor

THEA 3310.06: Film Theory.
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.

PREREQUISITE: 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 2405X/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 for re-creating costumes of the eighteenth and nineteenth centuries.

Primary research forms a significant component of this class. This is part of the Costume Studies Programme.

NOTE: 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 4.5 hours
PREREQUISITE: For BA in Theatre (Costume Studies) students: THEA 1000X/Y.06, 1400X/Y.06, 2111.03, 1202.03, 2400X/Y.06, 2406A/Y.10, 3411.05, 2483X/Y.05

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 Programme.
FORMAT: Lecture/lab 4 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
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 Programme.
FORMAT: Lecture/lab 4.5 hours
PREREQUISITE: For BA in Theatre (Costume Studies) students: THEA 1000X/Y.06, 1450X/Y.06, 2011.03, 2012.03, 2400X/Y.06, 2406X/Y.06, 2411.03, 2451X/Y.03.
For Diploma in Costume Studies: See Costume Studies class combinations.
RESTRICTION: Costume Studies degree or diploma students only.

THEA 3453.03: Body-Shaping Through Historical Tailoring II.
The class introduces the student to the process of tailoring as it originated in the Renaissance, and its development down to the twentieth century. Emphasis is placed on the purpose of underpaddings, understructures and the techniques of fixing them in place. This class is part of the Costume Studies Programme.
PREREQUISITE: For BA in Theatre (Costume Studies) students: THEA 1000X/Y.06, 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 Programme.
FORMAT: Lecture/lab 4.5 hours
PREREQUISITE: For BA in Theatre (Costume Studies) students: THEA 1000X/Y.06, 1450X/Y.06, 2011.03, 2012.03, 2400X/Y.06, 2406X/Y.06, 2411.03, 2451X/Y.03.
For Diploma in Costume Studies: See Costume Studies class combinations.
RESTRICTION: Costume Studies degree or diploma students only.

THEA 3500X/Y.06: The Modern Theatre.
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 these classes must register in both X and Y consecutively.
FORMAT: Lecture/lab 4 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.
PREREQUISITE: THEA 2900X/Y.06 and permission of the instructor.

THEA 3710X/Y.06: Scenography II.
This class is for theatre history 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 2000X/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 Baran.
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

THEA 3800X/Y.06/THEA 3810X/Y.06/THEA 3820X.06: The Transformation Year.
The third year of the Acting Programme 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 situations as assessed by the faculty. In addition to meeting degree requirements, students must achieve adequate grades in all acting programme 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 for theatre history and special scenography students only. It builds on the creative and imaginative work completed in the first two years of the Acting Programme. 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.
FORMAT: Lecture/lab 3 hours
PREREQUISITE: THEA 2900X/Y.06, 2070X/Y.06, 2011.03, 2012.03, 2700X/Y.06.

THEA 3810X/Y.06: Voice and Speech III.
This class is for theatre history and special scenography students only. It builds on the voice and speech skills that constitute "good use" by combining newly developed skills that substitute 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. Ways of accessing oral, nasal and pharyngeal cavities are explored. Phonetics, speech sounds 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
THEA 3820X/Y.06: Dance and Movement III.
This course is designed to reinforce the student's practical knowledge of movement through the discipline of Jazz Dance. This is in part the result of the current emphasis on the teaching of the Long Jazz Dance Technique. Emphasized are the performer's building blocks: a strong body alignment, a healthy stretching regimen, and an expanding skill repertoire. Exploitations 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-hr
PREREQUISITE: THEA 2800X/Y.06, 2810X/Y.06, and THEA 2820X/Y.06

THEA 3911.03: Gender in Theatre: A Cross-Cultural Survey.
This seminar examines the roles of gender and performance in the shaping of world theatre alongside the roles the theatre has played in shaping 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 performances' choices in various cultures, and how might our theatre express or even shape 'us'? Above all, the class offers an opportunity to consider the complex relationship between theatre and national identity: who are 'we,' how might our theatre look like. This seminar will examine Canadian theatre history to give students an integrated perspective on the continuous and changing notion of "Canadian" theatre history. A special emphasis is put on the performance 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 considered 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: Lecture/ demonstration/lab - 4.5 hours

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.

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 "alternative" 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, this 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 4735XY.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 course 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 Theatrical Anthropology's semiotics, 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 students' understanding of the Baroque and its legacy to subsequent periods.

FORMAT: Lecture 3 hours
PREREQUISITE: Permission of the Departments of Theatre and History.
CROSS-LISTING: HIST 4162.06

THEA 4800XY.06/4840XY.06: The Interpretation and Performance Year.

In the final year of the Acting Programme, students' studies are geared toward performance. The company of fourth year Acting Programme students will be cast in the DalTheatre season as well as receiving instruction in specific skills related to each production. Also offered are classes 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 4800XY.06: Acting IV.

The fourth year acting class is designed to prepare the Acting student for entering the world of professional theatre. Major emphasis is placed on audition technique and 'professional' department. Students are guided through an in-depth study of the 12 Catechism 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 4800XY.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 Department

THEA 4921.03: Special Topics I.

In this seminar, students focus on a particular topic in the history of European and American theatre and performance. The course will concentrate on an 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 broad 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, 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 theatrical traditions 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 and performance 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
Scrimger, J.N., BSc (UBC), MSc, PhD (Western Ontario)

Associate Dean
Jost, A., BSc, MSc, PhD (Dalhousie)

Administrative Assistant to the Dean
Publicover, A., BSc, EA (Dalhousie) Telephone: (902) 494-1199

Departmental Secretary--Undergraduate
Price, E. Telephone: (902) 494-3843

Departmental Secretary--Graduate
Tefferra, 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 programmes 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 student base of 500 students includes one of the largest graduate programmes in Computer Science in Canada, in part due to the imaginative multi-disciplinary programmes available, e.g. Electronic Commerce, Health Informatics, and so on. The most up-to-date information on ongoing programmes, 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 1501.03) cannot be taken for credit in the Faculty’s degree programme without explicit permission of the Faculty of Computer Science.

Grades
a. Class instructors will describe methods of student evaluation during the first week of each class.
b. Supplementary examinations are not given in Computer Science courses.
c. A grade of at least C- is required for a course to satisfy a prerequisite condition for a CSCI class.
d. 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 programme. A student who fails more than one co-op work term will be dismissed from the co-op programme.

An application for readmission to the programme 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 programme in the Faculty of Computer Science only once. A readmitted student is considered to be on probation.
Computer Science

Location: Computer Science Building
                   6050 University Avenue
                   Halifax, NS B3H 1W5
Telephone: (902) 494-2033
Fax: (902) 494-3336
Website: www.cs.dal.ca

Dean
Scrimger, J. N., BSc (UBC), MSc, PhD (Western Ontario)
Associate Dean
Joel, A., BSc, MEng, PhD (Delft)
Professors
Badenhorst, P., BSc (Calgary), MEng, PhD (Carleton)
Borowiec, J., BA (Western Ontario), MSc, PhD (Oxford)
Brown, J., BSc (Calgary), MSc (Toronto), PhD (Toronto), cross-appointment with Department of Mathematics and Statistics
Gao, F., P., BSc, MSc (Auckland), PhD (Waterloo)
Harrar, A., PhD (Alberta)
Casas, M., BEng, PhD (Waterloo)
Gentilhomme, M., BSc (McGill), MA, PhD (Pittsburgh)
Grundel, E. W., BSc, MSc (Delft), PhD (Waterloo)
Hitchcock, P., MA (Oxford), PhD (Warwick)
Joel, A., BSc, MSc, PhD (Delft)
Kroat, P., PhD (St. Andrews), cross-appointment with Department of Mathematics and Statistics

Associate Professors
Abidi, S., BEng (N.E.D. Univ of Eng & Technology), MS (Miami), PhD (Pennsylvania)

Adjunct Professors
Churchill, E., BSc, MSc (Stevens), PhD (Cambridge)
Dobson, P., MSc (Isreal Atia), PhD (Auckland)
Haig, A.
Hu, X., BSc (Wuhan), MEng (Chinese Academy of Science), MSc, PhD (Regina)
Jaftha, D. N., BSc, MSc, PhD (TUNS)
Leather, B., PhD (Conestoga)
Lecaso, R., BEng (Ming), MSc (Rhode Island), PhD (Waterloo)
Lynne, K., BSc, PhD (Queen’s)
Merrild, Y., MSc, PhD (Carleton)
Oore, S., BSc (Dalh), PhD (Toronto)
Read, J., BSc, MS (Victoria), PhD (Dalhousie)
Robson, R., BA (Hampshire), MS, PhD (Stanford)
Silver, D., BSc (Acadia), CM (SMU), MSc, PhD (Western Ontario)
Vaugah, P., BA, MSc (Hong Kong), PhD (CMU)
Wang, H., BSc, MEng (Chinese Academy of Science), MSc (SFU), PhD (Waterloo)
Zeh, N., Diplom-Informatiker (Friedrich-Schiller, PhD (Carleton)

Instructor
Kalyanavalle, N., BSc (Bangalore), MSc, PhD (Pittsburgh)

Assistant Professors
Arnold, D., Diplom Computer Science (Dortmund), MSc (SFU), Dr. rer. nat. (Dortmund)
Beiko, R., BSc (Dalhousie), PhD (Ottawa)
Biau, C., BSc (Laval), PhD (Dalhousie)
Blaisten, W., BSc, MSc, PhD (Western)
Brooks, S., BSc (Brock), MSc (UBC), PhD (Cambridge)
Chieson, T., BSc (Brandon), MSc, PhD (Carleton)
Cox, A., BSc of Technology with Honors (Ryerson), M. of Mathematics (Waterloo), PhD (Waterloo)
Gu, J., BSc (Hebei), MSc (Shanghai), PhD (Alberta), cross-appointment with Department of Electrical and Computer Engineering

Zeh, N., Diploma-Informatiker (Friedrich-Schiller, PhD (Carleton)

Assistant Associate Professor
Warren, J. (Maryland), PhD (Maryland)

I. General Interest Classes
The Faculty offers six classes that should be of interest to students whose major field of study while at Dalhousie will not be Computer Science.

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.
FORMAT: Lecture 3 hours, lab 1.5 hours
CROSS-LISTING: ASCC 100.10

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.

Toms, E., BA (Memorial), MSc (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)
Biau, C., BSc (Laval), PhD (Dalhousie)
Blaisten, W., BSc, MSc, PhD (Western)
Brooks, S., BSc (Brock), MSc (UBC), PhD (Cambridge)
Chieson, T., BSc (Brandon), MSc, PhD (Carleton)
Cox, A., BSc of Technology with Honors (Ryerson), M. of Mathematics (Waterloo), PhD (Waterloo)
Gu, J., BSc (Hebei), MSc (Shanghai), PhD (Alberta), cross-appointment with Department of Electrical and Computer Engineering

Zeh, N., Diploma-Informatiker (Friedrich-Schiller, PhD (Carleton)

Instructor
Kalyanavalle, N., BSc (Bangalore), MSc, PhD (Pittsburgh)

Adjunct Professors
Cowan, D.D., BSc (Toronto), MSc, PhD (Waterloo)
Cramer, M., BA (California at Los Angeles), BS, MSc (California Institute of Technology), PhD (Waterloo)

Hartman, C., MSc (Trent), PhD (Colorado)

Siberschatz, A., PhD (SUNY)

Wang, A., BSc, MSc (Hong Kong), PhD (CMU)

Yosh, Y., BSc (York), MSc, PhD (Ontario)

Adjunct Associate Professor
Warren, J. (Maryland), PhD (Maryland)

Assistant Adjunct Professors
Churchill, E., BSc, MSc (Stevens), PhD (Cambridge)
Dobson, P., MSc (Israel Atia), PhD (Auckland)
Haig, A.
Hu, X., BSc (Wuhan), MEng (Chinese Academy of Science), MSc, PhD (Regina)
Jaftha, D. N., BSc, MSc, PhD (TUNS)
Leather, B., PhD (Conestoga)
Lecaso, R., BEng (Ming), MSc (Rhode Island), PhD (Waterloo)
Lynne, K., BSc, PhD (Queen’s)
Merrild, Y., MSc, PhD (Carleton)
Oore, S., BSc (Dalh), PhD (Toronto)
Read, J., BSc, MS (Victoria), PhD (Dalhousie)
Robson, R., BA (Hampshire), MS, PhD (Stanford)
Silver, D., BSc (Acadia), CM (SMU), MSc, PhD (Western Ontario)
Vaugah, P., BA, MSc (Hong Kong), PhD (CMU)
Wang, H., BSc (Chinese Academy of Science), MSc (SFU), PhD (Waterloo)
Zeh, N., Diplom-Informatiker (Friedrich-Schiller, PhD (Carleton)

I. General Interest Classes
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FORMAT: Lecture 3 hours, lab 1.5 hours
CROSS-LISTING: ASCC 100.10

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.

Toms, E., BA (Memorial), MSc (Dalhousie) PhD (Western), cross-appointment with Faculty of Management
Zincir-Heywood, A.N., BSc, MSc, PhD (Ege University)
Faculty of Computer Science

244  Computer Science
•  CSCI 1100.03 Computer Science I

1000 Level

Faculty Requirements

The following regulations apply to students starting the programme in September 2005 or after. Regulations governing programmes started prior to September 2005 can be found in previous calendars or on the Faculty website at www.cs.dal.ca

II. Degree Programmes

A. Academic Regulations

For all variations of the Bachelor of Computer Science degree:

1. Bachelor of Computer Science

   The following regulations apply to students starting the programme in September 2005 or after. Regulations governing programmes started prior to September 2005 can be found in previous calendars or on the Faculty website at www.cs.dal.ca

   Faculty Requirements

   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 2122.03 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 3130.05 Introduction to Software Engineering
   • CSCI 3136.05 Principles of Programming Languages
   • CSCI 3171.03 Network Computing

   Other Required Classes:
   • MATH 1010.03 Differential and Integral Calculus I
   • MATH 1011.03 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 1000 level or above
   • Two half-credit classes in business, science, or engineering at 1000 level or above
   • One business, science or engineering half-credit class, 2000 level or above
   • Two half-credit electives of computer science at 3000 level or above
   • Three half-credit electives of computer science at 4000 level or above
   • Two free half-credit electives at 1000 level or above
   • Seven free half-credit electives at 2000 level or above

Courses of the form CSCI XX.XX, where X is any digit, may not be counted towards a Bachelor of Computer Science degree.

The purpose of the Honours programme is to provide a more challenging degree programme that prepares students for graduate school. The programme provides greater rigour and more analytic content than the Bachelor of Computer Science degree.

To enter the Honours programme 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 programme 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 seven courses chosen as follows, where X is any digit:

• CSCI 2135.03 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)

2. Bachelor of Computer Science with Honours

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 2122.03 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 3130.05 Introduction to Software Engineering
• CSCI 3136.05 Principles of Programming Languages
• CSCI 3171.03 Network Computing

Other Required Classes:
• MATH 1010.03 Differential and Integral Calculus I
• MATH 1011.03 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 1000 level or above
• Two half-credit classes in business, science, or engineering at 1000 level or above
• One business, science or engineering half-credit class, 2000 level or above
• Two half-credit electives of computer science at 3000 level or above
• Three half-credit electives of computer science at 4000 level or above
• Two free half-credit electives at 1000 level or above
• Seven free half-credit electives at 2000 level or above

Courses of the form CSCI XX.XX, where X is any digit, may not be counted towards a Bachelor of Computer Science degree.

The purpose of the Honours programme is to provide a more challenging degree programme that prepares students for graduate school. The programme provides greater rigour and more analytic content than the Bachelor of Computer Science degree.

To enter the Honours programme 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 programme 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 seven courses chosen as follows, where X is any digit:

• CSCI 2135.03 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)
providing an additional link between the Faculty and the Profession. The co-operative programme offers work terms to our students, thus making up any required classes that are missing. Students who wish to arrange interdisciplinary programmes (with fields such as Mathematics, Physics, Psychology, and others) are invited to consult the relevant department and should contact an academic advisor.

4. Co-operative Education Programmes

All programmes in Computer Science have a Co-operative Education option. This requires the completion of three Co-op work terms. Students interested in the Co-op programme should apply to register for CSCI 8871.00 and 8872.00 in their second year.

5. Entry Points to Bachelor of Computer Science

There are three main entry points into the Bachelor of Computer Science programme:

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 programme. If accepted they will be able to enter the third year of the programme 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 programme.

Students who wish to transfer to the Bachelor of Computer Science programme 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 below.

6. Accreditation and the Profession

Of particular importance to the Faculty is the accreditation of the undergraduate programme by the Computer Science Accreditation Council (CSAC), which is responsible for certification of computer professionals and accreditation of computer science programmes in Canada. Accreditation provides our graduates with an accelerated path towards achieving the professional designation of Information Systems Professional of Canada (IS.P.).

The Bachelor of Computer Science, Bachelor of Computer Science with Honours, and Bachelor of Computer Science with Honours and Co-op are accredited by CSAC. The co-operative programme 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 programme of studies is similar to the Bachelor of Computer Science, but with more flexibility in selection of elective classes. The programme may be of benefit for students who want to use it as a basis to enter other professional programmes 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.ca, and should consult with a Faculty advisor.

2. Double Majors and Combined Honours

The following degree programmes are available to students interested in interdisciplinary studies where the larger number of majors credits is Computer Science: 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 programme should consult the honours advisor through whom a suitable course of study can be arranged. A combined honours programme 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 programme may be insufficient for entry to a regular graduate programme, and that a qualifying year may be necessary. Students who wish to arrange interdisciplinary programmes (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 programme is offered with majors in Bioinformatics, Health Informatics, and Software Informatics. Consult the regulations on the Bachelor of Informatics on page 250.

E. Software Engineering

A Bachelor of Software Engineering programme is offered jointly with the Faculty of Engineering. Completion of any or all software engineering courses 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 consult the Bachelor of Software Engineering programme as described on page 253.

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 programmes offered by the Faculty of Science. The requirements are as for the appropriate programme with the completion of the following classes to fulfil the Computer Science Minor:

- CSCI 1100.03
- CSCI 2100.03
- CSCI 2110.03
- 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: None

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 INFX 1604.03
EXCLUSION: INFX 1400X/Y, 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.
FORMAT: Lecture 3 hours, lab 1.5 hours
CROSS-LISTING: ASSC 1100.03

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: None
EXCLUSION: CSCI 1100(S), CSCI 1101, CSCI 1202

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 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 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, COMM 1700.03, COMM 1702.03
EXCLUSION: COMM 2001.03

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 1210 (co-requisite), or COMM 1010 and COMM 1401 (co-requisite), or MGMT 1000 and MGMT 1010, or permission of the instructor.
EXCLUSION: CSCI 2201

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), graphs, 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 class description for MATH 2122.03 in the Mathematics section of this calendar.
CROSS-LISTING: MATH 2112.03

CSCI 2113.03: Discrete Structures II.
See class description for MATH 2123.03 in the Mathematics section of this calendar.
PREREQUISITE: See Mathematics section
CROSS-LISTING: MATH 2133.03

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 2122.03 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 2122.03

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.

CSCI 3101.03: Social, Ethical and Professional Issues in Computer Science.
A case study approach will be taken and will include the following topics: Social context of computing; methods and values in common with and distinct from those of other professionals, potentially controversial computer applications. Professional responsibilities: professional ethics, information security and privacy, ethical choices. Risks and liabilities: types of risk and loss, liabilities and liability. Intellectual property: definition, means of protection, infringement and penalties.

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, greedy algorithms, dynamic programming, data structure design, optimization algorithms, and amortized analysis. The techniques are applied to problems such as sorting, searching, graphs, and set manipulation.

PREREQUISITE: CSCI 2110.03 and CSCI 2122.03
RECOMMENDED: STAT 2800.03

CSCI 3111.03: Introduction to Numerical Linear Algebra.
Floating point arithmetic. Numerical solution of linear systems of equations; Cramer’s rule 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; least squares problems. Numerical optimization.

PREREQUISITE: CSCI 3101.03 and CSCI 3122.03
CROSS-LISTING: MATH 3170.03

CSCI 3120.03: Operating Systems.
This class includes a review of I/O and interrupt structures, addressing space and virtual memory, protection, deadlock and recovery. Other topics covered include linear and non-linear data structures, algorithms for graph traversal, file systems, and inter-process communication. The course emphasizes the design of operating systems, and introduces the use of Unix and other operating systems.

PREREQUISITE: CSCI 2110.03, CSCI 2122.03, and CSCI 2123.03

CSCI 3121.03: Computer Systems Architecture.
The primary objective of this class is to give a comprehensive understanding of the structure and function of a computer system from an architectural and integration viewpoint. It focuses on two broad architectural perspectives: the internal perspective, which entails the architectural 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.

PREREQUISITE: CSCI 2121.03

CSCI 3122.03: Microprocessors and the Real World.
See the description of EECS 3180.03.

PREREQUISITE: Permission of the instructor

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, 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 reviews, and testing and quality control.

PREREQUISITE: CSCI 2110.03, CSCI 2123.03, 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 2123.03

CSCI 3136.03: Principles of Programming Languages.
This course provides a comparative study of advanced programming language features. Topics include grammar generation, type system and type checking, type inference, scope, and parameter passing mechanisms. Formal methods for syntactic and semantic description of programming languages are examined.

PREREQUISITE: CSCI 2110.03, CSCI 2123.03, 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(s).

PREREQUISITE: CSCI 2140.03
EXCLUSION: COMM 3530.03
CO-REQUI: CSCI 3200.03

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 of a system.

PREREQUISITE: CSCI 3110.03 and CSCI 2122.03
CO-REQUI: 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 2123.03 and MATH 3100.03

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/
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, system design, and implementation methods developed in prerequisite courses or from prior equivalent experience.

PREREQUISITE: CSCI 2132.03, CSCI 2140.03 and 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).

PREREQUISITE: CSCI 3190.03 and 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, recursive and recursively enumerable functions. Some applications to computer science are also discussed, such as compiler design and test 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, NP-Completeness.

PREREQUISITE: CSCI 3110.03
CROSS-LISTING: MATH 4410.03

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 3136.03

CSCI 4115.03: Topics in Graph Theory. See 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 class description for MATH 4161 in the Mathematics section of this calendar.

PREREQUISITE: See Mathematics section
CROSS-LISTING: MATH 4161.03

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 for real computer design. This includes instruction set design issues (CISC vs. RISC), instruction level parallelism, 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: real time execution, 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 and implementation 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 (CMs).

PREREQUISITE: CSCI 3101.03 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 emerging as an important discipline for designers of software systems. It describes the architecture, 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 architecture: 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 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, and the course explores roles and techniques for reducing them. Topics include: software testing process in practice, including unit, integration and system 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 2122.03, CSCI 3130.03
CSCI 4137.03: Software Development, Maintenance, and Evolution.
This class addresses issues arising after the Factory Acceptance Test: deployment, field-support, and upgrades. Commercial software products (especially product-line) are delivered to many sites in many versions and are subject to an ongoing schedule of enhancements. Enterprise applications with many users must evolve; and may also run at different sites and require different versions. Topics include technical challenges of decision, 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 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, methods for analysis of observed data and interpretation of results.
PREREQUISITE: CSCI 3110.03 and either ENGM 2012.03 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 X-Windows 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 Object-Oriented Analytical Process (OLAP), characterization mining, association rule mining, classification and predication, clustering, and other topics. Selected system tools for data mining and data warehousing are introduced.
PREREQUISITE: CSCI 3340.03

CSCI 4150.03: Introduction to Artificial Intelligence.
The course in an introduction to the automation of intelligent capabilities, including knowledge representation and reasoning (search and logical inference), interpreting, behavior modeling and learning.
PREREQUISITE: CSCI 2112.03, CSCI 2410.03, CSCI 3101.03, CSCI 2100.03, MATH 2000.03, and either MATH 2100.03 or CSCI 2113.03. Students must be in fourth year.
RECOMMENDED: CSCI 2120.03

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 platforms and languages are left as a student choice to ensure immediate familiarity and future development with new technologies.
PREREQUISITE: CSCI 2110.03 and CSCI 3130.03
RECOMMENDED: CSCI 2120.03

CSCI 4163.03: Human-Computer Interaction.
Human-computer interaction has to do 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-supplied co-operative work, information search and visualization, hypermedia and the world wide web.
PREREQUISITE: CSCI 3310.03 and CSCI 3160.03

CSCI 4165.03: Digital Media.
This class covers technical aspects of digital media. This will include topics relating to the history and human perception of various media types, as well as digital representation, compression, generation and other topics. The forms of media to be covered include text, images, 3D animation, video, sound, and 3D graphics and animation.
PREREQUISITE: CSCI 3310.03

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 protocols that comprise a network. The class also examines the interactions and interdependencies between protocols. Topics covered in this class include network protocols and concepts, transmission principles, network architecture, routers and routing protocols, direct link networks, wireless networks, internetworking, and emerging network technologies.
RECOMMENDED: CSCI 3120.03
PREREQUISITE: CSCI 3221.03 and CSCI 3713.03
RECOMMENDED: CSCI 3120.03

CSCI 4173.03: Web-Centric Computing.
This class aims to give an understanding of how medium-sized interactive client/server Web applications for e-commerce can be built using different types of Web technologies. 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. Students who have an interest in programming for the Web are especially encouraged to take this class. Students will learn key skills such as HTML, XML, and other programming languages.
PREREQUISITE: CSCI 2140.03, CSCI 3120.03, and CSCI 3713.03

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 3713.03

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 3212.03 and CSCI 3713.03

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
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 the sciences. 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 programme 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 programme 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.

The various disciplines are integrated around a sequence of themes that find expression in all disciplines - themes like data, information and knowledge, structures, patterns and searching, management of complexity, visualization, models of the real world, design, legal and ethical issues.

II. Degree Programmes

A. Bachelor of Informatics

1. Programme Structure

Integrated Studies courses are taken by all Bachelor of Informatics students, regardless of major. They account for 60-40% 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 programme 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 will continue with project activities. Students entering the programme in year 2 take other specified courses instead of the first year integrated course.

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 Thesis, and give public presentations on their work. 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 Thesis, and give public presentations on their work. Pass/fail grading applies to this class.

PREREQUISITE: Permission of the Honours Coordinator

CSCI 8890.00: Co-Op Seminar.
Students in the Bachelor of Computer Science Co-operative Education Programme must register for this class, which orientates students to the co-op system. Pass/fail grading applies to this class.

PREREQUISITE: Permission of the Faculty of Computer Science

CSCI 8891.00: Co-op Work Term 1.
This is the first work term for students in the Bachelor of Computer Science Co-operative Education Programme. Pass/fail grading applies to this class.

PREREQUISITE: CSCI 8871.00

CSCI 8892.00: Co-op Work Term 2.
This is the second work term for students in the Bachelor of Computer Science Co-operative Education Programme. Pass/fail grading applies to this class.

PREREQUISITE: CSCI 8891.00

CSCI 8893.00: Co-op Work Term 3.
This is the third work term for students in the Bachelor of Computer Science Co-operative Education Programme. Pass/fail grading applies to this class.

PREREQUISITE: CSCI 8892.00

CSCI 8894.00: Co-op Work Term 4.
This is the fourth work term for students in the Bachelor of Computer Science Co-operative Education Programme. Pass/fail grading applies to this class.

PREREQUISITE: CSCI 8893.00

CSCI 8895.00: Co-op Work Term 5.
This is the fifth work term for students in the Bachelor of Computer Science Co-operative Education Programme. Pass/fail grading applies to this class.

PREREQUISITE: CSCI 8894.00

CSCI 8896.00: Co-op Work Term 6.
This is the sixth work term for students in the Bachelor of Computer Science Co-operative Education Programme. Pass/fail grading applies to this class.

PREREQUISITE: CSCI 8895.00

CSCI 8897.00: Co-op Work Term 7.
This is the seventh work term for students in the Bachelor of Computer Science Co-operative Education Programme. Pass/fail grading applies to this class.

PREREQUISITE: CSCI 8896.00

CSCI 8898.00: Co-op Work Term 8.
This is the eighth work term for students in the Bachelor of Computer Science Co-operative Education Programme. Pass/fail grading applies to this class.

PREREQUISITE: CSCI 8897.00
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 programme 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:

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2. General Requirements

- INFx 1600.03 Effective Communication
- INFx 1601.12 Integrated Informatics Studies: Structures
- INFx 2601.03 Use of Design of Databases
- INFx 3601.03 Project 1
- INFx 4601.03 Project 3
- HINF 3100.03 Research Methods (or equivalent)
- INFx 4600.13 Project 4
- CSCI 3172.03 Web-centric Computing
- 4 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

3. Major in Bioinformatics

The Major in Bioinformatics follows the general Bachelor of Informatics requirements and must include the following courses:

- BLC 1010.03 Principles of Biology Part I
- BLC 2010.03 Principles of Biology Part II
- BLC 2020.03 Genetics and Molecular Biology Application of Probability Theory to Biology
- CSCI 1010.03 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 2010.03 Matrix Theory and Linear Algebra I
- 1 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 3000.03 Introduction to Health Informatics
- HINF 4010.03 Health Information Flow and Management
- HINF 2901.03 Clinical Processes and Decision Making I
- HINF 3500.03 Healthcare Decision Support Systems
- HINF 4012.03 Inquiry in Health Informatics
- HINF 3102.03 Medical Coding
- HINF 4003.03 Healthcare Enterprise Information Systems
- HINF 4020.03 Healthcare Ethics
- HINF 2501.03 Clinical Processes and Decision Making 1
- HINF 3013.03 Health Data Standards and Terminologies
- HINF 3103.03 Healthcare Decision Support Systems
- HINF 4003.03 Healthcare Enterprise Information Systems
- HINF 4012.03 Inquiry in Health Informatics

5. Major in Software Systems

The Major in Software Systems follows the general Bachelor of Informatics requirements and must include the following courses:

- CSCI 1100.03 Computer Science I
- CSCI 2100.03 Computer Science III
- CSCI 2120.03 Software Development
- CSCI 3152.03 Object Orientation and Generic Programming
- CSCI 3136.03 Principles of Programming Languages
- CSCI 3410.03 Database Management Systems
- CSCI 3171.03 Network Computing
- 2 full credits of free electives at or above the 3000 level

6. Entry Points to Bachelor of Informatics

There are two main entry points into the Bachelor of Informatics programme:

- First-Year Entry - Students are advised to apply directly to the Faculty of Computer Science. Consult the first-year entry requirements on page 32.
- Second-Year Entry - 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; how 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

Informatics 251
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 decision making through information and technology management when they understand these basic processes.

HINF 2502.03: Clinical Processes and Decision Making II.
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 healthcare 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, CDAM, DIACOM, MSH, SNOMED, UMLS etc. PREREQUISITE: HINF 2503.03.

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-10 and HCPCS codes. The class will provide 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 2503.03.

HINF 3500.03: Healthcare Decision Support Systems.
This class familiarizes students with healthcare decision making for care givers/providers, and the electronic system that supports this decision making. Four kinds of systems will be examined: knowledge based systems, evidence based systems, guideline based systems (using primarily clinical practice guidelines or CPGs), and data driven systems. Emphasis will be on supporting decision making by providing a class that is based on the evidence of effectiveness. PREREQUISITE: HINF 2502.03, INF 2460.03.

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. Also included will be how information flows within and among different systems and how enterprise-wide information systems are integrated for overall decision support. PREREQUISITE: HINF 3500.03, CSCI 3172.03, INF 2460.03.

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: INF 3060.03.

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 Faculty.

EXCLUSION: INFX 1600.03, INF 1604.03, CSCI 1100.03, CSCI 2121.03, STAT 1000.03

INFX 1601XY.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 B.Inf. program in year 2 with advanced standing, and consists of the mathematics component of INFX 1600XY.18. NOTE: 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 Faculty.

EXCLUSION: INF 1600XY.18, CSCI 1103.03, STAT 1003.03

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 1103.03.

INFX 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 decision making through information and technology management when they understand these basic processes.

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EXCLUSION: INFX 1600.03, INF 1604.03, CSCI 1100.03, CSCI 2121.03, STAT 1000.03

INFX 1601XY.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 B.Inf. program in year 2 with advanced standing, and consists of the mathematics component of INFX 1600XY.18. NOTE: 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 Faculty.

EXCLUSION: INF 1600XY.18, CSCI 1103.03, STAT 1003.03

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 1103.03.

This class explores more advanced topics in informatics by building on the foundations of INFX 1600XY.18. NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

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 R.Comp.Sc. or the B.Sc. with a major in Computer Science.

CROSS-LISTING: CSCI 2203.03

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 particular 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 2600X/Y, INFX 2600.03, INFX 2640.03

INFX 3601.03: Project 2.
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 4600.03: Project 3.
Continuation of INFX 3601.03
PREREQUISITE: INFX 3601.03

INFX 4601.03: Project 4.
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 Engineering is 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:

i. how to design tractable software that is adaptable to changing business conditions,
ii. how to improve productivity of software developers thereby reducing costs,
iii. how to reduce time to market thereby gaining market share while enjoying a revenue stream,
iv. how to improve quality thereby enhancing reputation and satisfying customers while avoiding rework,
v. how to improve product and process predictability thereby facilitating better business decisions, and
vi. 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 whenever 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:

<table>
<thead>
<tr>
<th>Year</th>
<th>Term</th>
<th>Fall</th>
<th>Winter</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>AT1</td>
<td>AT2</td>
<td>FREE</td>
<td></td>
</tr>
<tr>
<td>Year 2</td>
<td>AT3</td>
<td>AT4</td>
<td>FREE</td>
<td></td>
</tr>
<tr>
<td>Year 3</td>
<td>AT5</td>
<td>AT6</td>
<td>WT1</td>
<td></td>
</tr>
<tr>
<td>Year 4</td>
<td>WT2</td>
<td>AT7</td>
<td>WT3</td>
<td></td>
</tr>
<tr>
<td>WT = Academic study term</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>AT = Co-op Workterm</td>
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</tbody>
</table>

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

- CSCI 1100 Writing class X/Y
- CSCI 1101 Programming 1
- CSCI 1101 Programming 2
- ENGI 1100 Eng Design & Graphics
- IENG 2005 Engineering Economics
- MATH 1000 Calculus 1
- MATH 1001 Calculus 2
- PHYS 1100 X/Y Intro to Physics
- PSYD 1000 X/Y Intro to Psychology

Year 2

- CSCI 2110 Data Structures
- CSCI 2121 Intro Computer Org
- CSCI 2132 Software Development
- CSCI 3130 Intro Software Eng
- ECED 2000 Electric Circuits
- ECED 2000 Digital Circuits

Year 3

- CSCI 3110 System Analysis
- EGEN 2022 Eng. Math. For Software Eng
- EGEN 2032 Applied Probability & Statistics
- MATH 2112 Discrete Structures
- PSYO 2330 Intro to Cognitive Psych

Year 4

- CSCI 4110 Algorithm Analysis
- CSCI 4120 Operating Systems
- CSCI 4143 Human Computer Interaction
- CPST 2000 Communication
- CPST 2000 Engineering in Society 1
- CPST 2000 Microprocessors
- ECED 2000 Real Time Systems
- IENG 3013 Analysis and Design of Work
- IENG 3045 Quality Control & Reliability
- IENG 3092 Industrial & Organizational Psych
- IENG 4547 Company Operations & Mgmt
- IENG 4558 Project Mgmt & Control

Year 4

- CSCI 4110 Formal Aspects of Software Eng
- CSCI 4120 Software Architecture
- CPST 2000 Engineering in Society 2
- EGD 2400 Computer Nets and Comm
- IENG 3045 Decision and Risk Analysis
- IENG 3045 Software Engineering Project
- IENG 3045 Software Testing and Quality Assurance
- IENG 3045 Software Processes and Tools
- IENG 3045 Software Deployment, Maintenance, and Evolution
- IENG 3045 Empirical Performance Modeling

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Faculty of Engineering

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 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 programme 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 programme 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 programmes are offered in a co-operative format. Engineering disciplines offering co-operative programmes 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 curriculum in this calendar.

All students in the upper division of the engineering degree programmes are eligible to apply for the co-op programme. 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 programme students must be properly registered and pay the appropriate co-op programme fees. For other regulations pertaining to the co-op programme, please refer to the Faculty Working Rules which are available on the web.

The degree programme 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 programme 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 programmes 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. programmes 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 programme. The department responsible for the appropriate programme will use these requirements in determining the suitability of student elective class selections. The baccalaureate programmes in all disciplines are accredited by the Canadian Engineering Accreditation Board.

II. Degree Programmes

A. Undergraduate

1. Engineering

1.a Bachelor of Engineering

Students who have successfully completed the academic study programme 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 3.05 or higher with no failed marks during their programme beginning in Academic Term 5.

1.d Co-operative Programme 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 Programme” designation on their degree.

1.e Diploma of Engineering

Students who have successfully completed the academic study programme 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 programme. Those who successfully complete the requirements as outlined in the Concurrent Programmes sections on page 45 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 programme. Those who successfully complete the requirements as outlined in the Concurrent Programmes sections on page 45 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 programme which is jointly offered by the Faculty of Computer Science and the Faculty of Engineering. Students who have successfully completed the academic study programme 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 282).

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 programme focused on the theory and technology of the Internet. This programme 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.

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Engineering

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 development of our resources. Engineering education provides great satisfaction of following a career where one's personal expertise can contribute not only to human welfare, but also to the sustainable development of transportation, and more. In general, the engineering enterprise contributes not only to human welfare, but also to the sustainable development of resources. Engineering education provides great rewards for the engineer of the future. Specifically, there is the personal development of our resources. Engineering education provides great satisfaction of following a career where one's personal expertise can benefit fellow humans and contribute to the making of a better world.

II. Engineering as a Profession

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 development of our resources. Engineering education provides great 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 programme 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 characterized by the development of professional competence. The Cooperative Engineering programme 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 programmes are offered in a co-operative format. Engineering disciplines offering co-operative programmes 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 curriculum in this calendar.

All students in the upper division of the engineering degree programmes are eligible to apply for the co-op programme. 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 programme students must be properly registered and pay the appropriate co-op programme fees. For other regulations pertaining to the co-op programme, please refer to the Faculty Working Rules which are available on the web.

The degree programme 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 programme 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 programmes by the CEAB is the

Engineering 257
Please refer to the Graduate/Professional Calendar for details of graduate admission or a Certificate of Applied Science from one of the Associated Universities. Not all Associated Universities offer all programmes in all disciplines. The Faculty will not admit any student who does not meet these requirements because this would jeopardize accreditation for the programme. The department responsible for the appropriate programme will use these requirements in determining the suitability of student elective class selections. The baccalaureate programmes in all disciplines are accredited by the Canadian Engineering Accreditation Board.

II. The Associated University Programme

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 programmes is competitive and is based on the students’ academic standing. The Associated Universities are:

- Acadia University
- Cape Breton University
- Nova Scotia Agricultural College
- Saint Mary's University
- St. Francis Xavier University
- University of Prince Edward Island
- Wolfville, Nova Scotia
- Antigonish, Nova Scotia
- Truro, Nova Scotia
- Sydney, Nova Scotia
- Charlottetown, Prince Edward Island
- Halifax, Nova Scotia
- Department of Engineering
- Department of Engineering
- Department of Engineering
- Department of Engineering
- Department of Engineering

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’ Departments of Engineering Committee. The programme 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 programme at an Associated University may receive a Certificate or Diploma and are normally admitted to the programmes in Biological, Chemical, Civil, Computer, Electrical, Environmental, Industrial, Materials, Mechanical, or Mineral Resource at Dalhousie without examinations. Students should ensure that their class selection at the Associated Universities include the discipline-specific classes relevant to their programme 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 Sydney 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 programmes 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 programme 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 be allowed to repeat 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 Supplementary Examinations, page 258.

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 programme may apply to be readmitted to the same programme after a minimum of eight (8) months from the time of withdrawal, or, such a student may apply to be admitted to a different programme 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 57.

Scholarships

Only those students who are registered for a full load of classes as measured by the curriculum of the programme 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 supplementary examinations 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 lot 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 258.

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 Programmes

A. Bachelor of Engineering

Introduction
The engineering programme is designed for students who have completed senior matriculation (Nova Scotia Grade 12) 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 programmes. 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 Networking. Civil and Resource Engineering administers degree programmes in the disciplines of Civil and Mineral Resource Engineering. The Department of Electrical and Computer Engineering administers degree programmes in Electrical and Computer Engineering and the Department of Process Engineering and Applied Science administers degree programmes 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 programmes. The curriculum for each of the basic programmes combines required ‘core’ subjects essential to the field, and ‘elective’ subjects permitting considerable diversity in individual programmes 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 programme and the Bachelor of Engineering programme 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 BA 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 Science and Bachelor of Engineering degrees concurrently in a time period of five years in total (or up to six years for Co-op programmes).

C. BA/BEng
Students who wish to do so may complete the 15-credit BA degree programme 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 programmes).

Students who meet the admission requirements for the Bachelor of Arts and Bachelor of Engineering programmes 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, Faculty of the Faculty for Science.

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 programme 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, Faculty of the Faculty for 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.

<table>
<thead>
<tr>
<th>Year</th>
<th>Course</th>
<th>Year 1</th>
<th>Year 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 1010</td>
<td>MATH 1000</td>
<td>MATH 1010</td>
<td>MATH 1010</td>
</tr>
<tr>
<td>ENGI 1100</td>
<td>MATH 1000</td>
<td>ENGI 1150</td>
<td>MATH 1010</td>
</tr>
<tr>
<td>CHEM 1020</td>
<td>MATH 1000</td>
<td>ENGI 1400</td>
<td>MATH 1010</td>
</tr>
<tr>
<td>PHYS 1200</td>
<td>MATH 1000</td>
<td>ENGI 1400</td>
<td>MATH 1010</td>
</tr>
<tr>
<td>PHYS 1300</td>
<td>MATH 1000</td>
<td>ENGI 1400</td>
<td>MATH 1010</td>
</tr>
<tr>
<td>Two 100-level classes in the subject of concentration</td>
<td>ENGI 1400</td>
<td>Two 100-level classes in the subject of concentration</td>
<td>ENGI 1400</td>
</tr>
<tr>
<td>Language/Humanities or Social Science Elective X/Y</td>
<td>ENGI 1400</td>
<td>Language/Humanities or Social Science Elective X/Y</td>
<td>ENGI 1400</td>
</tr>
</tbody>
</table>

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 258.
Students who have successfully completed the academic study programme 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.

Curricula for Terms 1 - 4

Year 1 – Term 1 Fall
- CHEM 1010: Principles of Biology Part I
- CHEM 2441: Organic Chemistry
Year 1 – Term 2 Winter
- CHEM 2080: Priniciples of Biology Part I
- ENGI 1400: Environmental Chemistry
- MATH 1010: Physics I

Year 2 – Term 3 Fall
- CHEM 1021: Engineering Chemistry I
- ENGI 1100: Engineering Design & Graphics I
- MATH 1000: Engineering Statics
- PHYS 1000: Introduction to Physics

Year 2 – Term 4 Winter
- CHEM 1022: Engineering Chemistry II
- ENGI 1400: Environmental Chemistry
- MATH 1010: Physics I
- PHYS 1010: Introduction to Physics

Discipline Specific Choices

The following classes replace those noted above where indicated for each specific discipline.
Year 2 - Term 4 Winter

- ENGI 2400.03 Mechanics II
- ENGI 2300.03 Fluid Mechanics

*Students must take two of:

- ENGM 2062.03 Engineering Mathematics IV(a)
- ENGM 2262.03 Engineering Math IV (b)
- ENGM 2282.03 Data Structures and Numerical Methods

Study and Work Sequences

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Fall</th>
<th>Winter</th>
<th>Summer</th>
<th>Fall</th>
<th>Winter</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical &amp; Materials</td>
<td>Work</td>
<td>Work</td>
<td>Study</td>
<td>Study</td>
<td>Study</td>
<td>Study</td>
</tr>
<tr>
<td>Mechanical</td>
<td>Work</td>
<td>Work</td>
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<tr>
<td>Materials</td>
<td>Study</td>
<td>Study</td>
<td>Work</td>
<td>Study</td>
<td>Study</td>
<td>Study</td>
</tr>
<tr>
<td>Environmental</td>
<td>Study</td>
<td>Study</td>
<td>Work</td>
<td>Work</td>
<td>Work</td>
<td>Work</td>
</tr>
<tr>
<td>Computer</td>
<td>Study</td>
<td>Study</td>
<td>Work</td>
<td>Study</td>
<td>Study</td>
<td>Study</td>
</tr>
</tbody>
</table>

Discipline-Specific Choices

- ENGI 2400.03 Principles of Biology Part II
- ENGI 2401.03 Geology II
- CHEE 2441.03 Organic Chemistry
- CHEE 2420.03 Fundamentals of Chemical Engineering
- ENGI 2800.03 Engineering Thermodynamics I.

Year 3

- ENGM 2262.03 Engineering Math IV (b)
- ENGM 2282.03 Data Structures and Numerical Methods

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-op 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 programme.

Study and Work Term Dates

Study and Work Term Dates

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Fall</th>
<th>Winter</th>
<th>Summer</th>
<th>Fall</th>
<th>Winter</th>
<th>Summer</th>
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<td>Mechanical &amp; Materials</td>
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<tr>
<td>Mechanical</td>
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<tr>
<td>Materials</td>
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<td>Study</td>
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</tr>
<tr>
<td>Environmental</td>
<td>Study</td>
<td>Study</td>
<td>Work</td>
<td>Work</td>
<td>Work</td>
<td>Work</td>
</tr>
<tr>
<td>Computer</td>
<td>Study</td>
<td>Study</td>
<td>Work</td>
<td>Study</td>
<td>Study</td>
<td>Study</td>
</tr>
</tbody>
</table>

Discipline-Specific Choices

- ENGM 2062.03 Engineering Mathematics IV(a)
- ENGM 2262.03 Engineering Math IV (b)
- ENGM 2282.03 Data Structures and Numerical Methods

E. Technical Co-op Programme

Co-operative education is based on the principle that an academic programme 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. 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 organised 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 programmes combine two or more four-month work terms.

Each academic programme 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 programme. All programmes end on an academic term rather than a work term to allow for the formal integration of workplace and classroom learning.
• 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 on-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 programmes.

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 programme websites.

Graduation
In order to complete successfully the requirements for graduation with a 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 revises 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 flow rate. Also covered are fundamental properties of multiphase systems: phase equilibrium, vapour pressure, phase rule, Raoult's and Henry's Laws, and colloidal properties. Emphasis is placed on developing problem solving skills. FORMAT: Lectures 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. Kirchoff's laws are introduced and developed into node and loop analysis techniques. Terminal behavior and circuit equivalence including Thevenin and Norten 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 PRIEREQUISITE: 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 phases 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 PRIEREQUISITE: 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 3 hours PRIEREQUISITE: 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 2 hours PRIEREQUISITE: ECED 2003.03, ECED 2200.03

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 touches 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 also included. FORMAT: Lecture 3 hours, lab 3 hours PRIEREQUISITE: MATH 1003.03 EXCLUSION: ENGI 1210.03

262 Engineering
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 lectures 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 14001, 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

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 remediates. Lectures are supplemented by tutorials which include guest speakers, case studies and field trips.
PREREQUISITE: CHEM 1021.03, 1022.03
CROSS-LISTING: ENVE 3000.03
FORMAT: Lecture 3 hours, lab 2 hours

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.

264 Engineering
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 fisheries and environment. In the private sector, Bio-Engineers are employed in the federal and provincial departments of agriculture and fisheries and environment. In the private sector, Bio-Engineers are employed in the federal and provincial departments of agriculture and fisheries and environment.

II. Curriculum and course descriptions

Refer to Sections IIA and IIB, Biological Engineering Programme, in the Process Engineering and Applied Science section of this calendar, pages 295 and 298.

III. Co-operative programme and schedule

Refer to Sections I: Technical Co-op Programme, in the Engineering section of this calendar page 261.

IV. Admissions

The entrance requirement to the Biological Engineering programme is a successful completion of the first year engineering at a recognized university. Students who have completed a first year of a science programme will also be considered for admission into this programme. Students who have completed two or more years of university studies will be considered for admission on the basis of transfer of credits.
II. Curriculum and course descriptions
Refer to sections II.B and IIIB, Chemical Engineering Programmes in the Process Engineering and Applied Science section of this calendar, page 294.

III. Co-operative programme and schedule
Refer to section F. Technical Co-op Programme, in the Engineering section of this calendar page 261.

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

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I. Introduction
The Department of Civil and Resource Engineering consists of the Civil Engineering Programme and the Mineral Resource Engineering Programme. The Department currently offers two accredited professional degree programmes:
- Bling in Civil Engineering, co-op and non-co-op programmes;
- Bling in Mineral Resource Engineering, co-op and non-co-op programmes.

For additional information on these programmes and the nature of the engineering studies involved, the reader is referred to individual programme listings in the Faculty of Engineering section of this calendar.

II. Programme Guides

A. Civil Engineering Programme

Year 1 and 2 follow the programme 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 undergraduates, 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 Programme

Year 3 Term 5 (Fall)
- CIVL 4024.005 Surveying Field School
- CIVL 3301.03 Soil Mechanics
- CIVL 3501.03 Hydrogeology
- CIVL 3705.03 Mechanics of Structural Materials and Components
- CIVL 3725.03 Construction Materials and Methods
- CIVL 4111.03 Geotechnical Engineering
- CIVL 4801.005 Senior Project I
- CPST 3000.05 Engineering in Society II

Technical Electives
- CIVL 4200.03 Transportation Engineering
- CIVL 4211.03 Geotechnical Engineering
- CIVL 4501.03 Design of Steel Structures
- CIVL 4802.025 Senior Project II
- CIVL 4802.025 Engineering in Society II

Year 4 Term 8 (Winter)
- CIVL 4411.03 Surveying Field School
- CIVL 3310.03 Engineering Hydrogeology
- CIVL 4111.03 Engineering Hydrogeology
- CIVL 4410.03 Water Quality and Treatment
- CIVL 4501.03 Geotechnical Engineering
- CIVL 4560.03 Special Topics in Structural Systems
- CIVL 4560.03 Petroleum Engineering

2. Infrastructure Option, Co-op Programme

Year 3 Term 5 (Fall)
- CIVL 4024.005 Surveying Field School
- CIVL 3301.03 Soil Mechanics
- CIVL 3301.03 Hydrogeology
- CIVL 3705.03 Mechanics of Structural Materials and Components
- CIVL 3725.03 Construction Materials and Methods
- CIVL 4111.03 Geotechnical Engineering
- CIVL 4801.005 Senior Project I
- CPST 3000.03 Engineering in Society II

Technical Electives
- CIVL 4200.03 Transportation Engineering
- CIVL 4211.03 Geotechnical Engineering
- CIVL 4501.03 Design of Steel Structures
- CIVL 4802.025 Senior Project II
- CIVL 4802.025 Engineering in Society II

Year 4 Term 8 (Winter)
- CIVL 4411.03 Surveying Field School
- CIVL 3310.03 Engineering Hydrogeology
- CIVL 4111.03 Engineering Hydrogeology
- CIVL 4410.03 Water Quality and Treatment
- CIVL 4501.03 Geotechnical Engineering
- CIVL 4560.03 Special Topics in Structural Systems
- CIVL 4560.03 Petroleum Engineering

3. Earth and Environment Option, Non-Co-op Programme

Year 3 Term 5 (Fall)
- CIVL 4024.005 Surveying Field School
- CIVL 3301.03 Soil Mechanics
- CIVL 3301.03 Hydrogeology
- CIVL 3705.03 Mechanics of Structural Materials and Components
- CIVL 3725.03 Construction Materials and Methods
- CIVL 4111.03 Geotechnical Engineering
- CIVL 4801.005 Senior Project I
- CPST 3000.03 Engineering in Society II

Technical Electives
- CIVL 4200.03 Transportation Systems
- CIVL 4211.03 Geotechnical Engineering
- CIVL 4501.03 Design of Steel Structures
- CIVL 4802.025 Senior Project II
- CIVL 4802.025 Engineering in Society II

Year 4 Term 8 (Winter)
- CIVL 4411.03 Surveying Field School
- CIVL 3310.03 Engineering Hydrogeology
- CIVL 4111.03 Engineering Hydrogeology
- CIVL 4410.03 Water Quality and Treatment
- CIVL 4501.03 Geotechnical Engineering
- CIVL 4560.03 Special Topics in Structural Systems
- CIVL 4560.03 Petroleum Engineering

3. Earth and Environment Option, Co-op Programme

Year 3 Term 5 (Fall)
- CIVL 4024.005 Surveying Field School
- CIVL 3301.03 Soil Mechanics
- CIVL 3301.03 Hydrogeology
- CIVL 3705.03 Mechanics of Structural Materials and Components
- CIVL 3725.03 Construction Materials and Methods
- CIVL 4111.03 Geotechnical Engineering
- CIVL 4801.005 Senior Project I
- CPST 3000.03 Engineering in Society II

Technical Electives
- CIVL 4200.03 Transportation Systems
- CIVL 4211.03 Geotechnical Engineering
- CIVL 4501.03 Design of Steel Structures
- CIVL 4802.025 Senior Project II
- CIVL 4802.025 Engineering in Society II
Year 3, Term 5 (Fall)
- CIVL 0124.005 Surveying Field School
- CIVL 3101.03 Soil Mechanics
- CIVL 3503.03 Hydraulics
- CIVL 3515.03 Structural Systems I – Form and Analysis
- CIVL 3775.03 Mechanics of Structural Materials and Components
- CIVL 3725.03 Construction Materials and Methods
- MINE 3900.03 Introduction to Geology for Engineers

Year 3, Term 6 (Winter)
- CIVL 3203.03 Transportation Engineering
- CIVL 3310.03 Engineering Hydrology
- CIVL 3403.03 Water Quality and Treatment
- CIVL 3513.03 Structural Systems II – Loads & Behaviour
- CIVL 3783.03 Combinations and Systems Modelling

3 Technical Electives from:
- CIVL 4403.03 Solid Waste and Landfill Engineering
- MINE 3620.03 Petroleum Engineering

Year 4, Term 8 (Winter)
- CIVL 4401.03 Water and Wastewater Treatment
- CIVL 4802.025 Senior Project II
- CPST 3025.03 Engineering in Society I

Technical Electives*
- CHEE 4872.03 Air Pollution Control
- CIVL 4440.03 Water and Wastewater Treatment
- CIVL 4801.005 Senior Project I
- CPST 3025.03 Engineering in Society I
- CHEE 4772.05 Environmental Assessment and Management

Year 5, Term 7 (Fall)
- CIVL 4441.03 Engineering Hydrogeology
- CIVL 4802.025 Senior Project II
- CPST 3025.03 Engineering in Society II
- CHEE 4772.05 Environmental Assessment and Management

Technical Electives*
- CIVL 4411.03 Geotechnical Engineering
- CIVL 4200.03 Transportation Systems
- CIVL 4359.03 Forms and Process in Alluvial Channels
- CIVL 4830.03 Applied Geometrics
- ENGM 4675.03 Risk Assessment & Management
- ENVE 3525.03 Environmental and Industrial Microbiology

Year 5, Term 7 (Winter)
- ENVE 3251.03 Environmental and Industrial Microbiology
- ENGM 4675.03 Risk Assessment & Management
- CIVL 4830.03 Applied Geometrics
- CIVL 4359.03 Forms and Process in Alluvial Channels
- CIVL 4801.005 Senior Project I
- CHEE 4772.05 Environmental Assessment and Management

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 Programme

Year 1 follows the common programme outlined in the Engineering section of this calendar.

Year 2, Term 3 (Fall)
- CPST 2000.03 Technical Communications
- ENGD 2000.03 Fluid Mechanics
- ENGD 2001.03 Mechanics II
- ENGM 2001.03 Engineering Mathematics III
- ENGM 2001.03 Computer Programming
- Humanities I

Year 2, Term 4 (Winter)
- CPST 2000.03 Technical Communications
- ENGD 2200.03 Mechanics of Materials
- ENGD 2800.03 Engineering Thermodynamics I
- ENGM 2001.03 Engineering Mathematics IV (a)
- ENGD 2005.03 Engineering Economics

Year 3, Term 5 (Fall)
- CIVL 0124.005 Surveying Field School
- CIVL 3101.03 Soil Mechanics
- CIVL 3503.03 Hydraulics
- CIVL 3513.03 Structural Systems I – Form and Analysis
- CIVL 3775.03 Mechanics of Structural Materials and Components
- CIVL 3725.03 Construction Materials and Methods
- MINE 3900.03 Introduction to Geology for Engineers

Year 3, Term 6 (Winter)
- CIVL 3203.03 Transportation Engineering
- CIVL 3310.03 Engineering Hydrology
- CIVL 3403.03 Water Quality and Treatment
- CIVL 3513.03 Structural Systems II – Loads & Behaviour
- CIVL 3783.03 Combinations and Systems Modelling

3 Technical Electives from:
- CIVL 4403.03 Solid Waste and Landfill Engineering
- MINE 3620.03 Petroleum Engineering

Year 4, Term 8 (Winter)
- CIVL 4401.03 Water and Wastewater Treatment
- CIVL 4802.025 Senior Project I
- CPST 3025.03 Engineering in Society I

Technical Electives*
- CHEE 4872.03 Air Pollution Control
- CIVL 4440.03 Water and Wastewater Treatment
- CIVL 4801.005 Senior Project I
- CPST 3025.03 Engineering in Society I
- CHEE 4772.05 Environmental Assessment and Management

Year 5, Term 7 (Fall)
- CIVL 4441.03 Engineering Hydrogeology
- CIVL 4802.025 Senior Project II
- CPST 3025.03 Engineering in Society II
- CHEE 4772.05 Environmental Assessment and Management

Technical Electives*
- CIVL 4411.03 Geotechnical Engineering
- CIVL 4200.03 Transportation Systems
- CIVL 4359.03 Forms and Process in Alluvial Channels
- CIVL 4830.03 Applied Geometrics
- ENGM 4675.03 Risk Assessment & Management
- ENVE 3525.03 Environmental and Industrial Microbiology

*total number of technical electives for terms 7 and 8 must equal five.
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 some hydrology are also discussed.

FORMAT: Lecture 3 hours, lab 2 hours
PREREQUISITE: ENGI 2800.03, ENGM 2021.03, ENGM 2022.03, CIVL 3300.03, MIN 3800.03

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 1010.03 and MATH 1011.03, CHEM 1021.03 and CHEM 1022.03, ENGI 2800.03
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 virtual work 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 3000.03, CIVL 3150.03

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 beams, building frames and frame 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, and learn how to use various computer programs.

FORMAT: Lecture 3 hours, lab 2 hours
PREREQUISITE: CIVL 4350.03, CIVL 3705.03, CIVL 3725.03
EXCLUSION: CIVL 3500.03, CIVL 3510.03

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 2022.03, 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. It will cover 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 4720.03

CIVL 3740.03: Computations and Systems Modeling.
This class will introduce 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 eigenvalue problems, as well as numerical differentiation and integration are introduced. Curve-fitting and non-linear optimization techniques are presented. Computational tools such as MatLab, MathCad, Excel, and Mathematica are introduced and used to analyze structural stability, the behavior of space-frames, dynamics, vibrations, and other topics of interest in infrastructure systems. FORMAT: Lecture 3 hours, lab 2 hours PREREQUISITE: ENGM 2002.03, ENGM 2002.03, ENGM 2011.03 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-pipe interaction, and design/analysis of natural cuts, embankments, and earth dams. The application of these design/analyses to particular infrastructure and environmental structures is emphasized in the laboratory sessions. FORMAT: Lecture 3 hours, lab 3 hours PREREQUISITE: CIVL 3301.03 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 as a cause of 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 an 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 roadway 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 3301.03

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 of 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 3301.03

CIVL 4359.03: Form and Process in Alluvial Channels.
This class will utilize the application of hydraulics in a civil engineering point-of-view. This will include discussion of hydraulic roughness, geometric parameters, and quantities, on 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 3101.03 (minimum), CIVL 4350.03 (preferable) CROSS-LISTING CIVL 6359.03 EXCLUSION: CIVL 6359.03

CIVL 4410.03: Engineering Hydrogeology.
This relatively quantitative introduction to hydrogeology begins with a review of key definitions and hydraulic principles pertaining to flow through porous media. It 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 3110.03, ENGM 2011.03, 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 3110.03 EXCLUSION: CIVL 4440.03

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 3435.03

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 sitting, liner system, leachate control and treatment, and gas collection and control system). FORMAT: Lecture 3 hours, lab 2 hours PREREQUISITE: CIVL 3435.03, CIVL 3101.03

CIVL 4515.03: Reinforced Concrete Design.
This class provides 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 3508.03, CIVL 3515.03, CIVL 3505.03, CIVL 3705.03, CIVL 3725.03 EXCLUSION: CIVL 3520.03, CIVL 4510.03

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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 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
EXCLUSION: CIVL 4515.03

CIVL 4710.03: Construction Planning.
This class deals with construction administration, building 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 airports.
FORMAT: Lecture 3 hours, lab 2 hours
PREREQUISITE: CIVL 3505.03, CIVL 3515.03
EXCLUSION: CIVL 4515.03

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 such reflects. Faculty standards for report preparation and oral presentations will be presented. Delievable 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 4801.02
EXCLUSION: CIVL 4701.03

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 GIS 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
EXCLUSION: CIVL 0242.0003

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 lapopographic maps and remote sensing images) and geologic map structures are an important part of the class.
FORMAT: Lecture 3 hours, lab 3 hours

MINE 3520.02: 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 processing operations 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, flotiation and selective flotation. 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.

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 materials. The drilling and blasting sequence of operations and equipment required are discussed for different mining situations. The effects of blasting on adjacent geological structures are examined. This course provides a foundation for the effective planning and implementation of overburden disposal. A term project is required. The student is required to solve problems and produce a term project using computer simulation programs.

FORMAT: Lecture 3 hours, lab 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 for each unit operation.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: MINE 3610.03

MINE 4705.03: Mining Geology II.

The physical characteristics and origins of the main types of ore deposits are covered. Individual deposits are described in terms of their mineralogy, rock types, structures and geographic 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

MINE 4710.03: Mine Excavation Systems.

This class deals with several specialized mining topics related to mine excavation including economic analysis and valuation, individual orebodies are described. The project scope can include feasibility studies, mining engineering design, and mine planning and design. The students is required to solve problems and produce a term project using computer simulation programs.

FORMAT: Lecture 3 hours, lab 2 hours

EXCLUSION: MINE 4810.03

MINE 4711.03: Mine Ventilation and Environment Control.

This class presents the principles of ventilation in underground and surface mines. Health hazards such as mine dusts, gases, radiation, and heat stress are discussed. The project scope can include a detailed analysis of ventilation systems. Mine ventilation and noise control are studied as part of the project scope. The students is encouraged to produce a term project using computer simulation programs.

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 project is required of each student to conduct a mineral economics analysis.

FORMAT: 1 lecture 2 hours, lab 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 mechanisms 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

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 included. FORMAT: Lecture 3 hours, lab 2 hours

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

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

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

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 belts and cyclones, Dyna-whirlpool and Vaney separators, water-only cyclones, shaking tables, spirals, flotation, split conditioning, oil agglomeration, selective flocculation, dry concentration, schlarb 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, flotation machines, froth stability, fines entertainment in froth lamellas, flotation kinetics, flotation machines, flotation of sulphides, oxides, silicates and nonmetallic minerals, and flotation circuit design. FORMAT: Lecture 2 hours, lab 3 hours
Civil Engineering

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Undergraduate Programme Co-ordinator
Ali, N.A., BSc (Baghdad), MSc, PhD (N.Carolina State), PEng

I. Introduction

Civil engineering deals with the design, construction, and maintenance of the infrastructure of human 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 meets 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.

Although civil engineering is only one among many engineering disciplines available at Dalhousie, as an applied science it is characterized by exceptional technical diversity, great breadth and depth of subject matter, and a propensity for proactively addressing the practical needs of society. It is therefore natural that a 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 programme 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 hydrology, geo-environmental engineering, and waste management.

II. Curriculum and course descriptions

Refer to sections IIA and IIIA, Civil Engineering Programme, in the Civil and Resource Engineering section of this calendar, pages 267 and 269.
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 programme, 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 Programmes

A. Electrical Engineering Programme

Year 1 follows the common programme outlined in the Engineering section of this calendar.

A. Electrical Engineering Programme

I. Introduction

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II. Degree Programmes

A. Electrical Engineering Programme

Year 1 follows the common programme outlined in the Engineering section of this calendar.
II. ENGM Courses

Year 1, Term 1 (Fall)
• ENGM 1281.03 Engineering Problem Solving
  PREREQUISITE: MATH 1010.03, PHYC 1100.06
  FORMAT: Lecture 3 hours, lab 3 hours
  This class covers advanced circuit analysis techniques, starting 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 into node and transient analysis software is used throughout the class.

Year 1, Term 2 (Winter)
• ENGM 2282.03 Data Structures and Numerical Methods
  PREREQUISITE: ECED 2000.03
  FORMAT: Lecture 3 hours, lab 3 hours
  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 into node and transient analysis software is used throughout the class.

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 into node and transient analysis software is used throughout the class.

Year 2, Term 4 (Winter)
• ECED 2000.03 Electric Circuits
  PREREQUISITE: MATH 1010.03, PHYC 1100.06
  FORMAT: Lecture 3 hours, lab 3 hours
  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.

Year 2, Term 6 (Summer)
• ECED 2400.03 System Analysis
  PREREQUISITE: ENGM 2032.03
  FORMAT: Lecture 3 hours, lab 3 hours
  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 pspice.

Year 4, Term 2 (Fall)
• ECED 4260.03 IC Design and Fabrication
  PREREQUISITE: ECED 4003.03
  FORMAT: Lecture 3 hours, lab 2 hours
  Modern Control Systems

Year 4, Term 3 (Summer)
• ECED 4350.03 Optical Electronics
  FORMAT: Lecture 3 hours, lab 3 hours
  This class covers advanced circuit analysis techniques, starting 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 into node and transient analysis software is used throughout the class.

Year 5, Term 8 (Fall)
• ECED 4460.03 Communications Electronics
  FORMAT: Lecture 3 hours, lab 3 hours
  This class covers advanced circuit analysis techniques, starting 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 into node and transient analysis software is used throughout the class.

C. Cooperative Education Programme Sequencing
The schedule for the cooperative education programme includes eight academic terms (AT) and three work-terms (WT), as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Term</th>
<th>Work Term</th>
<th>Fall</th>
<th>Winter</th>
<th>Summer</th>
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<tbody>
<tr>
<td>Year 1</td>
<td>AT1</td>
<td>AT2</td>
<td>FREE</td>
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<tr>
<td>Year 2</td>
<td>AT3</td>
<td>AT4</td>
<td>FREE</td>
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<tr>
<td>Year 3</td>
<td>AT5</td>
<td>WT1</td>
<td>AT6</td>
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<td>Year 4</td>
<td>AT8/WT2</td>
<td>AT7</td>
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<tr>
<td>Year 5</td>
<td>AT8</td>
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D. Technical Electives
- ECED 4071.03 Analog Filter Design
- ECED 4102.03 MOS-Switched-Capacitor Circuits
- ECED 4130.03 Electric Power Systems II
- ECED 4140.03 Power Systems III
- ECED 4200.03 IC Design and Fabrication
- ECED 4303.03 Optical Electronics
- ECED 4421.03 Technology and Applications of Fiber Optics
- ECED 4460.03 Communications Electronics
- ECED 4494.03 Digital Transmission Theory
- ECED 4503.03 Biomedical Engineering

B. Computer Engineering Programme
Students wishing to pursue the Computer Engineering Programme must have completed ECED 2400.03 Systems Analysis prior to Term 5.

Students follow the Electrical Engineering programme for Terms 1 to 3. In Year 2, Term 4, the student starts the Computer Engineering programme as outlined below.

Year 2, Term 4 (Winter)
• ECED 2400.03 System Analysis
  PREREQUISITE: ECED 2200.03
  FORMAT: Lecture 3 hours, lab 2 hours
  Functional decomposition and 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.

Year 2, Term 5 (Fall)
• ECED 2401.03 Circuit Analysis
  PREREQUISITE: ECED 2000.03
  FORMAT: Lecture 3 hours, lab 3 hours
  This class covers advanced circuit analysis techniques, starting 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 into node and transient response for first order networks. Phasors and sinusoidal steady state are introduced. Students are introduced to circuit simulation tools such as pspice.

Year 3, Term 3 (Summer)
• ECED 3400.03 Microcomputer Systems
  FORMAT: Lecture 3 hours, lab 3 hours
  Programmable logic is introduced. Contemporary computer aided design and analysis software is used throughout the class.

Year 3, Term 5 (Fall)
• ECED 3401.03 Introduction to Electronics
  PREREQUISITE: ECED 2000.03
  FORMAT: Lecture 3 hours, lab 3 hours
  This class covers advanced circuit analysis techniques, starting 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 into node and transient response for first order networks. Phasors and sinusoidal steady state are introduced. Students are introduced to circuit simulation tools such as pspice.

Year 3, Term 6 (Summer)
• ECED 3500.03 Signal Analysis
  FORMAT: Lecture 3 hours, lab 3 hours
  This class covers advanced circuit analysis techniques, starting 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 into node and transient response for first order networks. Phasors and sinusoidal steady state are introduced. Students are introduced to circuit simulation tools such as pspice.

Year 4, Term 7 (Winter)
• ECED 4001.03 Digital Control Systems
  PREREQUISITE: ECED 4003.03
  FORMAT: Lecture 3 hours, lab 2 hours
  This class covers advanced circuit analysis techniques, starting 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 into node and transient response for first order networks. Phasors and sinusoidal steady state are introduced. Students are introduced to circuit simulation tools such as pspice.

Year 4, Term 8 (Fall)
• ECED 4130.03 Electric Power Systems II
  PREREQUISITE: ECED 4003.03
  FORMAT: Lecture 3 hours, lab 2 hours
  This class covers advanced circuit analysis techniques, starting 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 into node and transient response for first order networks. Phasors and sinusoidal steady state are introduced. Students are introduced to circuit simulation tools such as pspice.
PREREQUISITE: ECED 2001.03
placed on motor control and application. An in depth presentation of AC and DC motor behavior. Emphasis is
and motor operation. Basic principles of motor operation such as rotating
circuit calculations and permanent magnet circuit behavior. Energy
addition, filtering, noise and distortion are introduced.

PREREQUISITE: ECED 2001.03

ECED 3204.03: Microprocessors.
This course introduces a current available microprocessor system. Topics include microcontrollers as a type of microprocessor, microprocessor
architecture, address, data, and control buses, allocation of linear time-invariant (LTI) systems, the convolution integral and Eigenfunction and Eigenvalues of LTI
systems.

FORMAT: Lecture 3 hours, lab 2 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 electrodynamics, 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 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 2 hours
PREREQUISITE: ENGM 2262.03

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
application to 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 3204.03

ECED 3500.03: Signal Analysis.
Transformation theory and frequency domain representation of continuous-time signals including Fourier series, Fourier transform and
Laplace transformation. Discrete-time signals, sampling theorems, aliasing and
frequency domain representation of discrete-time signals including the
z-transformation. Introduction to communication systems, exponential and
sinusoidal amplitude modulation.

FORMAT: Lecture 3 hours, lab 2 hours
PREREQUISITE: ENGM 2241.03 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

**ECED 3800.03: Electrical Materials.**

This class deals with the understanding and application of electronic materials used by electronic engineers. The class will begin by introducing Schrödinger’s equation in context with understanding the electronic transport properties of semiconductors and metals. The concept of band, effective mass, polarization, optical absorption, dielectric breakdown, and lasers will be developed. The properties and characteristics of pn junctions, diodes, magnetic materials, optical materials, and pn light detectors will be introduced.

**FORMAT:** Lecture 3 hours, lab 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 3 hours

**PREREQUISITE:** ECED 3202.03

**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, Cauer (or Elliptic) and Bessel-Thompson. The design of Multiloop MOS-switched-capacitor filters is also introduced.

**FORMAT:** Lecture 3 hours, lab 2 hours

**PREREQUISITE:** ECED 3202.03 and ECED 3003.03

**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 2 hours

**PREREQUISITE:** Permission of instructor

**ECED 4130.03: Electric Power Systems II.**


**FORMAT:** Lecture 3 hours, lab 2 hours

**PREREQUISITE:** ECED 3202.03

**ECED 4140.03: Power Systems III.**

This class covers topics such as load curves and forecasting, characteristics and peak demand forecasting, weather-load models, discounted multiple regression and ARIMA 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 CMOS 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 2202.03 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, 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 cutoff frequencies.

**FORMAT:** Lecture 3 hours, lab 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 laser diode in light emitting diodes (LED); and stimulated emission and optical gain in laser diodes (LD).

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:** ECED 2202.03

**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

**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; network analysis and s-parameter techniques; large signal circuit design realization and analysis employing volterra series and harmonic balance nonlinear analysis procedures; the realization and characterization of nonlinear circuits as high efficiency power...

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amplifiers, oscillators, frequency converters, and modulator/demodulator subsystems; the integration of appropriate subsystems into analog and digital terrestrial and space borne radio communication systems.

**ECED 4502.03: Digital Signal Processing.**

This class introduces the basics of filtering and analysis of discrete time signals and systems. The synthesis and implementation of analog filters is discussed. An overview of the sampling theorem is followed by a discussion of the discrete Fourier transform and the z-transform. The analysis of discrete time signals is introduced, and synthesis of digital filters is covered. Contemporary signal processing hardware and design software is introduced.

**FORMAT:** Lecture 3 hours, lab 2 hours  
**PREREQUISITE:** ECED 3202.03, ECED 4501.03  

**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 3 hours  
**PREREQUISITE:** ECED 3500.03  

**ECED 4504.03: Digital Transmission Theory.**

This class is a continuation of ECED 4503.03. 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. Telematic analysis is presented for both circuit and packet switched networks.

**FORMAT:** Lecture 3 hours, lab 2 hours  

**PREREQUISITE:** ECED 3500.03  

**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 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 4600.03  

**ECED 4760.03: Biomedical Engineering.**


**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
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 1012.03 or MATH 1000.03 and MATH 101.03

**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, inference 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 1012.03 or MATH 1000.03 and MATH 101.03

**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, rank, determinants, Cramer’s rule, introduction to vector spaces, linear independence and bases, rank, linear transformations, orthogonality and applications, Gram-Schmidt algorithm, eigenvectors and eigenpairs.

**FORMAT:** Lecture 3 hours, lab 2 hours

**PREREQUISITE:** ENGM 1011.03 and MATH 1000.03 and MATH 101.03

**ENGM 2052.03: 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, introduction to vector spaces, linear independence and bases, rank, linear transformations, orthogonality and applications, Gram-Schmidt algorithm, eigenvectors and eigenpairs.

**FORMAT:** Lecture 4 hours, lab 1 hour

**PREREQUISITE:** ENGM 1011.03 and 1012.03 or MATH 1000.03 and MATH 101.03

**ENGM 2062.03: Engineering Mathematics IVb.**
This class covers 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 1012.03 or MATH 1000.03 and MATH 101.03

**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 1012.03 or MATH 1000.03 and MATH 101.03
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, electrodynamics and fluid flow. FORMAT: Lecture 3 hours, lab 2 hours
PREREQUISITE: ENGM 2021.03 and 3012.03 or MATH 3002.03 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, classes, data structures, 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 2012.03, ENGM 2082.03, ENGM 2091.03

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 2032.03, 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 2012.03

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 2012.03

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

I. Introduction

Environmental Engineering is a rapidly growing discipline within the engineering profession. The programme 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.

Government departments, environmental consulting companies, provincial and national manufacturers of environmental and energy efficient products, in national and international petroleum companies and power utilities, level. Challenging Environmental Engineering career positions are found consulting sector at the provincial, regional, national and international

II. Curriculum and course descriptions

Refer to sections IIC and IIIC, Environmental Engineering Programme, in this calendar, page 294.

III. Co-operative programme and schedule

Refer to section E. Technical Co-op Programme, in the Engineering section of this calendar, page 261.

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 programme.
- Students who have completed a first year science programme 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

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 programme consisting of 20 credits or 120 credit hours. During the first two years of the programme, 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 programme’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 programmes 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 industry in the world. A food scientist with a BASc degree may choose

Undergraduate Programme Co-ordinator

Truelsrup-Hansen, L., Cand. Scient. (R.V.A. Univ. Denmark)

Dean

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

Department Head, Process Engineering and Applied Science

Pegg, M. J., BSc, PhD (Leeds), PEng

Programme Co-ordinator

Hardwicke, K., BEng (UNiversity of Guelph), PhD (Guelph)
II. Curriculum and course descriptions

Refer to sections IID and IIE, Food Science Programme, in the Process Engineering and Applied Science section of this calendar, page 294.

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 programme. Many of our students have traditionally been transfer students. Please contact the programme chair for advice on this matter.

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Industrial Engineering

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Dean
Leon, L.J., BSc, MSc, PhD (Dal), PEng

Department Head
Cynthia, J.P., BSc (Eng) (UW), MSc (Dal), PhD (TUNS), PEng

Professors
Garrett, R.A., BSc (MBA), MA (Dal), PhD (Toronto), PEng
He, Q-M., BSc, PhD (China), PhD (Waterloo) (Graduate Advisor)
Sandholtz, C.-L., Fil.Kand., Fil.Mag. (Lund), PhD (Barn)

Research Professors
Barzilai, J., BSc, MSc, DSc (Technion)
Dax, B., BEng (Rotman), MSc, PhD (NC State), FIEE, FIEEE, FIEEE, PEng

Associate Professors
Blake, J. T., BASc, PhD (Toronto), PEng (Undergraduate Programme Coordinator)
Cyrus, J.P., BSc (Eng) (UWI), MASc, PhD (TUNS), PEng
Pellet, R.P., BASc (Ottawa), MASc (Alberta), PhD (Waterloo), PEng (Co-op Adviser)
Verkade, U., IFtech (IT-BHU), MS (Clemson), PhD (Purdue), PEng

Assistant Professor
MacDonald, C. A., IFtech (TUNS), PhD (Dal), PEng

Adjunct Professors
Cormier, G., BSc (U de M), MSc, PhD (TUNS)
Easly, H.A., Dip-Kfm, Dr vir pol (Gottingen)
Fiala, H., BSc (UW), MSc, PhD (TUNS), PEng
Wormald, B.M., BSc, PhD (Hall), PEng
Yang, T., IFtech (Shanghai), MSc, PhD (Toronto), PEng

Adjunct Associate Professors
Black, N., BAEng (Waterloo), MSc (TUNS), PhD (UNB), PEng
Li, H., BSc, PhD (South Carolina), PEng
MacKay, K., BMath, MSc, PhD (Waterloo)

I. Introduction

Industrial Engineers design systems to enable people and society to improve the productivity, efficiency, effectiveness and quality of the work environment. All engineers work at planning, designing, implementing and controlling the systems that represent the way people 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 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 office 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 assumes 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 analyses 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 programme 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 being required to enhance 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 take extra classes related to such areas as manufacturing, service systems, or management science 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 programme of studies. They must also, of course, relate the practical requirements of the client.

Job opportunities for industrial engineers are both challenging and widely varied. 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 and requires not only technical skills but also an understanding of the business environment. 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.

II. Programme Guide

Year 1 follows the programme outlined in the Engineering section of this calendar.

Year 2, Term 3 (Fall)
• ENCI 2200.03 Electric Circuits
• ENCI 2300.03 Mechanics of Materials
• ENCI 2400.03 Engineering Thermodynamics I or ENCI 2280.03 Digital Circuits

Year 2, Term 4 (Winter)
• CPST 2000.03 Technical Communications
• ENCI 2400.03 Mechanics II or ENCI 2280.03 Mechanics II
• ENCI 2022.03 Applied Probability & Statistics
• ENCI 2062.03 Engineering Math IV (a) or ENCI 2262.03 Engineering Math IV (b)

Year 3, Term 5 (Fall)
• IENG 2005.03 Engineering Economics

Year 3, Term 6 (Winter)
• Work Term 1

Year 4, Term 7 (Summer)
• IENG 3315.03 Accounting
• IENG 3321.03 Manufacturing Processes and Materials
• IENG 3334.03 Industrial Statistics
• IENG 3340.03 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 3440.03 Quality Control and Reliability
• IENG 4452.03 Computer Networks
• IENG 4453.03 Facilities Design
• IENG 4457.03 Design of Inventory and Production Systems
• MCH 4345.03 Mechanical Design

Year 4, Term 10 (Summer)
• Work Term 3

Year 5, Term 11 (Fall)
• IENG 4541.03 Industrial and Organizational Psychology
• IENG 4546.03 Industrial Engineering Design Project I
• IENG 4548.03 System Engineering
• IENG 4549.03 Computer Integrated Manufacturing Systems
• IENG 4551.03 Industrial Engineering Design Project II
• IENG 4553.03 Quality Control and Reliability
• IENG 4557.03 Operations Research: Linear Models

Year 5, Term 12 (Winter)
• IENG 4547.03 Company Operations and Management
• IENG 4551.03 Industrial and Organizational Psychology
• IENG 4557.03 Computer Integrated Manufacturing Systems
• IENG 4559.03 Computer Integrated Manufacturing Systems
• IENG 4560.03 Modeling and Performance Analysis of Computer Networks

Industrial Engineering Electives
• IENG 4544.03 Routing and Scheduling
• IENG 4553.03 Computer Integrated Manufacturing Systems
• IENG 4560.03 Modeling and Performance Analysis of Computer Networks
• IENG 4562.03 Engineering Economics
• IENG 4564.03 Design and Optimization of Service Systems
• IENG 4573.03 Industrial Biomechanics
• IENG 4575.03 Industrial and Organizational Psychology
• IENG 4577.03 Organizational Aspects of Quality Management
• IENG 4579.03 Supply Chain Management
• IENG 4580.03 Computer Systems Engineering
• IENG 4581.03 Computer Systems Engineering
III. Class Descriptions

**IENG 2005.03: Engineering Economics.**
This class is designed to provide students with the fundamentals of Engineering Economics. Engineers must function as managers in the real world of decision making where the criteria include not only technological excellence, but cost. Time value of money, project screening, and a variety of discounting analyses 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

**IENG 3305.03: Computational Methods and Algorithms for IE.**
An overview of advanced programming methods is presented with an introduction to algorithms used in industrial engineering applications. Topics covered include sorting, searching, data structures, shortest paths, random number generation, simulated annealing, numeric 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 2032.03

**IENG 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

**IENG 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 workloads and tool design, graphical techniques of work measurement 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

**IENG 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

**IENG 3316.03: Design of Information Management Systems.**
Techniques used in the design of information management systems to support decision making are taught. This includes the principles of systems analysis, software engineering and requirements analysis. The design of relational database systems, user interfaces and documentation are covered. Current technologies for computer hardware, software, networking and communications are reviewed. Students are taught how to programme database applications in a fourth generation environment. Software development projects will be assigned.

**FORMAT:** Lecture 3 hours, lab 2 hours

**PREREQUISITE:** ENGM 2081.03

**IENG 3321.03: Manufacturing Processes and Materials.**
This class deals with properties of manufacturing materials, casting and forming, traditional and non-traditional machining processes, welding and computer-aided manufacturing (CAM). 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

**IENG 3334.03: Industrial Statistics.**
This class covers hypothesis testing, chi-square tests and nonparametric techniques, analysis of variance and experimental design, as well as simple and multiple linear regression. Numerical examples are solved by straightforward calculation as well as by computer software, and various applications are presented. Time series and forecasting techniques are taught. A project concerns the building and testing of a multiple linear regression model.

**FORMAT:** Lecture 3 hours, lab 2 hours

**PREREQUISITE:** ENGM 2032.03

**IENG 3344.03: Operations Research: Linear Models.**
This class is an introduction to linear programming and its applications to industrial engineering design. The simplex method and duality theory are covered in detail. Formulation, solution algorithms, and applications of several problem classes are presented including network models and integer programs. Through a class project, students are introduced to the process of developing an optimization model, including the ideas of database, matrix generators, and report writers.

**FORMAT:** Lecture 3 hours, lab 2 hours

**PREREQUISITE:** ENGM 2081.03, ENGM 2262.03

**EXCLUSION:** IENG 3342.03

**IENG 3345.03: Operations Research: Stochastic and Non-Linear Models.**
This class consists of an analysis of important probabilistic and nonlinear models in Operational Research. These include dynamic programming, queuing models and reliability models. Aspects of Markov processes and nonlinear programming are introduced. Application of these methods is reinforced through a term project.

**FORMAT:** Lecture, Lab

**PREREQUISITE:** ENGM 2032.03

**EXCLUSION:** IENG 3333.03

**IENG 3347.03: Ergonomics and Safety Engineering.**
This class deals with the 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 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 3333.03

**IENG 4432.03: Simulation of Industrial Systems.**
This class covers discrete-event systems simulation. Model development includes validation and verification methods, the generation of pseudo-random numbers from continuous and discrete distributions, selection of probability distributions and variance reduction techniques. Statistical output analysis and inference are studied for effective interpretation of results. Applications in areas such as manufacturing, service operations, project management and system design are reviewed. Simulation software is used throughout the course.

**FORMAT:** Lecture 3 hours, lab 2 hours

**PREREQUISITE:** IENG 3334.03, IENG 3342.03, IENG 3345.03

**EXCLUSION:** IENG 3432.03

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**IENG 3305.03**

**IENG 3311.03**

**IENG 3313.03**

**IENG 3314.03**

**IENG 3315.03**

**IENG 3316.03**

**IENG 3321.03**

**IENG 3334.03**

**IENG 3344.03**

**IENG 3345.03**

**IENG 3347.03**

**IENG 4432.03**
IENG 4443.03: Quality Control and Reliability.
This course 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 3302.03, IENG 3343.03
EXCLUSION: IENG 3443.03

IENG 4445.03: Facilities Design.
This course deals with the principles, concepts and methods of plant layout and materials handling for the optimum design of a facility. The topics include information systems 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 3333.03
EXCLUSION: IENG 3445.03

IENG 4452.03: Design of Inventory and Production Systems.
This course 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 lot sizing, 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 3444.03, IENG 3454.03
EXCLUSION: IENG 4453.03

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 3302.03
EXCLUSION: IENG 3303.03, IENG 3333.03, IENG 4332.03

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 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 organization 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.
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 graph theory, networks, maps and geographic information systems (GIS) are presented. Specific issues include NP-Complete problems, shortest paths and traveling salesman 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 3355.03, 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 course fills 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 then 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 4453.03

IENG 4551.03: Industrial Engineering Design Project II.
This 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-quality final report and oral presentation.
FORMAT: Lab 6 hours
PREREQUISITE: IENG 4451.03

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 engineers 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 scopeing 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 contests 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 Shewhart, 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 4550.03, 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 4452.03

**IENG 4581.03:** 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 4452.03

**IENG 4582.03:** 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 Shewhart, 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 4550.03, 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 4452.03

**IENG 4581.03:** 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 4452.03

**IENG 4582.03:** 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 Shewhart, 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
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 programme 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 III and IIII, Materials Engineering Programme, in the Process Engineering and Applied Science section of this calendar, page 294.

III. Co-operative programme and schedule
Refer to section F. Technical Co-op Programme, in the Engineering section of this calendar page 261.
Mechanical Engineering

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-equipped laboratories in thermal fluids, 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 prototypes. 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. Programme Guide

Mechanical Engineering offers two versions of the BEng Programme:

1. Co-op Programme which is completed over nine academic terms
2. Eight-Term Programme which is completed over eight academic terms

Students who choose to follow the Eight-Term Programme 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 Programme” 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 programme.

A. Co-op Programme

Year 1 follows the common programme outlined in the Engineering section of this calendar.

Year 2, Term 3 (Fall)
- ECE 2001.03 Electric Circuits
- ENEL 2201.03 Mechanics of Materials
- ENEL 2202.03 Engineering Thermodynamics I
- ENEL 2203.03 Engineering Mathematics III
- ENEL 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 3000.03 Technical Communication
- ENGM 3361.03 Vector Calculus & PDE
- MECH 3501.03 Machine Design I
- MECH 3505.03 Fluid Dynamics
- MECH 3515.03 Dynamics of Machines
- MATL 3500.03 Material Science

Year 3, Term 6 (Winter)
- CPST 3000.03 Engineering in Society II
- ENGM 3361.03 Vector Calculus & PDE
- MECH 3010.03 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 4330.03 Mechanical Design
- MECH 4440.03 Marine Craft Design
- MECH 4444.03 Mechanics
- MECH 4450.03 Marine Craft Design and Construction
- MECH 4520.03 Applied Dynamics
- MECH 4580.03 Aerodynamics
- MECH 4590.03 Space Systems
- MECH 4630.03 CAD/CAM
- MECH 4660.03 Computer Aided Toler. & Dimensioning
- MECH 4690.03 Robotics
- MECH 4695.03 Biomechanical Engineering
- MECH 4695.03 Kinematics of Human Skeleton
- MECH 4696.03 Finite Element Method in Mechanical Design
- MECH 4697.03 Energy from Renewable Resources
- MECH 4698.03 Reciprocating Internal Combustion Engines
- MECH 4699.03 Steam Plant Engineering
- MECH 4700.03 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 Programmes:
  - MECH 4300.03 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.
MECH 3010.03: Machine Design I.
 Diseign 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, stress, strain and deformation, failure, impact, fatigue, surface damage. Applications include: screw fastenings, springs. 
FORMAT: Lecture 3 hours, lab/tutorial 2 hours 
PREREQUISITE: MECH 3010.03 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 sealing, bearings, roller bearings, spur gears, helical, bevel and worm gears, clutches and brakes, power transmission such as belts, chains and hydrodynamic clutches.
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 mechanisms, their motion, static and dynamic link loads, and power transmission. It includes planar and spatial 4-bar, 5-bar, and 6-bar linkages, cam mechanisms, gear trains, roller 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 2100.03 
MECH 3700.03: Heat Transfer I.
This course 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 radiant heat transfer between simple geometric objects. 
FORMAT: Lecture 3 hours, lab/tutorial 2 hours 
PREREQUISITE: ENGI 2800.03 and MECH 2100.03 
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, recirculating combustion cycles. 
FORMAT: Lecture 3 hours, lab/tutorial 2 hours 
PREREQUISITE: ENGI 2800.03 and ENGI 2400.03 
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: ENGI 2101.03, ENGI 2300.03 
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 covered and part redesign for process and system is studied. 
FORMAT: Lecture 3 hours, lab/tutorial 2 hours 
PREREQUISITE: MECH 3200.03 or MECH 4300.03 
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 includes 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 follow 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, tension 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 modeling of marine systems; resistance estimation of low-speed and high-speed craft; sail power, marine propulsion 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 studies in the course.
FORMAT: Lecture 3 hours, lab/tutorial 2 hours
PREREQUISITE: MECH 3900.03 and MECH 3902.03
EXCLUSION: IORIE 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 systems 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 3900.03, MECH 3902.03

MECH 4521.03: Applied Dynamics.
This class begins with a review of plank mechanics and kinematics 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 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; airflow over bodies; friction 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
PREREQUISITE: MECH 3900.03

MECH 4560.03: Space Systems.
This class deals with the engineering design and analysis of space systems and their interrelationships. Topics include orbital mechanics, satellite perturbations, satellite actuator and sensor systems, satellite access and coverage.
FORMAT: Lecture 3 hours, tutorial 2 hours
PREREQUISITE: 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, and fluid flow. Computers are used extensively in the laboratory experiments.
FORMAT: Lecture 3 hours, lab/tutorial 3 hours
PREREQUISITE: ENCM 2021.03

MECH 4631.03: CAD/CAM - Computer Aided Design/Computer Aided Manufacturing.
The student is introduced to and trained in computer 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 3902.03 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 tolerancing techniques, working and assembly drawings, CAD/CAM drawings for computer numerical control, geometric and positional tolerancing, quantity production, part assembly, quality control and application of statistical and probabilistic methods. Breviary assignments require use of Auto-CAD, interactive computer programs for geometrical dimensioning/tolerancing, and a Coordinate Measuring Machine (CMM).
FORMAT: Lecture 3 hours, lab/tutorial 3 hours
PREREQUISITE: MECH 3902.03, MECH 3901.03, 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 itself, constitute a “robotized” workplace.
FORMAT: Lecture 2 hours, lab/tutorial 3 hours
PREREQUISITE: MECH 3902.03, completed or concurrently taking Auto-CAD class offered by the Dalhousie authorized Auto-CAD Training Centre

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 emphasized 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, asymmetric 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, class energy production, and environmental aspects of energy production are covered.
FORMAT: Lecture 3 hours, lab/tutorial 3 hours
PREREQUISITE: MECH 3800.03, ENGI 2541/ENGI 2500.03, MECH 3000.03, 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 worldwide and locally is considered.
FORMAT: Lecture 2 hours, lab/tutorial 3 hours
PREREQUISITE: MECH 3600.03
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 3600.03
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; Palnemized, Cyclone, Fluidized beds; auxiliary equipment (fans, stacks); control systems; cooling systems; 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 3600.03
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 feedback control system design and implementation. Topics include: system-parameter identification, control-system hardware, computer-based control systems, design techniques for multiple-input multiple-output systems, and adaptive control. The class is supported by computer-based simulation activities and design procedures, and by hands-on laboratory experience.
FORMAT: Lecture 3 hours, lab/tutorial 2 hours
PREREQUISITE: MECH 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 difference, series expansion, 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
I. Introduction

The Mineral Resource Engineering Programme 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 Programme. 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 programmes 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 III and IIII, Mineral Resource Engineering Programmes, in the Civil and Resource Engineering section of this calendar, page 266.
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 process engineering graduates are actively being employed in the bioresources industry (food, fiber, pharmaceuticals, ...), materials processes industries (metals, ceramics, composites, ...), petrochemical process industries (oil, gas, plastics, ...), chemical process industries (food, fiber, pharmaceutical, ...), and several others ...

II. Programme 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:

1. A. Biological Engineering

2. B. Eng in Biological Engineering, MSc (Dalhousie)

3. B. Eng in Environmental Engineering, co-op and non-co-op programmes

4. B. Eng in Food Science, co-op and non-co-op programmes

5. B. Eng in Materials Engineering, co-op and non-co-op programmes

For a description of each of the above programmes, admission requirements and more information on the opportunities for employment, refer to individual programme listings in the Faculty of Engineering section of this calendar.

Opportunities exist within the Department for graduate studies and research leading to the masters and doctorate degrees. Consult the Graduate Calendar, Dalhousie University for more details on these graduate programmes.

Adjunct Professors

Alvarenga, F.D., BSc (Laval), PhD (Dal)

Kalmokoff, M., BSc (Guelph), MSc (Saskatchewan), PhD (Queen's)

Gordon, R., BSc, MSc (McGill), PhD (Guelph), PEng, PAg

Chan, J.K-H., BSc (Hong Kong), MSc (Reading), PhD (TUNS)

Pink, D.A.H., BSc (Hons StFX), PhD (McGill)

B. Eng in Chemical Engineering, co-op and non-co-op programmes

C. B. Eng in Biological Engineering, co-op and non-co-op programmes

D. B. Eng in Food Science, co-op and non-co-op programmes

E. B. Eng in Materials Engineering, co-op and non-co-op programmes

F. B. Eng in Food Science, co-op and non-co-op programmes

G. B. Eng in Materials Engineering, co-op and non-co-op programmes

opportunity exists within the Department for graduate studies and research leading to the masters and doctorate degrees. Consult the Graduate Calendar, Dalhousie University for more details on these graduate programmes.

Adjunct Professors

Alvarenga, F.D., BSc (Laval), PhD (Dal)

Kalmokoff, M., BSc (Guelph), MSc (Saskatchewan), PhD (Queen's)

Gordon, R., BSc, MSc (McGill), PhD (Guelph), PEng, PAg

Chan, J.K-H., BSc (Hong Kong), MSc (Reading), PhD (TUNS)

Pink, D.A.H., BSc (Hons StFX), PhD (McGill)

B. Eng in Chemical Engineering, co-op and non-co-op programmes

C. B. Eng in Biological Engineering, co-op and non-co-op programmes

D. B. Eng in Food Science, co-op and non-co-op programmes

E. B. Eng in Materials Engineering, co-op and non-co-op programmes

F. B. Eng in Food Science, co-op and non-co-op programmes

G. B. Eng in Materials Engineering, co-op and non-co-op programmes

opportunity exists within the Department for graduate studies and research leading to the masters and doctorate degrees. Consult the Graduate Calendar, Dalhousie University for more details on these graduate programmes.

Adjunct Professors

Alvarenga, F.D., BSc (Laval), PhD (Dal)

Kalmokoff, M., BSc (Guelph), MSc (Saskatchewan), PhD (Queen's)

Gordon, R., BSc, MSc (McGill), PhD (Guelph), PEng, PAg

Chan, J.K-H., BSc (Hong Kong), MSc (Reading), PhD (TUNS)

Pink, D.A.H., BSc (Hons StFX), PhD (McGill)

B. Eng in Chemical Engineering, co-op and non-co-op programmes

C. B. Eng in Biological Engineering, co-op and non-co-op programmes

D. B. Eng in Food Science, co-op and non-co-op programmes

E. B. Eng in Materials Engineering, co-op and non-co-op programmes

F. B. Eng in Food Science, co-op and non-co-op programmes

G. B. Eng in Materials Engineering, co-op and non-co-op programmes

opportunity exists within the Department for graduate studies and research leading to the masters and doctorate degrees. Consult the Graduate Calendar, Dalhousie University for more details on these graduate programmes.
Aquacultural Engineering Emphasis
(One term at Nova Scotia Agricultural College)
• BIO 4320.03 Aquaculture Management
• CHEH 4320.03 Aquatic Biotechnology

Biomachineries and Robotics Emphasis
• BIO 4312.03 Biomimetics
• BIO 4311.03 Robotics

Biomedical Engineering Emphasis
• BIOL 4312.03 Biomedical Materials Science
• BIOL 4311.03 Biomedical Engineering

Food and Bioprocess Emphasis
• BIOL 4312.03 Bioprocess Engineering

Notes:
1. Technical electives within the chosen emphasis in any one year will depend on demand and staff availability.
2. Technical classes from other departments may be selected subject to availability and the approval of the departments concerned.

B. Chemical Engineering
Year 1 follows the common programme outlined in the Engineering section of this calendar.

Year 2, Term 3 (Fall)
• CHEM 2000.03 Electric Circuits
• CHEM 2011.03 Engineering Mathematics I
• CHEM 2021.03 Computer Programming
• IDS 2000.03 Fundamentals of Environmental Engineering

Year 2, Term 4 (Winter)
• CHEM 2004.03 Industrial Chemistry
• CHEM 2412.03 Fundamentals of Chemical Engineering
• CHEM 2411.03 Organic Chemistry
• ENGD 2901.03 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)
• CHEE 3611.03 Communications
• CHEE 3622.03 Chemical Reaction Engineering
• ENGM 3502.03 Applied Numerical Methods
• IENG 2801.03 Engineering Economics
• MATL 3502.03 Materials Science

Year 3, Work Term 2 (Summer)
Year 4, Term 6 (Fall)
• CHEE 3624.03 Heat Transfer
• CHEE 3634.03 Chemical Reaction Engineering
• ENGM 3502.03 Applied Numerical Methods
• IENG 2801.03 Engineering Economics
• MATL 3502.03 Materials Science

Year 4, Term 7 (Fall)
• CHEE 4721.03 Unit Operations Laboratory
• CHEE 4720.03 Mass Transfer
• CHEE 4741.03 Process & Plant Design I
• CHEE 4751.03 Process Modelling, Simulation & Control

Year 4, Term 8 (Winter)
• CHEE 4722.03 Process & Plant Design II
• CHEE 4761.03 Engineering in Society I
• MATL 3611.03 Corrosion and its Prevention

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 Programme Coordinator.
• BIO 4312.03 Microcomputer Interfacing
• CHEE 4311.03 Biomedical Engineering
• CHEE 4312.03 Bioprocess Engineering
• ENGM 2081.03 Computer Programming
• ENGM 2021.03 Engineering Mathematics III (Differential Equations)

Notes:
1. Seniors may take a postgraduate class as a Technical elective with the approval of the Undergraduate Programme Coordinator and the professor offering the class.
2. Not all technical electives are available each year and other elective courses may be available. Please check with the department prior to registration.

Non Co-op Programme
Non co-op students take the same academic programme as the co-op students; however, Term 5 may be taken before Term 4 if desired. In this way, the programme can be done in a total of five 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 programme outlined in the Engineering section of this calendar.

Year 2—Term 3 (Fall)
• BIOL 1010.03 Principles of Biology I
• BIOL 2001.03 Electric Circuits
• ENGM 2021.03 Engineering Mathematics III (Differential Equations)
• ENGM 2081.03 Computer Programming
• ENGI 1060.03 Geology I
• Humanities

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### Year 2 – Term 4 (Winter)
- ENGM 1010.03 Principles of Biology I
- CHEM 2441.03 Organic Chemistry
- ENGE 2530.03 Fluid Mechanics
- ENGE 2532.03 Applied Probability & Statistics
- ENVE 1500.03 Environmental & Industrial Microbiology
- ENVE 2531.03 Environmental Measurements and Analysis
- ENGM 2561.03 Engineering Mathematics IV

### Year 3 – Term 5 (Fall)
- BOE 3221.03 Applied Thermodynamics
- CPST 2000.03 Technical Communications
- ENV 3000.03 Fundamentals of Environmental Engineering
- ENV 3452.03 Soil and Water Conservation Engineering
- ENGM 3532.03 Numerical Methods and Linear Algebra

### Year 3 – Term 6 (Winter)
- BOE 3525.03 Heat & Mass Transfer
- CPST 3032.03 Engineering in Society I
- ENV 3412.03 Energy and Environment
- ENV 3432.03 Waste Management
- ENV 3432.03 Soil and Water Conservation Engineering
- ENGM 3532.03 Numerical Methods and Linear Algebra

### Year 4 – Terms 7 & 8
- CHES 3773.03 Industrial Safety & Loss Management
- CIVIL 4401.03 Water and Wastewater Treatment
- ENV 4401.03 Design Project for Environmental Engineers I
- ENV 4402.03 Design Project for Environmental Engineers II
- ENV 4411.03 Indoor Environment Control & Air Quality
- ENV 4421.03 Bioscience & Bioremediation
- ENV 4721.03 Environmental Assessment and Management
- IENG 4900.03 Operations Research Methods for Systems Engineering
- 3 Technical Electives classes

### Environmental Engineering—Recommended Technical Electives
- BOE 4312.03 Microcomputer Interfacing
- BOE 4322.03 Aquacultural Engineering
- BOE 4531.03 Biosystems Engineering
- CHEE 4872.03 Air Pollution Control
- CIVIL 3401.03 Water Quality and Treatment
- ENV 4000.03 Small Watershed Hydrology
- ENV 4612.03 Waste Disposal and Utilization
- ENV 4621.03 Atmospheric Air Quality
- ENV 4641.03 Contaminant Fate & Transport
- ENV 4651.03 Solar Energy Utilization
- ENGM 5022.03 Applied Statistics
- ENGM 4675.03 Risk Assessment & Management OR
- IENG 4974.03 Decision and Risk Analysis
- MINE 4825.03 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 programmes should be planned in consultation with the programme chair or another faculty advisor. Please note that students wishing to include Food Science in other programmes are welcomed. All third- and fourth-year level Food Science courses have prerequisites.

### Year 1
- BOE 1010.03 Principles of Biology I
- BOE 1011.03 Principles of Biology II
- CHEM 1010.03 General Chemistry I
- CHEM 1012.03 General Chemistry II
- FOSC 1000.03 Concepts of Food Science
- MATH 1001.03 Differential and Integral Calculus I

### Year 2
- BOE 2044.03 Diversity of Microorganisms OR
- MGT 2101.03 Introduction to Microbiology and Immunology
- BOE 2234.03 Introductory Biochemistry
- CHEM 2241.03 Foundations of Organic and Biological Chemistry
- FOSC 2013.03 Food Commodities
- PHYC 1100X/Y.06 Physics I and II
- PHYC 1110X/Y.06 Introduction to Physics
- STAT 1600.03 Introductory Statistics for Science and Health Sciences

### Year 3
- BOE 3013.03 Principles of Food Engineering
- CPST 2001.03 Technical Communication
- FOSC 3020.03 Food Chemistry
- FOSC 3042.03 Food Analysis
- FOSC 3023.03 Food Quality Assurance
- FOSC 3070.03 Food Processing
- FOSC 3090.03 Food Microbiology
- HPRO 2250.03 Human Nutrition

### Year 4
- FOSC 4020.03 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 4750X/Y.06)

### Writing classes
- The following classes meet the requirement for the writing credit: CLAS 1000.06, CLAS 1100.06, CLAS 1101.06, ENGL 1000.06, GERM 1020.06, PHIL 1101.06, POLI 1103.06, RUSN 1020.03 and RUSN 1070.03, THEA 1000.06, THEA 1300.06 and completion of the Dalhousie Integrated Science Programme (DISP), SCIE 1501.27, SCIE 1502.27, 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 elective(s) (7 or 8 half credits) are free.

### Examples of Electives
- ANAT 1010.03 Basic Human Anatomy
- BOE 2611.03 Introductory Biochemistry Laboratory
- BOE 3204.03 Biological Chemistry
- BOE 3408.03 Nucleic Acid Biochemistry & Molecular Biology
- BOE 3221.03 Applied Thermodynamics
- BOE 3241.03 Industrial Biotechnology
- BOE 3512.03 Properties of Biomaterials
- BOE 2010.03 Genetics and Molecular Biology
- BOE 4074.03 Introduction to Animal Nutrition
- CHEE 2431.03 Fundamentals of Chemical Engineering
- CHEM 2231.03 Physical Chemistry for the Life Sciences
- CIVIL 3411.03 Water Quality and Treatment
- CPST 3020.03 Engineering in Society II
- FOSC 3060.03 Engineering in Society II
- PHYC 4801.03 Brewing Science
- IDS 2003.03 Fundamentals of Environmental Engineering
- IENG 4529.03 Industrial and Organizational Psychology
- IENG 4529.03 Organizational Aspects of Quality Management
- PSYH 1000.06 Human Physiology
- STAT 2000.03 Statistical Methods for Data Analysis and Inference
E. Materials Engineering

Year 1 follows the common programme outlined in the Engineering section of this calendar.

Year 2, Term 3 (Fall)
- ECED 2000.03 Electric Circuits
- ENG 2200.03 Engineering Thermodynamics I
- ENGM 2201.03 Engineering Mathematics III
- ENGM 2281.03 Computer Programming
- Humanities I

Year 2, Term 4 (Winter)
- CPST 2000.03 Technical Communications
- ENGM 2280.03 Engineering II
- ENG 2401.03 Mechanics II OR
- MECH 2100.03 Engineering Design and Graphics II
- ENGM 2282.03 Applied Probability & Statistics
- ENGM 2462.03 Engineering Mathematics IV (a)
- ENGM 2481.03 Engineering Economics

Year 3, Term 5 (Fall)
- CPST 3302.03 Engineering in Society I
- ENGM 3592.03 Applied Numerical Methods
- MATL 3505.03 Materials Engineering
- MATL 3510.03 Extraction of Materials
- MINE 3530.03 Mining Processing

Year 3, Term 6 (Winter)
- CHEE 3550.03 Process Dynamics and Control
- MATL 3611.03 Structure of Materials
- MATL 3621.03 Mechanical Behaviour of Materials
- MATL 3620.03 Introduction to Physical Metallurgy

Year 3, Work Term 3 (Summer)
- MATL 3510.03 Extraction of Materials
- MATL 3620.03 Introduction to Physical Metallurgy
- MATL 3621.03 Mechanical Behaviour of Materials
- MATL 3611.03 Structure of Materials
- MINE 3530.03 Mining Processing
- MECH 4330.03 Mechanical Design
- CPST 3020.03 Technical Communications

Year 4, Term 7 (Fall)
- CHEE 3304.03 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/MSc Students)

Year 4, Work Term 2 (Winter)
- Technical Elective II
- Technical Elective III
- Graduate Class II (for combined BEng/MSc Students)

Year 4, Work Term 3 (Summer)
- Technical Elective I
- Technical Elective II
- Technical Elective III
- Graduate Class III (for combined BEng/MSc Students)

Combined BEng - MSc Programme Guide

1. Programme Entrance Requirements
   - To be eligible for the Combined BEng/MSc Programme, 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 Programme.
   - Since the first two academic terms of the BEng and combined BEng/MSc Programmes are common, students enrolled in the BEng Programme may apply for entrance into the combined degree programme at any time before the beginning of the seventh academic term.

2. Financial Support
   - All students accepted into the BEng/MSc Programme 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 Programme (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/MSc Programme, 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
   - Although students in the Combined BEng/MSc Programme 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/MSc Scheduling
   - The combined BEng/MSc Degree follows the programme 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
   - Technical Electives from other departments may be selected subject to availability and the approval by the departments concerned.

III. Class Descriptions

A. Biological Engineering Series

BIOE 3051.03: Principles of Food Engineering.
- This class presents principles of engineering and applications related to processing unit operations. This class is intended for primarily food engineering students.
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 1010.03, or ENGM 1011.03 and 1012.03, PHYC 1300X/Y.06
BIOE 3212.03: Measurement and Analysis.
The objectives of this course 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 2020.03 and ENGM 2023.03 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,
biotechnical engineering and industrial and environmental applications of
microbiology of interest to engineers. Topics covered include chemistry of
biological molecules, microbial biochemistry 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 biotechnical and environmental engineering.
Topics covered include steady state conduction in one dimension,
conduction in multi-dimensions, unsteady state conditions, convective heat
transfer and mass transfer, molecular mass diffusion and convective mass transfer. Radiative heat transfer and transport processes
in the atmosphere are also included.
FORMAT: Lecture 3 hours, lab 2 hours
PREREQUISITE: ENGC 2300.03, ENGM 2211.03 and one class in
Thermodynamics
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
chacteristics. The associated lab will feature examples from Biomedical
Engineering, Food Science, Bioprocess Engineering and Biotechnology to
measure and assess the 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.
FORMA: Lecture 3 hours, lab 3 hours
PREREQUISITE: CHEM 2441.03
EXCLUSION: BIE 3241.03
BIOE 4011.03: Robotics.
See class description for MECH 4641.03 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 farmed area 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 (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 aerobic and anaerobic 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
drif applications.
FORMAT: Lecture 3 hours, lab 4 hours
BIOE 4151.03: Aquatic Environment.
Engineering principles are studies in context of requirements for
environmental management of intensive aquaculture of finfish, molluscs,
crustaceans, and marine plants of commercial importance. Topics to water
habitat management will be emphasized including: water properties in
both fresh and salt water systems, water quality and water purification,
fluid dynamics and statistics, 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, hoppers, 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.

**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 common 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 introduces 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: BIEE 3322.03

**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 improvements 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: ENEG 2300.03, BIEE 3322.03

**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: BIEE 3322.03 or equivalent

**BIOE 4331.03: Design of Biomachines.**

This class extends the design and analysis of machines to components such as belts, gears, vane ropes, clutches and brakes. Reference is made to appropriate design codes. The Finite Element Method 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: MIECH 4301.03

**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 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 3312.03 or equivalent

**BIOE 4352.03: Food Engineering.**

This class focuses on the process design of unit operations in food processing, packaging and storage. Topics include mass and energy balances, reaction kinetics modeling, size reduction, emulsification, food dehydration, packaging, and storage, extraction 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: BIEE 3322.03 or equivalent

**BIOE 4391.03: Polymeric Biomaterials.**

This 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 structures, properties (physical, mechanical, biological), 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/1101, 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 equilibria, 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 3510.03: Communications.**

The class attempts to develop skills in written, oral and general interpersonal communication. Formal lectures concentrate on the organization of knowledge required to improve writing and verbal skills. Students are required to make several individual oral and written presentations. Students are also expected to participate in work.
CHEE 3522.03: Mechanical Unit Operations.
This course 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 2420.01

CHEE 3525.03: Separation Processes.
This course provides an introduction to cascade theory and develops fundamentals for design and analysis of stagd operations such as distillation, 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 2420.01

CHEE 3530.03: Chemical Engineering Thermodynamics.
The course deals with the theory and practice of chemical thermodynamics. A brief review is given of concepts in physical chemistry: partial molar quantities and vapour-liquid equilibrium in ideal and non-ideal systems, including miscible and partially miscible components. The course 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 2420.01

CHEE 3544.03: Computer-Aided Process Design.
The course aims to develop the student’s ability to solve process design problems using packaged software. Major emphasis is placed on how to translate the process design concept into the most 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 programmes.
FORMAT: Lecture 2 hours, lab 4 hours
PREREQUISITE: CHEE 2420.01

CHEE 3550.03: Process Dynamics and Control.
This course 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 2420.01 or departmental approval

CHEE 3624.03: Heat Transfer.
This course deals mainly with theories of heat transfer and their applications. The course 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 2420.01

CHEE 3634.03: Chemical Reaction Engineering.
This course 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 catalysts are also discussed. Emphasis is placed on computational techniques for reactor problem solutions.
FORMAT: Lecture 3 hours, lab 2 hours
PREREQUISITE: CHEE 2420.01

CHEE 4720.03: Unit Operations Laboratory.
In this course, 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 differential 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 2420.01

CHEE 4741.03: Process and Plant Design I.
This course 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 course 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.
The course 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 2420.01

CHEE 4762.03: Environmental Assessment and Management.
The course 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 hour
PREREQUISITE: CHEE 2420.03
CROSS-LISTING: ENVE 4722.03

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 programme elements; legislation.

FORMAT: Lecture 3 hours, tutorial 2 hours
PREREQUISITE: CHEE 4761.03
CROSS-LISTING: IDIS 2000.03
C. Environmental Engineering Series

ENV 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 wastes 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: ENGI 2800.03 or BIOE 3221.03
ENV 3432.03: Soil and Water Conservation Engineering.
The prediction, nature, effects and control of natural-surface and subsurface waters and non-point source pollutants in catchments are considered. Design of flood/channel, flooding, 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 2800.03, IDIS 2800.03
ENV 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 302 Process Engineering and Applied Science
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 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, corporate regulators and managers. Tutorials will be devoted to the preparation and presentation of hypothetical environmental impact statements and assessments.

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, biochemical 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 1 hour

PREREQUISITE: Senior students only

ENVE 4402.03: Design Project for Environmental Engineers II.

This is a continuation of ENVE 4401.03 leading to a final presentation in both oral and written format.

FORMAT: Lecture 1 hour, lab 1 hour

PREREQUISITE: BICE 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: BICE 3252.03 or equivalent

ENVE 4421.03: Biogeochernistry and Bioremediation.

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: Contaminant Fate and Transport.

This course focuses on the quantitative analysis of mechanisms that control the fate and transport of contaminants in the environment. The occurrence, movement, and transformation of contaminants in a variety of environmental media, including surface waters, terrestrial environments, and the atmosphere are covered. A 3-d field lab will be held at the beginning of the semester, in which students will gain experience in (i) sampling environmental media, and (ii) characterizing transport processes in terrestrial and aquatic environments.

FORMAT: Lecture

PREREQUISITE: ENVE 3452.03, CIVL 3110.03, ENVE 3000.03, CIVL 3450.03, 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: BICE 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 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

CIB:056-1, LISTING: CHE 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, food packaging. Selected food processing operations will also be discussed. Further detail. Food safety issues such as food infection and intoxication and HACCP will be introduced.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: BIOC 1010.03, BIOC 1110.03

FOSC 1010.03: 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

PREREQUISITE: BIOC 1010.03, BIOC 1110.03

FOSC 3010.03: Food Chemistry.

This class will examine the molecular behaviour of basic constituents common to food products and relate this behaviour to the structure and properties of food constituents. Topics covered will include water, carbohydrates, proteins and lipids and micro nutrients such as vitamins and minerals, pigments and flavours. Chemical processes such as browning, enzyme reactions and emulsification will also be examined. The function of ingredients, additives and nutrients will be examined.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: CHEM 2441.03, BIOC 2200.03

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 4400.03: 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, biochemical 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 1 hour

PREREQUISITE: Senior students only

ENVE 4402.03: Design Project for Environmental Engineers II.

This is a continuation of ENVE 4401.03 leading to a final presentation in both oral and written format.

FORMAT: Lecture 1 hour, lab 1 hour

PREREQUISITE: BICE 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: BICE 3252.03 or equivalent

ENVE 4421.03: Biogeochernistry and Bioremediation.

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: Contaminant Fate and Transport.

This course focuses on the quantitative analysis of mechanisms that control the fate and transport of contaminants in the environment. The occurrence, movement, and transformation of contaminants in a variety of environmental media, including surface waters, terrestrial environments, and the atmosphere are covered. A 3-d field lab will be held at the beginning of the semester, in which students will gain experience in (i) sampling environmental media, and (ii) characterizing transport processes in terrestrial and aquatic environments.

FORMAT: Lecture

PREREQUISITE: ENVE 3452.03, CIVL 3110.03, ENVE 3000.03, CIVL 3450.03, 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: BICE 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 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

CIB:056-1, LISTING: CHE 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, food packaging. Selected food processing operations will also be discussed. Further detail. Food safety issues such as food infection and intoxication and HACCP will be introduced.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: BIOC 1010.03, BIOC 1110.03

FOSC 1010.03: 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

PREREQUISITE: BIOC 1010.03, BIOC 1110.03

FOSC 3010.03: Food Chemistry.

This class will examine the molecular behaviour of basic constituents common to food products and relate this behaviour to the structure and properties of food constituents. Topics covered will include water, carbohydrates, proteins and lipids and micro nutrients such as vitamins and minerals, pigments and flavours. Chemical processes such as browning, enzyme reactions and emulsification will also be examined. The function of ingredients, additives and nutrients will be examined.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: CHEM 2441.03, BIOC 2200.03
FOSC 3020.03: Food Analysis.
This course 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 ecology associated with food products produced 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: FOSC 3080.03, BIOC 3051.03
FOSC 3080.03: Food Microbiology.
The course will examine unit operations employed during the production of malt and beer. Brewing, fermentation and packaging aspects of beer will be examined. This class 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, flavor and texture profile analyses 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 foods. Topics covered will include quality management systems, statistical quality control, government regulation and FDA 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 3010.03
EXCLUSION: BGSC 3481.03
FOSC 3070.03: Food Processing.
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, flavor and texture profile analyses and water activity measurement will be presented. FORMAT: Lecture 3 hours, lab 3 hours
PREREQUISITE: FOSC 3080.03 or permission from the instructor
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, flavor and texture profile analyses and water activity measurement will be presented. FORMAT: Lecture 3 hours, lab 3 hours
PREREQUISITE: FOSC 3080.03 or permission from the instructor
FOSC 4091.03: Food Safety and Biotechnology.
The 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, (2) foodborne disease, (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
FOSC 4250.03: Food Product Development Project.
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 experiences. 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 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
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 crystalllography, 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.
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 minerals 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 practices in stoichiometric mass balance and thermodynamic 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, the formation of 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 crystallography 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 and 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. Dissolution 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, refractory, 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, analyzes the data obtained and critiques 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. Lecture covers the principles of hydrometallurgy including leaching processes, solution purification and metal recovery methods. The laboratory experiments are used 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. This class reviews the iron-carbon system, including the transformation products of austenite, alloying elements and combined thermal mechanical treatments. Specific classes of steels, ranging from the simple plain carbon steels to the duplex stainless steels, are considered. The class also covers the 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 modern metallurgical processes and materials processing. An 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. This class covers the basic theories of electrochemistry and electrochemical engineering they apply to the design of processes for the production of materials. The theory and application of various electrochemical techniques such as electropolishing, electroforming, electromachining, electroplating, and fused-salt electrolysis are included. A brief overview on the development of electrochemical sensors and devices using solid 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. This 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

MATL 4813.03: Iron and Steel Production. 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 are used 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 topics of iron and steel 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 given.
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 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:

i. how to design tractable software that is adaptable to changing business conditions,

ii. how to improve productivity of software developers thereby reducing costs,

iii. how to improve quality thereby enhancing reputation and satisfying customers while avoiding rework,

iv. how to improve product and process predictability thereby facilitating better business decisions, and

v. how to design for greater generality thereby amortizing development costs over a broader customer base while reducing the risks of future requirements.

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 this is that software engineering involves the design and development of software applications that run on computers. 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.
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 whenever possible. Students should be prepared to work anywhere in Canada.

The University endorses, 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:

<table>
<thead>
<tr>
<th>Year/Term</th>
<th>Fall</th>
<th>Winter</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>AT1</td>
<td>AT2</td>
<td>FREE</td>
</tr>
<tr>
<td>Year 2</td>
<td>AT3</td>
<td>AT4</td>
<td>FREE</td>
</tr>
<tr>
<td>Year 3</td>
<td>AT5</td>
<td>AT6</td>
<td>WT1</td>
</tr>
<tr>
<td>Year 4</td>
<td>WT2</td>
<td>AT7</td>
<td>WT3</td>
</tr>
<tr>
<td>AT = Academic study term</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WT = Co-op Workterm</td>
<td></td>
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</tbody>
</table>

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

CSIC 1100 Writing class X/Y
CSIC 1101 Programming 1
CSIC 1102 Programming 2
ENGI 1100 Eng Design & Graphics
ENGI 2005 Engineering Economics
MATH 1000 Calculus 1
MATH 1010 Calculus 2
PHYC 1100 X/Y Intro to Physics
PSYO 1000 X/Y Intro to Psychology

Year 2

CSIC 1210 Data Structures
CSIC 2211 Intro Computer Org
CSIC 3312 Software Development
CSIC 3313 Intro Software Eng
ECED 2000 Electric Circuits
ECED 2002 Digital Circuits

ECED 2400 System Analysis
ENGM 2022 Eng. Math. For Software Eng
ENGM 2032 Applied Probability & Statistics
MATH 2112 Discrete Structures
PSYO 2130 Intro to Cognitive Psych

Year 3

CSIC 3110 Algorithm Analysis
CSIC 3120 Operating Systems
CSIC 4163 Human Computer Interaction
CPST 2000 Communication
CPST 3020 Engineering in Society 1
ECED 3204 Microprocessors
ECED 3402 Real Time Systems
IENG 3013 Analysis and Design of Work
IENG 3455 Quality Control & Reliability
IENG 4199 Industrial & Organizational Psych
IENG 4547 Company Operations & Mgmt
IENG 4538 Project Mgmt & Control

Year 4

CSIC 4114 Formal Aspects of Software Eng
CSIC 4154 Software Architecture
CPST 3000 Engineering in Society 2
ECED 4440 Computer Nets and Comm
IENG 4574 Decision and Risk Analysis
Software Engineering Project
CSIC 4136 Software Testing and Quality Assurance
CSIC 4137 Software Processes and Tools
CSIC 4138 Empirical Performance Modeling

Software Engineering 307
Faculty of Health Professions

Dean
Webster, William G., PhD
Associate Dean (Academic Affairs & Research)
Tambuli, C.L., MRCF, DipTP, BPT (Man), MA(Dal), PhD(Rhodes)
Faculty Administrator
Cole, L.J.
Human Resources Consultant
Smith, C.E., U.S.
Office Manager
Wert, B.L.
Policy & Research Administrator
Office, 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 programmes, including the Diploma in Disability Management, are described in the College, School, and other programme sections of this Calendar. Details of the graduate programmes in the Clinical Vision Science programme 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.ghp.dal.ca/&p:
- 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
- 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 regularity 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.

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 programmes. 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 programme. 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.

<table>
<thead>
<tr>
<th>Topics &amp; Dates for Interprofessional Learning Modules 2007-2008</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Learning Modules (Entry level)</strong></td>
</tr>
<tr>
<td><strong>Module Title</strong></td>
</tr>
<tr>
<td>-----------------------</td>
</tr>
<tr>
<td>Disability Module</td>
</tr>
<tr>
<td>Vulnerable Sector Screen</td>
</tr>
<tr>
<td>Human Communication Disorders Module</td>
</tr>
<tr>
<td>University of Texas (Intermediate level)</td>
</tr>
<tr>
<td>University of Texas (Entry level)</td>
</tr>
</tbody>
</table>

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 disclose his/her 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.

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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 programme (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
• Professor
• Site coordinator
• Externship administrator

School of Nursing
• Clinical instructor
• Class professor
• Associate Director, Undergraduate Student Affairs
• Nurse Practitioner/Acute Nursing Programme Coordinator

School of Occupational Therapy
• Professor
• 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
• Programme coordinator
• Facility field instructor

Health Services Administration
• Preceptor

Human Communication Disorders
• Clinical Educator

Health and Human Performance
• Associate Director, Undergraduate Studies

QEH - Dalhousie School of Health Sciences
• Clinical Education Coordinator

Disability Management

Location: Room 100, 6226 University Ave.
HFX, NS, B3H 1X1
Telephone: (902) 494-2950
Fax: (902) 494-3020
Email: disability.management@dal.ca
Website: www.alal.ca/ddm

Dean
Webster, William G., PhD

Academic Co-ordinator
McCann, F., BCom MA, PhD

Administrative Staff
Murphy, J., ICums

I. Introduction

The Faculty of Health Professions offers a range of diploma and degree-earning programmes for health professionals, including programmes 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 programme 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 programme are offered via distance learning technology.

A. Purpose of Programme

The Diploma Programme 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 programme responds to changes in workplace health & safety programmes, in legislation, regulations, and practices, and in changes in the health system in general. While the main paradigm of the programme 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 Programme 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 impact of injury on work, develop decision-making skills, and develop management skills. Prospective students in the Disability Management Diploma programme 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 Co-op Programme or Mentorship Programme.

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
C. Career Opportunities

An exemplary programme 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 Programme typically work as Disability Managers, Return to Work Facilitators, and Vocational Rehabilitation Consultants.

D. Learning Principles for Programme Development and Delivery.

In order for programme 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 programme 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 analysis against learned theories, concepts, and frameworks. Learning activities will foster personal growth through a healthy reflection of student’s attitudes and decision making patterns.

II. Regulations

Students registered in the Diploma Programme in Disability Management (DDM) are bound by the University and Faculty of Health Professions (FHP) regulations. Students registered in the Diploma Programme in Disability Management (DDM) are bound by the University and Faculty of Health Professions policies appear on the Dalhousie University website: http://www.registrar.dal.ca/calendar/signed/

A. Class Sequence and Prerequisites

• All students must begin the diploma programme by taking DISM 3010 (Introduction to Occupation and Disability Management).
• DISM 3010 (Introduction to Occupation and Disability Management) must be taken prior to DISM 3030 (Understanding Occupational Injury and Disability).
• DISM 3040, 4010, 4020, 4030, 4040, 4050, 4060 may be taken in any sequence but only after successful completion of classes 3010, 3020, and 3030.

Exceptions to Class Sequencing guidelines must be approved by the Programme Coordinator.

B. Class Grades

The minimum passing grade for all DDM classes is 70%.

C. 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 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 such instances, the student and instructor, with guidance from the DDM Programme Coordinator, 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. The formal appeals of a final grade or a procedural problem must follow the regulations as stated in the University Calendar (see Regulation 16.7 of the Academic Regulations section for appeals of grades, and Regulation 25.4 of the Academic Regulations section for the Faculty of Health Professions appeals process). For students registered in the DDM programme, the first step in a formal appeal involves the matter being sent to the DDM Programme Coordinator who will present the appeal to an appeals committee (Committee on Studies) of the DDM programme 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/signed/
III. Class Descriptions

DISM 3010.03: Introduction to Occupation and Disability Management.
Provides a primary introduction to the full programme. 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 programmes? 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, what either allows 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 programmes & work conditioning, workplace modification, ease-back programmes, work hardening, employer responsibility.

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 organization.
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 family, community and unemployed persons, psychosocial dynamics, employer/employee relationships, societal trends, dependency 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, programme evaluations. This includes the ability to contribute as a stakeholder or sponsor representative to the effective design of a programme 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
I. Bachelor of Health Science Degree Programme

The BHS programme is a four-year programme that provides an integrated course of studies including both theory and practice. There is also a post-diploma offering for practising professionals.

The programme 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 practice 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 29, 2007.

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 programmes 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 programmes meet the eligibility criteria set by the professional associations.

Diagnostic Cytology, Diagnostic Medical Ultrasound, 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 are 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 radio pharmaceuticals 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)

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 programme students must show certification for current immune status against tetanus, diphtheria, polio, measles, mumps, rubella, hepatitis B and varicella (chickenpox). Evidence of current immune status against tetanus, diphtheria, polio, measles, mumps, rubella, hepatitis B and varicella (chickenpox) must be recertified bi-annually. BLS-C Certification

- All BHSc students must show proof of BLS-C current certification prior to entry into the programme. B.L.S.-C must be recertified annually.

Basic First Aid Certification

- All BHSc students must show proof of Standard First Aid current certification prior to entry into the programme. Standard First Aid must be recertified bi-annually.

IV. Additional Costs

There are additional costs associated with all professional streams of the BHSc programme, including but not limited to Standard First Aid and BLS-C, registration, immunizations, uniforms, membership in professional associations, equipment, fees for writing registry exams. These additional costs are the responsibility of the student. A detailed list is available from the School.

V. Physical Demands

The health professions included in the Bachelor of Health Science programme are physically demanding. 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 descriptions of physical demands for each profession. Students who have concerns about physical demands should contact the School for further information.

VI. Programme Outline

Four-Year Entry-Level Programme

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 2

- HSE 1000.03
- HSE 1100.03
- CRM 1420.03
- CHEM 1410.03
- DCT 1000.03
- DCT 1010.03
- HSE 1000.03
- BOL 1001.03
- STAT 1000.03
- Elective (3 credit hours)
- DCTY 2500.03
- DCTY 2500.03
- HSE 4000.03
- HSE 3000.03

BLS-C Certification

- All BHSc students must show proof of BLS-C current certification prior to entry into the programme. BLS-C must be recertified annually.

Basic First Aid Certification

- All BHSc students must show proof of Standard First Aid current certification prior to entry into the programme. Standard First Aid must be recertified bi-annually.

IV. Additional Costs

There are additional costs associated with all professional streams of the BHSc programme, including but not limited to Standard First Aid and BLS-C, registration, immunizations, uniforms, membership in professional associations, equipment, fees for writing registry exams. These additional costs are the responsibility of the student. A detailed list is available from the School.

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VI. Programme Outline

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Diagnostic Cytology

Year 2

- BOL 2001.03
- DCTY 2000.03, 2010.03
- DCTY 2010.03
- HSE 2000.03
- MIC 1100.03
- Elective (3 credit hours)
- HSE 3010.03
- DCTY 2500.03
- HSE 4000.03
- HSE 3000.03
Year 3
- BIOL 3430.03
- DCYT 3000.03
- DCYT 3010.03
- DCYT 3020.03
- DCYT 3120.03
- DCYT 3220.03
- DCYT 3230.03
- DCYT 3320.03
- BKL 320A.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:
  - DMUT 4100.06
  - DMUT 4000.12
  - HSCE 4001.03
  - HSCE 4003.03
  - HSCE 4004.03
  - HSCE 4005.03
  - HSCE 4400.03
  - HPRO 3345.03
  - HPRO 3205.03
  - HESG 4405.03
  - 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 (PHYS 1300X/Y.06)
- DMUT 1500.03

Year 2
- DMUT 2000.03
- DMUT 2010.03
- DMUT 2020.03
- DMUT 2030.03
- DMUT 2400.03
- STAT 1060.03
- Electives (3 credit hours)
- PHSC 3000.03
- DMUT 2500.03

Year 3
- DMUT 3000.03
- DMUT 3010.03
- DMUT 3020.03
- DMUT 3200.03
- DMUT 3210.03
- DMUT 3220.03
- DMUT 3230.03
- DMUT 3240.03
- HSCE 3010.03
- HESG 4000.03
- Elective (3 credit hours)
- DMUT 3500.03

Year 4
- Required:
  - HSCE 4030.03
- Choose 9 credit hours:
  - HSCE 4001.03
  - HLTH 4040.03
  - HSCE 4220.03
  - Approved elective (3 credit hours)

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
- NUMT 2000.03
- NUMT 2010.03
- NUMT 2020.03
- NUMT 2080.03
- HSCE 3010.03
- NUMT 3000.03

Year 2
- CHEM 1410.05
- HSCE 2000.03
- STAT 1060.03 (HLTH 4040.03)
- 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
- HESG 4000.03
- HSCE 4001.03
- Elective (3 credit hours)
- NUMT 3500.03

Year 4
- Required:
  - NUMT 3210.03
  - NUMT 3240.03
  - NUMT 4200.03
  - NUMT 4220.03
- Choose 9 credit hours:
  - HSCE 4001.03
  - HLTH 4040.03
  - HSCE 4220.03
  - Approved elective (3 credit hours)

Nuclear Medicine Technology
Year 1
- HSCE 1000.03
- HSCE 1010.03
- HSCE 1020.03
- HSCE 2000.03
- STAT 1060.03
- HSCE 2010.03
- HSCE 2020.03
- NUMT 1000.03
- HSCE 3000.03
- PHYS 1300X/Y.06
- NUMT 1500.03

Year 2
- CHEM 1410.05
- 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
- HESG 4000.03
- HSCE 4001.03
- Elective (3 credit hours)
- NUMT 3500.03

Year 4
- Required:
  - NUMT 3210.03
  - NUMT 3240.03
  - NUMT 4200.03
  - NUMT 4220.03
- Choose 9 credit hours:
  - HSCE 4001.03
  - HLTH 4040.03
  - HSCE 4220.03
  - Approved elective (3 credit hours)
Choose 9 credit hours:

- NUMT 4100.06
- HESA 4010.03
- HESA 4020.03
- HESA 4040.03
- HESA 4050.03
- HPRO 3300.03
- HPRO 3340.03
- HPRO 3390.03
- HPRO 2361.03/LEIS 2361.03

Approved elective (3 credit hours)

Radiological Technology

Year 1

- HSCIE 1000.03
- HSCIE 1010.03
- HSCIE 1020.03
- HSCIE 1030.03
- PHYC 1300X/Y.06
- RADT 1000.03
- RADT 1010.03
- RADT 1020.03
- RADT 1030.03
- Elective (3 credit hours)

Year 2

- HSCIE 2000.03
- HSCIE 2010.03
- HSCIE 2020.03
- HSCIE 2030.03
- RADT 2000.03
- RADT 2010.03
- RADT 2020.03
- STAT 1060.03
- Elective (3 credit hours)

Year 3

- HSCIE 3000.03
- HSCIE 3010.03
- RADT 3000.03
- RADT 3010.03
- RADT 3020.03
- RADT 3030.06
- HESA 4000.03
- HPRO 3300.03

Year 4

Required:
- RADT 4200.03 (formerly RADT 3200.03)
- RADT 4220.03

Choose 9 credit hours:
- HSCIE 4200.03
- HSCIE 4210.03
- HSCIE 4220.03
- Approved elective (3 credit hours)

Choose 15 credit hours:
- RADT 4000.06
- RADT 4000.12
- RADT 4001.02
- HESA 4010.03
- HESA 4020.03
- HESA 4040.03
- HESA 4050.03
- HPRO 3303.03
- HPRO 3390.03
- 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 1420.09
- CHEM 1410.09
- HSCIE 1000.03
- HSCIE 1010.03
- HSCIE 1020.03
- STAT 1060.03
- Elective (3 credit hours)

Year 2

- HSCIE 2000.03
- RSPT 2070.03 (formerly RSPT 1010.03)
- RSPT 2000.03
- RSPT 2020.03
- RSPT 2030.03
- RSPT 2500.03
- RSPT 3000.03
- HSCIE 3010.03
- Elective
- RSPT 2500.03

Year 3

- RSPT 3000X/Y.06
- RSPT 3010X/Y.06
- RSPT 3200X/Y.06
- RSPT 3210X/Y.06
- RSPT 3500.03
- Elective
- RSPT 2500.03

Year 4

Required:
- HSCIE 4030.03
- HESA 4000.03

Choose 9 credit hours:
- RSPT 4000.06
- RSPT 4000.12
- HESA 4003.05
- HESA 4005.03
- HESA 4007.03
- HPRO 3335.03
- HPRO 3345.03
- HPRO 3390.03
- HPRO 2361.03/LEIS 2361.03

Approved elective (3 credit hours)

Note: RSPT 4010, 4020, 4030 are considered “approved electives.”

BHSc Degree Completion Programme

This programme requires 9 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 programme 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 Programme)
Post Diploma Programme

The School of Health Sciences offers a post diploma programme 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 programme 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 students’ leadership abilities and to equip them 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 programme is available on a full time or part-time basis and many of the courses are delivered via WebCT. There are university regulations concerning the maximum length of time allowed for degree completion. Refer to Academic Regulation 15.2 (Duration of Undergraduate Studies).

The post-diploma BHSc curriculum is equivalent to 2 years of full time university study and is the equivalent of 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.

Required Courses (30 credit hours)

| STAT 1060.03 | Introductory Statistics for Science and Health Sciences |
| HSCE 1000.03 | Introduction to Health Professional Practice |
| HSCE 2001.03 | Health Care Ethics |
| HSCE 3000.03 | Culture, Diversity and Health |
| HSCE 3011.01 | Introduction to Research Methods |
| HSCE 4000.03 | Leadership in Healthcare |
| HESA 4000.03 | Canadian Health Care Delivery |
| HSCE 4003.03 | Foundational Issues for Clinical and Professional Education |
| HLTH 4040.03 | Health Law for Non-Lawyers |
| HSCE 4200.03 | Critical Research Evaluation |

Electives (30 credit hours)

Students may choose electives from the Pre-Approval list but are not limited to this list. Contact the Post Diploma Advisor or visit the School website at www.dal.ca/shs.

Anesthesia Assistant Certificate

Fourth year and post-diploma students in Respiratory Therapy may now complete a 21 credit hour Anesthesia Assistant programme leading to an Anesthesia 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 401.03: Anesthesia and Related Equipment
- RSPT 402.03: Anesthesia Medication Delivery
- RSPT 403.03: Clinical Anesthesia
- RSPT 409.12: Specialty Practice

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 programme:

- 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 3 credit hour practicum in the May-June time period) can be taken in the first three years of the 4-year entry-level programme. Interruption of studies will only be granted for legitimate, non-academic reasons, such as illness, temporary 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 programme 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 programme.

The BHSc post-diploma programme 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 for overload requests pertaining to fourth year studies. However, in accordance with Academic Regulation 5.1.3, 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 their 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, RADD, 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 practice, 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 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 F (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) supplemental 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 eligible for supplemental privileges and will be required to repeat the course.

Successful completion of all clinical components of the programme is mandatory. Clinical practice and clinical education courses are required courses in the programme 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 programme. Course outlines provide specific information about criteria for successful completion and opportunities for remediation.

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 programme is delivered through an integrated curriculum and the clinical education logically sequenced within core, interdisciplinary, discipline-specific, and clinical education courses and clinical practice. 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 programme is mandatory. Clinical practice and clinical education courses are required courses in the programme 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 programme. Course outlines provide specific information about criteria for successful completion and opportunities for remediation.

Two elements of clinical education are:

1. Clinical Practicum
   The programme includes three clinical practice 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 programme, 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 component, 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 Hamilton 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 behaviours are readily applied at the expected level of performance. Clinical Education Courses are taken in Year 3 at all programmes. 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. Students will evaluate and interpret clinical data, cytopreparatory techniques, and specimen preservation. They will examine the cellular and histologic processes related to various disease processes. The Systems Pathology component covers all the body systems and enables the student to identify 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.

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 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 cytopathologic 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, lab 3 hours.
PREREQUISITE: DCYT 1500.03, HSCE 1020.03, HSCE 1030.03
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Cytology.

DCYT 1010.03: 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 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, tissue structure, 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 cytopathologic concepts and microscopy skills necessary to render an accurate cytopathologic diagnosis. Students are required to diagnose gynecologic 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 endoscopic cytopathology. Students will be introduced to the cellular morphology, nomenclature and diagnostic application of all disease processes diagnosed cytopathologically from all body sites external to the female reproductive tract.
be placed on the critical evaluation of pathologic and cytoclogic 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.

F I R S T Y E A R C O U R S E S

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 3020.03. The purpose of the course is to introduce and develop the diagnostic skills required to interpret, interpret and evaluate the cellular morphology of normal, benign and malignant specimens from non-gynecological sites. Emphasis will be placed on the critical evaluation of pathologic and cytoclogic 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.

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. Adversive 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.

PREREQUISITE: DCYT 3010.03.
FORMAT: Lecture 3 hours, labs 3 hours.
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Cytology.

DCYT 3240.03: 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 3230.03. 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 80% 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 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 3220.03. 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 3210.03
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Cytology.

DCYT 3210.03: 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 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 3000.03: 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 build upon knowledge and experience with application to diagnosis gained in DCYT 3000.03. 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 3000.03
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Cytology.

DCYT 3010.03: 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 3000.03. 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 3000.03
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Cytology.
This course will focus on the pathology of the vascular system.

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.

DMUT 2010.03: 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, adrenal, 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.

DMUT 2020.03: Sonography of the Abdomen/Superficial Structures III.

This is the third of three courses related to Abdomen and Superficial structures. This course will provide 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.

DMUT 2500.03: Clinical Practicum II in Diagnostic Medical Ultrasound.

This course builds on knowledge and experience gained in DMUT 2010. This course 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.
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 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.

**DMUT 3230.03: Superficial Structure Imaging.**

This clinical course allows the student to integrate and consolidate knowledge, concepts and skills developed in 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.

**DMUT 3240.03: Application of Ultrasound Instrumentation.**

This clinical course allows the student to integrate and consolidate knowledge, concepts and skills developed in 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.

**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 sonographic 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.

**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.

**DMUT 3230.03: Superficial Structure Imaging.**

This clinical course allows the student to integrate and consolidate knowledge, concepts and skills developed in 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.

**DMUT 3240.03: Application of Ultrasound Instrumentation.**

This clinical course allows the student to integrate and consolidate knowledge, concepts and skills developed in 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.

**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 sonographic 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.

**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.
RESTRICTION: Restricted to Bachelor of Health Sciences students or by permission of instructor.

DMUT 4010.03: Vascular Ultrasound.
This course builds on knowledge and experience gained in DMUT 2010 (Principles and Instrumentation of Diagnostic Medical Ultrasound I) and HSCE 2040 (Pathophysiology for Health Sciences). This course provides a comprehensive study of the normal and abnormal cardiovascular 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 WebCT
PREREQUISITE: DMUT 3800.03
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 2010 (Principles and Instrumentation of Diagnostic Medical Ultrasound I) and HSCE 2040 (Pathophysiology for Health Sciences). This course provides a comprehensive study of the normal and abnormal cardiovascular 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 WebCT
PREREQUISITE: DMUT 3800.03
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 other 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 Sciences 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 skills 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
RESTRICTION: Restricted to Bachelor of Health Sciences 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. 
FORMAT: Lecture 3 hours, lab 1.5 hours 
EXCLUSION: ANAT 1010.03, ANAT 1020.03, PFHY 1000.06, PFHY 1010.06
RESTRICTION: Restricted to Bachelor of Health Sciences 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, PBE tutorials 2 hours 
EXCLUSION: ANAT 1010.03, ANAT 1020.03, PFHY 1000.06, PFHY 1010.06
RESTRICTION: Restricted to Bachelor of Health Science students or by permission of instructor.

HSCE 2000.03: Health Care Ethics.
This course covers ethical problems students commonly face in their field. 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 display by Tomodensitometry and Picture Archiving Communication Systems are also provided. The class operates as a distance education class using WebCT, with materials being distributed via the internet. In-person tutorial sessions are scheduled throughout the term.
FORMAT: On-line delivery via WebCT, five in-person tutorial sessions
PREREQUISITE: BART 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
RESTRICTION: Restricted to students enrolled in the Bachelor of Health Science, students in the professional streams of Nuclear Medicine Technology and Radiological Technology programmes.

HSCE 2030.03: Radiation Biology and Protection.
This course provides a useful overview of the biologic effects 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 aspects 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 biologic and behavioral 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 WebCT

**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 encounters in their professional practices. By focusing on the role of research in contemporary health professional practice this course will provide the student with a sound basis in the principles underlying research theory, measurement issues, experimental, exploratory and descriptive research designs, data analysis and communication skills.

**FORMAT:** Online delivery via WebCT

**EXCLUSION:** HAMP 3000.03

**RESTRICTION:** Restricted to Bachelor of Health Science students; other Health Professions 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 WebCT

**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 depends upon the nature of the course of study. Students wishing to pursue HSCE 4040.03 must consult with the fourth year advisor for approval of a minimum of three months prior to the beginning of the term in which they hope to enrol in the course.

**HSCE 4200.03: Critical Research Appraisal and Practices.**

This course will provide an introduction to both contemporary clinical research practice and these 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:** Online delivery via WebCT

**PREREQUISITE:** HSCE 3001.03 or equivalent

**RESTRICTION:** Restricted to Bachelor of Health Science 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 221 clinical hours and twelve credit hours requires 441 clinical hours. Specialty Practice is arranged through consultation with the fourth year/ post diploma advisor.

**PREREQUISITE:** Post-diploma students must consult with the post diploma advisor to ensure the necessary prerequisites have been met.

**RESTRICTION:** Restricted to BHSc students MEU. 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 class 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 radionuclides 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 provides 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 Positron Emission Tomography (PET) scanner and cyclotron physics and instrumentation.

**FORMAT:** Lecture 3 hours lecture, lab 3 hours. Online delivery via WebCT

**PREREQUISITE:** NUMT 1000.03

**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 radionuclides in the investigation in the function of organs in the skeletal, gastrointestinal 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.
NUMT 2000.03: Radiopharmacy. This course covers the preparation of radioisotopes, the production of radionuclides, the construction and operation of cyclotrons, and safety and quality control. Emphasis will be placed on the safe handling and storage of radioisotopes. A comprehensive quality assurance program is presented, as well as licensing and record keeping. FORMAT: Lecture 3 hours, lab 2 hours.

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.

NUMT 2200.03: Nuclear Medicine Practicum II. In this course, the student will learn the Nuclear Medicine procedures that involve the use of radionuclides 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.

NUMT 3000.03: Nuclear Medicine Instrumentation II. This course will enable the student to understand 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 3 hours.

NUMT 3010.03: Nuclear Medicine Clinical Procedures 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 3 hours.

NUMT 3020.03: Positron Emission Tomography. The course provides students with an overview of PET imaging principles and instrumentation, as well as an introduction to the clinical applications of PET. Students will also learn how to perform and interpret PET scans. FORMAT: Lecture 3 hours, lab 2 hours.

NUMT 3200.03: Radiopharmacy. Students will be exposed to the daily operation of a central radiopharmacy. Emphasis will be placed on the safe handling and storage of radioisotopes. A comprehensive quality assurance program is presented, as well as licensing and record keeping. FORMAT: Lecture 3 hours, lab 2 hours.

NUMT 3220.03: General Imaging I. Students will apply theory to clinical practice by performing a variety of non-imaging Nuclear Medicine procedures relevant to the diagnosis and management of patients in general imaging procedures. Emphasis will be placed on the safe handling and storage of radioisotopes. A comprehensive quality assurance program is presented, as well as licensing and record keeping. FORMAT: Lecture 3 hours, lab 2 hours.

NUMT 3222.03: General Imaging II. Students will apply theory to clinical practice by performing a variety of non-imaging Nuclear Medicine procedures relevant to the diagnosis and management of patients in general imaging procedures. Emphasis will be placed on the safe handling and storage of radioisotopes. A comprehensive quality assurance program is presented, as well as licensing and record keeping. FORMAT: Lecture 3 hours, lab 2 hours.
self-confidence students will be provided an opportunity to integrate education courses and continue development of professional skills in a basic competency level. In an effort to further develop independence and to assume clinical responsibility and demonstrate leadership skills beyond NUMT 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

NUMT 4220.03: Professional Practice in Nuclear Medicine Technology II
This 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. Students will have the opportunity 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

NUMT 4100.03: 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/simulation sessions. FORMAT: Lecture 3 hours, Lab 3 hours, tutorial 2 hours

PREREQUISITE: 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/simulation sessions. FORMAT: Lecture 3 hours, Lab 3 hours, tutorial 2 hours

PREREQUISITE: RADT 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, cardiovascular, pulmonary, gastrointestinal, genitourinary, and vascular imaging. Image acquisition, image evaluation, and patient management/consent are reviewed when appropriate. FORMAT: Full-time rotations in clinical settings.
PREREQUISITE: RADT 1000.03, HSCE 1010.03, HSCE 1020.03.
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Radiological Technology.

This course provides the students with the knowledge of advanced skeletal examinations, and imaging examinations of the gastrointestinal, genitourinary, respiratory, biliary, reproductive, endocrine, cardiovascular, lymphatic and central nervous systems. The students' knowledge and clinical experiences gained through RADT 1500, 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.

RADT 3220.03: Gastrointestinal/Genitourinary/Operating Room Imaging.
This course provides the students with the opportunity to experience the professional stream 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 3240.06: General/Adoption 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 adoption is typically required, 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 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 programme. The course is presented by lecture and through clinical lab sessions where the student studies a variety of images related to pathologic processes. Images from related diagnostic modalities are reviewed when appropriate.
FORMAT: Lecture 3 hours, lab 3 hours.
PREREQUISITE: RADT 2000.03.
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 applications, procedures, sectional anatomy, radiological image review, patient management, and specialized imaging apparatus. Knowledge obtained in previous courses and clinical practice 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 2900.03.
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Radiological Technology.

RADT 3210.03: Introduction to Specialty Practice.
This clinical education course will prepare students for 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 3500.03: Clinical Practicum III. Clinical Practicum III provides students with an opportunity to integrate skills and concepts from previous courses, clinical practice and the clinical environment, under appropriate levels of supervision, the student will assume the responsibilities of a radiological technologist and demonstrate competence. This practicum takes place in a Diagnostic Imaging Department outside the QEII Health Sciences Centre.

RESTRICTION: 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 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 requires 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: 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 behaviors. Students will also have the opportunity to attend pediatric radiology rounds and observe related imaging procedures.

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 practice, 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.

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/practice 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 testing through lab simulation is required.

FORMAT: Lecture 3 hours, lab 1.5 hours
PREREQUISITE: RSPT 1000.03, HSCC 1000.03, HSCC 1020.03
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Respiratory Therapy

RSPT 1020.03: Respiratory Therapy Clinical Assessment and Techniques.

This course is a continuation of RSPT 1000. Students will be provided with the background knowledge necessary for understanding the physical principles and concepts governing the operation of respiratory therapy equipment to ensure the safe and efficient delivery of physician prescribed therapy. Clinical skills competency testing through lab simulation is required.

FORMAT: Lecture 3 hours, lab 1.5 hours
PREREQUISITE: RSPT 1000.03, HSCC 1000.03, HSCC 1020.03
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Respiratory Therapy

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 perform skills at the defined competency level. Full-time rotations in clinical settings will assign 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 accommodation arrangements.

PREREQUISITE: RSPT 1020.03, RSPT 1030.03, HSCC 1000.03, HSCC 1020.03, CHEM 1410.03
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
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 adjacent respiratory therapy equipment to ensure the safe and efficient delivery of physician prescribed therapy. Clinical skills competency testing through lab simulation is required.

FORMAT: Lecture 3 hours, lab 3 hours
PREREQUISITE: RSPT 2000.03, 2010.03, 2060.03
RSPT 2030.03: Cardiopulmonary Physiology II.  
This course is a continuation of the physiological concepts introduced in RSPT 1030 and will examine the integrative 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 practicum. Case study presentations and patient scenarios will complement the learning environment and assist the student in integrating previous knowledge. 
FORMAT: Lecture 4.5 hours, individual and group work, presentations, case study scenarios.  
PREREQUISITE: RSPT 1500.03  
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Respiratory Therapy.

RSPT 2050.03: Health Practice for Respiratory Therapy.  
This course consists of classroom work, clinical skills testing, guest presentations, community project and an advanced cardiac life-support course (ACLS). The learning environment will enhance the understanding of the role of the respiratory therapist in hospitals, healthcare facilities and the community. Basic competency level in the skills required for RSPT 2500 will be achieved by 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.  
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 conditions and diseases affecting clients 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 conditions and diseases affecting clients 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 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 programme as it relates to neonatal/pediatric therapeutics and instrumentation, pathophysiology, applications of mechanical ventilation, pharmacology, PALS and NRP.  
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 for 8 and 12 hour day and night shifts including weekends, depending upon the placement.  
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.  
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 programme 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. Students may be required to travel outside the metro area at their own expense.  
NOTE: Students taking this course must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.  
PREREQUISITE: RSPT 2500.03.

RESTRICTION: Restricted to Bachelor of Health Science students enrolled in the professional stream Respiratory Therapy.

RSPT 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 programme. 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 and II, Pediatric Intensive Care, Birth Unit, and General Ward. Students may be assigned to clinical experiences during twelve hour day or night shifts.  
NOTE: Students taking this course must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.  
PREREQUISITE: RSPT 2500.03.

RESTRICTION: Restricted to Bachelor of Health Science students enrolled in the professional stream Respiratory Therapy.

RSPT 3020X/Y.06: Pulmonary Function Testing and Interpretation.  
This course will consist of two modules, the first being a six-week seminar/lecture series and the second being a three week full-time clinical application programme in the adult and pediatric pulmonary function laboratories. Students will integrate and apply theories and skills in a specialized diagnostic environment. The students will be precepted and evaluated by certified Cardiopulmonary Technologists. This course will enable students to become proficient in performing cardio-pulmonary diagnostic testing including spirometry. Students will have exposure to bronchoprovocation testing and exercise stress testing. Students may be required to travel outside the metro area at their own expense.  
NOTE: Students taking this course must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.  
PREREQUISITE: RSPT 2500.03 and STAT 1060.03.

RESTRICTION: Restricted to Bachelor of Health Science students enrolled in the professional stream Respiratory Therapy.
RSPT 3230X/Y.06: Critical Care Instrumentation and Clinical Techniques.
This class will consist of two modules, the first being a six week seminar/lecture series and the second being a five week full-time clinical application programme 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 programme 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.
NOTE: 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: 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 programme. 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.
NOTE: Students taking this course must register in both X and Y terms; credit will be given only if both are completed consecutively.
PREREQUISITE: RSPT 2500.03
RESTRICTION: Restricted to Bachelor of Health Science students enrolled in the professional stream Respiratory Therapy
RSPT 3500.03: Clinical Practicum III.
This course enables students to integrate theories and skills acquired throughout the previous three years of the program; including theory, clinical practicums 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 the adult and neonatal/pediatric patient populations. Clinical experiences in this course will occur during twelve hour day and night shifts, including weekends.
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 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 requires 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: 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.Enrollment 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.
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 anaesthesia 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.
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 anesthetic process and with special types of anaesthesia.
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

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Professor Emeritus:
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Professors:
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Rathwell, T., BA (York), MA, PhD (Dundee)
Sketris, I., BSc (York), MHSA (McMaster), MBA (Dal), major appointment in College of Pharmacy

Associate Professors:
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Assistant Professors:
Simms, C., BA (SMU), MPA (Dal), MSc (Johns Hopkins), DPhil (Oxford)

Lecturers:
Bowen, L., BComm, DHSA, MHSA (Dal)
Cochrane, N., BA, MSW, MSW
Hartke, R., BA (York), MHSA (Dal)
Jorgie, S., BSc (Ottawa), MSc, MHSA (Dal)
Karim, S., BSc (York), MS, MHSA (Dal)
Mattiske, I., BSc, MHSA (Dal)

The School of Health Services Administration offers an undergraduate and graduate degree programme in Health Services Administration and Emergency Health Services Management.

I. Introduction - Diploma in Health Services Administration (DHSA)

The Diploma in Health Services Administration (DHSA) programme 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 programme 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 programme through distance education on a full-time or part-time basis.

The programme is conducted through the Internet and Web-based conferencing with a product called WebCT. WebCT is a distance education computer product developed by the University of British Columbia. It provides a learning environment where students direct their learning. WebCT 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 programme. 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 programme.

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 programme. Further information on the Diploma in Health Services Administration programme may be obtained from: School of Health Services Administration, Dalhousie University, 3999 Forester 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 programme features both an academic and results-oriented curriculum. Students accepted into the DHSA programme take the following half credit classes:

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<td>HESA 4009.03: Introduction to Health Care Economics</td>
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II. Introduction: Diploma in Emergency Health Services Management (DEHSM)

The School of Health Services Administration offers an undergraduate diploma programme in Emergency Health Services Management. The programme meets the need for an educational programme for mid-career managers working in the Emergency Health Services system in Canada.

The academic objectives of the programme 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 programme 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 programme is geared towards developing essential management skills.

The programme is conducted through the Internet and Web-based conferencing with a product called WebCT. WebCT is a distance education computer product developed by the University of British Columbia. It provides a learning environment where students direct their learning. WebCT consists of a suite of tools which provide mechanisms for interactive exercises, such as group discussions, presentations, and information sharing. The programme is offered on a part-time basis only.

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, 5990 Fawcett 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 4020.03: Health Care Planning
• HESA 4040.03: Health Law for Non-Lawyers

Winter term

• HESA 4050.03: Health Care Financial Management
• HESA 4060.03: Quality Improvement in EHS
• HESA 4070.03: Epidemiology for Managers

Summer term

• HESA 4090.03: EHS System Design
• HESA 4100.03: Principles of Community-Based EHS
• HESA 4110.03: 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 (eg. 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 answer for themselves a seemingly straightforward question: what is it that managers do to add value to their organizations? As a starting point to our examination of this question, we will explore key works in management studies, as well as more specific treatments of this issue in health service literature. We will also explore how management roles, competencies and values vary according to the type of health care organization, the specific mission of the organization and one’s position within it. Finally, we will examine specific skills and duties of health care managers (eg., as leaders, communicators, decision makers, planners and implementers), and how managers must balance competing roles in real world circumstances.

Learning is facilitated through a mix of individual study, class discussion, group case work exercises, individual and group project work, and formal presentations of projects and exercises.

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 labour management relations; human rights and labour 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.

PREREQ: HESA 4000.03

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.

PREREQ: HESA 4000.03

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, payments, 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, Managing 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 skills required to manage people effectively in their own work environment, and introduce EHS.
HESA 4020.03: Quality Improvement in EHS.
The objective of this course is to enable students to: (1) lead EHS managers through a step-by-step process to design, plan, implement, monitor, and evaluate 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.

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 CQI practices to modify the design and ever-vigilant system status management to maintain high performance. This course will consider first the public policy issues that bear upon EHS system design. 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, strategic 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 this 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 service system and various 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 analyse conclusions which have been gained through the application of epidemiological studies.

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; financing 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.
Adjunct Professors

Amantungo, C, BA (Univ. of Guelph), MSc (Univ. of Alberta), PhD (Univ. of Waterloo)
Balcom, E.C., BFPE (UNB), MSc (Dal)
Brooks, C, MBOB (Manchester Univ.), DAA/AMed (Univ. of London), MPVM, FVTDM (Royal Coll. of Phys)
Comunas, N., BEd(UPEI), MEd (Univ. of Queen'sland), MA, PhD (Dal)
Hilli, L.J., BS, MP (Springfield Coll), PhD (Southern Illinois)
MacLeod, D.A., BSc, MSc (Dal) (Dal)
Sauliner, C, BSc Honours (Univ. Ottawa), MA (Univ. Victoria), PhD (York)
Skeffert, G., BSc, MA, PhD(Univ. of Victoria)
Thompson, A, BFPE, MSc (PE), PhD (Dal)
Van Houten, R, BA (State Univ. of NY at Stony Brook), MA, PhD (Dal)
Vernoff, L.J., BA BFPE (Queens'), MA (Michigan), PhD (Ohio State)
Warner, G., BS (Emilmount College), MS, PhD (Case Western Reserve Univ.)

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 programmes as well as by conducting research in health promotion, kinesiology and recreation/leisure studies.

B. Limited Enrolment

All programmes 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 339.

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 Canadians, Aboriginal peoples, and persons with disabilities, in the School of Health and Human Performance.

D. Affirmative Action Admission Policy

Refer to Policy Statement in Faculty of Health Professions section, page 339.

IV. Application Procedure

1. Those applying directly from high school must have attained a minimum grade of 65% in each of the prerequisites listed for the programme 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 these 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 these students.

2. Dalhousie University offers the following services:
   - Back 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
   - Ombudsman
   - 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

1. School of Health and Human Performance Regulations
   a) All students must observe the University and Academic Regulations described in this Calendar.
   b) 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.

2. Grade Point Average Requirements
   The grade point average system is described in the Academic Regulations.

3. Supplemental Examinations
   The School of Health and Human Performance does not offer supplemental examinations in any of its programmes.

4. Academic Appeals Procedures
   The School of Health and Human Performance does not offer supplemental examinations in any of its programmes.

5. 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. Academic Appeals Procedures
   Although many classes are compulsory in the School’s programmes, considerable latitude exists for the development and extension of individual interests. To help in planning a total personal programme 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 programmes and for maintaining high academic standards, they should consult their advisor regularly.

III. Degree Programmes
   The School offers six undergraduate degree programmes:
   - BSc (Health Promotion)
   - BSc (Health Promotion) with Honours*
   - BSc (Kinesthetics)
   - BSc (Kinesthetics) 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 programmes 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 programmes with previous academic work will formulate a programme 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 programmes should note that the internship experiences required in the final year of these programmes 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 programme 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 Kinesthetics students.

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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: Lectures/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 programmes 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 interpretive models of inquiry. Testing, as well as written assignments will serve as evaluative techniques.
FORMAT: Lectures/discussion 3 hours
EXCLUSION: HCEC 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 programme. The goal of health promotion is to educate health promotion professionals to 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 programmes; coordinating health promotion activities and resources; promoting health promotion throughout the community; and professional development.

The BSc (Health Promotion) programme 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.

Programme of Study
NOTE: On admission into the BSc (Health Promotion) programme, all students will be issued a Programme 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
FHHL 1010.06
SOSA 1000.06 or 1010.06 or 1100.06 or 1200.06 6

Community Health Promotion Stream

Year Two
HAHP 2000.03 3
HAHP 2110.03 3
HPRO 2361.03 3
One of**: (HPRO 2255.03, HPRO 4412.03, HPPO 4365.03) 3
HPRO 3397.03 3
One of**: (HPRO 3325.03, HPRO 3335.03, HPRO 3351.03) 3
Open Electives*** 9
Writing Requirement**** 3

Year Three
HAHP 3000.03 3
HAHP 3100.03 3
HPRO 3379.03 3
HPRO 3325.03 3
One of**: (HPRO 3335.03, HPRO 3345.03, HPRO 3351.03) 3
Open Electives*** 9
Health Related Electives****** 6

Year Four
One of**: (HPRO 3355.03, HPRO 4412.03, HPPO 4365.03) 3
One of**: (HPRO 3335.03, HPRO 3345.03, HPRO 3351.03) 3
HPRO 4450.03 3
HPPO 4495.15 15
Open Electives** 6

Research and Policy Stream

Year Two
HAHP 2000.03 3
HPRO 2110.03 3
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 2210.03: 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/approval/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 the body systems related to different nutrients including proteins, carbohydrates, 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

### HPRO 2255.03: Drugs and Drug Education

The course focuses on the science of nutrition and the role of nutrition in health. We study the body systems related to different nutrients including proteins, carbohydrates, 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

### HPRO 2355.03: Health Promotion Policy

The course focuses on the science of nutrition and the role of nutrition in health. We study the body systems related to different nutrients including proteins, carbohydrates, 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

### HPRO 2361.03: Programme Planning

Designing, planning, implementing and evaluating programmes is fundamental to both leisure services and health promotion. Both disciplines develop programmes to enhance the quality of life for individuals, groups and communities. This class reviews the principles of programme planning, various programme planning models, and examples of programmes 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
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, HAFP 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, PHYH 1010.06 or PHYH 1000.06, or PHYH 2030.06, 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, PHYH 1010.06 or PHYH 1000.06 or PHYH 2030.06, 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 programmes 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
PREREQUISITE: ANAT 1020.03 or ANAT 1010.03, HPRO/HEED 1195.03, PHYH 1010.06 or PHYH 1000.06 or PHYH 2030.06, 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 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 interaction of multicultural health with policies and practice. 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 2100.03

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 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 2100.03

RESTRICTION: Restricted to Health Promotion students. Others by permission of instructor with priority to Health Professions students.

HPRO 3387.03: 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.
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 consult 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, HAFP 3000.03

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 value 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 programme in the public school system from a community health promotion perspective. The school health curriculum, school health services, and the school health environment, and how a community health promotion model interacts with the school system will comprise the content of the class.

FORMAT: Lecture/tutorial 3 hours

PREREQUISITE: 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 Programme Handbook. During the concluding week of the term, students will return to the campus for a debriefing, sharing of their internship experience, and preparing for their entry into the work force.

FORMAT: Field Placement/seminar

RESTRICTION: Restricted to Health Promotion students 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 study.

FORMAT: Research/tutorial 3 or 6 hours

PREREQUISITE: Fourth year status; a GPA of at least 3.0; 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 this 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: HPRO 3397.03 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 300-level or higher HPRO course in the area of intended research; and agreement from a faculty member to serve as Honours Thesis advisor.

HPRO 8880.00: Honours Thesis Examination.

The purpose of this portion of the Honours Program is to provide the opportunity for the student to demonstrate in-depth knowledge in the field of research chosen, the ability to publicly present research findings in a coherent and meaningful manner, and the ability to engage in debate and answer questions about the topic of research.

RESTRICTION: Restricted to Health Promotion students who have successfully completed all course requirements for the Bachelor of Science (Health Promotion) Honours degree and who are enrolled in HPRO 4900.

D. Bachelor of Science (Kinesiology)

Programme 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 program areas: ergonomics; fitness and lifestyle; or coaching sciences; 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 honour degree in Kinesiology (see Section E below).

See stream requirements under Programme 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 problem-based learning;
9. The necessary background to enable the student to pursue graduate work in kinesiology or other related fields.

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Programme of Study

On admission into the BSc (Kiniesiology) programme, all students will be issued a Programme of Studies Form. It is the responsibility of the student to ensure that all of the classes listed for the degree as outlined on the form are completed for graduation.

Required Classes - BSc (Kiniesiology)

Required Health and Human Performance Classes:
- HAHHP 1001.03
- HAHHP 1201.03
- HAHHP 3101.03
- ANAT 1020.03 or 1030.03
- CSCS 1204
- PHYC 1310.03
- PHYL 1010.06 or 1000.06 or 2000.06
- KINE 1104.03
- KINE 2310.01
- KINE 2321.03
- KINE 2431.03
- KINE 2465.03
- KINE 3501.03
- KINE 4001.03
- STAT 1060.01
- Kinesiology Electives* 18
- Science Electives* 24
- Open Electives** 27

Open Electives** (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:
- BIOC 1101 or 1121.03
- BIOC 1111 or 1121.03
- PHYC 1320 (03) Principles of General Biology I or Principles of General Biology II
- CHEM 1011 (03) General Chemistry Part I or General Chemistry Part II
- CHEM 1041 (03) General Chemistry for the Life and Health Sciences - Part I: Chemical form and function or General Chemistry for the Life and Health Sciences - Part II: Chemical reactivity
- MATH 1001 (03) Differential & Integral Calculus or MATH 1201 (03) Calculus for Life Sciences
- PSYO 1011 or 1021 (03) Introduction to Psychology and Neuroscience I or PSYO 1012 or 1022.05 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 these 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 for advice on courses.

A stream can be completed within the context of the BSc (Kiniesiology) or the BSc (Kiniesiology) with Honours programmes. Eighteen (18) credit hours of Science 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 listed below:

Ergonomics Stream:
- KINE 3414.03 Physical Fitness Assessment & Programme Design
- KINE 3415.03 Principles of Ergonomics
- KINE 3462.03 Care & Prevention of Injuries
- KINE 4466.03 Advanced Biomechanics
- KINE 4577.03 Cognitive Ergonomics
- KINE 4578.03 Ergonomics
- KINE 4588.03 Clinical and Occupational Ergonomics

Fitness & Lifestyle Stream:
- KINE 3414.03 Physical Fitness Assessment & Programme Design
- KINE 3419.03 Application of Physiological Principles to Human Performance
- KINE 3485.03 Psychology of Sport and Physical Activity
- KINE 3488.03 Clinical and Occupational Ergonomics
- KINE 3489.03 Counselling for Health 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 3462.03 Care and Prevention of Injuries
- KINE 3465.03 Psychology of Sport and Physical Activity
- KINE 3570.03 Coaching Science Seminar
- KINE 3741.03 Coaching Science Practicum
- KINE 4370.03 Advanced Coaching Science Seminar
- KINE 4741.03 Advanced Coaching Science Practicum
- KINE 4742.03 Introduction to Marketing

E. Bachelor of Science (Kiniesiology) with Honours

Students who wish to complete their Honours Programme may apply at the end of their third year of study. Acceptance into the honours programme is contingent upon the approval of a faculty member to serve as the honours thesis advisor. To be considered for admission into the programme, students must have fulfilled the following requirements:

1. Completed a minimum of 24 credit hours of science electives, including MATH 1001.03 and three other credit hours of MATH other than MATH 1001.03, 1202.03, 1003.03 1110.02, 1120.02, 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 in the previous 60 credit hours of work;
4. Completed a minimum of 24 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.

A stream can be completed within the context of the BSc (Kiniesiology) or the BSc (Kiniesiology) with Honours programmes. Eighteen (18) credit hours of Science 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:

Ergonomics Stream:
- KINE 3414.03 Physical Fitness Assessment & Programme Design
- KINE 3415.03 Principles of Ergonomics
- KINE 3462.03 Care & Prevention of Injuries
- KINE 4466.03 Advanced Biomechanics
- KINE 4577.03 Cognitive Ergonomics
- KINE 4578.03 Ergonomics
- KINE 4588.03 Clinical and Occupational Ergonomics

Fitness & Lifestyle Stream:
- KINE 3414.03 Physical Fitness Assessment & Programme Design
- KINE 3419.03 Application of Physiological Principles to Human Performance
- KINE 3485.03 Psychology of Sport and Physical Activity
- KINE 3488.03 Clinical and Occupational Ergonomics
- KINE 3489.03 Counselling for Health 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 3462.03 Care and Prevention of Injuries
- KINE 3465.03 Psychology of Sport and Physical Activity
- KINE 3570.03 Coaching Science Seminar
- KINE 3741.03 Coaching Science Practicum
- KINE 4370.03 Advanced Coaching Science Seminar
- KINE 4741.03 Advanced Coaching Science Practicum
- KINE 4742.03 Introduction to Marketing

E. Bachelor of Science (Kiniesiology) with Honours

Students who wish to complete their Honours Programme may apply at the end of their third year of study. Acceptance into the honours programme is contingent upon the approval of a faculty member to serve as the honours thesis advisor. To be considered for admission into the programme, students must have fulfilled the following requirements:

1. Completed a minimum of 24 credit hours of science electives, including MATH 1001.03 and three other credit hours of MATH other than MATH 1001.03, 1202.03, 1003.03 1110.02, 1120.02, 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 in the previous 60 credit hours of work;
4. Completed a minimum of 24 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 programme are required to attend an Honours seminar weekly for the first two months, and then monthly.

NOTE: Students accepted into the Honours programme must complete KINE 4000.06. Upon successful completion of the Honours thesis, the School will notify the Registrar’s Office to register the student in KINE 4880.00. These requirements are 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 programme. Before taking KINE 4900.06, they must have satisfied the requirements for the Honours Programme. 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 programme can only be considered provided a faculty member has agreed to supervise the project.

KINE Class Descriptions

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 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, PHYS 1010.06 or PHYS 1000.06 or PHYS 2010.06.

RESTRICTION: Restricted to Kinesiology students

KINE 2320.03: Kinesiological Anatomy.
Neuromuscular and musculoskeletal structures are presented and discussed in order to establish the understanding 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 PHYS 1010.06 or PHYS 1000.06 or PHYS 2010.06.

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: PHYS 1300.06 or PHYS 1301.05

EXCLUSION: PHYC 2610.03

RESTRICTION: Restricted to Kinesiology students

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, PHYS 1010.06 or PHYS 1000.06 or PHYS 2010.06.

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 forming the basis 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 & Programme Design.
Evaluation of various methods of physical fitness assessment, designing fitness programmes for diverse populations and identifying motivational techniques with emphasis on the areas of cardiovascular fitness, weight reduction, pre- and post-natal programmes 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 cord, CNS (including spinal cord) neurotransmitter systems will be analyzed in detail, using case studies to illustrate key principles. Students will learn about the major classes of neurologica
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 improve performance and reduce injuries. FORMAT: Lecture/field work. PREREQUISITE: KINE 2300.03, KINE 2320.03, 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 1010.03 or ANAT 1020.03, PHYL 1010.06 or 1000.06 or PHYL 2010.06, KINE 2300.03. RESTRICTION: Restricted to Kinesiology students. Others by permission of instructor, with priority to Health Professions students.

KINE 3485.03: Psychology of Sport. This class offers an awareness and understanding of the phenomena involved in mental preparation in sport. It will systematically analyze, investigate and assess psychological skills, attributes and preparation in this area, and their application in other environments. Emphasis will also be placed upon personal experience and practical application. FORMAT: Lecture. 3 hours. PREREQUISITE: PSYO 1021.03 and PSYO 1022.03 or PSYO 1011.03 and PSYO 1012.03, KINE 2400.03 or permission of instructor.

KINE 3500.03: Principles of Measurement and Evaluation. An introduction to the fundamentals involved in measurement and evaluation, including the strategies of 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 1000.06 or PHYL 2010.06, STAT 2400.03. 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 (NC3P). FORMAT: Lecture/group activities, 3 hours. PREREQUISITE: First and second year HAHP 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, understand 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.

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), body/mind techniques (e.g., massage, pressure point therapy), 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: HAP/IP 3300.03. 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 limits, research methodology and limitations, acclimation, counter-measures, protective clothing) applicable to human endeavour or extreme environments by investigating one environmental scenario (e.g. High altitude, diving, microgravity, thermal stress) in detail. Students will produce a peer-reviewed thesis 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 3493.03 AND KINE 3476.03. RESTRICTION: Restricted to 4th year Biok students.

KINE 4412XY.06: Advanced Fitness Assessment, Exercise Prescription and Lifestyle Counselling. The objective of this class is to provide the student with advanced techniques to assess physical fitness, design physical activity/exercise programmes and lifestyle counselling skills. In addition, this class will prepare the student to write the Canadian Society for Exercise Physiology’s National Professional Fitness and Lifestyle Consultant (FPSC) 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 ANAT 1010.03, PHYL 1010.06 or PHYL 1000.06 or PHYL 2010.06, KINE 2310.03, KINE 3414.03, KINE 3419.03, CFP, Certified Fitness Consultant (CFC) RESTRICTION: Restricted to Kinesiology vbg students. Others by permission of instructor, with priority to Health Professions students.

KINE 4413.03: Neuronomuscular 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. PREREQUISITE: KINE 2310.03, KINE 2320.03, KINE 2465.03, KINE 3419.03.
RESTRICTION: Restricted to School of Health and Human Performance students. Others by permission of instructor, with priority to Health Professions students.

KINE 4460.03: 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 applications of 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 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 clinical and occupational perspective. Due emphasis will be placed on the importance of understanding the strengths and weaknesses of biomechanical and physiological measures. 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 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 2465.03, KINE 2466.03, KINE 3476.03
RESTRICTION: Restricted to Kinesiology students. Others by permission of instructor, with priority to Health Professions students.

KINE 4700X/Y.06/4701.03/4702.03: Senior Seminar.
This class is tailored for small groups of students. Students enrolled in 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 successfully.
FORMAT: Seminar
RESTRICTION: Restricted to Kinesiology students in their final year of study.

KINE 4740.03: Advanced Coaching Science Seminar.
The purpose of this class is to provide students with the opportunity to learn about the advanced principles and concepts of effective coaching planning and practice. Students will design, quantify and monitor a season training plan using PLAN software, addressing the performance factors of speed, strength, suppleness, stamina and skill appropriate to the maturational level of the athlete, as well as the integration of psychological preparation and competitive strategies. The class will also prepare students to meet the requirements for Level Three of the Theory component of the national Coaching Certification Programme (NCCP).
FORMAT: Lecture (group activities), 3 hours
PREREQUISITE: KINE 3740.03 and KINE 3741.03, Level 1 Technical, National Coaching Certification Programme. (Students are required, at their own expense, to pursue this class externally.)

KINE 4741.03: Advanced Coaching Science Practicum.
The purpose of this class is to provide students with the opportunity to observe, identify and evaluate the advanced principles and methodologies of coaching that are associated with the creation of an effective practice, and learning 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.06/4802.03/4802.03: 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 study.
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 HARP 3100.03 with a minimum grade of B, and a minimum of 24 credit hours of science electives, including MATH/STAT 1080 and three other credit hours of MATH other than
RESTRICTION: Restricted to Kinesiology students in their final year of study.

KINE 8880.00: Honours Qualifying Examination. The Honours Qualifying Exam will consist of:

1. Weekly meetings with the Honours Coordinator and supervisors for the first six weeks, and then monthly meetings.
2. A research proposal submitted in the Fall, and an Ethics Application.
3. A written progress report to be submitted the first week of December.
4. A Review of Literature to be submitted in February.
5. A public presentation and oral defense of the thesis in April. The presentation is open to all faculty and students of the School, as well as the general public.

**F. Bachelor of Science (Recreation) - Therapeutic Recreation**

**Objectives**

The general objectives of the programme 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.

**Programme of Study**

On admission into the BSc (Recreation) programme, all students will be issued a Programme 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.

**Programme 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, programme 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**

- LEIS 3296.03 3
- LEIS 3426.03 3
- STAT 1004.03 3
- LEIS 4340.03 3
- LEIS 4360.03 3
- LEIS 4397.15 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
- SOOA 1000.06 or SOOA 1050.06 or SOOA 1100.06 or SOOA 1200.0 6

**Therapeutic Recreation Electives**

Two of the following:

- LEIS 4442.03 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.

**Programme Description**

The curriculum of this new combined programme 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 programme enhances career options of future recreation students.

The Bachelor of Science (Recreation) / Bachelor of Management is a five-year programme 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**

- HAHF 1001.03 3
- HAHF 1200.03 3
- HAHF 2000.03 3
- HAHF 3000.03 3
- ANAT 1020.03 or 1010.03 3
- PHYL 1010.06 or 1000.06 or 2000.06 6
- KINE 3084.03 3
- LEIS 1127.03 3
- LEIS 2127.03 3
- LEIS 2310.03 3
- LEIS 2510.03 3
- LEIS 2594.03 3
- LEIS 3127.03 3

**Required Arts & Social Science Classes**

- LEIS 3296.03 3
- LEIS 3426.03 3
- LEIS 3490.03 3
- LEIS 4340.03 3
- LEIS 4360.03 3
- LEIS 4397.15 15

**Therapeutic Recreation Electives**

Two of the following:

- LEIS 4442.03 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.

**NOTE:** Students should consult the NCTRC website (www.NCTRC.org) for CTRS Certification requirements.

**Kinesiology** 343
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 1001.03 or SOSA 1200.03 or PSYD 1021.03 and PSYD 1022.03 or PSYD 1031.03 and PSYD 1023.03. 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.

**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: Programme Planning.

Designing, planning, implementing and evaluating programmes is fundamental to both leisure services and health education. Both disciplines develop programmes to enhance the quality of life for individuals, groups and communities. This class reviews the principles of programme planning, various programme planning models, and examples of programmes 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

RESTRICTION: Restricted to Bachelor of Science (Recreation) students. Others by permission of instructor, with priority to Health Professions students.

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 behaviors, 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 to facilitate leisure education. In addition, students will have the opportunity to plan and facilitate leisure education experiences in class.

FORMAT: Lecture/discussion 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 3290.03: 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. 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 placed on leisure involvement, and 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, public, private non-profit, commercial recreation, travel and tourism sectors of the leisure industry. It will seek to (a) review the political, social, physical and economic impact on each of the sectors, (b) determine ways of assessing the quality of 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, HPRO/HEED 2361.03, MGMT 2102.03, MGMT 2103.03, PLAD 2661.03
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 government 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 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, LEIS 2361.03, MGMT 2361.03
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 programme planning (identifying client needs, programme design and case management, programme delivery, evaluation and follow up); professional skills in programme 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 programme planning context.

FORMAT: Lecture/discussion/practicum, 3 credit hours
PREREQUISITE: LEIS 1127.03, LEIS 2130.03, LEIS/PRO/HEED 2361.03, LEIS 2384.03, KINE 3584.03
RESTRICTION: Restricted to Bachelor of Science (Recreation)/Bachelor of Management 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 behaviors which are designed to facilitate change in the leisure behavior 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 2361.03, 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 toward strategic planning and financial, marketing and business planning development.
PREREQ: INTLE (HI) 2201.03, LES 3362.03, MGMT 2303.03, MGMT 2401.03
EXCLUSION: LES 3363.03
RESTRICTION: Restricted to Bachelor of Science (Recreation) Bachelor of Management students. Others with permission of the instructor.

LEIS 4363.03: 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
PREREQ: INTLE 1127.03, LES 2127.03, LES 2130.03, LES 2384.03
LES 3127.03, LES 3426.03, LES 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 youth development and adolescence which has created a number of problems such as low self-worth, alcohol abuse, teenage suicide, etc. There are programmes 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
PREREQ: INTLE 1127.03, LES 2127.03, LES 2384.03, LES 3127.03, LES 3426.03, LES 3492.03
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 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 mental illness and addiction will be examined, including assessment procedures, programme intervention techniques, etc. Site visits, observations, and simulations will be used to facilitate the application of this material.
FORMAT: Lecture/discussion/practicum 3 hours
PREREQ: INTLE 1127.03, LES 2127.03, LES 2384.03
LES 3127.03, LES 3426.03, LES 3492.03
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 illness 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, programme intervention techniques, etc. Site visits, observations, and simulations will be used to facilitate the application of this material.
FORMAT: Lecture/discussion/practicum 3 hours
PREREQ: INTLE 1127.03, LES 2127.03, LES 2384.03
LES 3127.03, LES 3426.03, LES 3492.03, KINE 3394.03
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 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, programme 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
PREREQ: INTLE 1127.03, LES 2127.03, LES 2384.03, LES 3127.03, LES 3426.03, LES 3492.03
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 terms with permission of Internship Coordinator
PREREQ: Completion of all course requirements; approval of advisor
RESTRICTION: Restricted to Bachelor of Science (Recreation) and 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 3.0; 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 333).
Nursing

School of Nursing
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Dean
Webster, William G., PhD

Director
Downe-Wamboldt, B.L., BN, MEd, Dip.Th (Dal), PhD (U Texas - Austin), RN

Associate Director Graduate Programmes
Martin-Misener, R., DOCHN, BScN, MN (Dal), PhD (Calgary), NP, RN

Associate Director Undergraduate Programme
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Foster, S., BN (MUN), MN (Dal), RN

Coordinator, Nurse Practitioner Programme
Martin-Misener, R., DOCHN, BScN, MN (Dal), PhD (Calgary), NP, RN

Coordinator, BScN (Arctic Nursing)
Edgecombe, N., BN (Lethbridge), MN, PhD (Alberta), RN

Professor
Downe-Wamboldt, B.L., BN, MEd, Dip.Th (Dal), PhD (U Texas-Austin), RN

Associate Professors
Hughes, J.M., BN (Dal), MS (Boston), PhD (McGill), RN
McIntyre, J., BN, MN (Dal), PhD (Florida), RN
Maugher-Stewart, L.M.N., BScN (MVU), MS (McMaster), PhD (UofT), RN
Melanson, P., BScN (Ottawa), MN (Dal), RN
Sommerfeld, D., BScN (MVU), MSN (OUC), RN
Tomlin Murphy, C., RN, MN (Dal), PhD (UofT), RN

Associate Professor (Research)
Brou, L., BA (MountA), PhD (Dal)

Assistant Professors
Astor, M., BScN, MN (Queen's), PhD (UofT), RN
Chirop, A., BScN, MN, PhD (Dal), RN
Dresser, S., BScN (MVU), MN (Dal), RN
Edgemore, N., RN (Leithbridge), MN (Alberta), PhD (Alberta), RN
Etowa, J., BScN, MN (Dal), PhD (Calgary), RN
Foster, S., RN (MUN), MN (Dal), RN
Gilbert, L., BS, MFA (Illinois), MSN (Western), RN
Goldberg, L., BA (UCB), MA (Dal), PhD (Alberta), RN
Hayward, K., BScN, RN (Dal), RN
Helpard, H., RN (UNB), MN (Dal), RN
Kibard, C., RN, MN (Dal), MS (Queen's), RN
Latomer, M., BA (MVU), BScN, MN (Dal), PhD (McGill), RN
MacDonald, M., RN (UNB), MSN (St. Maine), PhD (San Diego), RN

McLeod, D., RN, MN (Dal), PhD (Calgary), RN
Martin-Misener, R., DOCHN, BScN, MN (Dal), PhD (Calgary), NP, RN
Meyer, M., RN (UNB), MN (Dal), RN
Murphy, A., BScN (Dal), PhD (Dal), RN
Murphy, A., BScN (Dal), PhD (Dal), RN
Murphy, A., BScN (Dal), PhD (Dal), RN
Murphy, A., BScN (Dal), PhD (Dal), RN
Murphy, A., BScN (Dal), PhD (Dal), RN
Murphy, A., BScN (Dal), PhD (Dal), RN
Sabo, B., BA (Manitoba), MA (PhD), RN
Sabol, A., BScN (Dal), MSN (OUC), RN
Sheppard LeMone, D., RN, MN (Dal), RN
Smilgroat-Carlos, E., BMN (MN), MN (Dal), PhD (McGill), RN
Soele, B., BA (Manitoba), MA, PhD (UofT), RN
Strombook, A., BScN (Dal), MSN (UofT), RN
Thibault, C., BScN (MVU), MSN (OUC), PhD (McGill), RN
Valle, A., RN, MN (Dal), RN
White, M., RN (UNB), MN (Dal), RN
Wight Moffatt, C.E., RN (UofA), RN
Wilson, L., BScN (MVU), MN (Dal), RN
Youden, S., RN (Dal), MSc (Applied (PhD), McGill, RN

Lecturers
Bankhouse-MacKern, C., BN (Dal), MSc (Texas-Austin), RN
Blagston, M., BScN (SFU), RN
Burke, D., RN (UNB), MN (Dal), RN
Gallo, H., RN, MN (Uni), RN
Hend, S., BScN (Racon), RN
MacAulay, A., BScN (Dal), RN
Maclean, R., BScN (Alberta), RN
O'Leary, S., BScN (Dal), MScN (North Dakota), NP, RN
Sherer, C., RN, MN (Dal), RN

Senior Instructors - Skills Laboratory
Beliveau, E., BScN (MVU), RN
Keelanbale, B., RN (Dal), RN

Adjunct Appointments
Anderson, R., BScN (Dal), RN
Baker, C., BA (McGill), MA (London), MSc (Dal), PhD (Texas), RN
Rainbird, R., BScN (Dal), PhD (UofT), RN
Barril, V., RN (St. Fr.), MN (Dal), RN
Banoub-Baddour, S., BScN, MSN (DN), RN (Egypt), RN
Bayer, M.J., RN, MN (Dal), PhD (Acadia), PhD (Dal)
Bosco, D., RN (Dal), PhD (Dal)
Bradley, L., RN (Dal), MN (Boston), RN
Brandt, L., BScN (Dal), MScN (UofT), RN
Brooks, E., RN, MN (Dal), RN
Brown, T., BScN (Dal), MN (Albany), RN
Brown, G., BScN (Kentucky), MS (Boston), PhD (UF), RN
Brou, R., BScN (MVU), MSN (Dal), RN
Campbell, M., BScN (Yale), RN
Campbell, T., BScN (UPEI), RN (Dal), RN
Campbell-Ven, M., RN (Dal), RN
Carson, G., RN, MN (Dal), RN
Cobbett, S., RN, MN (Dal), EdD (Australia), RN
Cooper, E., RN, MN (Dal), RN
Coulier, L., RN, MN (Dal), RN
Crewdon, C., RN, MN (Dal), RNNP, RN
Doherty, A., BScN (Boston College), MA, E (of Massachusetts), RN
Edwards, N., BScN (Windsor), MSc (Dal), PhD (McGill), RN
Evans, J., RN, MN, PhD (Dal), RN
Fillette, T., BScN, MN (Dal), RN
Forgeron, P., BScN (SFU), RN (Dal), RN
Frank, R., BScN (Dal), RN, PhD (Dal)
Garden-Jayasinghe, J., RN, MN (Dal), RN
Gaudine, A., BScN (Dal), PhD (McGill), RN
Gaudine, A., BScN (Dal), PhD (McGill), RN
Garret, L., BScN (Colorado), MSN (UofT), PhD (Dal), RN
Gill, A., BScN, MN (SFU), PhD (Texas-Austin), RN
Graham, K., BScN (Dal), PhD (Dal)
Gregory, D., BScN (Dal), MSN (Fla), PhD (U of Ala), RN
Gulfom, M.E., RN, MN (Dal), RN
Hamilton, J., RN (Dal), MSN (McGill), RN
Hartigan-Rogers, L., BN, MN (Dal), RN
Hawley, P., BScN (SFU), MScN (Dal), PhD (Dal), RN
Hirsch, G., RN (Dal), MSN (SFU), RN
Jackson, W., BA (Manitoba), PhD (Wash)
Cross Appointments
Bogos, B., Ma(Dal), Ph.D (UCR)
Browne, C., B.A, MA, RN, MSc (Carleton), Ph.D(Toronto)
Coughlin, S., B.A (Carleton), M.A (Toronto), LLB (Dal), Ph.D (Toronto)
Evely, A., BSc (Winnipeg), MSc (Alberta), Ph.D (Dal)
Gabagab, J., BA Honours (Carleton), MA (Winnipeg), PhD (Wayne State)
Harrison, J., BA, BBS (Toronto), Grad Diploma (Edinburgh), PhD (UofT)
Jackson, L., B.A, MA, PhD (Queens) (Dal)
Ladkaye, T., BA, MEd (Calgary), Ph.D (Alberta)
Livingston, L., BScN, MSc(PHI), PhD (Calgary)
Lyons, R.F., BA (Dal), MEd (St. Fx), Ph.D (UofO)
Morr, K., RN, MSc (Dal), Associate Dean, Faculty of Medicine
Rathwell, T., BA (Hons) (York), MA, Ph.D (Dundee)
Sternow, J., BA (York), PhD (Stanford), FRS, (Professor Emeritus in Phil)
Sington, J., BA (Waterloo), M.P (Penn-Stat), PhD (Maryland), Associate
Professor, School of Recreation, Physical & Health Education
Skene, J., BSc (Toronto), MPH (Oslo), MA (Dal), PharmD (Leeuwarden)
Thawee, V., BA (Bam), MA, PhD (Wu)
Theo-Benjamin, W., BA (MSW), MSc (Dal), PhD (Sheffield)
Townsend, E., BSc (Toronto), MedEd (Sask), Ph.D (Dal)
Vogtges, P, Msc (Wurzburg), PhD (Amsterdam)

Preceptors
Many nurses and persons in other disciplines, and settings, provide
valuable assistance in the education of nursing students. Names cannot be
obtained by contacting the School of Nursing.

I. Introduction
The School of Nursing was established in 1949 and became a constituent part of the
Faculty of Health Professions in 1961. Currently the School offers an
undergraduate programme for Basic and Post Diploma students, a
Bachelor of Science (Arctic Nursing), a Diploma in Nurse Practitioner
Studies for Remote and Under-Serviced Communities (at the post diploma
and post baccalaureate level), a Master of Nursing Programme and a PhD
(Nursing) Programme.

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 programme. Incorrect registration,
at any time, could cause conflicts in a student’s year-to-year
progression and/or graduation.
4. Students in the Baccalaureate Programme are responsible for (a) the
use 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 incurred by
students in the Basic Baccalaureate Programme 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
Advising Committee to help them plan their academic programme and
to discuss academic progress or difficulties.
6. Students are required to report a given course in the BScN
programme only once. A second failure in a given course will result in
dismissal from the nursing program.
7. Failure in any two courses in the BScN programme will result in
dismissal from the nursing program.
8. Students wishing to appeal a decision based on faculty regulations or
decisions should follow the School of Nursing Appeal Procedure
outlined in the Nursing Student 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 programme 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 criminal conviction or any significant personal
circumstance which would adversely affect their ability to continue
studies or which would be an eligibility for registration
with the 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. Both students and faculty base rights and responsibilities and further, that if the University is a complex
system, students may experience difficulty in determining how to express

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disatisfaction. 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 Proceedings are available from the School.

II. Degree Options
A. Bachelor of Science (Nursing) for Basic Students

1. Degree Requirements
   Throughout the undergraduate programme 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

4. Requirements for Promotion
   Students with a prior degree and/or sufficient number of relevant credit hours (e.g., a half-credit class [three credit hours], is equivalent to 180 practice hours) are eligible for the advance placement option available as a component of the BScN (RN) degree programme. 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 specialty.

5. Normal Workload
   The programme 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 programme in a minimum of two or three years. To qualify, students must have a GPA of at least 3.0.

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 programme; accumulate a minimum of 75 credit hours; 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 CCRN recognises 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 programme constitutes 1,725 practice hours, the equivalent of working full-time. The 75 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 programme. 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 specialty.

   On completion of the clinical major option classes, students receive a certificate and may continue in the BScN (RN) programme 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 programme to prepare Inuit nurses for practice in the remote northern communities of Nunavut. Information about this programme is available from the School of Nursing.

D. Nurse Practitioner Diploma Programme
   The School of Nursing offers two streams in the Nurse Practitioner Programme: one for students with a bachelor’s degree in nursing (post-baccalaureate stream); the other for Registered Nurses (post-diploma nursing stream). Students are admitted each year in September.

   1. Post-Baccalaureate Stream
      Students complete a 12-month programme which includes two terms at the university followed by one term in a community-based clinical practicum. Students graduate with a Diploma in Nurse Practitioner Studies for Remote and Underserviced Communities.

   2. Post-Diploma Stream
      Students complete a 24-month programme which includes three terms at the university, summer school classes and one semester in a community-based clinical practicum. Completion of first year arts and science classes is a prerequisite for admission. Consult the School of Nursing for details.

   Students graduate with a Diploma in Nurse Practitioner Studies for Remote and Underserviced Communities and a Bachelor of Science (Nursing).

E. Graduate Programmes
   For details of the Master of Nursing, the joint Master of Nursing/Master of Health Services Administration Programmes and the PhD (Nursing) programme, please consult the Faculty of Graduate Studies calendar.

III. Bachelor of Science (Nursing) Degree Programme
   In response to a health care system based on principles of primary health care, the Bachelor of Science (Nursing) Programme 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
The Bachelor of Science in Nursing degree is a 129 credit hour programme. Graduates are eligible to write examinations for membership in the College of Registered Nurses of Nova Scotia.

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 programme. 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 (level C) and Standard First Aid certification before entering the clinical area. CPR (level C) 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 Programme is offered at both the Halifax and Yarmouth sites. The following is an outline of classes that are normally taken each year. Course of study varies considerably when the student applies transfer credit. The required non-nursing classes before starting nursing classes. The course of study will be determined. Course of study varies considerably when the student applies transfer credit.

First Year
- ANAT 1010.03
- BIOC 1420.03
- PHYL 1010.06
- NURS 1000.03
- NURS 1010.03
- NURS 1040.03
- NURS 1041.03 (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
- MCI 1101.03
- NURS 2000.03
- NURS 2050.03
- NURS 2060.03
- NURS 2061.03
- NURS 2200.03
- NURS 2246.03
- NURS 2280.03
- NURS 2281.06 (a six-week clinical nursing class taken in May/June or July/August)
- STAT 1060.03

Third Year
- NURS 3010.03
- NURS 3040.03
- NURS 3200.03
- NURS 3220.03
- NURS 3280.03
- NURS 3280.06 (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 4010.03
- NURS 4040.03
- NURS 4040.03
- NURS 4210.03
- NURS 4220.03
- NURS 4240.03
- NURS 4260.03
- NURS 4280.06 (10 week internship beginning in February)

B. Bachelor of Science (Nursing) for Registered Nurses

The Bachelor of Science (Nursing) for registered nurses consists of 75 credit hours of study. Students may complete the programme at either the Halifax or Yarmouth site through full- or part-time study. The programme 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 programme 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 programme.

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 credit toward the degree. Transfer credit regulations are outlined under the Academic Regulations section of the University Calendar.

The required non-nursing classes are: ANAT 1010.03, PHYL 1010.06, MCI 1101.03, STAT 1060.03, BIOC 1420.03 and 15 credit hours from Biology, Chemistry, Philosophy, Psychology and/or Sociology (9 credit hours at the 1000 level, 6 at the 2000 level or the 3000 level). The nine credit hours of general electives may be chosen from any class not listed as a nursing elective and are to be at the 2000 level or above except in the case of a language (not English) which can be taken at the 1000 level.
Classes are normally restricted to nurse practitioner students.

C. Diploma in Nurse Practitioner Studies for Remote and Underserved Communities

1. Classes for Post-Diploma Stream
   - 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 2390.03: Fundamentals of Oncology Nursing
     - NURS 5330.03: Health Informatics
     - NURS 5390.03: Acute Care Specialty Nursing
     - NURS 4091.03: Breastfeeding for Family and Community Health
     - NURS 4351.03: Specialty Practice of Oncology Nursing
     - NURS 4341.03: Management - The Process in Health Care Agencies
     - NURS 4371.03: Addictions Practice in Nursing
     - NURS 3390.03: Intermediate Pathophysiology and Nursing

2. Classes for Post-Diploma Stream
   - STAT 1060.03: Introductory Statistics for Science and Health Sciences
   - NURS 2000.03: Teaching and Learning and the Communication Process
   - NURS 3030.03: Nursing Research
   - NURS 3270.03: Nursing Practice: Caring for Infants, Children & Adolescents
   - NURS 4260.03: Community Health Assessment
   - NURS 4291.03: Primary Health Care Nurse Practitioner Practice with Infants, Children & Adolescents
   - NURS 4310.03: Social Justice Issues in Health Care Practice
   - NURS 4390.03: Care of the Elderly
   - STAT 1060.03: Introductory Statistics for Science and Health Sciences
   - NURS 2000.03: Teaching and Learning and the Communication Process
   - NURS 3030.03: Nursing Research
   - NURS 3270.03: Nursing Practice: Caring for Infants, Children & Adolescents
   - NURS 4260.03: Community Health Assessment
   - NURS 4291.03: Primary Health Care Nurse Practitioner Practice with Infants, Children & Adolescents
   - NURS 4310.03: Social Justice Issues in Health Care Practice
   - NURS 4390.03: Care of the Elderly

D. 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:

- PREREQUISITE: NURS 1000.03

E. Interdisciplinary Nursing Elective Classes

- NURS 4370.03: Women and Aging
- NURS 4380.03: Interdisciplinary Class in Human Nutrition

IV. Class Descriptions

Section 01 is restricted to students registered in the Halifax programme. Section 02 is restricted to students registered in the Yarmouth programme. Section 03 is restricted to students in the Nurse Practitioner programme. Section 06 is for students choosing the Distance option.

ANAT 1010.03: Basic Human Anatomy

See class description in the Anatomy/Microbiology 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 experiential 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.
Prerequisite: 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 1240.03, 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 1240.03, ANAT 1010.03, PHYL 1010.06, BIOC 1420.03

NURS 2000.03: Teaching and Learning and the Communication Process.
Teaching and learning transactions among nurse and individuals, families, groups, and communities are integral to health and well-being. The process of communication is central to the teaching-learning process and occurs within the nurse-patient relationship (a collaborative- partnership). The course is designed to assist students to critically analyze and integrate the teaching-coaching domain of nursing practice within the helping role of the nurse. Principles and theories of learning are used to identify strategies to help clients acquire knowledge, skills and attitudes that enable them to attain/maintain optimal levels of health. The course includes an introduction to the counseling role of the nurse with a focus on therapeutic communication strategies necessary to establish partnerships with clients. Students are given opportunities to expand their existing interviewing and communication skills and teaching abilities.
FORMAT: Lecture 3 hours
PREREQUISITE: NURS 1240.03

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 included.
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 analyze the social and cultural determinants of health. Students explore their own attitudes and beliefs related to topics including racism, poverty, ageism, sexism and classism. Critical social theory, cross cultural 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. 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: MCCI 1100.03

NURS 2200.03: Knowledge and Process in Nursing Practice I.
Students are introduced to theoretical bases of nursing to evaluate health and functional changes from normal serves as the basis for nursing assessment, intervention, and care. Students further develop knowledge and skills during clinical experiences in adult medical and surgical 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, 2210.03, 2201.03, 2050.03, 2081.03, 2090.03, 2480.03, MCCI 1100.03

NURS 2220.03: Knowledge and Process in Nursing Practice II.
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 2050.03, 2090.03, 2201.03, MCCI 1100.03

NURS 2230.03: Theoretical Perspectives for Contemporary Nursing Practice.
For Post-Diploma Students only. 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

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: 3 hours/week, clinical 40 hours
PREREQUISITE: NURS 2580.03, 2600.03, 2210.03, MCCI 1100.03

NURS 2350.03: Fundamentals of Oncology Nursing.
This nursing elective provides an introduction to oncology nursing. Students are introduced to nursing research to guide reflective nursing practice and the sole use of technology and care approaches in laboratory settings.
FORMAT: Lecture 2 hours, lab 2 hours
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, clinical 6 hours
PREREQUISITE: NURS 3280.03

NURS 4030.03: Collaborative Leadership for Nursing Practice. This course provides theory related to the counselling role of the nurse and addresses the dynamics of the 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 2-3 hours
PREREQUISITE: NURS 3280.03 for Basic Students; NURS 2220.06 for post-diploma 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

NURS 3300.03: 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, WebCT
PREREQUISITE: NURS Basics - third-year students; none for Post-RNs; open to students from other departments
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 behaviors 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; NURS 2250.03 for Post-Diploma students

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 4290.03: Primary Health Care Nurse Practitioner Practice with Adults.
Using a family-focused approach, students use clinical and research literature to develop competence in health promotion, health maintenance, health assessment, and the management of illness in adults. Students engage in clinical learning in a variety of clinical settings and they will use clinical and research literature to develop knowledge, skills, and competence in health promotion, health assessment, health maintenance and the management of illness.
FORMAT: Three class hours/week, 6 clinical hours/week
RESTRICTION: This class is restricted to students in the nurse practitioner programme.

NURS 4291.03: Primary Health Care Nurse Practitioner Practice with Childbearing Women and Families.
Using a family-focused approach, students use clinical and research literature to develop competence in health promotion, health assessment, and the management of illness in childbearing women and families. Students engage in clinical learning in a variety of clinical settings and they will use clinical and research literature to develop knowledge, skills, and competence in health promotion, health assessment, health maintenance and the management of illness in childbearing women and families.
FORMAT: Three class hours/week, 6 clinical hours/week
RESTRICTION: This class is restricted to students in the nurse practitioner programme.

NURS 4292.03: Primary Health Care Nurse Practitioner Practice with Children and Families.
Using a family-focused approach, students use clinical and research literature to develop competence in health promotion, health maintenance, health assessment, and the management of illness in children. Students engage in clinical learning in a variety of clinical settings and they will use clinical and research literature to develop knowledge, skills, and competence in health promotion, health assessment, health maintenance and the management of illness in children.
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RESTRICTION: This class is restricted to students in the nurse practitioner programme.

NURS 4292.03: Primary Health Care Nurse Practitioner Practice with Infants, Children and Adolescents.

Using a family-focused approach, students use clinical and research literature to develop competence in health promotion, health assessment, health maintenance and the management of infants, children and adolescents, experiencing illness. Students engage in clinical learning in a variety of settings.

FORMAT: Three class hours/week, 4 clinical hours/week

RESTRICTION: This class is restricted to students in the nurse practitioner programme.

NURS 4296.03: Primary Health Care Nurse Practitioner Clinical Practicum, (15 weeks)

Students identify and arrange a preceptorship clinical placement in a remote and/or under-serviced community with guidance from programme faculty. This is a fifteen-week experience that builds on all of the previous classes of the programme and enables students to strengthen their knowledge, skills and judgment in a practice setting.

RESTRICTION: This class is restricted to students in the nurse practitioner programme.

NURS 4300.03: 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 systemically 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 chronic disease 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 2390.03 and 3900.03

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/semナー

PREREQUISITE: NURS 4000.03, 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

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 2390.03, NURS 2220.06, NURS 2290.03 (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 2390.03, and NURS 2200.03

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: HSCI 1000.06 or by faculty permission

CROSS-LISTING: PHAR 4990.03, PHYT 3090.03, HPRO 2250.03, NURS 4800.03

PHYL 1010X/Y: 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 would 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, 5880 University Avenue, Halifax, NS B3H 3J5

Phone: (902) 494-8844
Fax: (902) 494-1229
Email: occupational.therapy@dal.ca
Website: www.occupationaltherapy.dal.ca

Academic

Bassett, B.E., BA, Honours, MA (New Zealand), PhD (UBC)
Champion, M., BOT (Dal); MBOT (Dal) in progress
Do-Rousseau, L., BOT (Queensland), OT (Brisbane), MTP (California), PhD (Queensland)
Dubzinski, C.J., BOT (Montreal), MSc in sciences cliniques (Montreal), PhD (Laval)
Egan, M., BOT (Western), MSc(T) (Alberta), PhD (McGill)
Etkovevsky, L., BOT (Manitoba), MEd (Manitoba), PhD (Manitoba)
Fisher, A.G., BOT (Western Michigan), MSc (Boston), ScD (Boston)
Lane, M., BOT (Queens), MHR (McMaster), PhD (Waterloo)
Manojlovich, M., BOT (Western), Med (Western)
Mitchell, M., Day-OT (Northampton), BOT (Georgia), MHE (Georgia), PhD (Georgia)
Palmeidottir, G., Dip(OT) (Arhus, Denmark), MS(OT) (Colorado)
Pranger, T., BOT (Dal), MEd, PhD (Toronto)
Taylor, S., Dip(OT) (Queens), MA (SMU)
Whitehead, G., BOT (Dalton), MBOT (South Australia)
Wicka, A., BSc(OT) (Dalton), MBOT (South Australia), PhD (Charles Stuart)
Wilkock, A. DipCOT/UK, BpprCOT/SAU, Grad DipPublic Health (Adel), PhD (Adel)

Professional

Craig, J., BOT (Queens), MSc (OT) (Toronto)
Cutcliffe, H., DipCOT (Manitoba)
Head, R., BOT (Queens), MSc (OT - Post Professional) (Dal)
Roussel, M., Dip(OT) (S-L Maillet), BOT (Montreal), MA (Montreal)
Spindler, M., Dip & OT (Toronto)

Cross Appointments

Merritt, B., BS (Psychology), MS (OT), PhD candidate (Colorado State)
McLellan, P., BA (Dalton), MA (Dalton), PhD (Dalton)
McLellan, R., BA (Dalton), MA (Dalton), PhD (Dalton)

I. Mandate

The Atlantic School of Occupational Therapy was established in 1982 as the only occupational therapy education programme in Atlantic Canada. The School exists in response to strong regional advocacy, particularly a 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 iniquities limit opportunities for meaningful participation in daily life occupations. Occupational Therapy 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.

Adjunct Appointments

Academic

Bassett, B.E., BA, Honours, MA (New Zealand), PhD (UBC)
Champion, M., BOT (Dal); MBOT (Dal) in progress
Do-Rousseau, L., BOT (Queensland), OT (Brisbane), MTP (California), PhD (Queensland)
Dubzinski, C.J., BOT (Montreal), MSc in sciences cliniques (Montreal), PhD (Laval)
Egan, M., BOT (Western), MSc(T) (Alberta), PhD (McGill)
Etkovevsky, L., BOT (Manitoba), MEd (Manitoba), PhD (Manitoba)
Fisher, A.G., BOT (Western Michigan), MSc (Boston), ScD (Boston)
Lane, M., BOT (Queens), MHR (McMaster), PhD (Waterloo)
Manojlovich, M., BOT (Western), Med (Western)
Mitchell, M., Day-OT (Northampton), BOT (Georgia), MHE (Georgia), PhD (Georgia)
Palmeidottir, G., Dip(OT) (Arhus, Denmark), MS(OT) (Colorado)
Pranger, T., BOT (Dal), MEd, PhD (Toronto)
Taylor, S., Dip(OT) (Queens), MA (SMU)
Whitehead, G., BOT (Dalton), MBOT (South Australia)
Wicka, A., BSc(OT) (Dalton), MBOT (South Australia), PhD (Charles Stuart)
Wilkock, A. DipCOT/UK, BpprCOT/SAU, Grad DipPublic Health (Adel), PhD (Adel)
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 on changing 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” programme or strategy for each and every client so that everyone can achieve an optimal level of occupational performance and just opportunities to participate in society.

A. Degrees Offered

1. Undergraduate Programme to Enter the Profession
   a. BSc(OT) First class accepted into the programme in September 2004

2. Master of Science (Occupational Therapy) - MSc (OT): Masters Programme to Enter the Profession
   a. MSc (OT) First class accepted into the programme in September 2006. Please refer to the Graduate Calendar for further information.

3. Master of Science (Occupational Therapy) - Post-Professional: Post Professional Masters programme for qualified occupational therapists.
   a. MSc Thesis
   b. MSc Coursework
   c. Single graduate courses (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 programme or the Faculty of Engineering Biomedical Engineering PhD programme. 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

Not all classes are offered each year. Please consult the current timetable for this year’s 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 exponential activities.

NOTE: ASK 110.03 is offered by the Faculty of Arts and Social Sciences.
It is a related class of potential interest.

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. This 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.

OCCU 2209.03: Enabling Principles and Processes.
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, respectively. This course will explore the principles and processes of research and 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.

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, respectively. This course will explore present needs of the critical appraisal of 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.

OCCU 4402.03: Program Design and Evaluation for Enabling Occupations.
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.

**INSTRUCTOR(S):** S. Banks

**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.

**INSTRUCTOR(S):** S. Banks

**PREREQUISITE:** Instructor permission

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**Pharmacy**

**College of Pharmacy**

Location: George A. Barbour Building
5960 College Street
Halifax, NS B3H 1J5
Telephone: (902) 494-2378
Fax: (902) 494-1386
Website: www.pharmacy.dal.ca

**Dean**
Website: William, G., PhD

**Academic Staff, 2006/2007**

**Director**

Caldwell, R.K., BSc(Pharm), MBA (Dal)

**Associate Directors**

Research: MacKinnon, N., BSc (Pharm), MHSA (Dal), MBA (Dal), PhD (Florida)

Undergraduate Education: Mansour, S. A., BSc (Pharm), MBA (Dal), PhD (B.C.)

**Professors Emeriti**

Duff, J.G., BSP, MSc (Sask), PhD (Fla)

**Professors**

Yeung, P.K.F., BSc(Pharm), MSc (Man), PhD (Sask)

**Post - Retirement, Appointment**

Farmer, P.S., BSP, MSc (Sask), PhD (Portsmouth)

**Associate Professors**

Bowlus, S.K., BScPhm (Toronto), PharmD (SUNY)

**Assistant Professors**

Agu, R., BPharm, MPharm (Pharmacology) (U. Nigeria), MPharm (Pharmaceuticals), PhD (Bopharmaceutics) (Katholische Universiteit, Belgium)

Bark, H.L., BSc(Pharm), PharmD (Alaska)

**Lecturers**

Deal, H., BSc (Chem) (Acadia), BSc (Pharm) (Dal)

Rodrigues, C., BSc (Chem/Pharm), BSc (Pharm) (Dal)

Spongjile, K., Diploma Engineering (Saint Mary's), BSc (Pharm) (Dal)

Walsh, K., BSc (Pharm) (Memorial)
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 Nova Brunswick Pharmacetical 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 programme was introduced.

In 1966, a Master’s programme was established, followed by a Doctor of Philosophy programme in 1977.

In 1972, a twelve month pharmacy residency programme was initiated by Camp Hill Hospital in cooperation with the College of Pharmacy. Programmes 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 1981, 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 programme.

Alumni, who always remain an active part of the College.

Mutually beneficial relationships with stakeholders.

Having all the resources necessary to fulfill this vision.

Accreditation

The Bachelor of Science in Pharmacy Programme 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. Programmes offered). To satisfy the requirements for the degree of Bachelor in 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, 33, or 33 credit hours, with the programme 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 38 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).

2. 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 65% unless otherwise indicated.
F. Repeating the Year

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 programme. 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 programme 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 programme.

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 Programme 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 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 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 Burbridge 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 and bibliographic databases.

Holdings in the Pharmacy Library include several thousand bound volumes and approximately 75 serial subscriptions relating to pharmacy and allied sciences. In addition, there is access to CD-ROM databases unique to the Pharmacy Library and access to many other databases through the Dalhousie Electronic Library (DEL).
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 increasing role of federal and provincial governments in public health provides opportunities for pharmacists in analytical laboratories and in administrative positions 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, 98% of 2006 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 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 body.

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. Successful 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 license 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 98.9%. 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 Student Pharmacy Society is an independent student organization in each college of pharmacy. It is affiliated with the Canadian Association of Pharmacy Students and Interns and membership in the Canadian Pharmacists Association.

Membership in the Pharmacy Society includes membership in the Canadian Association of Pharmacy Students and Interns and membership in the Canadian Pharmacists Association.

V. Programmes Offered

The College of Pharmacy offers a four-year programme, following at least one year of general science, leading to the degree of Bachelor of Science (Pharmacy) - BSc (Pharm).

The undergraduate programme 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 pharmaceutics, medicinal chemistry, drug metabolism, toxicology, pharmacodynamics and physical pharmacy) with necessary reviews of biomedical content, are integrated in Years 2 through 4, with therapeutics, pharmacoeconomics, pharmacokinetics, 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 Sciences Centre, Halifax, NS, South East Regional Health Authority, Moncton, NB and Atlantic Health Sciences Corporation, Saint John, NB in providing a three-year post graduate hospital pharmacy residency programme. Through structured rotations in various areas of pharmacy practice, the programme aims to prepare pharmacists for exemplary pharmacy practice. Areas of rotation include patient care, drug information, drug distribution, pharmacy administration, a research project and in-service and education. The emphasis is on providing exemplary patient care. Practitioner role models (preceptors) are utilized throughout the programme 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 programme.

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 Programme (PEP)

A progressive professional field experience complements the PBL curriculum as follows:

Year 1 - Community Experience Programme (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 Programme (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 Programme (PEP)

• PHAR 3080.03 - Community Rotation (4 consecutive weeks)
• PHAR 3081.03 - Hospital Rotation (2 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 Programme (PEP)

• PHAR 4080.045 - Hospital Rotation (4 consecutive weeks)
• PHAR 4081.045 - 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 60 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.

E. Prescribed Classes

Year 1

• ANAT 1040.03
• BIOC 1040.06
• CHEM 2442.03
• MCB 1050.03
• PHAC 1470.06
• PHAR 1060.015
• PHAR 1070.015
• PHAR 1080.030
• PHYL 1400.06

Year 2

• PHAR 2010.03
• PHAR 2015.03
• PHAR 2020.03
• PHAR 2035.06
• PHAR 2040.03
• PHAR 2045.015
• PHAR 2050.03
• PHAR 2055.015
• PHAR 2060.015
• PHAR 2070.03
• PHAR 2090.013
• PHAR 2092.03

Year 3

• PHAR 3010.03
• PHAR 3020.03
• PHAR 3030.015
• PHAR 3040.03
• PHAR 3050.03
• PHAR 3055.015
• PHAR 3060.015
• PHAR 3070.015
• PHAR 3090.03

Year 4

• PHAR 4010.015
• PHAR 4020.03
• PHAR 4030.045
• PHAR 4040.015
• PHAR 4050.015
• PHAR 4060.015
• PHAR 4070.015
• PHAR 4080.045
• PHAR 4090.045

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) programme.

CO-REQUISITE: CHEM 2442/03
PHAR 2010.03: Critical Appraisal Series I.

Students are introduced to a variety of drug/health information resources including specific websites, tests, 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

PHAR 2015.03: Topical Products (Dermatologicals).

Students learn the medicinal chemistry, pharmaceutics, biopharmaceutics and pharmacokinetics, and pharmacology, as well as the pathophysiology and pharmaceutotherapeutic 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, pharmaceutics, biopharmaceutics and pharmacokinetics, and pharmacology, as well as the pathophysiology and pharmaceutotherapeutic 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, pharmaceutics, biopharmaceutics and pharmacokinetics, and pharmacology, as well as the pathophysiology and pharmaceutotherapeutic principles pertaining to the problems and products discussed. 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, pharmaceutics, biopharmaceutics and pharmacokinetics, and pharmacology, as well as the pathophysiology and pharmaceutotherapeutic 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: J. Grant

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. Girgis

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 in 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 lab reinforces and expands 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. Rodrigues
FORMAT: Lecture, lab 6 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-centred 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 all second year classes

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, narcotic and controlled drugs, third party insurers, processing prescriptions, provincial formulation, 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 all second year classes

PHAR 3010.03: Critical Appraisal Series II.
This course advances and refines 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. Zeil
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, pharmacokinetics and pharmacodynamics of selected therapeutic agents, as well as the pathophysiology and pharmacological management of these conditions.
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, pharmacokinetics and pharmacodynamics of selected therapeutic agents, 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, pharmacokinetics and pharmacodynamics of selected therapeutic agents, as well as the pathophysiology and pharmacotherapeutic principles pertaining to the problems and products discussed. PHAR 3040.06 is devoted to 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, pharmacokinetics and pharmacodynamics, and pharmacology, as well as the pathophysiology and pharmacotherapeutic principles pertaining to the problems and products discussed. PHAR 3050.03 is devoted to 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, pharmacokinetics and pharmacodynamics, and pharmacology, as well as the pathophysiology and pharmacotherapeutic principles pertaining to the problems and products discussed. PHAR 3055.06 involves the study of an array of conditions ranging from depression to seizure disorders.
COORDINATOR: 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, pharmacokinetics and pharmacodynamics, and pharmacology, as well as the pathophysiology and pharmacotherapeutic principles pertaining to the problems and products discussed. PHAR 3060.03 is devoted primarily to 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. Sponglove
FORMAT: Lecture/lab/seminar, 4 hours
PREREQUISITE: Successful completion of all second year classes

PHAR 3080.03: Practice Experience Program (PEP) III.
The rotation focuses on the practical implementation of patient-centred 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 4 consecutive weeks (May-Aug)
PREREQUISITE: Successful completion of all third year classes
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. Gardiner
PREREQUISITE: PHAR 3010.03 or consent of instructor
FORMAT: Lecture, small group – 2 hours

PHAR 4025.06: Pathophysiologic Disorders.
Students learn the medicinal chemistry, pharmacodynamics, and pharmacokinetics of drugs used in the treatment of various diseases. 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, 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 all fourth year classes

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 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 all fourth year classes

PHYL 1400.06: Human Physiology.
This course is designed to give pharmacy students a broad understanding of normal human physiology using pathophysiological 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, nervous, 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
FORMAT: A 7-week comprehensive unit with 6 hours tutorial and 4 hours lecture per week
PREREQUISITE: ANAT 1040.03

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 FEL 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. Dugal
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
Recreation
See School of Health and Human Performance (page 333).

Social Work

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Arab, M., BA (Dal), BW, MSW (McGill), MSW (Dal)
I. Introduction
The School of Social Work's mission is to build 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 programme 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 programme 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 programme has evolved within the context of the people, communities and service network of the Maritime Provinces, graduates are qualified to practise social work throughout Canada and beyond.

A. BSW Delivery Options
The BSW is a 20-credit degree programme 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 Programme
The School also offers a Master's degree programme for advanced specialized study in Social Work practice. The BSW is the academic prerequisite for graduate study in Social Work. The MSW programme 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) 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 Programme
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 those groups who have free general (non social work) university credit 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. Programme Objectives
Upon successful completion of the BSW programme, 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. Programme Requirements
The four admission credits that form the basic BSW academic prerequisite reduces the 20 degree requirement to the following 15 credits for all students.

Required Courses (10.5 credits)
- SLWK 2003.03: Historical and Ethical Foundations of Social Work
- SLWK 2023.03: Beginning Social Work Practice
- SLWK 2013.03: Introduction to Community Social Work
- SLWK 3013.03: Perspectives on Social Welfare Policy I
- SLWK 3023.03: Perspectives on Social Welfare Policy II
- SLWK 3203.03: Field Instruction I (or equivalent)
- SLWK 3213.03: Theoretical Foundations of Social Work
- SLWK 3703.03: Social Service Delivery Analysis
- SLWK 3903.03: Introduction to Research Methods and Statistics in Social Work
- SLWK 3903.03: Understanding Research and Research Methods in Social Work
- SLWK 3223.03: Cross-Cultural Issues
- SLWK 4003.03: Advanced Social Work Practice
- SLWK 4033.03: Field Instruction II
- SLWK Social Work Elective
- SLWK Social Work Elective
Transfer Credit Policy
The above 15 credits may be further reduced by the amount of transfer credit in 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. Eligible credits receive one-half their original credit value as transfer credit (i.e., a possible maximum of five transfer credits (30 credit hours)).
b. As a general rule, transfer credit is assigned first to Elective Courses and then 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 insufficient).
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 insufficient).
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 seven credits (45 credit hours) under Dalhousie instruction.

D. Course Load and Sequencing

1. Length of Programme

Most students accepted to the BSW programme 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 (60 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 programme 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 0.5 credit classes) in the Fall and Winter terms.
• For part-time study the course load may be as minimal as one 0.5 credit class per term.
• The only Social Work courses offered in the Spring semester consist of Electives and Field I Field Load 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 0.5 credits from the list of required courses

Year 1: Winter term
• SLWK 3030.06X: Theoretical Foundations of Social Work
• SLWK 3020.16: Field Instruction I
• 2 other 0.5 credits from the list of required courses

Year 2: Full term
• SLWK 4010.06X: Advanced Social Work Practice
• SLWK 4010.12: Field Instruction II
• 2 other 0.5 credits from the list of required courses

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 programme and the drop out rate - that is, the shorter time students remain in a programme 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 programme 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 Practice
• SLWK 3030.06: Field Instruction I
• 1 other 0.5 credits from the list of required courses

Year 1: Winter Term
• SLWK 2002.03: Beginning Social Work Practice
• SLWK 3010.03: Perspectives on Social Welfare Policy

Year 1: Spring/Summer Term
• SLWK 3020.06 Field Instruction I
• Elective1

Year 2: Fall Term
• SLWK 3010.03: Theoretical Foundations of Social Work Practice
• SLWK 4010.06: Advanced Social Work Practice

Year 2: Winter Term
• SLWK 3010.03: Field Load I or Field Load II
• SLWK 3010.12: Field Load II
• 2 other 0.5 credits from the list of required courses

Year 2: Spring/Summer Term
• SLWK 4010.06: Advanced Social Work Practice (Residential Component)
• 1 other 0.5 credits from the list of required courses

Year 3: Full Term
• SLWK 3020.16: Field Instruction II

1 Electives may be chosen from those offered by the School of Social Work (or other social problem electives offered by other university departments).
organized by the School of Social Work. There is provision for seminars, regular working hours. The field component of the programme is field placements (SLWK 3020X/Y.06 and 4030X/Y.12) normally during All part-time and full-time students are required to undertake the two part-credit course. Fees are paid by the term in relation to the number of classes in which the student enrolls.

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 is otherwise still eligible to continue in the programme 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 4031.06 - Field Instruction II cannot be repeated. Students must repeat the class until a grade of at least C is attained.

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

E. Registration

Registration is completed online for all students (regardless of delivery method) beginning in early July for the Fall term. For more information, go to www.registrar.dal.ca/regguide and www.dal.ca/online. The academic timetable is available online in June 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 "D".

IMPORTANT: Please note that it is not possible to transfer between onsite and the online delivery or to transfer 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 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 (from the SSW office) or download the following:

Field I Manual (Distance Study)
Field I Manual (Onsite study)
Field II Manual (Distance Study)
Field II Manual (Onsite study)
Field I Student Information Sheet
Field II Student Information Sheet
Field I Equivalency Form
Field I Learning Agreement
Field I & II Student Field Placement Evaluation
Field I Final Student Evaluation
Field II Final Student Evaluation
Field I & II Agency Field Instructor Information Sheet
Field I & II Agency Field Instructor Selection Form
Field I & II Agency Field Instructor Feedback Form

2. Field Instruction

All part-time and full-time students are required to undertake the two field placements (SLWK 3020X/Y.06 and 4030X/Y.12) normally during regular working hours. The field component of the programme is organized by 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 sessions scheduled prior to the commencement of classes. Students studying by distance will receive online orientation. Confirmation of each student’s curriculum requirements including the assignment of transfer credit is normally available at this time. Opportunity to meet individually with the Student Services Coordinator is available to each new student. Distance students should contact the Distance Education Coordinator regarding their programme 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.

IPSV 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-IPAAC modules take priority and professors must excuse students from their classes with no penalty. More information can be found on the Tri-IPAAC website at: www.dal.ca/pl.

III. School of Social Work Regulations: BSW Degree Programme

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. 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 maximum grade requirement for satisfactory completion of a Social Work class is C. A student who earns a grade of less than C is otherwise still eligible to continue in the programme 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 programme. 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
5. Required Withdrawal on Grounds of Unsuitability

A student who fails SLWK 4030.12 - Field II is required to withdraw from the School.

6. Readmission

Because of the relation of the BSW programme 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 enrollment process, readmission of students is not guaranteed. Programme 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 in order to follow a minimum of twelve months' absence from the School. Since enrolment in the programme 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 programme 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 programme for three years or more and who wish to be reinstated are required to apply. Normally, by the February 15 admissions deadline date. The application and supporting documentation must be accompanied by a letter explaining the reasons for their absence and the decision to resume the BSW degree programme. Former students who have less than the five general admissions credits, which are now required prior to BSW admission, must complete these before applying. (See Admissions Requirement Faculty of Health Professions - School of Social Work (page 33) 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. All appeals are subject to the approval of the BSW Programme Coordinator.

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). Students are normally required to complete the BSW degree within 10 years of their first registration. The School usually offers one 0.5 credit Social work class in the May/June term. Social Work students may, following consultation with the Field Coordinator, register for the Field placements during this session.

11. 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. Special permission is required to exceed the two-credit limit for the two summer terms.

12. Workload Summer Session (includes May-June and July-August parts of term).

See University Regulations: Suspension or Dismissal from a Programme on the Grounds of Professional Unsuitability - Faculty of Health Professions (page 27).

13. Students in Other Degree Programmes (applicable for on-campus students only)

Students enrolled in degree programmes at Dalhousie may, in accordance with their programme 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 programmes may be permitted to enroll in specific classes by application for admission as a Special 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 programmes are governed by the regulation that any student with a previous degree is required to complete a minimum of six credits (30 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

Requests for deferral of admission may be sent in writing to the Admissions Coordinator of the School of Social Work. When submitting a request for deferral, an applicant should clearly state the reasons 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 Programme Coordinator.

17. Audit by Agency Field Instructors

Permissions 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).
Faculty of Health Professions
372 Social Work

FORMAT: Lecture and discussions

Perspectives on Social Welfare Policy II deals with policy issues in a contemporary context. Policies and understandings are different from today; in other respects, they influence how we think today. The course does not address current historic understandings are different from today; in other respects, they remain constant for the duration of the programme.

Students are advised to consult the following website for current tuition fees: http://adl.ucis.dal.ca/stdacct/fees.cfm

IV. Class 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 exercises
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
CO-REQUISITE: SLWK 2011.03 and 2012.03
RESTRICTION: Restricted to Social Work students

SLWK 2011.03: 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 policy issues. Perspectives on Social Welfare Policy II deals with policy issues in a contemporary context.
FORMAT: Lecture and discussions

SLWK 2012.03: 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: None, although it is recommended that SLWK 3011.03 be taken before SLWK 3012.03

SLWK 3020.06: Field Instruction I

This field social work placement provides an opportunity for beginning social work practice under supervision of agency personnel in liaison with School faculty. 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. Approximately 200 hours. Students must indicate their intent to register for Field I to the Field Co-ordinator.
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 problems definitions. The first term is devoted to 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

Tuition Fees

Students are advised to consult the following website for current tuition fees: http://adl.ucis.dal.ca/stdacct/fees.cfm

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, which is completed in the Spring of the first year, is one full-credit. The cost for this placement will be 2x tuition plus 2x distance delivery fee. The second field placement, which is offered starting the winter of the third year of the program, 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 programme.

Students are advised to consult the following website for current tuition fees: http://adl.ucis.dal.ca/stdacct/fees.cfm

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, which is completed in the Spring of the first year, is one full-credit. The cost for this placement will be 2x tuition plus 2x distance delivery fee. The second field placement, which is offered starting the winter of the third year of the program, 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 programme.

Students are advised to consult the following website for current tuition fees: http://adl.ucis.dal.ca/stdacct/fees.cfm
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 use social work research to make evidence-based decisions. 
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 practitioner 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, 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.
Minimum requirement: 500 hours of placement in 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. Social Work in a Special Field of Practice Electives
In keeping with the overall programme goals of the BSW programme 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 is 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 3140.03: Crisis Counseling
- SLWK 3150.03: Poverty and Inequality
- SLWK 3160.03: Social Work with Aboriginal Populations
- SLWK 3170.03: Feminist Counseling (Cross Listed with GWST)
- SLWK 3210.03: Law and Social Work
- SLWK 3220.03: Women and Social Change
- SLWK 3245.03: Social Work in Corrections
- SLWK 3250.03: Social Work in Addictions
- SLWK 3260.03: Advanced Counseling in Social Work Practice
- SLWK 3280.03: Social Work and Aging
- SLWK 3300.03: 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

Possible Elective Offerings
- SLWK 3110.03: Africentric Perspectives in Social Work
- SLWK 3120.03: International Social Work
- SLWK 3130.03: Women and Violence
- SLWK 3140.03: Crisis Counseling
- SLWK 3150.03: Poverty and Inequality
- SLWK 3160.03: Social Work with Aboriginal Populations
- SLWK 3170.03: Feminist Counseling (Cross Listed with GWST)
- SLWK 3210.03: Law and Social Work
- SLWK 3220.03: Women and Social Change
- SLWK 3245.03: Social Work in Corrections
- SLWK 3250.03: Social Work in Addictions
- SLWK 3260.03: Advanced Counseling in Social Work Practice
- SLWK 3280.03: Social Work and Aging
- SLWK 3300.03: 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
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 Programme. The Faculty has two undergraduate programme 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 programmes 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 programme, contact Ramona Ryan at 494-2871.

The Dalhousie School of Business Administration provides quality programmes 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 programme 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 programme 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 Programme
Shaw, D.
Commerce Programme Manager
MacIntyre, A.J.
Commerce Programme Academic Advisor
De Souza, S.
Director, Centre for International Business Studies
Hobbs, G.
Coordinator, International Student Exchange Programme
Richard, T.
Director, School of Business Career Service
Akerboom, J.
I. Bachelor of Commerce Programme

The School of Business Administration offers a four-year, Bachelor of Commerce (Co-operative Education) Programme that is accredited by the Canadian Association for Co-operative Education (CACE). It is one of only two mandatory co-op business degree programmes 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 Programme includes seven academic terms (AT) and three work terms (WT), as follows:

```
Year 1
<table>
<thead>
<tr>
<th>Fall</th>
<th>Winter</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT1</td>
<td>AT2</td>
<td>FREE</td>
</tr>
</tbody>
</table>
```

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Year 2
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<th>Winter</th>
<th>Summer</th>
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<td>WT1</td>
<td>AT4</td>
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Year 3
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<td>WT3</td>
</tr>
</tbody>
</table>
```

```
Year 4
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<thead>
<tr>
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<th>Winter</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT6</td>
<td>AT7</td>
<td></td>
</tr>
</tbody>
</table>
```

The co-op programme in Commerce requires a broad and general range of studies, including required and elective classes provided by the College of Arts and Science. The programme also allows students to choose a major in a variety of special areas. The Commerce programme 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 programme - 7 academic terms and 3 work-terms
• Total credits required - 20
• Required GPA for graduation 2.00
• Required core area classes - 10 / 2 credits.

Note: Some suitable replacements for MATH 1115.03 are MATH 1000.03 or ECON 2101.03.

Meeting the 2.00 GPA requirement is also subject to the Academic Regulations as stated in the Calendar for the year of readmission. For further information, contact the School of Business, Commerce Programme Manager, 6100 University Ave., (902) 494-1811.

Email: amacinnis@mgmt.dal.ca

B. Programme Guide

Students normally follow a fixed programme of study, as outlined below:

### Academic Term One

- **COMM 1010.03**: Business in a Global Context
- **COMM 1103.03**: Principles of Macroeconomics
- **ECON 1101.03**: Principles of Microeconomics
- **COMM 1203.03**: Intro to Computers in Business
- **COMM 1204.03**: Intro to Communication

### Academic Term Two

- **COMM 1701.03**: Oral Communications
- **COMM 1702.03**: Written Communications
- **COMM 1703.03**: Business Communications

### Academic Term Three

- **COMM 1704.03**: Introduction to Accounting
- **COMM 1705.03**: Principles of Microeconomics
- **COMM 1706.03**: Principles of Macroeconomics
- **COMM 1707.03**: Business Communications

### Academic Term Four

- **COMM 1708.03**: Business in a Global Context
- **COMM 1709.03**: Principles of Microeconomics
- **COMM 1710.03**: Principles of Macroeconomics
- **COMM 1711.03**: Business Communications

### Academic Term Five

- **COMM 1712.03**: Business in a Global Context
- **COMM 1713.03**: Principles of Microeconomics
- **COMM 1714.03**: Principles of Macroeconomics
- **COMM 1715.03**: Business Communications

### Academic Term Six

- **COMM 1716.03**: Business in a Global Context
- **COMM 1717.03**: Principles of Microeconomics
- **COMM 1718.03**: Principles of Macroeconomics
- **COMM 1719.03**: Business Communications

### Academic Term Seven

- **COMM 1720.03**: Business in a Global Context
- **COMM 1721.03**: Principles of Microeconomics
- **COMM 1722.03**: Principles of Macroeconomics
- **COMM 1723.03**: Business Communications

### Academic Term Eight

- **COMM 1724.03**: Business in a Global Context
- **COMM 1725.03**: Principles of Microeconomics
- **COMM 1726.03**: Principles of Macroeconomics
- **COMM 1727.03**: Business Communications

### Academic Term Nine

- **COMM 1728.03**: Business in a Global Context
- **COMM 1729.03**: Principles of Microeconomics
- **COMM 1730.03**: Principles of Macroeconomics
- **COMM 1731.03**: Business Communications

### Academic Term Ten

- **COMM 1732.03**: Business in a Global Context
- **COMM 1733.03**: Principles of Microeconomics
- **COMM 1734.03**: Principles of Macroeconomics
- **COMM 1735.03**: Business Communications

### Academic Term Eleven

- **COMM 1736.03**: Business in a Global Context
- **COMM 1737.03**: Principles of Microeconomics
- **COMM 1738.03**: Principles of Macroeconomics
- **COMM 1739.03**: Business Communications

### Academic Term Twelve

- **COMM 1740.03**: Business in a Global Context
- **COMM 1741.03**: Principles of Microeconomics
- **COMM 1742.03**: Principles of Macroeconomics
- **COMM 1743.03**: Business Communications

### Academic Term Thirteen

- **COMM 1744.03**: Business in a Global Context
- **COMM 1745.03**: Principles of Microeconomics
- **COMM 1746.03**: Principles of Macroeconomics
- **COMM 1747.03**: Business Communications

### Academic Term Fourteen

- **COMM 1748.03**: Business in a Global Context
- **COMM 1749.03**: Principles of Microeconomics
- **COMM 1750.03**: Principles of Macroeconomics
- **COMM 1751.03**: Business Communications

### Academic Term Fifteen

- **COMM 1752.03**: Business in a Global Context
- **COMM 1753.03**: Principles of Microeconomics
- **COMM 1754.03**: Principles of Macroeconomics
- **COMM 1755.03**: Business Communications

### Academic Term Sixteen

- **COMM 1756.03**: Business in a Global Context
- **COMM 1757.03**: Principles of Microeconomics
- **COMM 1758.03**: Principles of Macroeconomics
- **COMM 1759.03**: Business Communications

### Academic Term Seventeen

- **COMM 1760.03**: Business in a Global Context
- **COMM 1761.03**: Principles of Microeconomics
- **COMM 1762.03**: Principles of Macroeconomics
- **COMM 1763.03**: Business Communications

### Academic Term Eighteen

- **COMM 1764.03**: Business in a Global Context
- **COMM 1765.03**: Principles of Microeconomics
- **COMM 1766.03**: Principles of Macroeconomics
- **COMM 1767.03**: Business Communications
Academic Term Three
- COMM 2102.03: Managerial Accounting
- COMM 2202.03: Managerial Finance
- COMM 2401.03: 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 3913.03: Management Information Systems

Work Term II

Academic Term Five
- COMM 3301.03: Operations Management
- PHIL 2881.03: Business Ethics
- Three commerce electives
- One non-commerce elective

Work Term III

Academic Terms Six and Seven
- COMM 4301.03 and 4302.03
- Five commerce electives
- Four non-commerce electives

During their fifth, sixth and seventh academic terms, students can either pursue a general programme of study, by choosing electives from a wide range of the functional areas of business, or they can follow a more specialized programme, 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 3101.03
- COMM 3203.03
- COMM 3207.03
- 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 seven classes:
- 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)
- 6 credit hours of History or International Development classes (selected from a list approved by the School)

Plus the following:
- COMM 3405.03
- COMM 4201.03
- COMM 4315.03
- COMM 4701.03
- ECON 2200.03 or 2210.03
- 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 Entrepreneurship
Students must complete the following six classes:
- COMM 3307.03
- COMM 3308.03
- COMM 3309.03
- COMM 3310.03 or COMM 3316.03
- COMM 3401.03 or COMM 3404.03
- COMM 4401.03

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 4203.03

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 1101 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)
- 6 credit hours of History or International Development classes (selected from a list approved by the School)

Plus the following:
- COMM 3405.03
- COMM 4201.03
- COMM 4315.03
- COMM 4701.03
- ECON 2200.03 or 2210.03
- 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 3105.03
- COMM 3404.03
- COMM 3405.03
- COMM 4401.03

Plus two of:
- COMM 3401.03
- COMM 3402.03
- COMM 3405.03
- COMM 3411.03
- COMM 3412.03
- COMM 4413.03

Major in Marketing Management
Students must complete the following four classes:
- COMM 3105.03
- COMM 3404.03
- COMM 3405.03
- COMM 4401.03

Plus two of:
- COMM 3401.03
- COMM 3402.03
- COMM 3405.03
- COMM 3411.03
- COMM 3412.03
- 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. These 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 Coordinators 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 Placepop 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 coordinator in the School of Business Career Services (SBCS).
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 SRS and some job opportunities are posted through SRS on Placepop.)
6. Employees 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.

Work Term Eligibility

Only co-op 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 1.75 GPA overall will be required to withdraw from the programme. 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 installments attached to the academic terms in an effort to balance the cost. These fees are non-refundable. Students who transfer into the programme 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.

II. Class Descriptions

Section II: Classes Offered

II. Class Descriptions

A. General Information

While the primary goal of this course 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 1001.03

COMM 1501.03: Introduction to Computers in Business Management.

This class is offered through a computer-managed learning environment, a bulletin board system (Bulletin Board Postings, electronic mail, and more). The class is fully online with a single weekly tutorial session. This class is offered to introduce students to the various software programs 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.

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COMM 1702.03: Business Communication - Oral.  
This course 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 speaking and presentation skills and receive feedback on the skills of others.  
FORMAT: Lecture 3 hours  
EXCLUSION: INF 1003, ENG 210, HABP 1200

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 1000.03 or COMM 1010.03  
EXCLUSION: MGMT 2101.03

COMM 2102.03: Introductory Accounting II.  
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 permission of the instructor.  
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 permission of the instructor.  
EXCLUSION: MGMT 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 1001.03 and 2101.03; ECON 1011.03 and 1102.03  
CO-REQUISITE: COMM 2102.03

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

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 lectures, discussions, and experiential exercises, students will first be introduced to the theoretical basis of managing people in organizations, and then to the skills required to apply the concepts. Key topics include individual factors, such as personality and perceptions; organizational processes, such as hiring, and performance management; and contextual issues, such as organizational culture and change, as well as the legislative framework within managers must work.  
FORMAT: Lecture/discussion 3 hours  
PREREQUISITE: COMM 1010.03 and COMM 1501.03  
EXCLUSION: COMM 2301.03, MGMT 2303.03 and MGMT 2304.03

COMM 2401.03: Introduction to Marketing.  
The objective of this class is to familiarize you with marketing’s mode of inquiry—the way marketers look at the world. As a marketer you should be able to: 1) ask the right questions about markets; 2) organize data into relevant information; 3) discover market opportunities; 4) set goals; 5) create a marketing plan that includes clear target markets, as well as product, price, distribution and communication strategies; and 6) implement and control a marketing programme. The class will also train you in a number of skills that are necessary for higher level classes and career advancement (i.e., case analysis and analytical report writing).  
FORMAT: Lecture 3 hours

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 1151.03  
CROSS-LISTED: MGMT 2501.03  
EXCLUSION: MATH 1060.03 or 2060.03; STAT 1060.03 or 2060.03; ECON 2260.03; ENGM 2520

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; ECON 2260.03; ENGM 2520

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 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 Programme 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 cashflows.
FORMAT: Lecture 3 hours
PREREQUISITE: COMM 2101.03 and 2102.03
EXCLUSION: COMM 3111.03 and COMM 3113.03

COMM 3101.03: Managerial Accounting and Decision Making.
This course focuses on cost and management accounting, decision analysis and 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.
FORMAT: Lecture 3 hours
PREREQUISITE: COMM 2101.03 and COMM 2102.05

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 asset 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 3110.03, 3113.03

COMM 3111.03: Intermediate Financial Accounting II.
In conjunction with its predecessor, Commerce 3105.03, Intermediate Financial Accounting I, 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, and accounting changes and revaluations.
FORMAT: Lecture, 3 hours
PREREQUISITE: COMM 3105.03 with a minimum grade of C-
CROSS-LISTING: BUSI 6102.03
EXCLUSION: COMM 3101.03

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 programmes for examination of balance sheet and income statement accounts.
FORMAT: Lecture 3 hours
PREREQUISITE: COMM 2111.03 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 3110.03 instead of this class.
FORMAT: Lectures/case discussions 3 hours
PREREQUISITE: COMM 2101.03 and 2102.03, with at least a B-
EXCLUSION: COMM 3115.03, COMM 3120.03

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 course 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, liability 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 2201.03 and 2203.03. The former may be waived with the permission of the instructor.

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 2201.03 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.
PREREQUISITE: COMM 2202, COMM 2203
EXCLUSION: COMM 3202.05

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, labour 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
Faculty of Management

COMM 3307.03: New Venture Creation. This course is designed to expose students to 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 considered 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, 2201.03, and 2401.03, or permission of instructor. RESTRICTION: MGMT 3067

COMM 3308.03: Managing the Family Enterprise. Family enterprises dominate the business landscape of Atlantic Canada with businesses such as Sobey’s, Irving and McCain. In addition, a large number of smaller businesses are family-owned and operated. 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 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 those professionals who deal with family firms. FORMAT: Lecture/discussion 3 hours PREREQUISITE: COMM 2301.03 or MGMT 2101.03 and COMM 2401.03 (or MGMT 2401.03) or permission of the instructor. Cross-listing: RES 6406.03

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 behaviours which will help to 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, communication, 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

COMM 3310.03: Leadership and Strategic Change. This course focuses on six major approaches to the study of leadership. Some major ethical traditions will be linked to managerial excellence, corporate culture, extrinsic 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 1010.03 and 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, analyses and predictions about 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 communications 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. Emphasis on planning and formulating research problems, research design, application of sampling methods, statistical design of experiments, and analysis of data collected. A real-life research project is required, its nature to be determined considering student interests and backgrounds. FORMAT: Lecture/discussion 3 hours PREREQUISITE: COMM 2401.03 and COMM 2502.03, STAT 2100.03 or MATH 2100.03 or ECON 2300.03

COMM 3405.03: Export Marketing. This 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 1011.03 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 logistics and recycling, and the strategic logistics plan. PREREQUISITE: COMM 3001.03, or permission of the instructor. Cross-listing: RES 6407.03

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 company 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, which requires an understanding of the tools of direct marketing, the creative process, and how direct marketing fits into the total marketing strategy.

This is a very applied class that will have guest speakers and industry projects. It is designed to complement the Marketing Informatics class that focuses more on the total information needs, acquisition and usage within a firm for purposes of marketing.

PREREQUISITE: COMM 2301.03 and COMM 2401.03

COMM 3412.03: Internet Marketing.

As much 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 special interests, should have an understanding of some of the key concerns in managing operations, particularly if they aspire towards senior 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 2201.03, 2401.03, 2501.03 or STAT 1060.03 or MATH 1060.03

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 key 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 remote locations. Much of it is self-paced, and this will place a demand on you for self-discipline and self-motivation. This class page, and the links provided to it, are designed to support you in this adventure in learning.

CLASS PAGE: http://www.cdn.ca/~doc/index.html

FORMAT: Delivered On-Line, using WebCT, the World Wide Web and electronic mail. You are required to have daily access to a high-speed computer with Internet access. There is one in-class midterm and a final exam, as well as an online assignment and mandatory weekly work.

PREREQUISITE: COMM 1000 or COMM 1010 and COMM 1501 CROSS-LISTING: BUSI 5511.03, INFO 5505.03, PLAD 6125.03

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 % 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, and various practical and theoretical topics, and current topics, as appropriate.

FORMAT: Lecture 3 hours

PREREQUISITE: COMM 3305.03 and 3311.03, or permission of the instructor

CROSS-LISTING: BUSI 6110.03

EXCLUSION: COMM 3313.03

COMM 4102.03: Advanced Topics in Accounting II.

This course covers an in-depth study of the intermediate 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, extensive use is made of assigned cases and problems

PREREQUISITE: COMM 3305.03 and 3311.03 or permission of the instructor

CROSS-LISTING: BUSI 6120.03

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 Cobi 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 CGAs and the CMA's.
COMM 4102.03: Organizational Change, Theory and Design.

This course will provide students with an understanding of contemporary organizational dynamics relating to organizational structure, design and change. The main thrust of the class will be a practical analysis of why organizations change, why structural changes affect organizations and the impact of change on individuals. The objective of the course is for students to fine-tune these analytical and decision-making skills necessary for the effective introduction of change in organizations.

Format: Lecture 3 hours
Prerequisite: COMM 2101.03 or MGMT 2101.03; ECON 1101.03 and 1302.03
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, currency exchange rate forecasting, capital budgeting, and assessing and hedging foreign exchange risk.

Format: Lecture 3 hours
Prerequisites: 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. 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 2102 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 2102.03 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
Prerequisites: COMM 2102 and COMM 2203
Cross-listing: BUSI 6201.03

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 control are used to frame the discussions.

Prerequisites: COMM 3307.03 or MGMT 3907, or permission of instructor

Cross-listing: MGMT 4901.03

COMM 4302.03: Organizational Change, Theory and Design.

This course will provide students with an understanding of contemporary organizational dynamics relating to organizational structure, design and change. The main thrust of the class will be a practical analysis of why organizations change, why structural changes affect organizations and the impact of change on individuals. The objective of the course is for students to fine-tune these analytical and decision-making skills necessary for the effective introduction of change in organizations.

Format: Lecture 3 hours
Prerequisite: COMM 2101.03 or MGMT 2101.03; ECON 1101.03 and 1302.03
Cross-listing: BUSI 6102.03

COMM 4315.03: International and Intercultural Management.

This senior level course is designed to provide students with the knowledge and skills necessary for effective management in the global environment. 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 management, cultural perspectives, management, and cross-cultural management, variations on cultural orientations and values, 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, expatriate and repatriation management, and designing global structure.

Recommended: COMM 3001.03 and 3009.03
Format: Lecture 3 hours/case/reading
Prerequisites: COMM 2101.03 or COMM 2303.03

COMM 4351.03: Competitive Strategy.

Competitive Strategy is the first of two required classes in strategic management. These two classes form the capstone class of the Commerce program. They view the organization from a holistic perspective and are aimed at understanding and evaluating the strategic directions taken by organizations. The course begins with an in-depth discussion of the financial press. 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 (Commerce/ Economics and Mathematics)

COMM 4352.03: Strategic Management.

Strategic Management picks up where Competitive Strategy leaves off. While Competitive Strategy focuses on the external environment faced by organizations, the focus in Strategic Management is on examining the internal organizational design and workings of the firm in detail. Like Competitive Strategy, 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. In addition, small groups of students are required to undertake a field project in which they examine an organization closely, identify its existing strategy, potential growth opportunities, and suggest strategic directions for the chosen organization.

Prerequisite: COMM 4351.03
COMM 4401.03: Marketing Strategy.
The 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.

Instructor is mostly through case study discussions, report writing, and group presentations.
FORMAT: Seminar 3 hours
PREREQUISITE: 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 decided 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 premier 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.
Technological developments in database storage and mining, the development of relationship marketing, the rise of direct marketing and introduction of new media such as the internet have revolutionized the way marketing is conceptualized and executed. This revolution in marketing requires marketers who have a whole new set of skills and knowledge focused on the field of information technology. These skills are required in the growth areas of marketing practice such as direct marketing, where demand for marketing graduates has grown substantially in the last several years. Large companies require marketers with the skills necessary to work with IT people to develop effective customer information files and design customer database files. They need to be able to use data-mining tools and techniques to understand buyer behaviour, identify relevant segments, and develop effective strategies using all of today’s new media and channels.

RECOMMENDED: COMM 2111.03 or 3116.03
FORMAT: Students will complete real-world projects using advanced data-mining tools
PREREQUISITE: COMM 2401.03 and COMM 3404.03 with an average of at least B

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 programming, transportation, network problems, and simulation. Excel and other software 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 6011.03

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 these 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 3801.03, COMM 3901.03

COMM 4538.03: Applied Multivariate Analysis.
The convenience of packaged statistical programmes (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" programmes 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 programmes with data sets from such business areas as marketing, finance and organizational behaviour.

PREREQUISITE: COMM 3801.03, MATH 1110.03 or MATH 1115.03 and COMM 2502.03 or STAT 2880.03 or ECON 2280.03 or permission of instructor
CROSS-LISTING: BUSI 6943.03

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 3601.03
EXCLUSION: COMM 5701.05
Management

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Fax: (902) 494-3460
Website: www.bmg.t-management.dal.ca

Dean
Wheeler, D., BSc (Hons) (Surrey), PhD (Surrey)

Director
Sullivan, K.C. BSc, BEd (Dal), MEd, PhD (Ab)

Programme Manager
Ryan, R.H., BA (Dal)

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 programme in which the student receives both degrees upon graduation. Please refer to Degree Requirements on page 47 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 programme recruits students locally, nationally and internationally.

The Objectives of the Bachelor of Management programme are for:

• 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 programme
• Total credits required - 120
• Required GPA for graduation - 2.00

• Required core area classes - 12 credits:
  • ECON 1101.03
  • ECON 1102.03
  • MGMT 1000.03
  • INFO 1002.03
  • INFO 1003.03
  • INFO 1601.03
  • INFO 1602.03
  • MGMT 2100.03
  • MGMT 2101.03
  • MGMT 2102.03
  • MGMT 2304.03
  • MGMT 2403.03
  • MGMT 2404.03
  • 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. Programme Guide
Students will normally follow the classes as listed in the table below:

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<th>Year</th>
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* 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 0300 or 0310, 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 programme 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 34) 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 Programme Manager. These informal areas of concentration are not reflected on your transcript, however, a reference letter is available from the Programme Manager. B. Management programme if the conditions as described below are fulfilled.

Entrepreneurship: Students should follow the requirements for the Major in Entrepreneurship in the Commerce programme. (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 201 and 440 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 164. 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 Programme 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.
This class introduces the student to management issues with emphasis on creativity, leadership and innovation. Experiential learning will be used to explore the basic management issues of planning, organization, leading and controlling within a variety of venues including both for-profit and not-for-profit.

EXCLUSION: COMM 1000.03, 1010.03, 2010.03, HBSA 4001.03

MGMT 1001.03: Managing Organizational Issues II.
A continuation of MGMT 1000.03.

PREREQUISITE: MGMT 1000.03

EXCLUSION: COMM 1000.03, SCIE 1001.03

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, concisely and coherently.

EXCLUSION: COMM 2010.05, CSPH 2000.03, MGMT 1002.03, LIBS 1002.03, COMM 1701.06

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 ASBU 1000.03 and ASCS 3100X/ Y.06 are exempt from registering for LIBS 1002.03 and 1003.03.

PREREQUISITE: INFO 1002.03 or LIBS 1002.03 or MGMT 1002.03

EXCLUSION: HARP 1200.03, COMM 1702.03, LIBS 1003.03, MGMT 1003.05

ENVI 1100XY.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 successfully.

INSTRUCTORS: Dunsbee, P.
EXCLUSION: ENVS 1000X/Y.06, SOAS 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, ASCS 1000 and CSCI 1210 are exclusions.

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.

PREREQUISITE: Exposure to computers and/or permission of the instructor

MGMT 2101.03: Accounting - External.
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 1003.03, 1001.03, or professor approval

EXCLUSION: COMM 2100.03

MGMT 2102.03: Accounting - Internal.
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 all Management students who have been granted exemption for MGMT 2301 and MGMT 2302. It covers the components that are covered in the MGMT classes and missing from typical private sector accounting classes.

MGMT 2303.03: Principles and Applications for Managing the Human Resource I.

The aim of this class is to help students, as aspiring managers, entrepreneurs and engaged employees, to acquire the knowledge and skills necessary to understand behaviour in the workplace and be effective members of work organizations. Through a combination of individual and group work and a blend of classroom and practical activities augmented by additional materials and resources available via WebCT, students will explore concepts and principles of micro-organizational behaviour. Topics covered will include personality and perception, motivation, learning, values and attitudes in the context of contemporary workplace experiences, challenges and organizational responses (including environments and legislative frameworks and managerial and human resource considerations).

PREREQUISITE: MGMT 1000.03 and MGMT 1001.03
EXCLUSION: COMM 2301/2302 and COMM 2303 and COMM 3301 and MGMT 2301

MGMT 2304.03: Principles and Applications for Managing the Human Resource II.

This class will build on the concepts and principles identified in MGMT 2303, which combined micro-organizational behaviour (considering individual motivation, perception, learning and attitudes) with contemporary workplace experiences and organizational responses (performance appraisal, humanized environments and legislative frameworks, and managerial and human resource considerations). In particular, the course will examine aspects of: organizational environment, structure and processes; leadership, power and politics; organizational cultures and processes of organization change. To achieve a balance between theoretical and practical learning, and to enhance the overall course learning process, the teaching methodology will combine mini-lectures with in-class exercises, cases, presentations & group facilitated discussions.

PREREQUISITE: MGMT 2303.03
EXCLUSION: COMM 2303/2302 and and COMM 2303 and COMM 3301 and MGMT 2301

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 programme. 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 and MGMT 1001.03, ECON 1001.03, ECON 1002.03
CROSS-LISTING: COMM 2401.03

MGMT 2402.03: Marketing Applications in the Not-for-Profit Sectors.

This class is intended to further the student’s understanding of the ways in which the discipline of marketing can be applied to a number of public policy, environmental, professional and non-profit management areas. It will integrate the basic theory and concepts covered in the introductory marketing class with the knowledge gained in the introductory classes in environmental and public policy management or in introductory classes in a number of professional fields. The class will maintain an overall managerial perspective in examining the ways in which various constituencies fulfill their strategic organizational objectives through the application of marketing practices. Topic areas examined will be: micro-marketing (firm perspective) vs. macro-marketing (societal perspective), non-profit, cause-related, “green” and social marketing; de-marketing (e.g. anti-smoking, etc.); the use of marketing communications in the electoral and public policy-making process; ethics in marketing, marketing and development. The class may also examine the application of the discipline of marketing to a number of professional fields, such as sports/recreation and health sciences. Learning activities might include: lectures, videos, seminars, internet exercises, examinations and field assignments.

PREREQUISITE: MGMT 2401.03

MGMT 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 1000.03 or 2000.03, MATH 1001.03 or 2001.03, ECON 2206.03, ECON 2222.03

MGMT 2502.03: Statistics for Managers II.

This is 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 1000.03 or 2000.03, MATH 1001.03 or 2001.03, ECON 2206.03, ECON 2222.03

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 2240.05

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 principles and methods used in the management of financial, human, and information resources in 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 1001.03, ECON 1002.03, MGMT 2101.03, MGMT 2501.03
EXCLUSION: COMM 2201, COMM 2202.03/2203.03

386 Management
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 1101.03, MGMT 2003.03, MGMT 2104.03, MGMT 2401.03, MGMT 2501.03, MGMT 3201.03
EXCLUSION: COMM 2503.03

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 an increasingly important phenomenon within public 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 1011, ECON 1012 or equivalent

MGMT 3807.03: New Venture Creation Entrepreneurship.
This class is about venturing: the process of creating new ventures in both the for-profit and not-for-profit environments. 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 them, 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: E. Leach
PREREQUISITE: MGMT 1000 and MGMT 1011 or COMM 1000/COMM 1010
CROSS-LISTING: COMM 3307
EXCLUSION: COMM 3307

MGMT 4001.03: Policy 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 evaluating 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 4511.03

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 4522.03

MGMT 4050.03: Directed Reading and Research.
This class offers the student the opportunity to explore in greater detail a particular area of interest. The content of the class is negotiated with the individual instructor involved. The student and instructor must develop a proposal, and submit it to the Programme Committee for approval. Guidelines are available from the Bachelor of Management Programme Administrator.

MGMT 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: E. Leach
PREREQUISITE: MGMT 3801.03 or COMM 3801.03 or COMM 1010.03, MGMT 1000.03, MGMT 3807.03, COMM 3307.03 or permission of instructor
CROSS-LISTING: COMM 4301

PREREQUISITE: All required first, second, and third year core classes for the Bachelor of Management.
Faculty of Medicine

Faculty of Medicine
Office of the Dean of Medicine
Location: Room C-205, Clinical Research Centre
5849 University Avenue
Halifax, NS B3H 4H7
Telephone: (902) 494-6592
Fax: (902) 494-7119
Admissions Office
Location: Room C-132, Lower Level, Clinical Research Centre
Telephone: (902) 494-1874
Fax: (902) 494-8884

Academic and Administrative Staff
Dean
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Associate Deans
Blake, K., MB (London) FRCP(C), Undergraduate Medical Education
Gardner, M., MD, FRCP (c), FACC, Postgraduate Medical Education
Johnston, G.C., PhD (York), Research
Sinclair, D.J., MD (Dal), FRCP, CCFP (EM), Continuing Medical Education
Spence Wach, S., MHSA, Health Systems & Policy
Assistant Deans
Brownstone, R., MD (Manitoba), Research - Clinical Departments
McMaster, C., PhD (Manitoba), Graduate & Postdoctoral Studies
Sutton, E., MD (Dal), Admissions and Student Affairs
Academic Directors
Sinha, G., Director, Student Advisor Programme
Zitner, D., BA (Sir George Williams University), MA (Dal), MD (Dal), CCFPC, FCFPC, Medical Informatics
Administrative Directors/Staff
Goudar, C., BA, AIPR, Communications
Greer, W., BSc (Acadia), MEd (Dal), Curriculum and Faculty Development
Paterson, G.I., BSc (UBC), BEd (Acadia), MEd (Dal), ISP, Medical Informatics Coordinator
Powell, L., BSc (Dal), MEd (Dal), BEd (Dal), ISP, Medical Informatics Coordinator
Rouse, C., Research Coordinator
Silver Smith, C., Postgraduate Medical Education Coordinator
Weeden, A., Cert. BA (UNB), BA (Dal), Administrative Services
Dalhousie Medical Research Foundation
Sloan, J., BA(French), BPR (MSVU) Administrator/Executive Director
Telesca, D., Administrative Assistant
Faculty Council
Abbass, A.
Anderson, J.
Brisseau, G.
Carr, B (Chair)
Downie, S.
Feulker, G.
Grout, D.
Gaudet, C., B.A., 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
Powell, L., BSc (Dal), BEd (Dal), MEd (MSVU), Human Resources
Rofford, M., BComm (Dal), Finance
Rouse, C., Research Coordinator
Silver Smith, C., Postgraduate Medical Education Coordinator
Weeden, A., Cert. BA (UNB), BA (Dal), Administrative Services

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 programmes 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

Faculty of Medicine

Anatomy and Neurobiology
Location: Sir Charles Tupper Medical Building
12th, 13th, and 14th Floors
Halifax, NS B3H 4H7
Telephone: (902) 494-6950
Fax: (902) 494-1212

Dean
Cook, H.

Dr. D.G.J. Campbell Professor and Head of Department
Leslie, R.A., BSc (Brock), PhD (Cambridge)

Professors
Brownstone, R.M., BSc, MD, PhD (Manitoba)
Currie, R.W., BSc, MSc, PhD (Man)
Hopkins, D.A., BSc (Abia), MA, PhD (McMaster)
Leslie, R.A., BSc (Brock), PhD (Cambridge)
Mendez, I., MD, PhD, FRCSC (Western)
Morris, S., MSc, FRSC, MD (Kitchener)
Neumann, P.E., BA, MD (Brown)
Rutherford, J.G., BA (Cornell), MS (Syracuse), PhD (SUNY)
Semba K., BEd, MA (Tokyo), PhD (Brown)
Tasker, R.A.R., BSc (Queen’s), MSc (Queen’s), PhD (Queen’s)
Wassersug, R.J., BSc (Manitoba), PhD (Chicago)

Associate Professors
Allen, G.V., BSc, PhD (Dal)
Baldridge, W. H., BSc (Toronto), PhD (McMaster), Graduate Studies Coordinator
Darvesh, S. MD (Dal), PhD (UNB)
Kablar, B., MD, PhD (Zagreb, PISA)
Reunser, V.F., BSc (Auckland), PhD (Alberta)
Smith, F.M., BSc, MSc, PhD (UBC)

Assistant Professors
Clarke, D.R., MDCM, MD, FRSC (McGill)
Marsh, D.E., BSc (Guelph), MSc (Guelph), PhD (Alberta)
Schmitt, M., BSc (Toronto), MD (Toronto), FRPC, EPE (EPE)
Sinha, G., MBBS, (Banaras)

The Department of Anatomy and Neurobiology provides facilities for advanced study and research in Neuroscience, Histology, Embryology, Cell Biology, Neuroendocrinology and Evolutionary Biology.

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 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 body. There are no formal laboratory sessions. However, a self-directed optional human 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 students in Recreation, Physical and Health Education and Kinesiology. 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 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 self-directed optional human anatomy laboratory will be provided throughout the year for independent study.

INSTRUCTOR(S): G.V. Allen
FORMAT: Lecture 3 hours

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 body. There are no formal laboratory sessions.

INSTRUCTOR(S): G.V. Allen
FORMAT: Lecture 3 hours

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, expanding the understanding of how organisms function.

INSTRUCTOR(S): F. Smith, B. Kablar (Dept. of Anatomy and Neurobiology)
FORMAT: Lecture 2 hours, lab 2 hours
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
CROSS-LISTING: BIOL 3431.03

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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
CROSS-LISTING: BIOL 3431.03
Pharmacology

Location: Sir Charles Tupper Medical Building
685, 6th Floor, 5850 College St.
Halifax, NS B3H 1X5
Telephone: (902) 494-3435
Fax: (902) 494-1388

Dean
Cook, H, BSc, MSc (McGill), PhD (Dal)

Professors Emeriti
Gray, J.D., BSc, MD (Alta), FRCP(C)
Ruddy, J., MD, CM (Queen's), FRCPT(C)
FACP
Voltra, M.M., BPhm, MPhm, PhD (Banas)
White, T. D., BSc, MSc (UWO), PhD (Braskol)

Professor and Head of Department
Savory, J., BSc, MSc, PhD (Queen's)

Professors
Baz, J., BSc (Brad), PhD (Cantab)
Deveno, J.W., BSc, PhD (Manitoba)
Howlett, S.E., BSc (Concordia), MSc, PhD (Memorial)
Lakes, M.E., BSc, PhD (Southampton)
Robertson, G.S., BSc, PhD (Dal)
Robinson, H.A., BA, BSc, PhD (Western), PhD (Cantab)

Associate Professors
Dennison-Wright, E.M., BSc, PhD (Dal)
Nachtigal, M., BSc, PhD (Manitoba)
Smul, C., BSc, PhD (McMaster), PhD (Western)

Assistant Professors
Fawcett, J., BSc, MSc, PhD (Dal)
Howlett, S.E., BSc (Concordia), MSc, PhD (Memorial)
Robertson, H.A., BA, BSc, PhD (Western), PhD (Cantab)

Cross Appointments
Aubert, T., BSc, MD (University of Ottawa), PhD (Dalhousie)

Gajewski, J.B., MD (Poznan), FRCS(C), Urology, Major Appointment in Department of Psychiatry

Goralski, K., BSc, PhD (Manitoba), Major Appointment in College of Pharmacy

Hall, B., BSc, PhD, MD (Dal), FRCP(C), FCC, Major Appointment in Department of Anesthesiology

Hang, M.E., BSc, MD (Dal), FRCP(C), Major Appointment in Department of Anesthesiology

Lynch, M.E., BSc, MD (Dal), FRCP(C), Major Appointment in Department of Psychiatry

Peterson, T.C., BSc (Ottawa), MSc, PhD (Dal), Major Appointment in Department of Medicine

Rusak, B., BA (Toronto), PhD (Berkeley), Major Appointments in Departments of Psychiatry and Psychology

Post-Doctoral Fellows and Research Associates/ Assistants 2006
Hof, A., PhD (Calcutta)
Shepherd, T., BSc (Western), PhD (McMaster)

Steinhardt, A., BSc (Bangalore U.), PhD (Delhi U.)

Wright, A., BA Hons (University of British Columbia), MA (Brock), PhD (Dal)

Yagoveya, S., MPhil (Kiev State U., Ukraine), PhD (Inst. of Molecular and Cell Science, Ukraine)

Zhang, F., BSc (Wuhan U., China), PhD (Northwest Normal U., China)
Zhu, J., PhD (Tongji University, China)

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 analysis to molecular biology.

II. Degree Programmes

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 programme 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 4403: 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 act to regulate host defence mechanisms will also be studied.

COORDINATOR: S.E. Howlett

FORMAT: Lecture 3 hours

BIOL 4404.03: Introduction to Pharmacology II.

This class is intended to cover specific aspects of drug action not covered in BIOL 4403. The class includes: drug receptor signaling, ion channels, second messengers, G-proteins, phyto-specific consideration of drugs used for pain, inflammation, cancer, diabetes, asthma, and diseases of the thyroid, eye and gastrointestinal tract. Special emphasis will be placed on 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 analysis to molecular biology.

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COORDINATOR: S.E. Howlett

FORMAT: Lecture 3 hours

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COORDINATOR: S.E. Howlett

FORMAT: Lecture 3 hours

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Physiology and Biophysics

Location: 5th Charles Tupper Building, Third Floor
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Cook, H.W., PhD

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Undergraduate Coordinator
Morgunov, N.

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Brown, R.E., BSc (Victoria), MA, PhD (Dal)
Chauhan, B., PhD (Wales), Major appointment - Dept. of Psychology
Cowley, E.A., BSc (London), PhD (Leicester)
Chen, R., BSc, MD (Dalhousie), FRCP (C), Major appointment - Dept. of Medicine
Chappe, V., Licence Maîtrise (Université de la Méditerranée-Marseille), Diplôme d’Etudes Approfondies, PhD (Univerté de Provence-Marseille, France)
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Assistant Professors
Ah, L.S., BSc (Dalhousie), FRSC, Major appointment - Dept. of Surgery
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Kraeger, S., PhD (Zurich)
Li, L., BSc (UBC), PhD (Dal), Major appointment - Dept. of Medicine
O’Brien, 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), Class-Smith Clinic.

I. Introduction
The Department of Physiology and Biophysics offers a wide range of undergraduate and graduate 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 course 1000X/0.06 is open to all students. PHYL 2030 is the recommended prerequisite for science students interested in taking higher level physiology courses. Students wishing to enroll in other specialized classes require permission from the Course Director or Department Head.

II. Class Descriptions
PHYL 1000X/Y.06: Human Physiology.
This is a full-credit Distance Education class equivalent to PHYL 1010X/Y.06. The functions of body organs and body systems, as well as integrative functions of the whole organism are studied. This 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.

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 pathophysiological 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.

INSTRUCTOR(S): M. Murphy and other staff members

FORMAT: A 7-week comprehensive unit with 6 hours tutorial and 4 hours lecture per week

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.

DIRECTOR: N.S. 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.

Physiology and Biophysics 391
PHYL 3120.03: Exercise Physiology in Health and Disease.
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. 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) the functional organization of cells (cellular compartments, cytoskeleton), (ii) receptor 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.

PHYL 3130.03: Physiology of the Nervous System.
This course provides an introduction to the function 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. 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) the functional organization of cells (cellular compartments, cytoskeleton), (ii) receptor 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.

PHYL 3320.03: Human Cell Physiology.
The function and dysfunction of body organ systems are reviewed, and the short- and long-term responses of these systems to physical exercise are examined. Factors affecting physical performance are considered, and the preventive and therapeutic use of exercise for a wide range of clinical conditions is examined.

PHYL 3520.03: Core Concepts in Medical Physiology.
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.

PHYL 3570.03: 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.

PHYL 4328X/Y.03: Directed Project in Physiology.
This class allows the advanced undergraduate student to pursue more specialized study. The advanced undergraduate student can pursue one of several possibilities under the direction of a project advisor. Options include (a) a research project with a laboratory mentor, (b) a project with a clinical mentor, and (c) a project with a clinical mentor with accompanying didactic sessions. Students will work in small groups on directed projects with the advice of an advisor. Projects will be evaluated on the basis of written reports, presentations, and other criteria as specified by the advisor.

PHYL 4460.03: Advanced Exercise Physiology.
The course consists of lectures, tutorials, student presentations, and class discussion periods. Approximately one-third of the content concerns cellular and systems exercise physiology. One-third of the exercises in the course have a clinical orientation.
Faculty of Science

Location: Life Sciences Centre (Biology), 8th Floor, Room 827
Halifax, NS B3H 4J1
Telephone: (902) 494-2373
Fax: (902) 494-1123
Email: science@dal.ca
Website: www.dal.ca/science

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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)

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Telephone: (902) 494-2373

Administrative Secretary
TBA
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 and Molecular Biology, Biology, Biotechnology, Chemistry, Earth Sciences, Economics, Environmental Science, Marine Biology, Mathematics, Meteorology, Microbiology and 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 programmes with Oceanography are offered. Details concerning particular programmes of study are found in the departmental entries.

II. Departments of the Faculty of Science
Biochemistry and Molecular Biology* (also in the Faculty of Medicine), Biology*, Chemistry*, Earth Sciences*, Economics*, Mathematics and Statistics*, Microbiology and Immunology* (also in the Faculty of Medicine), Oceanography, Physics and Atmospheric Science*, and Psychology

* Co-op Option available.
Biochemistry and Molecular Biology

Location: 6th Floor, 5850 College Street, Ninth Floor
Halifax, NS, B3H 1X5

Facility of Science

Department of Biochemistry and Molecular Biology

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 and molecular biology ranging from structure-function relationships in macromolecules to the dynamic aspects of metabolism. The core programmes 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 programme can include classes in Pharmacology and/or Pathology in their programmes. Greater flexibility is available in combined degree programmes of Biochemistry with another subject; most often with Chemistry, Microbiology, Biology, Neuroscience or Psychology. Specific programmes developed with the Department of Microbiology & Immunology provide coordinated studies of metabolism, enzymology and molecular biology with bacteriology, virology and immunology. These programmes provide the foundation for molecular genetics, genetic engineering and biotechnology.

Laboratory Exercises: Many of the classes offered by the Department of Biochemistry and 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 Programmes

NOTE: Students interested in a Biochemistry degree should first read the Undergraduate Handbook on the Department website that describes all of the programmes available and the special requirements relating to them. Degree programmes 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 programme with a concentration in Biochemistry. Students wishing to include Biochemistry in other programmes 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 40 of this calendar.

A. 20-credit BSc with Honours in Biochemistry

This is a special concentrated Honours Programme 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 BSC 2301.03 and BSC 2302.03, students require minimum grades of B- in BOL 1011.03 and BOL 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-
- BOL 1011.03 and 1012.03 (or equivalent) - minimum passing grade B-
Departmental Requirements

1000 level
- BIOC 1011.03 and 1012.03 (or equivalent) - minimum passing grade B-
- 1 full credit in mathematics
- or, in lieu of the above, SCE 1500.30, SCE 1501.27, SCE 1502.21, SCE 1504.27, or SCE 1510.23
- Students who have not passed Nova Scotia grade 12 Physics or its equivalent must include a 1000-level Physics class.

2000 level
- BIOC 2020.03
- BIOC 2030.03
- BIOC 2200.03 or 2300.03
- BIOC 2610.03
- CHEM 2201.03
- CHEM 2305.03 and 2306.03 or if not taking combined programme with Chemistry, CHEM 2305.03
- 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 4201.03 or 4202.03
- BIOC 4403.03 or 4403.03
- BIOC 4604.03 and 4605.03
- BIOC 4610.06
- BIOC 4700.03 or 4701.05

One full credit in Biochemistry in any area

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 Programme.

Departmental Requirements
- 1000 level classes as specified in A above with the exception of the Physics requirement
- BIOC 2020.03
- BIOC 2030.03
- BIOC 2200.03 or 2300.03
- BIOC 2610.03
- BIOC 3200.03
- BIOC 3300.03
- BIOC 3400.03
- CHEM 2201.03
- CHEM 2305.03 and 2402.03

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 programmes, the 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 programme of study leading to a BSc Major degree. The programme, 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
- BIOC 1011.03 and 1012.03 (or equivalent) - minimum passing grade B-
- 1 full credit in mathematics
- or, in lieu of the above, SCE 1500.30, SCE 1501.27, SCE 1502.21, SCE 1504.27, or SCE 1510.23

2000 level
- BIOC 2020.03
- BIOC 2030.03
- BIOC 2200.03 or 2300.03
- BIOC 2610.03
- CHEM 2201.03
- CHEM 2305.03
- 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 4000 level

D. 20-credit BSc Double Major in Biochemistry and Another Subject.
*See notes in C, above.

This 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, with the exception of the Physics requirement.

2000 level
- BIOC 2020.03
- BIOC 2030.03
- BIOC 2200.03 or 2300.03
- BIOC 2610.03
- CHEM 2201.03
- CHEM 2305.03
- CHEM 2401.03 and 2402.03

3000 level
- as for Single Major, above

4000 level
- A minimum of one full credit in Biochemistry at the 4000 level

E. Co-operative Education in Biochemistry
Co-operative Education in Science (Science Co-op) is a programme 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.sciencescoop.dal.ca, for information on Science Co-op such as Science Co-op BSc and General Science Co-op.
Co-op requirements, eligibility, how to apply, deadlines and other related information.

Admission to the Biochemistry Co-op programme requires a GPA of at least 3.00 in first year classes. Continuance in the Biochemistry Co-op programme 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 programme:

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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. Leaver

FORMAT: Lecture 4 hours/lab 3 hours/tutorial 6 hours; 7 weeks

EXCLUSION: This class is restricted to students in the BIc (Pharm) programme.

BIOC 1420.03: Introductory Biochemistry for Nursing Students.

Topics discussed include the structure, biosynthesis and functions of biologically important compounds, enzyme kinetics, control of metabolism, genetic engineering and nutrition. Medical aspects are stressed.

INSTRUCTOR(S): B.H. Leaver

FORMAT: Online (WebCT)/tutorial 2 hours

PREREQUISITE: None, but Chemistry 1401.03 is recommended

EXCLUSION: This class cannot be used as a prerequisite for any other biochemistry class and is not normally accepted by the Faculty of Dentistry in fulfilment of any requirement of a biochemistry class for admission. This class is restricted to students in the BScN and BHS programmes.

BIOC 2020.03: Cell Biology.

See class description for BIOC 2020.03, in the Biology section of this calendar

CROSS-LISTING: BIOC 2020.03

BIOC 2030.03: Genetics and Molecular Biology.

See class description for BIOC 2030.03, in the Biology section of this calendar

CROSS-LISTING: BIOC 2030.03

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. Leaver

FORMAT: Lecture 3 hours/tutorial 1 hour

PREREQUISITE: BIOL 1010.03 and 1011.03 (or equivalent), CHEM 1011.03 and 1012.01 (or equivalent), all with grades of B- or higher, or instructor’s consent.

NOTE: Students are advised to also take CHEM 2401.03 and 2402.01, or CHEM 2441.03. CHEM 2441 does not satisfy the prerequisite requirement for BIOC 2500.03 and BIOC 2600.03

CROSS-LISTING: BIOC 2300.03, BIOC 2020.03

EXCLUSION: BIOC 2200.03, BIOC 2030.03

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 Programmes.

INSTRUCTOR(S): Briggs, P.

FORMAT: Lab 3 hours

EXCLUSION: BIOC 2200.03, BIOC 2010.03

CROSS-LISTING: BIOC 2013.03

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. Bence

FORMAT: Lecture 3 hours/lab 3 hours

PREREQUISITE: BIOC 2610.03 and (BIOC 2200.03 or BIOC 2300.03 with a Grade of B- or higher) and BIOC 2010.03 and CHEM 2401.03 and CHEM 2402.03, or instructor’s consent

CROSS-LISTING: BIOC 3012.03

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), C. Luehr, B. Karten, C. Too

FORMAT: Lecture 3 hours/lab 3 hours

PREREQUISITE: BIOC 2610.03 and CHEM 2200.03 or BIOC 2300.03 with a Grade of B- or higher and BIOC 2010.03 and BIOC 2030.03 and CHEM 2401.03 and CHEM 2402.03, or instructor’s consent

CROSS-LISTING: BIOC 3013.03

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. Enzyme 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): A. Roger (Coordinator), J. Archibald, M. Gray

FORMAT: Lecture 3 hours/lab 3 hours

PREREQUISITE: CHEM 2401.03 and CHEM 2402.03 or CHEM 2441.03; BIOC 2200.03 and BIOC 2010.03 (both with grades of B- or higher); BIOC 2200.03 and BIOC 2030.03, or instructor’s consent

CROSS-LISTING: BIOC 3014.03

396 Biochemistry and Molecular Biology
This class discusses the organization of genes into genomes. It deals with enzymatic and organelar genomes which are not genes (transposable and other repetitive elements, introns), (ii) genetic and physical methods for mapping genomes, and (iii) 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, W.F. Doolittle

FORMAT: Lecture 3 hours

INSTRUCTOR(S): P. Liu, W.F. Doolittle

CROSS-LISTING: MICI 4403.03, BIOL 4010.03, BIOC 5403.03

PREREQUISITE: BIOC 3400.03 and MICI 3033.03 or instructor's consent

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: MIC 4404.01, BIOC 4011.03, BIOC 5404.03

BIOC 4501.03: Medical Biotechnology I. An introduction to biotechnology fundamentals from a medical perspective. Topics will include manipulation of recombinant DNA, DNA microarray, antibody and polymerase-chain reaction-based technologies, 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

INSTRUCTOR(S): M. Dobson

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). COORDINATORS: P.Liu and L. Murray

INSTRUCTOR(S): Members of the departments of Biochemistry & Molecular Biology, and Microbiology & Immunology

FORMAT: Eight 5-hour and four 3-hour tutorials and 15 half hours laboratory assignments

PREREQUISITE: BIOC 3200.03, BIOC 3300.03, BIOC 3400.03 and consent of coordinator

CROSS-LISTING: BIOC 5603.03

EXCLUSION: BIOC 4604/5610, BIOC 4012/5013 and MICI 4601/5610

RESTRICTION: Restricted to BIOC and MICI Co-op students
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. Beam

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 (X & Y 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 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.

COORDINATORS: F. 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 3 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, BIOC 5612X.Y.06, MED 4610X.Y.06, MED 4612X.Y.06, MICT 4610X.Y.06, MICT 5610X.Y.06

EXCLUSION: BIOC 4005.03 (BIOC 5601.06), BIOC 4012.06 (BIOC 5603.06), MICT 4601.06 (MIC 5601.06) and MICT 4602.06 (MIC 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 are examined. 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.

COORDINATOR(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 mechanisms 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.

COORDINATOR(S): S.L. Beam

FORMAT: Lecture 2.5 hours, seminar/tutorial 3.5 hours

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 activity 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 cardio-vascular system. Drugs that assist or regulate host defence mechanisms will also be studied.

COORDINATORS: S.E. Hewlett

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, BIOC 4404.03, and NESC 4374.03

BIOC 4805.03: Introduction to Pharmacology II.

This class is intended to cover specific aspects of drug action in greater depth than BIOC 4804.03 and provide students with practical experience in pharmacology and a perspective on pharmacological research. The laboratory component consists of practical exercises using various techniques, such as computer simulations. There will be an opportunity to visit research laboratories. Instructor's consent and signature are required.

COORDINATOR(S): S.E. Hewlett

FORMAT: Lecture 3 hours, laboratory 3 hours

PREREQUISITE: BIOC 4804.03 (with a grade of B or better) and instructor's consent

CROSS-LISTING: PHAC 5407.03, BIOC 4405.03, and NESC 4375.03

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: K. Dooley

FORMAT: Lecture 3 hours, case studies and assignments

PREREQUISITE: BIOC 3200.03, CHEM 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 pathophysicsiology 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: K. Dooley

FORMAT: Lecture 3 hours, case studies and assignments

PREREQUISITE: BIOC 3200.03, CHEM 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 and ethics, and social issues related to medical genetics.

COORDINATOR: W.L. Gasser

FORMAT: Lecture 3 hours, tutorial 2 hours
Biology 399

Faculty of Science

PREREQUISITE: BIOC 3400.03/BIOL 3014.03, or permission from instructor

CROSS-LISTING: BIOC 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: at 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 programme; all Science Co-operative Education students are required to register for and attend, upon acceptance into the programme. 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/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
Fredman, B., MSc, PhD (Toronto)

Biology Undergraduate Programme Advisors
Bouzid, C. (494-2185)
Bishop, T. (404-1086)
Brockway, J. (494-6017)
Corkett, C. (494-7616)
McAllister-Irwin, N. (494-3818)
Oulton, M. (494-7072)
Staples, E. (494-2464)
Walsh, E. (494-7110)

Marine Biology 20-credit Major Programme Advisors
C. Corkett (494-7010)
R. Scheibling (494-2296)

Biology Honours Programme Advisors
Collins, P. (494-3847)
Latta, R. (494-2727)
Pohajdak, B. (494-6353)
Wright, J. (494-6460)

Marine Biology Honours Programme Advisors
Hartinger, C. (494-1367) (Marine)
McAllister-Irwin, N. (494-3818)
Fidler A. (494-3822) (Marine)

Professors Emeriti
Vining, L.C., MSc (Auckland), PhD (Cantab), FRSC
von Maltzahn, K.E., MS, PhD (Yale)
McLaren, I.A., MSc (McGill), PhD (Yale), George S. Campbell Professor Emeritus

Professors
Benton, P., MSc (UBC), PhD (McGill)
Bouzid, D., BSc (Bath, PhD (Londond)
Croll, R.P., PhD (McGill), (major appointment in Physiology and Biophysics)
Fentress, J.C., PhD (Cantab) (major appointment in Psychology)
Fredman, B., MSc, PhD (Toronto)
Hall, B.B., PhD, Dsc (UNEd), FRS (George S. Campbell Professor of Biology), University Research Professor
Hutchings, J.A., PhD (Memorial)
Johnston, M.O., PhD (Chicago)
Lane, P.A., Msc (SUNY Binghampton), PhD (SUNY Albany)
Lee, R.W., MA (Mass), PhD (SUNY Stony Brook)
Leonard, M.L., PhD (Ontario)
MacRae, T.H., MSc, PhD (Windsor) (Killam Professor of Biology)
Mills, E.L., MSc, PhD (Yale) - (major appointment in Oceanography)
Myers, R.A., PhD (Dal), Killam Research Professor
O’Dor, R.K., PhD (UBC)

Biology 399
Petricigni, D.G., MSc, PhD (McGill)
Pohjakal, B., BSc, PhD (Dal)
Rajnar, O.P., PhD (Tohoku), Stora Enso Senior Chair in Forest Genetics and Biotechnology
Scheibling, R.E., PhD (McGill)
Wald, S., PhD (Illinois)
Whitehead, H., PhD (Cambridge), University Research Professor
Wilson, J.H.M., PhD (Nottingham) - jointly appointed with SRES
Wright, J.M., PhD (MUN)

Associate Professors
Herbinger, C.M., PhD (Dalhousie)
Latta, R., PhD (Colorado)
Pinder, A., PhD (Dal)
Razzuette, D.E., MSc, PhD (Dal)

Assistant Professors
All, S., MSc, PhD (UBC, Paris-VI)
Balatovska, J.P., PhD (Texas A & M)
Côté, P., PhD (McGill)
Franco-Orozco, A.A., PhD (Cape Town, South Africa)
Ganau, C., PhD (Dalhousie)
Horn, A., PhD (Toronto)
Weilgart, L., PhD (Dalhousie)

Honorary Research Associates
Witton, P., PhD (Hamburg)
Vezina, A., BSc, (Laval), PhD (McGill)
Swain, D.P., PhD (UBC)
Rossolimo, T., PhD (Moscow)
Ross, N., BSc (McGill), PhD (McGill)
Platt, T.C., MA (Tor), PhD (Dal), BIO
Olivier, Gilles, BSc, MSc, PhD (Montreal)
Lall, S.P., MSc, PhD (Guelph), NRC
Kenchington, E., MSc (Dal), PhD (Tasmania), BIO
Johnson, S., BSc, MSc (Dal), PhD (Sydney), Dal
Jeliazkov, V., PhD (Massachusetts)
Head, E. MPhil (London), PhD (Wales), BIO
Hatcher, B., MSc (Dal), PhD (Sydney)
Harrison, W.G., PhD (New York at Stony Brook)
Hanson, M., MSc (Ottawa), PhD (McGill), BSc (Ottawa)
Ewart, V., PhD (Dal)
Douglas, S.E., MSc, PhD (Dal)

Adjoint Professors
Barber, C., PhD (Queens)
Bard, S., PhD (MIT)
Bricelj, M., PhD (New York State)
Browne, W.D., PhD (UBC), BIO

Post Doctoral Fellows
Van Dommelen, J.A., BSc, MSc (Dal)
Oulton, M. BSc, MSc (Dal)
McAllister-Irwin, N., BSc, PhD (Dalhousie)
Staicer, C., PhD (UMass/Ambrose)
Staples, E., BSc (Dal), BEd (MSVU)
O'Halloran, M.J., BSc (Southampton), BEd, MSc (Dal)
Collins, P., BSc, MSc (Dal)
Corlett, C., BSc, DPhil(Technical), PhD (London)
O'Halloran, M.J., BSc (Southampton), BEd, MSc (Dal)
Staples, E., BSc (Dal), BEd (NSMU)
Welsh, E., BSc (McMaster), MSc (Guelph), BEd (Dal)

Instructors
Bishop, T., MSc (MUN)
McAllister-Irwin, N., BSc, PhD (Dalhousie)
Oshorn, M, BSc, MSc (Dal)
Van Dommelen, J.A., BSc, MSc (Dal)

Areas of Specialty of Biology Faculty
Cell Biology: S. Adl, P. Côté, T. MacRae, B. Pohajdak, A. Gunawordena, S. Stone.
Developmental Biology: R.K. Hall, T. MacRae, A. Pinder
Molecular Biology: T. MacRae, B. Pohajdak, O.P. Rajora, J. Wright

I. Degree Programmes
The department offers the following degree programmes 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 programmes are described below. 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 for all Biology programmes 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.
A. Co-operative Education Programme in Biology

The Department of Biology will be offering a Co-operative Education Programme for Biology Major and Honours students.

Co-operative Education (Science Co-op) is a programme 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 assist 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 Duhun, (Mindy.Duhun@Dal.Ca, 494-7072) DURING THEIR FIRST YEAR OF STUDY for programme details.

B. 20-credit Honours Biology, BA, BSc

Students will not normally be officially registered into an Honours programme 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 programme 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 programme are encouraged to pick up a departmental honours record form which lists the classes which are required in all Biology Honours Programmes. Students should consult the Marine Biology 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.

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Students should plan their programme of study carefully and are encouraged to do so in consultation with a departmental academic advisor. The department also offers degree programmes in Marine Biology. Please consult the Marine Biology section of this calendar.

Biology 401

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Students interested in pursuing a Biology Co-op Degree should contact the Biology Co-op Advisor, Mindy Duhun, (Mindy.Duhun@Dal.Ca, 494-7072) DURING THEIR FIRST YEAR OF STUDY for programme details.

Students should plan their programme of study carefully and are encouraged to do so in consultation with a departmental academic advisor. The department also offers degree programmes in Marine Biology. Please consult the Marine Biology section of this calendar.
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 Programmes section, page 44 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 44 for details.

Concentration in Environmental Science
The Faculty of Science offers a Combined Honours or Double Major degree with a concentration in Environmental Science. Consult the Environmental Programmes section, page 44 for details.

Major in 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 programme in Biology.

II. Course Selection Guidelines

Biology is a large and diverse field, and students enroll in Biology programmes 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. Organisational Biology, C. Cell/Molecular Biology. Below, we list courses associated with each area, and provide recommendations for designing individual programmes at the 3rd and 4th year levels.

IMPORTANT: Students should choose 300 level classes in their 3rd 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 PROGRAMME.

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. tundra, 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.

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It is recommended that students wishing to emphasize E&E in their degree programme select 3rd and 4th year classes as follows:

• Three full credits from the Prerequisite group (see below)
• At least one half-credit from each of
  • Biodevlopment
  • Ecosystems or Evolution
  • Applications
• Methods and Data Skills
• Two half-credits of Statistics (Stat 1060 and 2800)
• A half-credit in calculus (MATH 1400)
• One half-credit class with a field component (marked * below)

Prerequisites: BIOC 1042, BIOC 2045, BIOC 3041, BIOC 3091, BIOC 3101

Biodiversity: BIOC 3060, BIOC 3061, BIOC 3212, BIOC 3215, BIOC 3220, BIOC 3221, BIOC 3301, BIOC 3302, BIOC 3327, BIOC 3622, BIOC 3662, BIOC 3666

Ecosystems: BIOC 3660, BIOC 3751, BIOC 3752, BIOC 3753, BIOC 4570, BIOC 4667, BIOC 4668, OCEA 3001, OCEA 3002, OCEA 3003, OCEA 3004
Evolution: BIOC 3012, BIOC 3326, BIOC 4010, BIOC 4020, ERTH 2205, ERTH 2210

Applications: BIOC 3060, BIOC 3063, BIOC 3217, BIOC 3225, BIOC 3226, BIOC 3900, BIOC 3901, BIOC 3903, BIOC 3904, BIOC 4045, BIOC 4060, BIOC 4014, BIOC 4028, PSY 2075, PSY 2076, PSY 2204

Methods & Data Skills: BIOC 3615, BIOC 3640, BIOC 4054, BIOC 4061, BIOC 4062, BIOC 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: BIOC 3050, BIOC 4050

Physiology/Anatomy: BIOC 3070/3071/3074/3075, BIOC 3113, BIOC 3326, BIOC 3328, BIOC 3405, BIOC 3407, BIOC 3409, BIOC 4301, FV 3122, FV 3140, FV 4074, FV 4075, FV 4107, FV 4108

Animal Science: BIOC 3061, BIOC 3064, BIOC 3125, BIOC 3127, BIOC 3218, BIOC 3220, BIOC 3221

Organisms in the environment: BIOC 3062, BIOC 3101, BIOC 3600, BIOC 3615, BIOC 3620, BIOC 3623, BIOC 3640, BIOC 3641, BIOC 4270

General: BIOC 3204, BIOC 3404, BIOC 3503, BIOC 3580, BIOC 4061, BIOC 4072, BIOC 4073, BIOC 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: BIOC 3012, BIOC 3013, BIOC 3014, BIOC 3020, BIOC 3066, BIOC 3102, BIOC 3113, BIOC 3125, BIOC 4010, BIOC 4011, BIOC 4012, BIOC 4020, BIOC 4025, BIOC 4041, BIOC 4044, BIOC 4101

Microbiology: BIOC 3012, BIOC 3013, BIOC 3014, BIOC 3015, BIOC 3020, BIOC 3066, BIOC 3102, BIOC 3113, BIOC 3125, BIOC 4010, BIOC 4011, BIOC 4012, BIOC 4020, BIOC 4025, BIOC 4041, BIOC 4044, BIOC 4101

Physiology: FV 3122, PHV 2030

Required in addition to the Biology core: BIOC 2010, CHEM 2441 or CHEM 2442 or 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 enrol in programmes 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 200- and 300- 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 signed into 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 BIOC 1010.03 or BIOC 2020.03 and BIOC 1011.03 or 1021.03 or in SCE 1500/X.30 or 1501.27, 1502.21, 1504.27 or 1505.35.

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**
   (BIOC 1010.03 or 2020.03) and (BIOC 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 programme at the 2000 level. Students should normally complete these core classes in their second year. The core programme 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 programme covers five discipline areas:
   - 1. Cell Biology - BIOC 2020.03
   - 2. Diversity of Organisms (animals, plants and microbes)
     - BIOC 2011.03
     - BIOC 2014.03
   - 3. Ecology - BIOC 2060.03
   - 4. Evolution - BIOC 2065.03
   - 5. Genetics and Molecular Biology - BIOC 2010.03
   Students interested in biochemistry are advised to take the second-year biochemistry class offered by the Biology and Biochemistry and Molecular Biology departments. This class is not part of our core-programme but is a prerequisite for entry into some higher level classes.
   Students majoring in subjects other than Biology can design their own programmes 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.

BIOL 1010.03: Principles of Biology Part 1. 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
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 Programme Requirements for these degrees.

COORDINATOR: T. Maclean
INSTRUCTOR(S): T. Maclean, J. Wright, E. Welsh/ T. Bishop
FORMAT: Lecture 3 hours, lab 2 hours
EXCLUSION: BIOL 1010.03, BIOL 1021.03

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 Programme Requirements for these degrees.

COORDINATOR: M. Leonard
INSTRUCTOR(S): M. Johnston, M. Leonard, S. Walde, E. Welsh/ T. Bishop
FORMAT: Lecture 3 hours, lab 2 hours
EXCLUSION: BIOL 1010.06, 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, symbionts and phagotrophy, 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 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 close to enrolment one week after classes begin.

COORDINATOR: D. Patirajin, J. Van Dommelen
INSTRUCTOR(S): D. Patirajin, J. Van Dommelen
FORMAT: Online (WebCT, 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 1000.06, BIOL 1010.03, SCIE 1501.03, 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 1022.03, 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 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.

COORDINATOR(S): S. Adl, A. Simpson, J. Breckenridge
INSTRUCTOR(S): S. Adl, A. Simpson, J. Breckenridge
FORMAT: Lecture 3 hours, lab 2 hours
EXCLUSION: BIOL 1010.03, BIOL 1021.03, DSP

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 invertibrate 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 the processes and factors that contributed to the origin 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.

COORDINATOR(S): A.S. Chapman
INSTRUCTOR(S): S. Adl, A. Simpson, J. Breckenridge
FORMAT: Lecture 3 hours, lab 2 hours
EXCLUSION: BIOL 1010.03, BIOL 1021.03

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 prokaryotes to bacteria and marine and terrestrial ecology and its environmental issues will be discussed. The class is recommended to students interested in further studies in cell biology, environmental sciences, evolution, marine biology, microbiology, and oceanography.

COORDINATOR(S): A.S. Chapman, S. Adl, J. Simpson, J. Breckenridge
FORMAT: Lecture 3 hours, lab 2 hours
EXCLUSION: BIOL 1010.03, BIOL 1021.03

BIOL 2100.03: Introduction to Biochemistry.
See class description for BIOL 2200.03, in the Biochemistry and Molecular Biology section of this calendar.
BIOL 2060.03: The Flora of Nova Scotia.

This course 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 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 and 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.

See class description for BIOC 2600.03, in the Biology section of this calendar.

BIOL 2065.03: Introduction to Marine Life of Nova Scotia.

This course explores the interrelationships between living organisms in the sea and the ocean environment. The course material provides first an overview of the major processes which determine the functioning of marine ecosystems, such as the absorption of light, photosynthesis, nutrient uptake, respiration, grazing, microbial degradation, production/decomposition of organic particles, and 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.

See class description for BIOC 2600.03, in the Biochemistry and Molecular Biology section of this calendar.

BIOL 2104.03: Evolution.

Evolution is a basic unifying principle in Biology. This course will provide a broad overview of the process of evolution. Beginning with the cell, we will proceed through the mechanisms of evolution such as natural selection and genetic drift. The course will be supplemented with assigned readings of original research articles for discussion in class.

See class description BIOC 3400.03, in the Biochemistry and Molecular Biology section of this calendar.

BIOL 2105.03: Cellular Physiology.

This course will provide the student with an overview of the structure and function of cells and organisms. The course content is organized around the four major components of cells: (1) the cellular cytoskeleton, (2) membranes, (3) organelles, and (4) the extracellular matrix. Students will have the opportunity to study new concepts in cell biology and to evaluate established ideas in the context of recent findings. Some of the topics covered include the processing of proteins and other molecules as they move through the cell, how the cell interacts with its environment and how the cell is maintained. The course will be supplemented with assigned readings of original research articles for discussion in class.

See class description for BIOC 2400.03, in the Biochemistry and Molecular Biology section of this calendar.

BIOL 2106.03: Genes and Molecular Biology.

Genes contain the biological information that specifies the cell and the organism. Therefore, genes, 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; transcription and translation, concern 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.

See class description for BIOC 3200.03, in the Biochemistry and Molecular Biology section of this calendar.

BIOL 2107.03: Advanced Cell Biology.

This course will provide a comprehensive overview of the cell and its components. The course content is organized into three major components: (1) the cellular cytoskeleton, (2) membranes, and (3) organelles. Students will be introduced to the cellular and molecular basis of cell function. The course will be supplemented with assigned readings of original research articles for discussion in class.

See class description for BIOC 3300.03, in the Biochemistry and Molecular Biology section of this calendar.

BIOL 2108.03: Nucleic Acid Biochemistry and Molecular Biology.

This course will provide an overview of the structure and function of DNA, the nucleic acid that comprises genes and chromosomes. The course content is organized into three major components: (1) the structure and function of DNA, (2) transcription and translation, and (3) gene function, the expression of genetic information.

See class description for BIOC 3200.03, in the Biochemistry and Molecular Biology section of this calendar.

BIOL 2201.03: The Flora of Nova Scotia.

This course 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 study project-based studies to understand and appreciate how a full and wise use of the sea's living resources requires and 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.

See class description for BIOC 2600.03, in the Biochemistry and Molecular Biology section of this calendar.

BIOL 2300.03: Dynamics of Biological Oceanography.

This course explores the interrelationships between living organisms in the sea and the ocean environment. The course material provides first an introduction to the major processes which determine the functioning of marine ecosystems, such as absorption of light, photosynthesis, nutrient uptake, respiration, grazing, microbial degradation, production/decomposition of organic particles, and 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.

See class description for BIOC 2600.03, in the Biochemistry and Molecular Biology section of this calendar.

BIOL 2400.03: Evolution.

Evolution is a basic unifying principle in Biology. This course will provide a broad overview of the process of evolution. Beginning with the cell, we will proceed through the mechanisms of evolution such as natural selection and genetic drift. The course will be supplemented with assigned readings of original research articles for discussion in class.

See class description for BIOC 3400.03, in the Biochemistry and Molecular Biology section of this calendar.

BIOL 2500.03: Beginning Biological Oceanography.

This course explores the interrelationships between living organisms in the sea and the ocean environment. The course material provides first an introduction to the major processes which determine the functioning of marine ecosystems, such as absorption of light, photosynthesis, nutrient uptake, respiration, grazing, microbial degradation, production/decomposition of organic particles, and 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.

See class description for BIOC 2600.03, in the Biochemistry and Molecular Biology section of this calendar.

BIOL 2600.03: The Flora of Nova Scotia.

This course 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 and 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.

See class description for BIOC 2600.03, in the Biochemistry and Molecular Biology section of this calendar.

BIOL 2700.03: Cellular Physiology.

This course will provide a comprehensive overview of the cell and its components. The course content is organized into three major components: (1) the cellular cytoskeleton, (2) membranes, and (3) organelles. Students will be introduced to the cellular and molecular basis of cell function. The course will be supplemented with assigned readings of original research articles for discussion in class.

See class description for BIOC 3300.03, in the Biochemistry and Molecular Biology section of this calendar.

BIOL 2800.03: Nucleic Acid Biochemistry and Molecular Biology.

This course will provide an overview of the structure and function of DNA, the nucleic acid that comprises genes and chromosomes. The course content is organized into three major components: (1) the structure and function of DNA, (2) transcription and translation, and (3) gene function, the expression of genetic information.

See class description for BIOC 3200.03, in the Biochemistry and Molecular Biology section of this calendar.

BIOL 2900.03: Advanced Cell Biology.

This course will provide a comprehensive overview of the cell and its components. The course content is organized into three major components: (1) the cellular cytoskeleton, (2) membranes, and (3) organelles. Students will be introduced to the cellular and molecular basis of cell function. The course will be supplemented with assigned readings of original research articles for discussion in class.

See class description for BIOC 3300.03, in the Biochemistry and Molecular Biology section of this calendar.

BIOL 3000.03: Dynamics of Biological Oceanography.

This course explores the interrelationships between living organisms in the sea and the ocean environment. The course material provides first an introduction to the major processes which determine the functioning of marine ecosystems, such as absorption of light, photosynthesis, nutrient uptake, respiration, grazing, microbial degradation, production/decomposition of organic particles, and 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.

See class description for BIOC 2600.03, in the Biochemistry and Molecular Biology section of this calendar.

BIOL 3100.03: Intermediary Metabolism.

See class description for BIOC 3300.03, in the Biochemistry and Molecular Biology section of this calendar.

BIOL 3204.03: Nucleic Acid Biochemistry and Molecular Biology.

This course will provide an overview of the structure and function of DNA, the nucleic acid that comprises genes and chromosomes. The course content is organized into three major components: (1) the structure and function of DNA, (2) transcription and translation, and (3) gene function, the expression of genetic information.
BIOL 3024.03: Microscopy. The course is concerned with biological ultrastructural analysis concentrating on transmission and scanning electron microscopy. The influence of sperms and the structure of the physical and chemical principles governing technical procedures such as fixation, freeze–}

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.

BIOL 3040.03: 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 wildfowl? Determine where the ancestors of northeast 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.

BIOL 3044.03: Ecological Genetics. The interface of heritable variation among living things (genetics) with the 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 wildfowl? Determine where the ancestors of northeast 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.

BIOL 2004.03: Microbial 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 wildfowl? Determine where the ancestors of northeast 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.

BIOL 3060.03: Environmental Ecology. Ecosystems are communities of living organisms and their physical and 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 techniques. 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 discussed, and students will have the opportunity to be an environmental manager and to make decisions concerning a selected ecosystem. Other topics such as environmental...
Biological interactions can be studied from an evolutionary perspective. Using the theory of natural selection as a basis, we will examine biotic interactions, population biology, and conservation biology. This class concentrates on individual interactions, adaptations and processes. Processes, such as nutrient cycling, that occur in ecosystems will receive little attention.

G.E. Hutchinson). This class examines animal behavior from an evolutionary perspective. The overriding theme of the class, therefore, is to evaluate single, multi-species, and ecosystem-based approaches to sustainable management.

This class considers the evolution of communities and ecosystems by focusing on 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.

This class examines plant behavior from an evolutionary perspective. Plants stand still after they have passed the seed stage. Standing still means that plants must survive and make offspring in an environment that is imposed upon them. This class examines the causes and consequences of being a plant from an evolutionary perspective. Ecological interactions between plants and their environment are studied in this course. The overriding theme of the class, therefore, is that of the ecological theatre and the evolutionary play (in the words of G.E. Hutchinson). This class concentrates on individual interactions, adaptations and processes. Processes, such as nutrient cycling, that occur at the level of communities or ecosystems will receive little attention.

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This class concentrates on individual interactions, adaptations and processes. Processes, such as nutrient cycling, that occur in ecosystems will receive little attention.

Ecology refers both to the interactions between organism and environment as well as to the formal scientific study of these interactions. In plants these interactions can involve other plants, as in competition, or animals, as in pollination, herbivory, seed predation and seed dispersal. Plants do not fly, so they pass the seed stage. Standing still means that plants must survive and make offspring in an environment that is imposed upon them. This class examines the causes and consequences of being a plant from an evolutionary perspective. Ecological interactions between plants and their environment are studied in this course. The overriding theme of the class, therefore, is that of the ecological theatre and the evolutionary play (in the words of G.E. Hutchinson). This class concentrates on individual interactions, adaptations and processes. Processes, such as nutrient cycling, that occur at the level of communities or ecosystems will receive little attention.

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BIOL 3113.03: Bacterial Physiology.

The biochemistry of the physiological pathways of bacteria 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 2101.03 or BIOL 2004.03

BIOL 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 course 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, myosin and glia, mechanism of neurotransmitter release, i onotropic 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 course will involve discussing original research papers in class.

INSTRUCTOR(S): P. Côté
FORMAT: Lecture 1.5 hours, seminar 1.5 hours
PREREQUISITE: BIOL/BIOC 2020 (B or better) or permission of instructor
CROSS-LISTING: NESI 3225.03

BIOL 3212.03: Biology of the Algae.

A non-taxonomic examination of the cellular, organismic, population and community organizations of benthic and planktonine 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 or BIOL 2004.03 or permission of instructor
CRB:955-LISTING: MA3 3221.03

BIOL 3215.03: Systematics of Flowering Plants.

This class approaches the flowering plants as organisms. Studies focus on gross morphology rather than anatomy. They provide an introduction to basic botanical terminology and to the concepts and the scientific conventions concerned with plant description, classification and nomenclature. Laboratory exercises centre on the identification and characterization of flowering plants familiar through the use of diagnostic keys. Field ecologists, environmental biologists, and naturalists will find the applied approach to this class broadens their general knowledge of plants and enables them to identify plant specimens. Each student prepares a small collection of pressed plants.

INSTRUCTOR(S): P. Taschereau
FORMAT: Lecture 3 hours, lab 3 hours
PREREQUISITE: Biology 2002.05 or BIOL 2003.03, or instructor's consent

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 or 1020.03 (C- or better) AND BIOL 1011.03 or 1021.03 (C- or better), OR DSIP (SCIE 1500.30/C or 1510X/Y.27 or 1502X/Y.21, or 1503X/Y.21 or 1504X/Y.33/C or 1505X/Y.33)(C- or better)

BIOL 3220.03: Land Plants.

A survey of the biology, evolutionary history of the main divisions of land plants including: conifers and their gymnosperm allies; ferns, horsetails, grass, and other club mosses. Flowering plants are excluded. Evolutionary adaptations to the land will be emphasized. Considering the fossil record, we will evaluate evidence for the origin of leaves, the seed habit, and a variety of forms. The class will be useful to those students considering the teaching profession, graduate study or who are interested in broadening their general knowledge.

INSTRUCTOR(S): P. Taschereau
FORMAT: Lecture 2 hours, lab 3 hours
PREREQUISITE: BIOL 1010.06 or BIOL 1010.03 or BIOL 1021.03 or BIOL 1021.03 or DSIP (SCIE 1500.30/C or 1510X/Y.27 or 1502X/Y.21, or 1503X/Y.21 or 1504X/Y.33/C or 1505X/Y.33)(C- or better)

BIOL 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 small group of specialists known as phycologists. In this class, algal diversity is presented by one of the phycologists. Emphasis is placed primarily on laboratory and field work with both benthic and planktonic algae. Lectures cover the organization of algal diversity into the Linnaean 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: MA3 3221.03
EXCLUSION: BIOL 3221.03

BIOL 3225.03: Plants in the Human Landscape.

This course covers the use of plants for human recreation and aesthetics; in gardens, public parks, suburban and urban landscapes. Topics include: garden design, choice of plant material, management, edible landscaping, use of horticulture as therapy and plants and human health. Course will involve field trips and projects. Students will be expected to complete a design project as part of the coursework.

INSTRUCTOR(S): D. Bazavid
FORMAT: Lecture, tutorial
PREREQUISITE: BIOL 1010.03 or BIOL 1021.03 (C or better) and BIOL 1011.03 or BIOL 1021.03 (C or better) or DSIP or PLAN 2001.03
CROSS-LISTING: PLAN 3225

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, grapes, olive, pineapple and strawberries), vegetables (alliums, broccoli, legumes, lettuce, potato and tomato) and industrial crops (cocoa, coffee, cotton, hemp, rubber and sugar), and the development of newer bioproducts (bio-fuels, etc) from plant sources. Course includes field trips and laboratories.

INSTRUCTOR(S): D. Bazavid
FORMAT: Lecture/lab
PREREQUISITE: BIOL 1010.03 or BIOL 1021.03 (C or better) and BIOL 1011.03 or BIOL 1021.03 (C or better)
CROSS-LISTING: ENV 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...
BIOL 3435X/Y.06: Anatomy. See class description for ANAT 2170X/Y.06 in the Anatomy and Neurobiology section of this calendar. Students wishing to register for this class must consult with the instructor and receive his/her signature. NOTE: 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.W. Cartier and R.J. Wassersug (Anatomy and Neurobiology Dept.)
FORMAT: Lecture 1 hour, lab 4 hours
PREREQUISITE: Permission of instructor
CROSS-LISTING: ANAT 2170X/Y.06

BIOL 3440.03: Neuroanatomy. See class description for ANAT 2100.03 in Anatomy and Neurobiology section of this calendar.
INSTRUCTOR(S): W.H. Baldridge and F.M. Smith (Anatomy and Neurobiology Dept.)
FORMAT: Lecture/lab 3 hours
PREREQUISITE: BIOL 2002X/Y.06 (or permission of instructor)
CROSS-LISTING: ANAT 2100.03, NSCI 3440.03

BIOL 3503X/Y.06: Introduction to the History of Science. This class offers a broad introductory survey of the central developments in the history of Western science, examining its most revolutionary figures from the Greeks to the modern period. The work of each of these figures had such a profound influence upon their own eras and upon subsequent developments, both in the sciences and in other areas of human endeavor, that students in the sciences will recognize that their contributions have been woven permanently into the fabric we call science. Students in the humanities will find the class useful in placing science in a cultural, social and historical context. It may be used as a general arts or science elective and as an introduction to further study in history of science, but not as an elective for the joint (combined) honours degree in History of Science and Technology. CROSS-LISTINGS: HIST 304X/Y.06, HIST 320X/Y.06, SCI 2000X/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): G. McOuat and staff

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; fish/hub culture; molluscs 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. Herbigner
FORMAT: Lecture 3 hours, Field trips (2 Sundays)
PREREQUISITE: BIOL 2001.03 or BIOL 2003.03
CROSS-LISTING: ANAT 3420.03

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, extinctions and land-use patterns. Here, inter-related 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
BIOL 3615.03: Methods in Ecology.

This summer 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, includes a wide range of ecological questions, techniques, organisms, and techniques. Specific topics may include the impacts of habitat fragmentation on the population distributions of organisms, animal orientation and movement, disturbance and succession in forests, function of animal behavior, and microbial ecology. Students conduct, 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 honorees 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: BICL 2000.03 or DISP 2003 and at least one divinity class (e.g. BICL 2001 or 2002 or 2003 or 2004). RECOMMENDED: STAT 1060.03
CROSS-LISTING: ENV 3615
EXCLUSION: BICL 3614

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. Field 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: Field and Lab intensive
PREREQUISITE: BICL 2000.03 or BIOL 2060.03 and (STAT 1060.03 or DISP)
CROSS-LISTING: ENV 3620

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 and community dynamics. Specific topics may include identification of species by sight and sound, and conducting experiments. Lectures will provide background information, but most of the class will be spent in the field. 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.

FORMAT: Lecture 3 hours/tutorial 1 hour
PREREQUISITE: BICL 1010.06 or BIOL 1010.03 or 1020.03 and BIOL 1010.03 or 1020.03 or SCIE 1000.30, 1500.27, 1502.21, 1803.21, 1504.27, or 1510.03 or permission of instructor
EXCLUSION: BICL 3410.03 taken in 91.92 or 92.93

BIOL 3632.03: 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.

FORMAT: Field and Lab intensive
PREREQUISITE: BICL 2000.03 and STAT 1060.03 (or DISP)
CROSS-LISTING: ENV 3624.03, MARI 3624.03

BIOL 3625.03: Urban Ecology.

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. 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.

FORMAT: Field and Lab intensive
PREREQUISITE: BICL 2000.03 and STAT 1060.03 (or DISP)
CROSS-LISTING: ENV 3626.03, MARI 3626.03

BIOL 3626.03: Field Studies of Marine Mammals.

This summer class provides first-hand experience in studying animal behavior in the field, so that upon completion, students should be able to conduct field studies of their own. Topics include focusing questions, describing behavior, choosing sampling strategies, analyzing data, and conducting experiments. Lectures will provide background information, but most of the class will be spent in the field. Students will design and conduct independent projects to test a functional hypothesis about the behavior 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.

FORMAT: Lab and field intensive
PREREQUISITE: BICL 2000.03 and STAT 1060.03 (or DISP)
CROSS-LISTING: ENV 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 conduct field studies of their own. Topics include focusing questions, describing behavior, choosing sampling strategies, analyzing data, and conducting experiments. Lectures will provide background information, but most of the class will be spent in the field. Students will design and conduct independent projects to test a functional hypothesis about the behavior 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.

FORMAT: Lab and field intensive
PREREQUISITE: BICL 2000.03 and BIOL 3602.03 (or similar behaviour class), STAT 1060.03
CROSS-LISTING: MARI 3630.03
exercises will involve various species from insects to mammals, and various behaviours, including visual signalling, 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: Field intensive

PREREQUISITE: BICL 3662.03 or PSYN 2160.03 or 5610X/Y.06 or permission of instructor

BIOC 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: BICL 2600.03 and (STAT 1060.03 or DFRP) or their equivalents or permission of instructor

CROSS-LISTING: MARI 3622.03, ENVS 3622.03

BIOL 3644.03: 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 laboratories. 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, and 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 each will contribute a species profile.

FORMAT: Field and lab intensive

PREREQUISITE: BICL 2600.03 and (STAT 1060.03 or DFRP)

CROSS-LISTING: ENVS 3644.03, MARI 3644.03

EXCLUSION: BICL 3622.03, 3643.03

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, photography), dive log 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 have successful (preferably at least advanced open water, > 15 recent open water dives), have completed a full diving medical, be admitted to the Dalhousie Scientific Diving Programme (contact the University Diving Officer), and be comfortable under water in cold water equipment.

INSTRUCTOR(S): R. Scheibling, A. Purdy, J. Lindley

FORMAT: Field Lab and Lecture

PREREQUISITE: BICL 2001.03 or BIOL 2003.03, STAT 1060.03 (or DFRP) internationally recognized diving certification, diving physical;

recommended: BICL 3222.03, 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 monitoring and understanding marine biodiversity, measurement of environmental factors, and fundamentals of sampling and experimental design.

INSTRUCTOR(S): R. Scheibling

FORMAT: Lecture, Lab

PREREQUISITE: BICL 2600.03, BIOL 2001.03 or BIOL 2003.03

CROSS-LISTING: MARI 3761.03

BIOL 4010.03: Genes and Genomes.

See class description for BICL 4403.03, in the Biochemistry and Molecular Biology section of this calendar.

BIOL 4011.03: Gene Expression.

See class description for BICL 4404.03, in the Biochemistry and Molecular Biology section of this calendar.

BIOL 4013X/Y.06: Scientific Writing and Advanced Laboratory in Biochemical Techniques.

This course 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 each from three sections. 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. Liau and L. Murray.

NOTE: Students taking this class must register in both X and Y terms; credit will be given only if both are completed concurrently. 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: BICL 3200.03, 3300.03, 3400.03 and consent of coordinator

CROSS-LISTING: BICL 4003X.06, BICL 5610.06, MICI 4610X/Y.06, MICI 5610X/Y.06

EXCLUSION: BICL 4003, BICL 5610, BICL 4013/4012, BICL 4013

Biology 411
BIOL 4020.03: Comparative Cell Biology.
Lectures provide an evolutionary perspective on the functions and diversity of organelles in eukaryotes. Topics include the prokaryote to eukaryote transition, the specialization of organelles through protein phylogenies, the cytoskeleton and inheritance of cell shape, the origin of cell-cell recognition and communication, the origin of multicellularity and development. Weekly supplementary reading will be discussed in class.
INSTRUCTOR(S): S. Adl
FORMAT: Lecture, tutorial 1 hour
PREREQUISITE: BIOL 3400.03 or permission of instructor.
CROSS-LISTING: BIOL 5045.03

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 ecology, behavioral and evolutionary studies of wild organisms. Students will be trained in a variety of molecular techniques, including DNA extraction, quantification, 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.
FORMAT: Lab (2 x 3 hr) + 1 lecture
PREREQUISITE: BIOL 2020.03, BIOL 2040.03 or permission of instructor
CROSS-LISTING: BIOL 5024.03
Pre or Co-REQUISITE: BIOL 3400.03 or 3402.03

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 immune and cancer, genetic technology and medicine, ethical and social issues related to medical genetics. This course will provide a practical introduction to molecular genetic techniques that have gained wide use in ecology, behavioral and evolutionary studies of wild organisms. Students will be trained in a variety of molecular techniques, including DNA extraction, quantification, 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.
FORMAT: Lab (2 x 3 hr) + 1 lecture
PREREQUISITE: BIOL 2020.03, BIOL 2040.03 or permission of instructor
CROSS-LISTING: BIOL 5024.03
Pre or Co-REQUISITE: BIOL 3400.03 or 3402.03

BIOL 4041.03: Bioinformatics.
See class description for BIOC 4011.03 in the Biochemistry section of this calendar.

BIOL 4045.03: Resource Conservation Genetics.
Increased use of natural resources threatens the sustainability of the world’s genetic resources. The principles, concepts and practices of population and molecular genetics and biotechnology have an increasing role to play in the conservation and sustainable management of genetic resources. This class will focus on the application of genetic principles, concepts and biotechnologies in natural resource management, conservation and restoration. The topics will include: examination of the concepts of genetic resources, genetic biodiversity and other population genetic parameters, demography, conservation, sustainable management, ecological restoration, and minimum viable population size; genetic and reproductive indicators for population viability; exploration, evaluation, utilization and conservation of genetic resources; genetic consequences of habitat fragmentation, resource management practices, domestication, climate change, and natural disturbance; challenges and opportunities for sustainable management of genetic resources, including deployment of genetically modified organisms, and strategies for conservation and sustainable management of genetic resources, including threatened and endangered species. A number of case studies will be discussed. Besides lectures, this class will include student presentations of current resource conservation issues, with follow up discussion and evaluation of the potential roles of genetics, molecular biology, and biotechnology in resolving the issues.
INSTRUCTOR(S): C.P. Rapra
FORMAT: Lectures, student presentations and group discussion 3 hours
PREREQUISITE: BIOL 2020.03 or equivalent, or instructor’s permission
CROSS-LISTING: BIOC 5061.03, MARI 4060.03

BIOL 4050.03: Advanced Animal Development.
This class is the follow-up to BIOL 3051.03 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 developmental mechanisms. Topics covered include cell determination and differentiation, morphogeneses, 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): H. Whitehead
FORMAT: Lectures 3 hours
PREREQUISITE: BIOL 2020.03
CROSS-LISTING: BIOL 5603.03, 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. 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 (C- or better), offered to well prepared honors students as well as graduate students
CROSS-LISTING: BIO 5603.03

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 details. Students will analyze real and realistic data sets, and be assessed on write-ups of these analyses.
INSTRUCTOR(S): S. Whitehead
PREREQUISITE: STAT 2080.03 or ECON 2280.03
CROSS-LISTING: BIO 5603.03

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 GLM, random/mixed effects models, Bayesian models and how to use them in large data, and will work with dynamic modelling approaches. At the end of this course, students should be able to formulate research problems as models, create
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 BIOL 2101.03 or MCI 2100.03

BIOL 4104.03: Environmental Microbiology.

Micro-organisms are an essential component of every ecosystem. This class will examine the role of micro-organisms in the terrestrial and aquatic environments. The physiological state of the micro-organisms, nutrient cycling, decomposition processes, and microbial interaction will be examined. In addition, special topics will include extreme environments and the fate and potential effects of “foreign” and genetically engineered micro-organisms.

INSTRUCTOR(S): Staff

PREREQUISITE: BIOL 2004.03 or BIOL 2101.03 or MCI 2100.03 and CHEM 2401.03/2402.03

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 + WebCT

PREREQUISITE: BIOL 2004.03 or BIOL 2101.03, or MCI 2100.03, or CHEM 2401.03/2402.03, or BIOL 3502.03

BIOL 4130.03/5302.03, BIOL 5302.03

BIOL 4302.03: Core Concepts in Human General Physiology.

See class description for PHYL 4210.03 in the Physiology section of this calendar.

BIOL 4320.03: Core Concepts in Medical Physiology.

See class description for PHYL 4222.03 in the Physiology 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 replacement, effluent impacts, 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
BIOL 4666.03: Benthic Ecology. See class description for MARI 4664.03 in the Marine Biology section, or OCEA 4365.03 in the Oceanography section of this calendar.

BIOL 4800/X.Y.06: Special Topics. Available as 4800.03, 4807.03, 4808X/Y.06, 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://biology.dal.ca/classes/classes/specialtopics.html

NOTE: Students taking 4800.X.Y.06 must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

BIOL 4900/X.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 programmes. 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 grade of this course 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. Fobahidik

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.

BIOL 8880.00: Honours Qualifying Examination. This is an additional requirement of all Biology and Marine Biology Honours students and is normally taken concurrently with BIOL 4800X/Y.06 (4801.03/4902.03). Students are required to attend weekly seminars for two academic terms in which they and other students in BIOL 4800X/Y.06 (4801.03/4902.03) give oral presentations of their Honours research projects. Instructional seminars in thesis writing, oral presentations, poster preparation, and other skills are also given. Registration 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.

INSTRUCTOR(S): P. Collins, A. Pinder, B. Fobahidik

FORMAT: Weekly seminars 1.5-3.0 hours

CROSS-LISTING: SCIE 4880.00

RESTRICTION: Honours students normally in their final year of study.

BIOL 8891.00: Co-op Work term I. PREREQUISITE: SCIE 2800.03

BIOL 8892.00: Co-op Work term II. PREREQUISITE: SCIE 2800.03
BIOL 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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Chairperson of Department
Pincock, J.A.

Graduate Coordinator
Barford, N.

Co-op Advisor
Thompson, A.

Faculty Undergraduate Advisors
Doucette, A.A. (494-3714)
Grundy, K.B. (494-3408)
Guy, J.O. (494-7079) (Coordinator)
Laws, P. (494-6435)
Thompson, A. (494-6421) (Co-op Academic Advisor)

Professors Emeriti
Aue, W.A., PhD (Vienna), FCIC
Coxon, J.A., BA (Cambridge), MSc, PhD (University of East Anglia)
Koop, O., BSc (Laval), FCIC
Kwok, J.C.T., BSc, MSc, PhD (Amsterdam), FCIC

Professors
Beebe, A., BSc (Queen's), MSc, PhD (McMaster)
Boyd, R.J., BSc (UBC), PhD (McGill), FCIC, Alexander McLeod Professor of Chemistry
Barford, N., BSc (Wales, Cardiff), PhD (Calgary), Harry Shirreff Professor of Chemical Research, Canada Research Chair in Synthesis and Characterization of Materials and Canada Council Killam Research Fellow
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 (War), PhD (Toronto), FCIC, Director of SLOWPOKE and Faculty of Science Killam Professor of Chemistry
Dahie, J.R., BSc (Dal), MSc, PhD (UBC), Canada Research Chair in Battery and Fuel Cell Materials, NSERC/1M Canada Inc. Industrial Research Chair and cross-appointment with Physics
Grindley, T.R., BSc, MSc, PhD (Queen's), FCIC
Pacey, F.D., BSc (McGill), PhD (Toronto), FCIC
Pincock, J.A., BSc, MSc (Man), PhD (Toronto), FCIC, Faculty of Science Killam Professor of Chemistry
Shaver, A., BSc (Carleton), PhD (Massachusetts Institute of Technology)
Warror, D.F., MD, PhD (Queen's), FRoyal VC (Dal), FCIC, Canada Research Chair in Clinical Neuroscience and cross-appointment with 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
Zwanziger, J.W., BA (Chicago), PhD (Cornell), Canada Research Chair in NMR Studies of Materials, Director, AILMRIC and cross-appointment with Physics
Associate Professors

Cassens, F.L., BSc (York), PhD (Toronto)
Grundy, K.R., BSc, MSc, PhD (Auckland)
Guy, B.D., BSc (E. Mel.), PhD (Carleton)
Jakeman, D.L., BSc, PhD (Sheffield), cross-appointment with College of Pharmacy
Schepp, N.P., BSc, PhD (Toronto)
Strachan, M., BSc, PhD (McMaster)
Thompson, A., MSc (Edin.)., PhD (Sheffield)
White, R.L., BSc (Dal), PhD (McMaster), CIC

Assistant Professors

Andresen, H., BSc, PhD (Kiel)
Darvey, S., BSc, MSc, PhD (UNB), MD (Dal), FRCP(c), cross-appointment with Academy and Neuropsychology
Doucette, A.A., BSc (Dal), PhD (Alberta)
Martin, R.V., BS (Cornell), MSc (Oxford), PhD (Harvard), cross-appointment with the Department of Physics and Atmospheric Sciences
Turekian, L., BSc (MIT), PhD (Berkeley)
Zhang, P., BSc, MSc (Shanghai, China), PhD (Western)

Senior Instructors

Richards, S.A., BSc (NSU), BEd, MBA (Dal)
Byers, C.M., BSc (Dal)
Gabor, J., MSc (Budapest)
Silvert, D.J., MSc (CFWRL)
Thompson, K.E., BSc (Acadia), MBA (SMU)

Instructors

Alman Mean, C., BEng (Superior Polytechnic Institute of Havana), MSc, PhD (Dal)
Laro, J.A., BSc (Acadia), MSc (Dal), BEd (MSU)

Adjunct Professors

Aguero, M.A.S., BA, BSc, MSc (Queen’s), PhD (Carleton), St. Francis Xavier University, Antigonish, NS.
Garnswnt, J.S., BSc, MSc, PhD (Dalhal), Dalhousie University, Halifax, NS.
Hollux, J., BSc (Montreal), MSc, PhD (UBC), Bedford Institute of Oceanography, Dartmouth, NS.
Kothe, C.D., BSc (MUN), PhD (Alberta), Cape Breton University, Sydney, NS.
Kiceniuk, J., BSc (Alberta), MSc, PhD (UK), Dept. of Fisheries and Oceans, St. John’s, NL.
Marangoni, D.G., BSc (Acadia), PhD (Dal), St. Francis Xavier University, Antigonish, NS.
Mattu, C., B. Pharm. Sci. (Alexandria U, Egypt), Graduate Diploma in Health and Hospital Administration (National Institute of Management, Egypt), PhD (McMaster)
Pinto, D.M., BSc (McGill), PhD (Alberta), Institute for Marine Biosciences, Halifax, NS.
Pitett, J.R., BSc (SMU), PhD (MUN), Mount Saint Vincent University, Halifax, NS.
Ramalh, L., BA (Colorado), MA/PhD (Princeton), Dalhousie University, Halifax, NS.
Reso, J.M., BSc, MSc (Acadia), PhD (McGill), Acadia University, Wolfville, NS.
Sivykiv, R., BSc, MSc (Lakeland), PhD (UBC), Institute for Marine Biosciences, Halifax, NS.
Volmer, D.A., MS (Humboldt), PhD (Hannover), Institute for Marine Biosciences, Halifax, NS.
Worm-Geurts, E., Vordiplom (Mathematics), Diploma (Chemistry), PhD (Westfälische Wilhelms-Universität Münster, Germany), Dalhousie University, Halifax, NS.

Sessional Appointments

Gonzalez, C.M., BSc (Havana, Cuba), PhD (Dal)
Kosic, J.T., BSc, MSc, PhD (Amsterdam), FCIC
Moya Baranu, R., BSc, MSc, PhD (Dal)
Perrott, A., BSc, PhD (Dal), BEd (Acadia)
Tadko, K., BSc (Queen’s), PhD (Dal)

Postdoctoral Fellows, Research Associates/ Assistants

Ba Han, PhD (Yangtze University, China); Bartsen, C.J., BSc (U of Georgia), PhD (Dal)
Cai, J., BSc (China Pharmaceutical U)
Carter, M., BSc, MSc (Queen’s), BEd (Ottawa), PhD (Dal)
Clarke, H.D., BSc (Dal)
Cordes, R.L., BSc (Dal), MSc (UBC)
Dorat, J., BSc, MSc (McGill), PhD (Queen’s)
Gemmell, P.E., BSc, MSc (Dal), PhD (U of Hannover)
Gonzalez, C.M., BSc (Havana, Cuba), PhD (Dal)
Graham, C.L., BSc (McAllister)
Graupner, M.H., MSc, PhD (University Rennes I, France)
Heasman, M., BSc (Dal)
Jacob, S., BSc (U of Philippines), PhD (Florida Institute of Technology)
Jahns, J., BSc, MSc (Karachi U, Pakistan), PhD (Heidelberg, Germany)
Karpukhina, N.G., Diploma, PhD (St. Petersburg State U, Russia)
Lu, E., BSc (Wuhan U of Technology), PhD (Dalhousie U of Technology)
Lubell, W., MSc (University of California at Berkeley)
MacDonald, L., BSc (Dal), PhD (U of Alberta)
Mattu, C.T., B. Pharm. Sci. (Alexandria U, Egypt), Graduate Diploma in Health and Hospital Administration (National Institute of Management, Egypt), PhD (McMaster)
Meier-Stephenson, F., BSc (Chemical Institute Dr. Fled, Stuttgart), MSc (U of Applied Sciences Lübeck, Germany)
Mysyk, R., BSc, MSc (Dominet National Technical U), PhD (Institute of Physical and Organic Chemistry, National Academy of Sciences of Ukraine)
Paul, N., BSc, MSc (Kumasi Polytechnic, Kumasi, Ghana, India), PhD (Bundeslandund U, Flensburg, UP, Germany)
Perock, A.L., BSc, MSc (Man), BFA (NSCAD)
Regourd, J., Maitrise (U Poitiers, France), PhD (U of Bath, UK)
Sadeghi-Khormali, A., BSc (U of Mashhad), PhD (U of Nottingham)
Saez Diaz, R., BSc, MSc (U of Barcelonan, Spain), PhD (U of Bremen-Germany)
Sanzoukos, M., IRIS Ing (Polytechnic U of Bucharest, Romania), MSc (Carleton)
Watson, C., BSc (Queen’s)
Westgren, J.J., BSc, MSc, PhD (LMU, Munich, Germany)
Wu, F., PhD (Research Institute of Petroleum Processing, Beijing, P.R. China)
Zhang, L., BSc, MSc (Shandong Medical U), PhD (Oceanology, CAS)
Zhong, X., BSc (Dal)

Visiting Scientists

Fukushima, M., DSc (Tohoku U, Japan), Ishihara, M., PhD ( Sanford U, Florida)
Furue, H., BSc, MSc (Osaka), PhD (Queen’s)
Graubner, M.H., MSc, PhD (University Rennes I, France)
Heasman, M., BSc (Dal)
Karpukhina, N.G., Diploma, PhD (St. Petersburg State U, Russia)
Lu, E., BSc (Wuhan U of Technology), PhD (Dalhousie U of Technology)
Lubell, W., MSc (University of California at Berkeley)
MacDonald, L., BSc (Dal), PhD (U of Alberta)
Mattu, C.T., B. Pharm. Sci. (Alexandria U, Egypt), Graduate Diploma in Health and Hospital Administration (National Institute of Management, Egypt), PhD (McMaster)
Meier-Stephenson, F., BSc (Chemical Institute Dr. Fled, Stuttgart), MSc (U of Applied Sciences Lübeck, Germany)
Mysyk, R., BSc, MSc (Dominet National Technical U), PhD (Institute of Physical and Organic Chemistry, National Academy of Sciences of Ukraine)
Paul, N., BSc, MSc (Kumasi Polytechnic, Kumasi, Ghana, India), PhD (Bundeslandund U, Flensburg, UP, Germany)
Perock, A.L., BSc, MSc (Man), BFA (NSCAD)
Regourd, J., Maitrise (U Poitiers, France), PhD (U of Bath, UK)
Sadeghi-Khormali, A., BSc (U of Mashhad), PhD (U of Nottingham)
Saez Diaz, R., BSc, MSc (U of Barcelonan, Spain), PhD (U of Bremen-Germany)
Sanzoukos, M., IRIS Ing (Polytechnic U of Bucharest, Romania), MSc (Carleton)
Watson, C., BSc (Queen’s)
Westgren, J.J., BSc, MSc, PhD (LMU, Munich, Germany)
Wu, F., PhD (Research Institute of Petroleum Processing, Beijing, P.R. China)
Zhang, L., BSc, MSc (Shandong Medical U), PhD (Oceanology, CAS)
Zhong, X., BSc (Dal)

I. Introduction

Chemists study the properties of molecules, atoms, and ions, and how they 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, cosmetology, 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 Programmes

The Honours in Chemistry, Joint Honours in Chemistry and Biochemistry and 20-credit Major in Chemistry as described in this calendar, are programmes accredited by the Canadian Society for Chemistry (CSC). CSC accreditation ensures that graduates of these programmes 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 requirements described below, students must satisfy the requirements outlined in the Degree Requirements section, page 45 of this calendar.

#### A. 20-credit Honours in Chemistry

This programme 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 selections.

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**

<table>
<thead>
<tr>
<th>Level</th>
<th>Course Code/Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>CHEM 1011/1012 or 1021/1022 or 1041/1042 or Science 1501 or 1510.</td>
</tr>
<tr>
<td>2000</td>
<td>CHEM 2101.03, 2201.03, 2301.03, 2401.03, 2402.03.</td>
</tr>
<tr>
<td>3000</td>
<td>CHEM 3101.03, 3201.03, 3301.03, 3401.03, 3501.03, 3402.03, 3502.03.</td>
</tr>
<tr>
<td>4000</td>
<td>CHEM 4101.03, 4201.03, 4301.03, 4401.03, 4501.03, 4601.03, 4402.03, 4502.03, 4602.03.</td>
</tr>
</tbody>
</table>

#### B. Combined Honours Programme

The department has designed a number of programmes 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, 2401.03, 2402.03, 2404.03, and 2405.03 must be part of any combined honours programme 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 programme. 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) programme is accredited by the Canadian Society of Chemistry. Students who wish to obtain a BSc Major (20 credit) in Chemistry must complete the core programme 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 3101.03
- CHEM 2302.03
- CHEM 2401.01
- CHEM 2402.01
- CHEM 3101.01
- CHEM 3201.01
- CHEM 3601.01

**Option A**

- CHEM 3202, CHEM 3401, and CHEM 3402 and three chemistry electives at the 3000/4000 level.

**Option B**

Any two of CHEM 3202, CHEM 3401, and CHEM 3402 and CHEM 4801 and three chemistry electives at the 3000/4000 level.

**Option C**

One of CHEM 3202, CHEM 3401, and CHEM 3402 and CHEM 4801 or 4802 or CHEM 4901 and four chemistry electives 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 programme must also take:

- MATH 1000.03 and MATH 1010.03
- PHYC 1100X/Y.06 or equivalent
- One additional credit in mathematics at the 2000 level or higher.
Students who wish to have Chemistry as the primary subject (6 or more credits) of this programme 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 programme 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 and Immunology, Neuroscience or Psychology for 6+ credits) the required chemistry classes 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 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 2401.03
- CHEM 2402.03
- 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 3/4xx.

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 programme. Students should also consult the Department’s Handbook “Undergraduate Studies in Chemistry” for more information.

### E. Co-operative Education Programme in Chemistry

Co-operative Education in Science (Science-Co-op) is a programme 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 endeavors 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 programme each year. Students must be Canadian citizens or landed immigrants. Students may be admitted to the 20-credit BSc Major programme when they have successfully completed all the classes listed below before 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 programme. Students must register before August 1, but should, however, register their intention to enter the programme 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](http://www.sciencecoop.dal.ca)

### D. 20-credit Double Major Programme

The Department has a number of programmes 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 and Immunology, Neuroscience, Physics, Psychology, and Statistics.

Students who wish to have Chemistry as the primary subject (6 or more credits) of this programme 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 programme 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 and Immunology, Neuroscience or Psychology for 6+ credits) the required chemistry classes 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 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 2401.03
- CHEM 2402.03
- 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 3/4xx.

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 programme. Students should also consult the Department’s Handbook “Undergraduate Studies in Chemistry” for more information.

### Departmental Requirements

**Year 1**

**Regular Session**

- CHEM 1101.03 (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
- CSCE 1100.03 or 1202.03
- MATH 2400.03 or CSCE 1101.03
- SCIE 2800.00
- Electives (three half credits)

These classes must normally be successfully completed before proceeding to Work Term 1.

**Summer: no academic classes specified**

**Year 3**

- CHEM 2101.03
- CHEM 2201.03
- CHEM 2301.03
- CHEM 2302.03
- CHEM 2401.03
- CHEM 2402.03
- CSCE 1100.03 or 1202.03
- MATH 2400.03 or CSCE 1101.03
- Electives (three half credits)

**Year 4**

- Fall: CHEM 8891.00 (Work Term II)
- Winter: CHEM 8892.00 (Work Term II)
Minor in Business
A Minor in Business may be completed as part of an Honours or Major degree, 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 programmes. The requirements are as for the appropriate degree programme 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 78.

Minor in Community Design
The minor in community design is available to students registered in the BAdm, BSc 20-credit major and honours programmes. The requirements are as for the appropriate degree programme with completion of the following classes:
- PLAN 1001.03 and PLAN 2002.03
- Either PLAN 2001.03 or PLAN 2302.01
- Seven additional half-classes (21 credit hours) in PLAN classes. See page 88 for further details

Minor in Computer Science
A Minor in Computer Science is available as part of an Honours or Major BSc degree, of which involves 20 credits. Consult the Degree Requirements section, page 44 for details

Minor in Environmental Studies
A Minor in Environmental Studies may be completed as part of an Honours or Major degree, of which involves 20 credits. Consult the Environmental Programmes 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
- MATH 1010.03, and PHYC 1100.06
- In addition to these classes, students are required to take MATH 1000.03 and PHYC 1000.03 in chemistry. The required classes are:
  - At least one credit at the 3000/4000 level in chemistry.
- All Chemistry classes must be passed with a grade of at least C-

G. Concurrent BSc/DipEng
The Faculty of Engineering and the Faculty of Science have agreed to offer a combined BSc/DipEng programme. This programme 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.

II. Class Descriptions
The credit hour extension following the class number, e.g., 1000.06 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 be not 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. Only 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

For details, consult the Degree Requirements section for the BSc (15-credit), the BEDS, and the MArch degrees.
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 tests available to the students.

CHEM 1000X/Y.06: The Chemical World.

This class is intended for students who wish 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 or without 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 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 concurrently.

INSTRUCTOR(S): T.S. Cameron
FORMAT: 4 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 or 1500X/Y.06


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. Specific 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 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 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 concurrently.

INSTRUCTOR(S): T.S. Cameron
FORMAT: Lecture 3 hours, lab 3 hours
EXCLUSION: Credit will be given for only one of the following combinations: 1011.03, 1012.03 or 1021.03, 1022.03 or 1041.03, 1042.03 or 1410.03.

CHEM 1022.03: Engineering Chemistry II.

This class builds on the principles of CHEM 1021.03 to provide a broader background 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 1011.03 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): T.S. Cameron
FORMAT: Lecture 3 hours, lab 3 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 ionic 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 3 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 3 hours
PREREQUISITE: CHEM 1011.03/1012.03 or equivalent; MATH 1000.03 and 1010.03

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 concepts of their reactivity. Topics include bonding, acid-base properties, stereochemistry and spectroscopy (IR and 1H and 13C NMR) of organic molecules. In addition, the principles of reactivity and mechanisms will be introduced through the chemistry of alcohols. Laboratory experiments 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 2401.03

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, alkenes, 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 2401.03

CHEM 2441.03: Foundations of Organic and Biological Chemistry. This class is designed primarily to help students in the life sciences develop an appreciation for the chemistry of molecules which are important in 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 the impact both on human and aquatic organisms. The chemicals to be discussed include formaldehyde, chlorinated hydrocarbons, pesticides, PAHs, and heavy metals.

INSTRUCTOR(S): R.D. Gay

FORMAT: Lecture 3 hours
PREREQUISITE: CHEM 1011.03/1012.03 or equivalent
EXCLUSION: CHEM 2505.03

CHEM 3103.03: Intermediate Inorganic Chemistry. 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 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 3 hours
PREREQUISITE: CHEM 2101.03
EXCLUSION: CHEM 3101.03, CHEM 3102.03

CHEM 3201.03: Analytical Mass Spectrometry and Separations. 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
presented. Laboratory experiments illustrate the above techniques with practical examples.

INSTRUCTOR(S): Staff
FORMAT: Lecture 3 hours, lab 4 hours
PREREQUISITE: CHEM 2301.03

CHEM 3202.03: Instrumental Methods of Analysis.
Modern science relies on the use of techniques for the analysis of a wide variety of samples. The chemicals of science are analyzed using techniques that include spectrometry, gas chromatography, and capillary electrophoresis. These techniques are presented. Laboratory experiments illustrate the above techniques with practical examples.

INSTRUCTOR(S): T.B. Grindley
FORMAT: Lecture 3 hours, lab 4 hours
PREREQUISITE: CHEM 2401.03/2402.03 (or equivalent)

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 principles of quantum mechanics are presented and applied to simple 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 2002.03 or 2030.03 and CHEM 2301.03 or 2301.03 and 2302.03

CHEM 3302.03: 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: gasses, liquids, films, liquid crystals, perfect crystals, defective solids, glasses. The principles of important processes such as photography and X-rayography will be explained.

INSTRUCTOR(S): M.A. White
FORMAT: Lecture 3 hours
PREREQUISITE: CHEM 2301.03 or PHYS 2520.03 or PHYS 3200.03 or EARTH 2001.03/2002.03 or ENGR 2000.03 or permission of the instructor
CROSS-LISTING: PHYS 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 2401.03/2402.03 and covers many of the topics included in the last third of modern organic chemistry texts. Topics presented include alkenes, aromatics, heterocyclics, 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): T.B. Grindley
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. The use of these 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): R.L. White
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 spectrometric 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): R. D. Gay
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 stability, including 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): R. D. Gay
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 chains; types of radioactive decay; nuclear reactions; research reactors; instrumental, precollection, and radiolabelled neutron activation analysis; and two laboratory sessions on NAA.

INSTRUCTOR(S): A. Chatt
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 course examines some of the statistical and mathematical tools necessary for planning and analyzing scientific measurements, with a strong emphasis on chemical applications. Topics include basic probability, hypothesis testing, analysis of variance, exponential design, regression, signal processing, multivariate calibration, pattern recognition, response surface modelling and simple optimization. Most assignments are done in 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 required.

INSTRUCTOR(S): P.D. Wentzell
PREREQUISITE: CHEM 2201.03
CROSS-LISTING: CHEM 6205.03

CHEM 4206.03: Analytical Mass Spectrometry. This course 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. 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 3201 or CHEM 3201, or consent of the instructor
CROSS-LISTING: CHEM 5206.03

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 motion 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): R.J. Boyce
FORMAT: Lecture 3 hours
PREREQUISITE: CHEM 3201.03 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 3202.03 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 emphasised and an overview of modern techniques is also given.

INSTRUCTOR(S): Staff
FORMAT: Lecture 3 hours
PREREQUISITE: CHEM 3201.03 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 approaches to spectral analysis of nmr spectra in liquids, and 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 3203.03 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): A. Thompson
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 mechanistic 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 5401.03

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 2401.03 and 2402.03 and 2403.03 and 2404.03 or instructor’s 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 2401.03 and MATH 2001.03/2002.03 or equivalent

CHEM 4595.03: Atmospheric Chemistry.
The class will discuss the distribution that the distribution of chemical species in the troposphere and stratosphere. It will include such topics as the ozone layer, and the effects of 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 students 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 3601

CHEM 4801.03: Research Project in Chemistry II.
This class is intended for those students in the Major programme with an appropriate background with willing 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 present the results of the research to the Department. Students wishing to enter this class must have a strong interest in chemistry and must satisfy 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 programme. 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 present the results of the research to the Department. Students wishing to enter this class must have a strong interest in chemistry and must satisfy the Coordinator of Honours and Major 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 programme, with an average grade of at least 3.0, or consent of the Coordinator.

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I. Science Co-operative Education

Science Co-operative Education (Science Co-op) is an academic programme 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, Biology, Chemistry, Earth Sciences, Environmental Science, Economics, Marine Biology, Mathematics, Microbiology, Immunology, Physics, and Statistics. Students may choose a combined Honours or Double Major where only one of the disciplines is a recognized Science Co-operative Education programme.

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 programme includes three to four work terms and a minimum of eight academic terms comprising 30 academic credits. The Science Co-operative Education degree programme 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 programme 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 work 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 programme. 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 programme. All Science Co-operative Education students are required to register for, and attend this class, upon acceptance into the programme. 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 responsibility 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 the 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.

*Diplomatic Note: The Co-op Fee is a programme 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. These 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 programme. 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 programme. Satisfactory performance in the work place is also required and Co-op employers submit an Employer Evaluation for students in the programme. 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 programme 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 (programme fee) regardless of whether the services of the Co-op office are used. This Co-op Fee is a programme 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 Programme

I. Introduction
DISP is an alternative and more interdisciplinary way for a science student to complete first-year university. 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.

Any of the DISP options will satisfy the full first-year Writing Class requirement at Dalhousie University. DISP students will concurrently take PHIL 1050.03 (Ethics in Science), a fully integrated and complementary half-credit humanities class for DISP students. PHIL 1050 will provide an introduction to ethical questions that arise in the practice of science, using examples that relate to the specific scientific topics studied within DISP. The format of PHIL 1050 is both lecture and discussion, with several written essay assignments. 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 programme. A breakdown of marks is provided, upon request, for the purpose of transferring to professional programmes or other universities, and when applying for jobs or other positions. Students wishing to enter this programme normally must have a minimum Grade 12 or OAC average of 80%, with a minimum of 80% in Mathematics and 75% English, and a minimum of 75% in Grade 12 or OAC Chemistry plus either Biology or Physics. It is recommended that DISP candidates be highly motivated and have a strong interest in science.
II. Choosing a DISP Option

The different options are designed to prepare students for a certain range of degree programmes. 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 programmes. 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 in addition to PHIL 1050.

First-year Prerequisites satisfied by each DISP option

<table>
<thead>
<tr>
<th>DISP Option</th>
<th>Biology (full credit)</th>
<th>Chemistry (full credit)</th>
<th>Earth Sciences (full credit)</th>
<th>Mathematics (full credit)</th>
<th>Physics (full credit)</th>
<th>Psychology (half credit)</th>
<th>Writing Class (full credit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCIE 1510</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>SCIE 1501</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
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<td>+</td>
</tr>
<tr>
<td>SCIE 1502</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>SCIE 1503</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>SCIE 1504</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

* 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 offered only as a one-term or half-credit class.

Pharmacy: Students intending to apply to the College of Pharmacy from DISP should consult with the DISP director about their choice of DISP options and electives.

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 programme of interest after first year:

<table>
<thead>
<tr>
<th>DISP Option</th>
<th>Atmospheric Science</th>
<th>Biochemistry &amp; Molecular Biology</th>
<th>Biomedical Engineering</th>
<th>Dentistry</th>
<th>Dental Hygiene</th>
<th>Dentistry (Double major)</th>
<th>Dentistry (Honours)</th>
<th>Earth Sciences</th>
<th>Economics</th>
<th>Environmental Science (Area of Emphasis)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCIE 1510</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
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<tr>
<td>SCIE 1501</td>
<td>+</td>
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<td>+</td>
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<tr>
<td>SCIE 1502</td>
<td>+</td>
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<td>+</td>
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<tr>
<td>SCIE 1503</td>
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<tr>
<td>SCIE 1504</td>
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<td>+</td>
</tr>
</tbody>
</table>

+ recommended option

* may need Physics later
+ can enter after first year
** must obtain undergraduate degree first
III. Class Descriptions

SCIE 1501/X/Y: 27: DISP for Biomedical Science.
This programme provides comprehensive preparation for the full range of degree programmes in the biomedical sciences at Dalhousie. Concepts and techniques at the first-year introductory level are integrated across six subjects: Biology, Chemistry, Mathematics, Psychology, Physics, 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 programme, 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 12 hours/lab and other activities 10 hours/tutorials 3 hours (optional);
CROSS-LISTING: BIOL 1010.03 and BIOL 1011.03, CHEM 1011.03 and CHEM 1012.03, or CHEM 1041.03 and CHEM 1042.03, MATH 1000.03, MATH 1010.03, PSYO 1001.06 and PSYO 1002.06, or PSYO 1003.06 and 1004.06, PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03, and STAT 1000.03/1001.03
CO-REQUISITE: PHIL 1050.03

A recommended route into the Environmental Science degree, this programme 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 in the Biology, Earth Sciences, Ecology, and Marine Biology Areas of Emphasis in Environmental Science. Students interested in other Areas of Emphasis (Chemistry and the Environment, the 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 programme, 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 12 hours/lab and other activities 10 hours/tutorials 3 hours (optional);
CROSS-LISTING: BIOL 1010.03 and BIOL 1011.03, CHEM 1011.03 and CHEM 1012.03, or CHEM 1041.03 and CHEM 1042.03, MATH 1000.03, MATH 1010.03, PSYO 1001.06 and PSYO 1002.06, or PSYO 1003.06 and 1004.06, PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03, and STAT 1000.03/1001.03
CO-REQUISITE: PHIL 1050.03

SCIE 1503.21: DISP for Life Science.
This programme 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 hands-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 appropriate 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 programme, 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 12 hours/lab and other activities 10 hours/tutorials 3 hours (optional);
CROSS-LISTING: BIOL 1010.03 and BIOL 1011.03, CHEM 1011.03 and CHEM 1012.03, OR CHEM 1041.03 and CHEM 1042.03, MATH 1000.03, MATH 1010.03, PSYO 1001.06 or 1001.06, or PSYO 1003.06 or 1004.06, PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03, and STAT 1000.03/1001.03
CO-REQUISITE: PHIL 1050.03

SCIE 1504/Y: 33: Dalhousie Integrated Science Programme.
This programme 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 Atmospheric Science. 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 credit, 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 15 hours/lab and other activities 12 hours/tutorials 3 hours (optional);
CROSS-LISTING: BIOL 1010.03 and BIOL 1011.03, CHEM 1011.03 and CHEM 1012.03, OR CHEM 1041.03 and CHEM 1042.03, MATH 1000.03 and MATH 1010.03, PSYO 1001.06 or 1001.06, or PSYO 1003.06 or 1004.06, PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03, and STAT 1000.03/1001.03
CO-REQUISITE: PHIL 1050.03
Earth Sciences

Location: Life Sciences Centre, Room 3006, Halifax, NS B3H 4J1
Telephone: (902) 494-2358
Fax: (902) 494-6669
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. (494-8019)
Co-op Advisor
Wach, G. (494-3501)
Graduate Coordinator
Calabrese, N. (494-3501)

Professors Emeriti
Cooke, H.J.N., BSc, DSc (Witwatersrand)
Medlik, F.S., PhD (Jarvis)
Milligan, C.C., BSc (Dal), PhD (Harv)
Zentilli, M., BSc (Chile), PhD (Queens), PGeo

Professors
Gibling, M.R., BA (Oxon), PhD (Otago)
Jameson, R.A., BSc (Dal), PhD (MUN)
Scott, D.B., BSc (Washington), PhD (Dal)
Wach, G.D., BA (Western Ontario), MSc (Dal), PhD (Dal), PGeo

Associate Professors
Calabrese, N., BA (Rutgers), PhD (Otago)
Culshaw, N., BA (Hons) (St Catharine’s Col, Cantab), MA (Cantab), PhD (Dal)
Grujic, D., BSc (Belgrade), PhD (ETH Zurich)
Haines, J., BSc (Dal), MSc, PhD (Dal)
Holloway, D., BSc (Dal), MSc (Dal), PhD (Dal)

Assistant Professor
Pip, L., BA (McGill), PhD (Univ. of Alaska - Fairbanks)

Senior Instructors
Grujic, D., BSc (Belgrade), MSc, PhD (Dal)
Holloway, D., BSc (Dal), MSc (Dal), PhD (Dal)

Adjunct Professors
Adam, J., Dip in Geology (Univ. of Clausthal), PhD (Techn. Univ. of Berlin), Dalhousie Univ.
Anderson, A., BSc (Univ. of Windsor), MSc (Maine), PhD (Queen’s), St. Francis Xavier
Barr, A., BSc (UNB), PhD (Dal), Acadia University
Beltrami, H., BSc (Winnipeg), MSc (Queen’s), PhD (U de Quebec à Montreal)
Calabrese, N., BA (Rutgers), PhD (Dal)
Drost, J., BSc (Charles), PhD (McMaster), St. Mary’s University
Fensome, R., BSc (Sask), MSc (Sask), PhD (Nottingham), GSC Atlantic

Earth Sciences 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.

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, geophysicists, geographers, 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 parasitic. 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 primary 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 Programmes in Earth Sciences

In addition to the requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 40 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 Programme (see separate entry in this calendar) is an appropriate preparation for entry into the second year of an Earth Sciences programme.

Departmental Requirements

1000 level
Recommended:
• ERTH 1000.03 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 2000.03: Earth Sciences Field School
• ERTH 2010.03: Principles of Geophysics I
• ERTH 2011.03: Earth Materials Science I
• ERTH 2022.03: Earth Materials Science II
• ERTH 3110.03 (Prerequisite: ERTH 2000.03): Field Methods
• ERTH 2301.03: Sediments and Sedimentary Rocks
• ERTH 2305.03: Introduction to Paleontology

3000 level
• ERTH 3000.03: Computation Camp
• ERTH 3010.03: Igneous Petrology
• ERTH 3020.03: Metamorphic Petrology
• ERTH 3140.03: Structural Geology
• ERTH 3302.03: Quaternary Sedimentary Environments
• ERTH 3303.03: Stratigraphy

4000 level
• ERTH 4000.00: Advanced Field School
• ERTH 4200X/Y: Honours Thesis
• ERTH 4305.03: Tectonics
• Plus other advanced Earth Science credits for a total of nine credits beyond the 1000 level.

Honours Qualifying Examination

Other required classes
• MATH 1010.03
• MATH 1000.03
• Plus other advanced Earth Science credits for a total of nine credits beyond the 1000 level.

Honours Qualifying Examination

Other required classes
• MATH 1010.03
• MATH 1000.03
• Plus other advanced Earth Science credits for a total of nine credits beyond the 1000 level.

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. Honours Marine Geology Stream Programme

Students wishing to obtain an Honours BSc degree in the marine geology stream should discuss their programme with the undergraduate advisor.

C. Combined Honours

Students wishing to take combined Honours in Earth Sciences and another subject, should discuss their programme in detail with the undergraduate advisor. Students must attend the field school normally taken at the beginning of second-year (ERTH 2000.015).

D. Combined Honours: Earth Sciences and Biology

Earth Sciences Honours Programme should be followed during Years I-III and students should take either a Biology class or ERTH 4002.01 in place of ERTH 3010.03/3020.03. For Biology classes, consult Biology Department.

E. Combined Honours: Earth Sciences and Physics

Students should follow the Earth Sciences Honours Programme in years I to III, including ERTH 2050.03 and ERTH 3130.03, but should take a Physics class in place of ERTH 3010.03/3020.03. For Physics classes, consult Physics Department. MA/TH 2001.03/2002.03 should also be taken in either Year II or III, and MA/TH 3110.03/3120.03 in Year III or IV.

F. Combined Honours: Earth Sciences and Chemistry

Students should follow the Earth Sciences Honours Programme in Years I-III, but should take 1000 level Chemistry classes in place of ERTH 3002.03/3010.03 and 2050.03/3150.01. For Chemistry classes, consult Chemistry Department.

G. Combined Honours: Earth Sciences and Oceanography

Students should follow the Earth Sciences Honours Programme in years one and two. In year two they should start the Oceanography component by taking OCEA 2800.06. Students should also take CHEM 3101.03/3102.03 and PHYC 3100.03, 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.

H. Co-op Education in Earth Sciences

Co-operative Education in Science (Science Co-op) is a programme 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 (#84-804)
Email: grant.wach@dal.ca
I. 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 2001.03: Earth Sciences Field School
• ERTH 2002.03: Earth Materials Science I
• ERTH 2101.03: Field Methods
• ERTH 2110.03 (Prerequisite: ERTH 2001.03): Field Methods

3000 level
• ERTH 3000.015: Computing Camp
• ERTH 3000.015: Introduction to Palaeontology

Other required classes
• MATH 1000.03
• MATH 1010.03/STAT 1060.03
• One of PHYC 1100X/Y.06 or CHEM 1011.03/1012.03 or BIOL 1000X/Y.06 or BIOL 1001.03 and 2000.03

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.

J. 20-credit Major Co-op

Departmental Requirements

Same as for the Major above plus the work described in the Co-op programme section, previously stated.

K. 15-credit BSc with Concentration in Earth Sciences

Three-year programmes 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 2001.03: Earth Sciences Field School
• ERTH 2002.03: Earth Materials Science I
• ERTH 2101.03: Field Methods
• ERTH 2110.03 (Prerequisite: ERTH 2001.03): Field Methods

3000 level
• ERTH 3000.015: Computing Camp
• One (1) additional credit in Earth Sciences beyond the 2000 level

L. Other Programmes

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 44, for details.

Minor in Canadian Studies
The Minor in Canadian Studies is available to students registered in the BSc 20-credit major and honours programmes. The requirements are as for the appropriate degree programme 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 78.

Minor in Community Design
The minor in community design is available to students registered in the BA, BSc 20-credit major and honours programmes. The requirements are as for the appropriate degree programme with completion of the following classes:
• PLAN 1001.03 and PLAN 1002.03
• Either PLAN 2001.05 or PLAN 2002.03
• Seven additional half-credits (21 credit hours) in PLAN classes. See page 88 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 programmes. The requirements are as for the appropriate degree programme with completion of the following classes:
• One of CSCI 1100.03 or CSCI 1201.03
• CSCI 1210.03
• CSCI 2132.03
• CSCI 3103.03
• Two of CSCI 3110.03, CSCI 3120.03, CSCI 3310.03, 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

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 Programmes section of this calendar, page 443, for details.

Minor in Film Studies
A Minor in Film Studies is available as part of a BA, BSc 20-credit and BA Honours degree. Consult the Degree Requirements section of this calendar, page 44, for details.

Concentration in Environmental Science
The Faculty of Science offers a Combined Honours or Double Major degree with a concentration in Environmental Science. Consult the Environmental Programmes section of this calendar, page 443 for details. ERTH 2001.03, 2202.03, 2203.03, and 2205.03 are suitable classes for this programme.

III. Programmes and classes for those whose Major is not Earth Sciences

These classes are specially designed for those who want to learn more about the Earth, its subsystems and regions.

A. Elective Classes

• ERTH 1030.03: Introduction to Physical Geography, a class for anyone who wants to learn more about the Earth, its subsystems and regions.

Earth Sciences 431
Faculty of Science
432 Earth Sciences

• ERTH 2410.03: Environmental and Resource Geology, open to those with the above prerequisite
• ERTH 2420.03: Desiccation, Origin, Evolution and Extinction, open to those with the above prerequisite
• ERTH 2430.03: Forensic and Medical Geology.

B. Other Programmes

Concurrent BSc/DipEng

The Faculty of Engineering and the Faculty of Science have agreed to offer a combined BSc/DipEng degree programme. This programme allows students to complete requirements for the BSc (15-credit) and DipEng degrees in a little as five years. Consult the Degree Requirements section of this calendar for details.

Concurrent BSc/BEDS/MArch

The Faculty of Architecture and Planning and the Faculty of Science have arranged a programme which will permit students to complete the requirements for the BSc (15-credit), the BEDS, and the MArch degrees within a six-year period. For details, consult the Degree Requirements section of this calendar for details.

Bachelor of Computer Science with Minor in Earth Sciences.

Students taking a BCS with a minor in Earth Sciences should take: ERTH 1040.03 and ERTH 1080.03 as well as ERTH 2001.03, ERTH 2002.03, 2203.03, 2110.03, either ERTH 2100.03 or 2410.03 and at least 3 half credits at the 3000-level or higher.

IV. Special Information for Earth Sciences Programmes

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 programme which meets our degree requirements 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, 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 first-year Chemistry, (CHEM 1011.03 or 1012.03), Calculus (MATH 1000.03 and 1010.03) and Physics (PHYS 1100.03/V/03). 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 those 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 IT sciences to students who meet the following requirements:

• Completion of the 20-credit Major or Honours programme 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:
  • ERTH 2200.03 or ERTH 3400.03
  • ERTH 3500.03
  • ERTH 4420.03 or ERTH 4100.03

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 landslides caused 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 as an addition to any other first year Earth Sciences class.

INSTRUCTOR(S): A. M. Ryan, L. Plag.
FORMAT: Lecture-class 3 hours each week and 1 hour tutorial every second week, some classes may include map work
CRISH-LISTING: GEGS 1003

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 non-specialist, investigates these intriguing questions. Excerpts of “disaster films”, in conjunction with lectures and discussions are used to identify the causes, consequences and predictions associated with these phenomena. Examples from Atlantic Canada and contemporary disasters are used to assess local risk and near-term events worldwide.

INSTRUCTOR(S): J. Gosse
FORMAT: Lecture 3 hours
CRISH-LISTING: GEGS 1060

ERTH 1080.03: 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 landslides caused 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 as an addition to any other first year Earth Sciences class.

INSTRUCTOR(S): A.M. Ryan, L. Plag.
FORMAT: Lecture-class 3 hours each week and 1 hour tutorial every second week, some classes may include map work
CRISH-LISTING: GEGS 1003

ERTH 1090.03: 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 geologist 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 natural hazards. Examples from Atlantic Canada and contemporary disasters are used to assess local risk and near-term events worldwide.

INSTRUCTOR(S): A.M. Ryan
FORMAT: 3 hour lecture; 3 hours of labs
EXCLUSION: Credit will be given for only one of ERTH 1090, 1010, 1040 or 1041.

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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 climate, 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 for pursuing further work in either the natural and environmental sciences. ERTH 1090 is recommended for Earth Sciences majors.

INSTRUCTOR(S): A.M. Ryan
FORMAT: Lecture 3 hours; lab 3 hours
PREREQUISITE: ERTH 1080 or permission of instructor
EXCLUSION: credit will only be given for one of 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: ERTH 1080 or permission of instructor
EXCLUSION: Credit will be given for only one of ERTH 1091.03, ERTH 1090.03, ERTH 1020.03 or ERTH 1050.03.


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 cliffs sections and outcrops. Skills taught are rock, mineral and fossil identification, basic geological map making and report writing. This 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: ERTH 2001.03, 2002.03, 2110.03, 2203.03.

INSTRUCTOR(S): P. Wallace
FORMAT: On campus at a summer camp, daily field work 10 to 11 continuous days
PREREQUISITE: ERTH 1080 and one other 1st year ERTH course; ERTH 1090.03; SSCI 1502.21, 1504.27, 1510.33

ERTH 2001.03: Earth Materials Science I.

Materials from the Earth include minerals, rocks, and the ore and petroleum resources they contain - form the basis of our industrial society and are vital to the Canadian economy. ERTH 2001.03/2002.03 intends 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, 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 most third-year Earth Science classes.

INSTRUCTOR(S): D. Cuzio
FORMAT: Lecture 3 hours/lab 3 hours/field trip
PREREQUISITE: ERTH 2001.03

ERTH 2050.03: Principles of Geophysics I.

Geophysical methods are increasingly important in land- and sea-based geological studies. These studies range in scale from understanding the Earth's crust to investigating problems related to waste disposal sites. Understanding the principles of the various techniques (seismics, gravity, magnetics) their powers, and limitations, provides a foundation for later work. The geophysics field school normally conducted during the last week of April is an integral part of this class.

INSTRUCTOR(S): P. Ruhl
FORMAT: Lecture 3 hours; tutorial 2 hours
PREREQUISITE: First-year class in Mathematics and PHYC 1100X/Y 06

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 evaporate sediments. Materials associated with Quaternary glacial events are discussed. The formation of sedimentary rocks is examined and their petrophoty 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 1090.03

ERTH 2205.03: Introduction to Paleontology.

This will encompass an introduction to all the major invertebrate groups that are important in the fossil record. It will begin with an introduction of the first life forms, basic taxonomy and uses of fossils followed by lectures and laboratory sessions on each major group.

INSTRUCTOR(S): D. Scott
FORMAT: Lecture 3 hours/lab 3 hours, possible field trip
PREREQUISITE: ERTH 2203.05 or permission of the instructor

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 application 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 geochemistry, with an emphasis on processes that control the natural occurrence of elements, and the 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/Majors 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):** M. Graves

**FORMAT: Lecture 3 hours**

**PREREQUISITE:** ERTH 1080 and one other 1st year ERTH course; ERTH 100 recommended; or SCIE 1502.22, 1504.27 or 1510.30

**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 behavior.

**INSTRUCTOR(S):** M. Graves

**FORMAT: Lecture 3 hours**

**PREREQUISITE:** ERTH 1080.03 or any two of ERTH 1010, 1020, 1030, 1041, 1050, 1060, 1091, or SCIE 1502.21, 1504.27 or 1510.30

**EXCLUSION:** 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):** M. Graves

**FORMAT: Lecture 3 hours**

**PREREQUISITE:** ERTH 1080 and one other 1st year ERTH course; ERTH 100 recommended; or SCIE 1502.22, 1504.27 or 1510.30

**EXCLUSION:** This class is not available for Earth Sciences Majors

**ERTH 2430.03: Forensic and Medical Geology.**

Students will also be introduced to a number of closely-related disciplines including surface science, geomicrobiology, and medical geology.

**FORMAT: Lecture**

**PREREQUISITE:** ERTH 1800 and one other Earth Sciences course or instructor's permission.

**ERTH 3000.015: Computing Camp.**

This class is required for 1st Major, and Honours programmes 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 programme.

**INSTRUCTOR(S):** P. Wallace

**FORMAT: OFF Campus, 10 days**

**PREREQUISITE:** ERTH 2000.015, 2001.03, 2002.03, 2100.03, 2203.03, 2205.03

**ERTH 3011.03: Metamorphic 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):** Staff

**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 geochronological 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 / field trips**

**PREREQUISITE:** ERTH 3011.03

**ERTH 3130.03: Principles of Geophysics II.**

*Topics include: electrical properties of rocks; resistivity, self-potential and induced polarization; electromagnetics; radioactivity and georadar; geophysical well logging; integrated geophysical problems. Examples are taken from the mining industry, and also from the environmental and geological fields. Topics in this class complement the material offered in ERTH 3250.03. These two classes can be taken in either order.*

**INSTRUCTOR(S):** P. Ryan

**FORMAT: Lecture 3 hours**

**PREREQUISITE:** ERTH 3001.03

**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. Craig

**FORMAT: Lecture 3 hours / lab 3 hours, possible field trips**

**PREREQUISITE:** ERTH 2001.03, ERTH 2202.03, ERTH 2100.03, ERTH 2203.03, 2205.03

**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 such depositional settings and the geometry of the resulting deposits. Ancient deposits, including those resulting from glacial events, are examined, and their association with hydrogenous, 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 2200.03, 2202.03
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 chronolithostratigraphy). We will survey the impact of sea-level change, tectonics and climate on sediment accumulation, with emphasis on wholly 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. Wachi

FORMAT: Lecture 3 hours / lab 3 hours
PREREQUISITE: ERTH 2003.03, 2203.03

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 exploitation 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 2003.03, 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 biology, 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: Geochmistry of Aquatic Environments.

Given the abundance of water at the earth's surface and the wide use both by humans and other organisms make of aquatic 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 (Eq-pH and activity-diagrams) and of mass-balance (box models and computer models). FORMAT: Lecture 3 hours
PREREQUISITE: ERTH 2410.03, 1012.03 or equivalent and ERTH 1080/1090 or ERTH 1010/1020
CROSS-LISTING: OCEA 3403

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 soil development, sediment production, storage, and deposition and 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 experiments 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): M. S. Wach

FORMAT: Lecture 3 hours/lab 3 hours including mandatory field trips
PREREQUISITE: ERTH 1080 and one other 1st year ERTH course: ERTH 1090 recommended, or SCI 1ER2.21, 158.27, 153.01 or permission of 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: GEOL 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 prediction, 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, emergency preparedness, 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 emphasise 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): G. Walls

FORMAT: Lecture 3 hours, lab 3 hours
PREREQUISITE: Two years of university study or equivalent or instructor's permission

CROSS-LISTING: ERTH 5460, GEOG 5450, ENV 5450
EXCLUSION: Credit will only be given for one of ERTH 3500.03, ERTH 5460.03, GEOG 5450.03, SCI 5900.03 or ENV 5450

ERTH 4000.00: Advanced Field School.

This class is a field excursion of 7-14 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 programme to do a research project. See class description for ERTH 4200X/Y.06.
ERNTH 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 concepts and techniques used by geoscientists in the search for and evaluation of mineral concentrations, in mineral processing, and in technical 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 x-ray microscopy will be introduced, with emphasis on metallography, 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: ERTH 2001.03, 2002.03, 2110.03, ERTH 2050.03
CROSS-LISTING: ERTH 5141.03

ERNTH 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, beryl), 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: ERTH 3001.03, 3140.03, 4141.03
CROSS-LISTING: ERTH 5151.03

ERNTH 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, drillerling 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: ERTH 2050.03, ERTH 3130.03, ERTH 3140.03, ERTH 3303.03

ERNTH 4156.015: Petroleum Geology - Field Methods and Economic Evaluation.

This is an intensive class comprising 40 hours of field, laboratory and classroom study. Students will work in teams to evaluate and bid on field properties for exploration and development. The class will normally be held in January during study break in February. There will be preliminary field work before and follow up work at Dalhousie.

The class will emphasize Petroleum Systems. Exposed oil reservoirs, pitch lakes, oil seeps, mud volcanoes, analogous outcrop exposures and access to subsurface data from producing onshore and offshore field makes this an extraordinary area for use as a laboratory. The region provides an excellent overview of extensional and compressional tectonics and their effect on petroleum system development, and basin configuration with an overspill of incredible rates of sedimentation into the basins.

INSTRUCTOR(S): G. Wach
FORMAT: Field work with preparatory and follow-up lectures/labs
PREREQUISITE: ERTH 4151 or permission of instructor


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 it is open to students from other disciplines. Filled 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 concurrently.

INSTRUCTOR(S): P. Ryall
FORMAT: Lecture 3 hours

ERNTH 4270.03: Applied Geophysics.

Note: This class is not offered every year. Please consult department in the spring for further information.

The application of geophysical methods to petroleum and mineral exploration as introduced in 2050.03 is here treated at a more advanced level with an emphasis on seismic techniques. Assignments involve the student in interpretation of industry geophysical data and modelling on workstations.

INSTRUCTOR(S): P. Ryall
FORMAT: Lecture 3 hours
PREREQUISITE: ERTH 2050.03 or instructor’s consent
CROSS-LISTING: ERTH 5270.03

ERNTH 4280.03: Marine Geophysics.

Note: This class is not offered every year. Please consult department in the spring for further information.

The application of the various geophysical techniques to the study of the sea floor and the principal results obtained are examined. The processes involved in the creation, evolution and destruction of ocean basins and the implications of the experimental observations are also considered.

INSTRUCTOR(S): K. Loudon
FORMAT: Lecture 3 hours
PREREQUISITE: ERTH 2050.03, ERTH 4270.03 or instructor’s consent
CROSS-LISTING: ERTH 5280.03, OCEA 5280.03

ERNTH 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 programme. 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: ERTH 2050.03, ERTH 3201.03, 3410.03
CROSS-LISTING: ERTH 5350.03

ERNTH 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 microthermometry, chosen to reflect current topics of interest in the disciplines and specific interests of participants. The focus is on the interaction of metamorphism and deformation, and on the constraints provided by microthermometry and metamorphic data on tectonic processes in general. Examples of topics that might be covered include: petrogenetic grids, related metamorphic rocks, quantitative P-T methods in metamorphism;
This class provides a systematic study of major groups of microfossils. Note: This class is not offered every year. Please consult department in the change.

CROSS-LISTING: ERTH 5450, GEOG 4450

PREREQUISITE: ERTH 2440.03, MATH 1010 or 1400, PHYC 1100X/Y and pertinent to their own research interests as a final project. than numerical methods. Advanced students will develop simple models lies in understanding the utility and limits of landscape models rather than 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: ERTH 1000 and any 1st year ERTH class, ERTH 1000 recommended. Must be a 4th year Science student familiar with Excel, or with instructor's permission

CROSS-LISTING: ERTH 5400.03, GEOG 4400.03

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, weathering on Mars, fracture patterns in rock and permafrost, and slider-block models for faults. Programming experience is useful but not essential; class emphasis will be placed 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: ERTH 2440.03, MATH 1010 or 1400, PHYC 1100S/Y and these courses at the 3000-level in the physical sciences (chemistry, earth science, physics) or with consent of instructor

CROSS-LISTING: ERTH 5450, GEOG 4450

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 pale-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: ERTH 3000.03, ZOOL 3000.03

CROSS-LISTING: ERTH 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 deficiencies 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 Geologic 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 ERTH 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, ERTH 3500.03; ERTH 5600, or SCIE 3600.03; STAT 3060.03

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 satellite 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: ERTH 3500.03, GEOG 3500.03, ENVS 3500, or ERTH 3500.03; ERTH 5600.03 or SCIE 3600.03

CROSS-LISTING: GEOG 4502.03, ERTH 5502.03

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)
Faculty of Science
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McAllister, R.L., MA (Oxon), MA (Can.), Emeritus
Nakovic, S., BA (Novi Sad, Yugoslavia), MA (Guelph), PhD (McGill), SMU
Pinfold, T., BA (Western), PhD (Minn)
Rankin-Dawson, W., BA, MSC (Dalhousie), 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 (Ottawa), MA (McGill)
Smirniotis, A.M., BA (Dal), MA, BPhil (Oxon), PhD (Harvard), Dal, Professor Emeritus
Taylor, K., Dip. (B.C. Teachers’ Univ.), MA, PhD (Concordia)

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Administrative Offices: 6214 University Avenue
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Dean
Taylor, K., BSc (St. FX), PhD (U. of Alberta), Professor (Mathematics & Statistics)

Chairperson of Department
Osberg, L.

Faculty Advisors
Cross, M., MDE Coordinator (494-6867)
Cyrus, T., Undergraduate Coordinator, Co-op Academic Advisor (494-6904)
Burton, P., Graduate Coordinator (494-6985)

Professors Emeriti
Cumming, L., BA (Iowa), MSc (London), PhD (Harvard), FRSC
Konzacki, Z.A., BSc (London), BCom (Natal), PhD (London)
Sinclair, A., BA (Dal), MA, BPhil (Oxon), PhD (Harvard)

Professors
Bradfield, F.M., BComm (McMaster), PhD (Brown)
Burton, P., BSc (Saskatchewan), MA, PhD (UBC)
Cross, M.L., AA (Dawson College), BA (Montana), MA (SFU), PhD (Texas)
Cyrus, T., BA (UCLA), PhD (Berkeley)

Assistant Professors
Adshade, M., BA (Iowa), MA, PhD (Queen’s)
Forsdyke, R., BSc (Biology, Western, MA (Queen’s), PhD (Simon Fraser)
Kotlyarova, Y., Dip. Software Eng (Lviv Poly. Inst.), MSc (U of Illinois - Urbana), PhD (McGill)
Kumaratugoda, L., BA (Hons) (McGill), MA, PhD (AED (Toronto)
McCallum, A., BS, BA (McMaster), MA, PhD (Queens)

Associate Professors
Cross, M.L., AA (Dawson College), BA (Alabama), MA (SFU), PhD (Texas)
Cyrus, T., BA (UCLA), PhD (Berkeley)

Assistant Professors
Addah, M., BA (Iowa), MA, PhD (Queen’s)
Forsdyke, R., BSc (Biology, Western, MA (Queen’s), PhD (Simon Fraser)
Kotlyarova, Y., Dip. Software Eng (Lviv Poly. Inst.), MSc (U of Illinois - Urbana), PhD (McGill)
Kumaratugoda, L., BA (Hons) (McGill), MA, PhD (AED (Toronto)
McCallum, A., BS, BA (McMaster), MA, PhD (Queens)

Adjunct Professors
Amirkhalkhal, S.I., BA (Iowa), MA (Dal), PhD (Dal), Emeritus Science
Cumming, L., BA (Iowa), MSc (London), PhD (Harvard) Professor Emeritus
Cumming, L., BA (Iowa), MSc (London), PhD (Harvard) Professor Emeritus
Dar, A., BA, MA (Dalhousie), PhD (McMaster), SMU
Deyton-Johnson, J., BA, PhD (Boston College)
George, R., BSc (London), MSc (Bristol), PhD (London), Emeritus
Hodgkinson, J., BA (Hons) (Dalhousie), MA, PhD (Queen’s)
Huber, P.B., BA, MA, PhD (Dal)
MacDonald, M., BA (Dal), PhD (Boston College), SMU

Marfels, C.T., Dipl.-von-Volkswirt, Dr. Rez. Pol. (Berlin)
McAllister, R.L., MA (Oxon), MA (Can.), Emeritus
Nakovic, S., BA (Novi Sad, Yugoslavia), MA (Guelph), PhD (McGill), SMU
Pinfold, T., BA, MA (Western), PhD (Minn)
Rankin-Dawson, W., BA, BSc (Dalhousie), 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 (Ottawa), MA (McGill)
Smirniotis, A.M., BA (Dal), MA, BPhil (Oxon), PhD (Harvard), Dal, 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 known 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 some of the sciences surpasses economics in its relevance to our needs, problems and goals.

“Economic man” is rational man consuming, organizing and producing within a framework of laws and customs in an effort to use the limited resources of our world efficiently for the greatest satisfaction. 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 Programmes
The department offers BA and BSc programmes, described below. A student may graduate with either a BA or a BSc degree but not both. In all programmes 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 40 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, such as commerce, 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 1100.03
• ECON 1102.03

2000 level
• ECON 2200.03
• ECON 2201.03

3000 level
• ECON 3308.05
• ECON 3309.05
• ECON 3307.05

One half credit in ECON 3310.03 or ECON 3319.03 or ECON 2233.03 or ECON 2239.03

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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
• STAT 2080.03 (ECON 2280.03)
• 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

An Honours Thesis is also required.

D. Combined Honours

Combined honours programmes, BA or BSc, may be arranged with other departments such as Biology, Earth Sciences, History, Mathematics, Political Science, Statistics, Sociology. For combined Honours programmes with Economics, students must also consult the other departments concerned.

Required classes are decided on a case-by-case basis and include a core of:
• ECON 1101.03, 1102.03, 2201.03, 2200.03 or 2210.03, 2280.03 (or STAT 2080.03 and ECON 3338.03). If Economics is the secondary field in the combined honours, you must take at least 4 courses 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 programme requires an honours essay and a higher academic standing than the Major. An Honours programme 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 programme 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

While the total number of credits required for the Major is the same as for an Honours degree, the honours programme in economics requires an honours essay and includes a larger core of classes in economics. In addition, the Honours programme requires a higher academic standing than does the Major. However, the Major provides a comprehensive programme not available with the 15-credit programme. Major students are strongly encouraged to consult with members of the department to ensure an integrated and coherent programme.

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 programme 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 programme allows a maximum of eleven.

Combined programmes 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.
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inquire about the programme before beginning their second year of study.

operative Education Programme in Economics. Interested students should

Departmental approval is required to obtain admission to the Co-

requirements of either a 20-credit BSc Major programme while

Students who wish to keep open the option of transferring into the

maintaining at least a B average, or a 20-credit BSc Honours Programme.

In addition to completing three to four workterms, a student in the co-operative programme must fulfil the

Terms, a student in the co-operative programme must register for, and attend, the Science Co-op Seminar Series (SCIE 2800.00) in

Students apply to join Science Co-op before their second year of study. If

Co-op enables students to apply their knowledge directly while providing

I. Co-op Education in Economics

Co-operative Education in Science (Science Co-op) combines academic study with paid career-related work experience. The programme integrates eight academic terms with three to four workterms. Workterms are normally 15-16 weeks in length. With four workterms, the programme 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 programme, 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 programme 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 workterms, a student in the co-operative programme must fulfill the requirements of either a 20-credit BSc Major programme while maintaining at least a B average, or a 20-credit BSc Honours Programme. Departmental approval is required to obtain admission to the Co-operative Education Programme in Economics. Interested students should inquire about the programme 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 A above).

K. Graduate Studies

The Department offers a graduate programme leading to the MA, MDE and PhD degrees. Details of these programmes, 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

Some classes are normally offered on a two year rotational basis. Please consult the department for details regarding the rotation scheme. 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, economic 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, economic 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

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. Serves as the macroeconomic prerequisite for higher-level classes in economics.

FORMAT: Lecture 3 hours

ECON 2210.03: 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 advanced 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? Approved with Canadian Studies.

FORMAT: Lecture 3 hours
PREREQUISITE: ECON 1101.03 and ECON 1102.03

ECON 2218.03: The Canadian Economy in the New Millennium: Economic Policy Debates for the Next Decade.

A century ago, Prime Minister Wilfrid 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.

Quick, name the economic powerhouse at the threshold of the New Millennium. Yes, it is the European Union. What is the European Union? The European Union represents a unique relationship among the 15 member states. In the late 1940s, the grand vision of Jean Monnet and Robert Schuman laid the foundation of the European Communities that were gradually transformed into a single Market of Europe 1993. This made the four freedoms of movement, the movements of goods, services, capital and people a reality for 375 million EU citizens. After an historic overview from the Schuman Plan to the Maastricht Meetings the class will conduct in the analytical framework of economic integration. This is of particular interest to Canadian students in view of Canada’s role in the EU and beyond, in the negotiations for a free trade area of the Americas (FTA). Topics to be discussed include the gradual removal of barriers, the financial framework and the Euro, trade policy, and the future of the European Union in view of the new entrants from Central and Eastern Europe.

FORMAT: Lecture 3 hours
PREREQUISITE: ECON 1101.03 and ECON 1102.03

ECON 2231.03: Health Economics.

This course is designed as an introductory course in the economics of health and health care. The course will provide an overall understanding of the definitions and policy issues that have arisen within a health care setting, looking at both Canadian and international experiences, including developing countries. The course will examine the use of economic approaches in understanding health issues, focusing on demand, production, costs, and markets. The course examines the nature of markets and market failure in the health sector including agency, uncertainty and informational problems. Methods of economic evaluation, including cost-effectiveness and cost-benefit analyses, will be examined. The course will introduce students to economic perspectives of health policy and planning issues at the macro and micro level.

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 WWII. 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 (may be taken separately from ECON 238.03) examining the contrasting development patterns of various industrialized European countries after their respective industrial revolutions and up to about 1910. 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 2080.03, in Mathematics section of this calendar.

ECON 2280.03: Statistics II.

See class description for MATH 2060.03, in Mathematics section of this calendar.

ECON 2303.03: Globalization and Economic Development: Current Debates.

Economists have long debated whether the task of development should be estimated largely to market forces, or whether there was a 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 reference to 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: Lecture/seminar 3 hours
PREREQUISITE: ECON 1101.03 and 1102.03
EXCLUSION: ECON 3306.03

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 predation 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
PREREQUISITE: ECON 2280.03, or 2210.03, 2321.03

ECON 3315.03: Labour Economics.

Who gets jobs and how much are they paid? Why has female employment increased so much in recent decades? Should Canada reduce or expand unemployment insurance? Understanding how labour markets work is crucial to these and other questions.

FORMAT: Lecture 3 hours
PREREQUISITE: ECON 2280.03 or 2210.03, 2201.03

Economics 441
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 3317 before taking ECON 3317.
FORMAT: Lecture/semester 3 hours
PREREQUISITE: ECON 1101.03, 1102.03, 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. This class is complemented by ECON 4426.03.
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 volatility 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 2201.03
ECON 3331.03: International Finance.
This course covers the principal issues and theories of international macroeconomics. It examines balance of payments accounting, 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 trade balance and the balance of payments.
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 complimentary 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 emphasize the assumptions underlying particular economic theories and their implications 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 2201.03
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 2201.03/MATH 2080.03/ STAT 2080.03
ECON 3339.03: Econometrics II.
Further practical problems associated with economic data and with model specification and estimation are discussed. This class is an extension of ECON 3338.03 and includes Logit, Probit, Tobit, Distributed Lag, 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 programmes 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
PREREQUISITE: ECON 2201.03 or 2201.03
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 2201.03 or 2201.03, 2201.03
ECON 3700.03: Mathematics for Economists.
This course is intended to provide mathematical methods used in modern micro- and macroeconomics. The lectures will concentrate on the basic concepts of analysis, comparative statics and optimisation 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
ECON 3800.03: Financial Economics.
This class is an introduction to decision making by investors in the presence of uncertainty, asset pricing, financial markets, and instruments. It discusses how financial markets help share and manage risks. The course covers both the theoretical and practical aspects of investment and portfolio theory, surveys the techniques available for economists, and emphasizes "hands-on" learning using Canadian and international case studies, and computer software. This course is suitable for those who wish to broaden their understanding of the operation of financial markets, and pursue a career in financial applications of economics.
PREREQUISITE: ECON 2200.03 or 2210.03, 2201.03
CROSS-LISTING: MATH 3700.03
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, optional for others. 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 occasional invited guests. In addition to the prerequisites, the student must complete ECON 4100.03, 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

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 2000 for example, is useful.
FORMAT: Lecture 3 hours
PREREQUISITE: ECON 2200.03 or 2210.03 and MATH 2000.03

ECON 4421.03: Macroeconomic Theory.
For those who wish to do relatively advanced work in economic theory, possibly with the thought of going on to do graduate work in economics. The class assumes some knowledge of calculus. Topics covered include: models of income and employment; employment; the theory of economic growth (including two-sector models), and business cycle models.
FORMAT: Lecture 3 hours
PREREQUISITE: ECON 2201.03 and MATH 1000.03 and 1010.03

ECON 4446.03: Contemporary Liberalism, and Democracy.
See class description for PHIL 4470.03, in the Philosophy section of this calendar.

Environmental Programmes
Location: LSK 622 (8th Floor)
Halifax, NS B3H 4J1
Telephone: (902) 494-7117
Fax: (902) 494-1123
Website: www.dal.ca/environment

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Supporting Faculty
Environmental Programmes 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 programmes 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 Programmes 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 International Development Studies. The Faculty of Arts and Social Sciences (FASS) and the Faculty of Architecture and Planning offer a Minor in Environmental Studies which is administered through Environmental Programmes.

Environmental Science applies the findings and principles from multiple disciplines to environmental questions and problems. Environmental Sciences, by nature, is multidisciplinary and interdisciplinary. Most environmental scientists develop expertise in a particular discipline, and work cooperatively 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.

All of the Environmental Degree Programmes at Dalhousie 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 Programmes
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 programmes 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 programmes outlined below, the Dalhousie Integrated Science Programme (DISP) is highly recommended.

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 40 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 Programme.

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 Programmes or from the Environmental Programmes 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 Programme (SCIE 1502, 1504, or 1510)
- Environmental Science Foundation Programme

<table>
<thead>
<tr>
<th>Fall Term</th>
<th>Winter Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 1101</td>
<td>ECON 1102</td>
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<tr>
<td>PHIL 2480</td>
<td>PHIL 2481</td>
</tr>
<tr>
<td>BCOL 2060</td>
<td>STAT 2060 or 2080</td>
</tr>
<tr>
<td>ENVS 2001</td>
<td>AOE/elective</td>
</tr>
<tr>
<td>AOE/elective</td>
<td>AOE/elective</td>
</tr>
<tr>
<td>ENVS 3001</td>
<td>1 week Environmental Science Field School late April or late August</td>
</tr>
</tbody>
</table>

(1) Students are encouraged to take introductory courses in subjects that they are considering for their Area of Emphasis.

Year 2

<table>
<thead>
<tr>
<th>Fall Term</th>
<th>Winter Term</th>
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</thead>
<tbody>
<tr>
<td>ENVS 3001</td>
<td>ENVS 3002</td>
</tr>
<tr>
<td>ENVS 3200</td>
<td>AOE/elective</td>
</tr>
<tr>
<td>BCOL 3000</td>
<td>AOE/elective</td>
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<tr>
<td>AOE/elective</td>
<td>AOE/elective</td>
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<tr>
<td>AOE/elective</td>
<td>AOE/elective</td>
</tr>
</tbody>
</table>

(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

<table>
<thead>
<tr>
<th>Fall Term</th>
<th>Winter Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVS 4001</td>
<td>ENVS 4002</td>
</tr>
<tr>
<td>ENVS 4012</td>
<td>AOE/elective</td>
</tr>
<tr>
<td>AOE/elective</td>
<td>AOE/elective</td>
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<td>AOE/elective</td>
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<td>AOE/elective</td>
<td>AOE/elective</td>
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Year 4

<table>
<thead>
<tr>
<th>Fall Term</th>
<th>Winter Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVS 4001 (Honours only)</td>
<td>ENVS 4002 (Honours only)</td>
</tr>
<tr>
<td>AOE/elective</td>
<td>AOE/elective</td>
</tr>
<tr>
<td>AOE/elective</td>
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<td>AOE/elective</td>
<td>AOE/elective</td>
</tr>
</tbody>
</table>
Honours Programme: 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 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 Programmes (www.dal.ca/environment).

Major Students: Students must have a minimum of 7 and a 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 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 Programmes (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. First Year
   Students are required to take the following credits:
   - BIOL 1010/1011 or 1020/1021
   - MATH 1000.03
   - MATH 1010.03 or MATH 2000.03 or STAT 1060.03
   - SCIE 1111.03 or an alternative writing requirement approved by the Director of Environmental Programmes
   - PLAN 1001.03
   - PLAN 1002.03
   - 1 full credit in a first year single subject chosen from (chemistry, physics, earth sciences, oceanography, environmental science)

2. Common Core Classes
   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 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

<table>
<thead>
<tr>
<th>Fall Term</th>
<th>Winter Term</th>
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</thead>
<tbody>
<tr>
<td>BIOL 1010 or 1020</td>
<td>BIOL 1011 or 1021</td>
</tr>
<tr>
<td>PLAN 1001</td>
<td>PLAN 1002</td>
</tr>
<tr>
<td>MATH 1000</td>
<td>MATH 1000 or MATH 2000 or STAT 1060</td>
</tr>
<tr>
<td>SCIE 1111 (or other approved writing class)</td>
<td>elective</td>
</tr>
<tr>
<td>1 full credit chosen from Chemistry, Physics, Environmental Science, Earth Sciences, or Oceanography</td>
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</tr>
</tbody>
</table>

Year 2

<table>
<thead>
<tr>
<th>Fall Term</th>
<th>Winter Term</th>
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<tbody>
<tr>
<td>CON 1001</td>
<td>CON 1002</td>
</tr>
<tr>
<td>BIOL 2061</td>
<td>STAT credit</td>
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<td>STAT 2060 or STAT 2061</td>
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<tr>
<td>PLAN 2002</td>
<td>PLAN 2003</td>
</tr>
<tr>
<td>PLAN 3001</td>
<td>PLAN 3002</td>
</tr>
<tr>
<td>ENVS 4001</td>
<td>elective</td>
</tr>
<tr>
<td>ENVS 3001: 1 week Environmental Science Field School in late April or late August</td>
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Year 3

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>ENVS 3001</td>
<td>ENVS 3002</td>
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<tr>
<td>ENVS 3003</td>
<td>PLAN 3005</td>
</tr>
<tr>
<td>BIOL 3060</td>
<td>PHIL 2400</td>
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<td>PLAN 3001</td>
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Year 4

<table>
<thead>
<tr>
<th>Fall Term</th>
<th>Winter Term</th>
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</thead>
<tbody>
<tr>
<td>PLAN 3002</td>
<td>ENVS 4001</td>
</tr>
<tr>
<td>PLAN elective</td>
<td>PLAN 3006</td>
</tr>
<tr>
<td>ENVS elective</td>
<td>ENVS elective</td>
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<td>elective</td>
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</table>

C. BSc (20 credit) Double Major or Combined Honours in Environmental Science and International Development Studies

The requirements for the BSc Double Major in Environmental Science and International Development Studies are the following:

1. First Year
   Students have the option to take DISP or the Environmental Science Foundation Programme.

2. Common Core Classes
   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 international development studies (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 International Development Studies.
### Environmental Programmes

#### Faculty of Science

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Fall Term</th>
<th>Winter Term</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>ENV 101</td>
<td>ENV 101</td>
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<tr>
<td></td>
<td>BIOL 1010 or 1020</td>
<td>BIOL 101 or 1021</td>
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<td></td>
<td>MATH 1000</td>
<td>MATH 1010 or 2030 or STAT 1000</td>
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<td></td>
<td>SCI 1111 (or other approved science class)</td>
<td>elective</td>
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</tbody>
</table>

1 full-credit in each of 2 science subjects chosen from Chemistry, Physics, Environmental Science, Earth Sciences, Oceanography, and Economics.

#### Year 2

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<tr>
<td>BIOCON 101</td>
<td>ECON 1010</td>
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<td>PHL 2405</td>
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<td>BIOL 2060</td>
<td>STAT 2060 or STAT 2080</td>
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<tr>
<td>ENVS 2011</td>
<td>ENVS 2002</td>
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</table>

ENVS 2001: 1 week Environmental Science Field School in late April or late August

(1) Students who have taken BIOL 1010 and 1020 in Year One are required to substitute ECON in Year Two with 1 full credit in a single science subject listed for Year One

<table>
<thead>
<tr>
<th>Year 3</th>
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</thead>
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<tr>
<td>ENVS 301</td>
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<td>ENVS 3030</td>
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<table>
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<th>Year 4 Double Majors</th>
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<tbody>
<tr>
<td>ENVS elective</td>
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<tr>
<td>IDS elective</td>
<td>IDS elective</td>
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<td>elective</td>
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<tr>
<td>elective</td>
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<thead>
<tr>
<th>Year 4 Combined Honours</th>
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<tr>
<td>IDS elective</td>
<td>IDS elective</td>
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<tr>
<td>ENVS elective</td>
<td>ENVS elective</td>
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</tr>
<tr>
<td>elective</td>
<td>ENV 4001</td>
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<tr>
<td>elective</td>
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</tbody>
</table>

*Any ENVS or ENVS equivalent class from the Faculty of Science

### D. BA, BSc, BCD (20-credit), BCSc with Minor in Environmental Studies

Students in the following 20-credit degree programmes may do a Minor in Environmental Studies:

- Major or Honours Bachelor of 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 Programmes. The rules governing the selection of classes are given below.

1. **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 programmes, 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 subject (i.e., a class beyond those required for the Major) can count toward the Minor.
   - At least one full credit from the approved list must be in FASS classes and at least one credit must be from Science classes.
   - At least two 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 Biology
- 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
- ERTH 2410.03: Environmental and Resource Geology I
- ERTH 3500.03: Exploring Geographic Information Systems
- GEOS 2800.05: Climate Change
- MARI 2405.03: Introduction to Marine Biology
- OCEA 2000.03: The Blue Planet
- OCEA 2800.03: Climate Change
- PHYC 2451.03: Astronomy I: The Sky and Planets
- PHYC 2808.03: Climate Change
- ENVS 2401.03: Analytical Environmental Science and Social Responsibility
- ENVS 3000.03: Environmental Science Internship
- ENVS 3120.03: Environmental Law II: Natural Justice and Unnatural Acts
- ENVS 3220.03: International Law for Environmental Scientists
- ENVS 3260.03: 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

**Fall Term**

<table>
<thead>
<tr>
<th>Winter Term</th>
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</table>
| *Any ENVS or ENVS equivalent class from the Faculty of Science
Faculty of Arts and Social Sciences (FASS):
- CTMP 3000.06: Science and Culture
- CTMP 3101.03: Nature and History
- CTMP 3201.03: Intersecting Bodies, Selves and Environments
- CTMP 3411.03: Studies in Contemporary Science and Technology
- EMPR 2510.03: Women and Gender in Early Modern Science
- ENVS 3200.03: Introduction to Environmental Law
- ENVS 3000.06: The Study of Nature in Early Modern Europe
- ENVG 3000.03: The Scientific Revolution
- FESC 3400.03: Science and Nature in the Modern Period
- FESC 4300.03: Nature and Romanticism
- HSTC 2270.03: The Atlantic Provinces
- HSTC 3302.03: Technology and History in North America
- HSTC 3370.03: North American Landscapes
- HSTC 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 3004.03: Sustainable Development in Cuba
- PHL 2475.03: Justice in Global Perspective
- PHL 2485.03: Technology and the Environment
- PHL 3670.03: Philosophy of Science
- PHIL 4101.03: Theory of Rational Decision-Making
- POLI 3985.03: Politics of the Environment
- POLI 3990.03: Politics of the Sea I
- POLI 3991.03: Politics of the Sea II
- POLI 4222.03: Interest Groups
- SCVA 2030.03: Environment and Culture
- SCVA 3010.03: Social Movements
- SCVA 3201.03: Coastal Communities
- SCVA 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:
- ARCT 4208.02: Natural Building
- 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 3006.03: Environmental Ecology
- PLAN 3010.03: Landscape Design
- PLAN 3015.03: Transportation Planning

In any given year, special and variable topics classes may be approved when the content warrants. See the programme director for information.

2. BSc with Minor in Environmental Studies

If 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 programmes 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 be a requirement of both the Major or Honours subject and 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 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: Intro to Environmental Studies OR Dalhousie Integrated Science Programme, SCE 1502.21, 1504.27 or 1510.33
- PHL 3400.03: Environmental Ethics
- ENVS 5901.03: Environmental Problem Solving I
- ENVS 5902.03: Environmental Problem Solving II
- ENVS 5903.03: Introduction to Environmental Law

Electives (2 full credits from the list):
- BOL 2461.03: The Flora of Nova Scotia
- BOL 2465.03: Introduction to Marine Biology
- BOL 2522.03: Plants in the Human Landscape
- BOL 3226.03: Economic Botany, Plants and Civilization
- BOL 7610.03: Nature Conservation
- BIOL 3xx.03: Any ecology-related class at 3000-level or above
- BIO 4003.03: Sustainability and Global Change
- BIOL 4014.03: Environmental Microbiology
- CHEM 3205.03: Environmental Chemistry I
- CHEM 4205.03: Environmental Chemistry
- CHEM 4595.03: Atmospheric Chemistry
- ECON 3225.03: Sediments and Sedimentary Rocks
- ECON 4210.03: Environmental and Resource Geology I
- ECON 3320.03: Quaternary Sedimentary Environments
- ENVS 3400.03: Fundamentals of Hydrogeology
- ENVS 3402.03: Practical Hydrogeology
- ENVS 3403.03: Environmental Geology
- ENVS 3404.03: Geochemistry of Aquatic Environments
- ENVS 3405.03: Geology
- ENVS 3406.03: Exploring Geographic Information Systems
- ENVS 4408.03: Introduction to Landscape Simulation
- ENVS 4492.03: Microbial Ecology and Global Change
- ENVS 4493.03: GIS Applications to Environmental and Geological Sciences
- ECON 3226.03: Regional Development
- ECON 3332.05: Resource Economics
- ECON 3355.05: Environmental Economics
- ENGL 4009.03: Green Reading
- ENVS 2001.03: Analytical Environmental Science and Social Responsibility
- ENVS 3000.03: Environmental Science Internship
- ENVS 3220.03: Environmental Law II: Natural Justice and Unnatural Acts
- ENVS 3222.03: International Law for Environmental Scientists
- ECON 3226.03: Economic Botany, Plants and Civilization
- ECON 3300.03: Environmental Site Investigation
- ECON 3400.03: Sustainability and Global Change
- ECON 3500.03: Geoscience Information Management
- ECON 3626.03: Application of Geographic Information Systems
- ECON 3631.03: Methods in Ecology
- ECON 3801.03: Directed Readings in Environmental Science
- ECON 4002.03: Environmental Impact Assessment
- GEOG 2605.03: Culture and Environmental History
- HIST 3310.03: 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 3004.03: Sustainable Development in Cuba
- MAR 2609.03: Introduction to Marine Biology
- MIG 4104.03: Environmental Microbiology
- OCEA 2000.03: The Blue Planet
- OCEA 2005.03: Climate Change
- OCEA 4101.03: Introduction to Geologic Oceanography
- OCEA 4102.03: Introduction to Physical Oceanography
- OCEA 4303.03: Introduction to Chemical Oceanography
- OCEA 4403.03: Introduction to Biological Oceanography
- PHL 2475.03: Justice in Global Perspective
- PHL 2495.03: Technology and the Environment
- PHYS 2401.03: Astronomy I. The Sky and Planets
- PHYS 2403.03: Climate Change
- PHYS 2301.03: 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 3985.03: Politics of the Environment
- POLI 3990.03: Politics of the Sea I
Environmental Programmes

• HIST 3370.03: American Landscapes
• HIST 3302.03: Technology and History in North America
• GEOG 2800.03: Climate Change
• ERTH 3302.03: Quaternary Sedimentary Environments
• EMSP 3000.06: The Study of Nature in Early Modern Europe
• EMSP 2330.03: Nature Imagined
• ENVS 3400.03: Human Health and Sustainability
• ENVS 3226.03: Economic Botany, Plants and Civilization
• ENVS 3220.03: International Law for Environmental Scientists
• ENVS 3210.03: Environmental Law II: Natural Justice and Unnatural Acts
• ENVS 3000.03: Environmental Science Internship
• ENVS 2610.03: Environmental Law I: Natural Justice and Unnatural Acts
• ECON 3335.03: Environmental Economics
• ECON 3332.03: Resource Economics
• CHEM 4203.03: Environmental Chemistry
• CHEM 2505.03: Environmental Chemistry I
• BIOL 4065.03: Sustainability and Global Change
• BIOL 3601.03: Nature Conservation
• BIOL 3226.03: Economic Botany, Plants and Civilization
• BIOL 3225.03: Botany and Plants in the Human Landscape
• BIOL 2605.03: Introduction to Marine Biology
• ENVS 3501.03: Environmental Problem-Solving I
• ENVS 3502.03: Environmental Problem-Solving II
• ENVS 3200.03: Introduction to Environmental Law
• ENVS 3480.03: Environmental Ethics
• ENVS 1000.06: Introduction to Environmental Science OR DISP
• Required classes:

3. Bachelor of Community Design with Minor in Environmental Studies

Bachelor of Community Design students may take a Minor in Environmental Studies according to the requirements below. Note: In planning their programmes 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.
- At least one half credit beyond the required classes must be at the 3000-level or above.
- No class can fulfill a requirement of both the Major or Honours subject and the Minor.
- Electives (2 full credits from the list):

4. BCSc with a Minor in Environmental Studies

BCSc students must take three full credits of required classes, plus two full credits from the approved list of elective classes below. Note: In planning their programmes 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.
- Electives (2 full credits from the list):

Bachelor of Community Design students may take a Minor in Environmental Studies according to the requirements below. Note: In planning their programmes 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.
- At least one half credit beyond the required classes must be at the 3000-level or above.
- No class can fulfill a requirement of both the Major or Honours subject and the Minor.
- Electives (2 full credits from the list):

Bachelor of Community Design students may take a Minor in Environmental Studies according to the requirements below. Note: In planning their programmes 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.
- Electives (2 full credits from the list):
E. Co-operative Education Programme in Environmental Science

Co-operative Education in Environmental Science is a programme 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 programme requires a minimum of three workterms and normally requires four full years to complete. A fourth workterm is optional, and the programme requires correspondingly longer to complete if four workterms are selected.

A student in the co-operative programme must complete (SCIE 3001.00), 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 programme 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 programme must fulfill the requirements of either a 20-credit B.Sc. Major in Environmental Science, a 25-credit B.Sc. Honours in Environmental Science, a 25-credit B.Sc Combined Honours or Double Major in Environmental Science and International Development Studies, or a B.Sc Double Major in Environmental Science and International Development Studies, 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 Programme in Environmental Science. Interested students should inquire about the programme 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.dal.ca

Scheduling of Academic and Workterms

Cooperative Education Programme in Environmental Science

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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 Science.

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 Programmes 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.

ENVS 3001.03: Environmental Science Field School.

This class is an extensive on-site course delivered the last week of summer holidays. Students live on-site at a research station, and engage in formal class work for 8 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 a set of field exercises. Each will begin with lectures and discussions and background readings, followed by site visits for observation and data gathering. Students will undertake various analyses and submit reports and/or make presentations for evaluation.

ENVS 3200.03: Introduction to Environmental Law.

This class provides a comprehensive overview of all the problems facing the world. The course introduces students to the nature and effect of an existing
ENVS 3210.03: Environmental Law II: Natural Justice and Unnatural Acts.
Offered every second year. Next offered fall 2007. This course will consider administrative processes, the role of legislation, the function of administrative courts 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 1010.03 or BIOL 1020.03 (B- or better) and BIOL 1020.03 or SCIB 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 2008. 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 reduce or avoid environmental disasters. Some 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 relationships 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 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 (hulps and orchids), fruits (apple, blueberry, citrus, grapes, 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. Barazz
PREREQUISITE: BIOL 1010.03 or BIOL 1020.03 (B- or better) and BIOL 1020.03 or BIOL 1020.03 (B- or better)
CROSS-LISTING: BIOL 3226.03

ENV 3300.03: Environmental Site Investigation.
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 1010.03/1012.03, ERTH 1010.03/1020.03 or permission of the instructor

ENV 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 creating 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

ENV 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 GIS (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: ERTH 3500, GEOG 3500, ERTH 9500
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 1000X/Y (with a grade of B- or better) or ENVS 2001.03. Must be a 3rd year student OR have permission of instructor.

**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 waterbodies. This applies Ecology course in field-intensive, and will concentrate on the lakes and rivers of the assess ecosystem health in several lakes and rivers. In the

**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 trade-offs 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.

**INSTRUCTOR(S): Field intensive. Lecture and lab.**  
PREREQUISITE: BIOL 2600.03 and STAT 1000.03 or their equivalents or permission of instructor.  
FORMAT: Field intensive. Lecture and lab.  
PREREQUISITE: BIOL 2600.03 and STAT 1000.03 or their equivalents or permission of instructor.

**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 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 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.

**INSTRUCTOR(S): Field intensive. Lecture and lab.**  
PREREQUISITE: BIOL 2600.03 and STAT 1000.03 or their equivalents or permission of instructor.

**ENVS 3801.03: Directed Readings in Environmental Science.**  
This class is designed for third and fourth-year students who wish to study in an area of environmental science not 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 the co-ordinator of Environmental Sciences 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 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 in the class. An extra fee will be charged to cover the costs of transportation and field expenses.

**INSTRUCTOR(S): Field intensive. Lecture and lab.**  
PREREQUISITE: BIOL 2600.03 and STAT 1000.03 or their equivalents or permission of instructor.

**ENVS 3801.03: Directed Readings in Environmental Science.**  
This class is designed for third and fourth-year students who wish to study in an area of environmental science not 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 the co-ordinator of Environmental Sciences 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.**  
This class is designed for third and fourth-year students who wish to study in an area of environmental science not 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 the co-ordinator of Environmental Sciences 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.**  
This class is designed for third and fourth-year students who wish to study in an area of environmental science not 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 the co-ordinator of Environmental Sciences 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 4700.03: Environmental Toxicology.
The objective of this course is to introduce students to the principles of environmental toxicology. This course will feature lectures and tutorials that take students through the stages of project writing, including research design and methodology. Students will learn about the major groups of contaminants (e.g., organic chemicals, heavy metals, radiation) and the impacts they have on ecosystems. The course will include lectures and tutorials that take students through the stages of project writing, including research design and methodology. Students will learn about the major groups of contaminants (e.g., organic chemicals, heavy metals, radiation) and the impacts they have on ecosystems. The course will introduce the students to the science of risk assessment. Through this course, the students will gain a clear understanding of the molecular mechanisms by which contaminants impact the environment.

INSTRUCTOR(S): S. Band
FORMAT: Lecture/seminar
PREREQUISITE: CHEM 1011.03 and CHEM 1012.03 or DSP, BIOL 2060.03 and BIOL 3060.03 or permission of instructor

ENVS 4901.03: Honours Thesis Part A.
This course will allow students to complete their research project under the supervision of an approved faculty member. The course will include research design and methodology, and an independent environmental science research project. The course will provide students with the opportunity to develop and implement their own research project.

INSTRUCTOR(S): Independent research
FORMAT: Independent research

ENVS 4950.03: Advanced Topics in Environmental Science.
This course will introduce students to the scientific, procedural and political requirements for the BA degree.

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 non-specialist, 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. Comes
FORMAT: Lecture 3 hours
CROSS-LISTING: ERTH 1060.03

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 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/Double Major/Combined Honours as Environmental Science summer credit.
FORMAT: Lecture 3 hours, lab 3 hours
PREREQUISITE: ENVS 1008.03 or ENVS 2001.03
CROSS-LISTING: ENVI 5001.05, CHEE 4720.03

GEOG 2005.03: Landscape Analysis.
This course is designed as a science course with no lab for non-science majors, and assumes no special science background. This physical geography develops an understanding of the surface of the physical earth, including the atmosphere, the hydrosphere, and the earth’s surface features. 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 these landforms), 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
FORMAT: Lecture class 3 hours each week, and 1 hour tutorial every second week; some classes may include map work
CROSS-LISTING: ERTH 1060.03
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 3-4 hours

PREREQUISITE: Recommended E Kath 400.03, 401.03, or 410.03

CROSS-LISTING: PLAN 4001.03

GEOG 2070.03: Area Studies on Mexico and Central America.

Following an examination of the indigenous heritage, and the colonial legacy of the conquistadores, the class deals principally with the contemporary period, examining the Mexican Revolution and its aftermath, the Sorcias 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: HIS 2301.03

GEOG 2100X/Y.06: Environment and Culture.

Concern about the environment is a widespread phenomenon as virtually everyone is confronted by environmental issues—their 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 environmental issues; 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 1200X/Y.06

GEOG 2336.03: Regional Development.

Most societies 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 EEN 306.03.

FORMAT: Seminar 2.5 hours/tutorials

PREREQUISITE: EEN 1011.03 and 1102.03

GEOG 2800.03: Climate Change.

Most models of the atmosphere predict that increasing concentrations of greenhouse gases will continue to warm the surface of the earth and the oceans in the twenty-first century. The magnitude of the warming and its consequences are still very controversial. This class will discuss, mainly from a nonmathematical viewpoint, the reasons for the greenhouse effect, the current warming in the context of the historical record of climate change, and sources of natural climate variability such as the El Nino Southern Oscillation. It will also review arguments that attribute the warming that has occurred in the Twentieth century to natural variability, and those that attribute the warming to increased human emission of greenhouse gases.

CROSS-LISTING: PHVC 2800.03

GEOG 3001.03: Landscape Ecology.

Landscape reflects the interaction of natural and cultural processes. This course introduces the principles of ecology to landscape analysis. It explores relationships between science and planning by examining the landscape to inform community design and land use planning applications.

INSTRUCTOR(S): P. Manuel

FORMAT: Lecture/lab 3-4 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 to the present. 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 course 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

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 (terrestrial, 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 GEOG 1106

CROSS-LISTING: ENV 5180.03

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 arable resources for indigenous peoples, the occupation and settlement of colonial populations, transportation and continental expansion, town planning, the politics of
GEOG 3440.03: Geomorphology.
The quantitative study of Earth’s surface processes and landforms applies to
geoecology, civil engineering, hydrogeology, and physical geography.
Slope stability, weathering and soils development, sediment production,
storage, and deposition in and 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
groundwater, describing, analyzing, and interpreting soils and
geomorphometric analysis. The local Quaternary record of glaciation and stream
incision, and incorporates field and remotely sensed data and digital
landform and change. Early classic viewpoints of landform development are
surficial processes involving weathering, mass wasting, streams, and
geologic activity. The purpose of this course is to provide a
fundamental understanding of landscapes by tectonics and
chemical properties of the rock. The goal of this class is to introduce students to the role of remote sensing as a technique to 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
data 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): J. Sege

FORMAT: Lecture 3 hours/lab 3 hours
PREREQUISITE: ERTH 1080 and one other first year ERTH course; 1090
recommended. Must be a 400 level Science student familiar with Excel,
or with instructor’s permission

CROSS-LISTED: ERTH 4440.03

GEOG 4450.03: Introduction to Landscape
Simulation.
Spatially-extended computer models are tools for the investigation of
landscapes and their 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
beaded rivers, topographic and thermal diffusion, cutting 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 3 hours
PREREQUISITE: ar ERTH 2440.03, MATH 1100 or 1400, PHYC 1100X/Y
and three courses at the 3000-level in the physical sciences (chemistry,
physics, earth science, geology) or with consent of instructor
CROSS-LISTED: ERTH 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 to 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
data 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: ar ERTH 5500.03, ENV 5500.03, or ERTH 5600.03 or
SCIE 5600.03 or GEOG 3500.03
CROSS-LISTED: ERTH 4530.03

GEOG 5300.03: Exploring Geographic Information
Systems. Geographic Information Systems (GIS) is a tool for the management of
government-distributed data, have become indispensable for disciplines where
location of objects and pattern of processes is important. GIS plays a
significant role in a wide range of applications, from modelling, to analysis
and predictions, to decision making. The class is aimed at a broad base of
students, environmental science, ecology, marine biology, oceanography, epidemiology, urban and rural planning, civil engineering,
and any other field involving spatial data. The course will discuss the
principles of raster and vector GIS, and the integration of databases and GPS (global positioning systems) data into GIS. The course will provide an overview 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-LISTED: ERTH 3500, ERTH 3600, ENVS 3500
EXCLUSION: Credit will only be given for one of GEOG 3500, SCIE 3600,
ERTH 3500, ERTH 3600, ENVS 3500

GEOG 4440.03: Geomorphology and Landscape
Evolution. Ripple-to mountain range-scale landforms evolve under predictable
internal and external forces that are mediated 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
sediment processes involving weathering, mass wasting, streams, and
geologic activity. The course will 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
data 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): J. Sege

FORMAT: Lecture 3 hours/lab 3 hours
PREREQUISITE: ERTH 1080 and one other first year ERTH course; 1090
recommended. Must be a 400 level Science student familiar with Excel,
or with instructor’s permission

CROSS-LISTED: ERTH 4440.03

GEOG 4450.03: Introduction to Landscape
Simulation.
Spatially-extended computer models are tools for the investigation of
landscapes and their 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
beaded rivers, topographic and thermal diffusion, cutting 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 3 hours
PREREQUISITE: ar ERTH 2440.03, MATH 1100 or 1400, PHYC 1100X/Y
and three courses at the 3000-level in the physical sciences (chemistry,
physics, earth science, geology) or with consent of instructor
CROSS-LISTED: ERTH 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 to 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
data 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: ar ERTH 5500.03, ENV 5500.03, or ERTH 5600.03 or
SCIE 5600.03 or GEOG 3500.03
CROSS-LISTED: ERTH 4530.03

GEOG 5300.03: Exploring Geographic Information
Systems. Geographic Information Systems (GIS) is a tool for the management of
government-distributed data, have become indispensable for disciplines where
location of objects and pattern of processes is important. GIS plays a
significant role in a wide range of applications, from modelling, to analysis
and predictions, to decision making. The class is aimed at a broad base of
students, environmental science, ecology, marine biology, oceanography, epidemiology, urban and rural planning, civil engineering,
and any other field involving spatial data. The course will discuss the
principles of raster and vector GIS, and the integration of databases and GPS (global positioning systems) data into GIS. The course will provide an overview 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-LISTED: ERTH 3500, ERTH 3600, ENVS 3500
EXCLUSION: Credit will only be given for one of GEOG 3500, SCIE 3600,
ERTH 3500, ERTH 3600, ENVS 3500

GEOG 4440.03: Geomorphology and Landscape
Evolution. Ripple-to mountain range-scale landforms evolve under predictable
internal and external forces that are mediated 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
sediment processes involving weathering, mass wasting, streams, and
glaciers. The concepts of equilibrium, 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
geology, describing and interpreting soils, local geomorphology, and
groundwater.
Geology

Please refer to the Earth Science departmental entry (page 429).

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, HIST 3074.06, HSTC 2200.06, SCIE 2000.06: Introduction to the History of Science
- HIST 2995.03/BOL 3404.03: The History of Modern Medicine.
- BOL 4664.03/OCEA 4331.03/SCIE 4001.03/HIST 3073.03/HSTC 3331.03: History of Marine Sciences

Philosophy of the Sciences

- PHIL 2410.03: Philosophy of Psychology.
- PHIL 2420.03/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
I. Introduction
The Marine Biology Programme 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 at Dalhousie University, and thus many faculty members have active research programmes 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 for 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 a number of marine, rocky shores, estuaries, and sand beaches for field work.

We offer Honours and 20-credit major degree programmes 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 offers an integrated programme 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 practical experience that assists in making educated career choices. The Co-operative Education degree provides an integrated knowledge of marine biology while providing them with work experience that assists in making educated career choices.

II. Degree Programmes
In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 40 of this calendar.

A. Co-operative Education Programme 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 programme 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 (SCE 2801.00) 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.

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.

Programme Co-ordinator
Pinder, A. (pinder@dal.ca) (494-3822)

Programme Advisors
Corbett, C. (corbett@dal.ca), 20-credit majors
Herbig, C. (christopher.herbig@dal.ca), Co-op Academic Advisor, Honours and 20-credit majors
Pinder, A. (pinder@dal.ca), Regular Honours
Schelling, R. (schelling@dal.ca), 20-credit majors

Marine Biology Work-Study Programme

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 programme and required classes for Honours and Major Co-op students are essentially the same as those for the non co-op programme (listed below). Students in the third and fourth year of their Science Co-op programme 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 3074X/Y.03, is split into 3074.X in the fall term of their third year and 3074.Y 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 programme 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 programme 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 programmes should have at least an overall GPA of 3.0 or higher from all first year classes and a grade of B+ in BIO 1010.03 or equivalent. Successful applicants will be informed before the beginning of the fall term.

For further information, please see www.sciencecoop.dal.ca

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B. 20-credit Honours in Marine Biology

Programme Advisors: A. Pinder (494-3822), C. Herbinger (494-1397)
Email: alan.pinder@dal.ca, christoph.herbinger@dal.ca
Honours students must take a minimum of 9 and a maximum of 11 credits in their honour 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:

- BIOC 2000.03
- BIOC 2004.03
- BIOC 2020.03
- BIOC 2040.03
- BIOC 2060.03
- MARI 3071X/Y.06 (3074.03/3076.03) or BIOC 3050.03

A maximum of two of these required classes may be repeated in an attempt to achieve this GPA.

Departmental Requirements

1000 Level

- BIOC 1010.03 or 1020.03 (C- or better)
- BIOC 1011.03 or 1021.03 (C- or better)
- CHEM 1041.03/1042.03 (or 1011.03/1012.03)
- COMM 1501.03
- MATH 1000.03
- STAT 1000.03
- OR
- DPST (SCIE 1500X/Y, 1501X/Y, 1502X/Y, 1503X/Y, 1504X/Y or 1505X/Y) (C- or better)

2000 Level

- BIOC 2003.03
- BIOC 2004.03
- BIOC 2020.03
- BIOC 2040.03
- BIOC 2060.03
- OCEA 2001.03 or 2001.05/2002.05
- STAT 2000.03

3000 and 4000 Level

- MARI 3067.03
- MARI 3071X/Y.06 OR 3074.03/3076.03 OR BIOC 3050.03
- MARI 3212.03 or 3221.03 (strongly recommended but not required)
- MARI 3301.03
- MARI 3501.03
- MARI 3504.03
- MARI 3526.03 or 4001.03
- MARI 4003X/Y.06 or 4901.03/4902.03
- MARI 4074.03, 4611.03

In addition to the required Biology credits (3.0) and Marine Biology credits (3.5 - 4.5), students must select 1.5 - 2.5 more full credits from the list of Marine Biology (MARI) classes or BIOC classes with some marine emphasis to fulfill the university requirement of a minimum of 9 credits beyond the 1000 level in the Honours subject.

Clases 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: BIOC 3042.03, 3050.03, 3065.03, 3069.03, 3102.03, 3126.03, 3151.03, 4061.03, 4063.03, 4074.03, 4611.03

C. Honours Co-op 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 3091.03, 3092.03, 3093.03 (Co-op Work terms)

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 in Marine Biology and Another Subject

Students planning a Combined Marine Biology programme 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

- BIOC 1010.03 and BIOC 1011.03 or BIOC 1020.03 and BIOC 1021.03, CHEM 1041.03/1042.03 or CHEM 1011.03/1012.03, MATH 1000.03, STAT (MATH 1060.03 or SCIE 1500X, 1501.27, 1502.21, 1503.21, 1504.27, or 3100.33 (with a minimum grade of C-)

2000 Level

- BIOC 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, MARE 3301.03 and MARE 3764.03.

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 21 credit Honours in Marine Biology (above) when these classes are included in a Combined Honours degree.

Please note: A double major in Marine Biology and Biology is not offered.

E. 20-credit Major in Marine Biology

Programme Advisors: B. 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.

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Classes required in Major

1000 level
- BIOL 1010.03 or BIOL 1020.03 (C- or better)
- BIOL 1011.03 or BIOL 1021.03 (C- or better)
- CHEM 1041.03/1042.03 or (1011.03/1012.03)
- COMM 1501.03
- MATH 1000.03
- STAT 1060.03
- OR
- DSP (SCIE 1500X/Y, 1510X/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 2044.03
- BIOL 2050.03
- 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 Major Co-op in Marine Biology
Departmental Requirements
Same as for regular Major in Marine Biology as above in addition to the following:
- SCE 2400.00 (Science Co-op Seminar Series)
- MARI 8891.00, 8892.00, 8893.00, 8894.00 (Co-op Work terms)

G. 20-credit Double Major in Marine Biology
Departmental 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 1011.03 and BIOL 1012.03 or BIOL 1021.03 and CHEM 1041.03/1042.03 or CHEM 1011.03/1012.03 MATH 1000.03, MATH/STAT 1060.03 or SCE 1500X/Y, 1501.27, 1502.21, 1503.21, 1504.27, or 1510.33 (with a minimum grade of C)

2000 level
- BIOL 2003.03, 2004.03, 2005.03, 2006.03 and 2000.05

3000 and 4000 level
Minimum of 2.5 full credits 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 DSP. 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 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, BIOL 3033.03, 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 2010.03
CROSS-LISTING: BIOL 3067.03

MARI 3071X/Y.06: MARI 3074.03/3076.03 Biology 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.

These Co-op students must take both classes normally MARI 3074.03 in their third year and 3076.03 in their fourth year. All other students should take MARI 307X/Y.06 because of work term schedule.

NOTE: MARI 3074.03/3076.03 are only open to Marine Biology Co-op (Honours and Major) students that are unable to take MARI 307X/Y.06.

PREREQUISITE: BIOL 2001.03 or BIOL 2003.03, BIOL 2010.03
CROSS-LISTING: BIOL 3074.06 or 3076.03
EXCLUSION: BIOL 307X/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. Ketchington
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 marine phycologists. In this class, algal diversity is presented by one of the marine phycologists.

PREREQUISITE: BIOL 3221.03
CROSS-LISTING: BIOL 3221.03
EXCLUSION: BIOL 3221.03

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.

INSTRUCTORS: L.J. Romanuk

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITES: BCK 2060.03 or BIOL 2003.03

CROSS-LISTING: BILK 3220.03

EXCLUSION: BIOL 3222.03

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 for culture; culture systems; 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.

INSTRUCTORS: C. Hartinger

FORMAT: 3 hour lecture

PREREQUISITE: BCKL 2003.03 or BIL 2003.03

CROSS-LISTING: BILK 3606.03

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: BCKL 2000.03 or STAT 1060.03

CROSS-LISTING: BILK 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 porpoised behaviour and cetacean distribution. Laboratory work will include necropsies of available specimens and an introduction to photographic identification of cetaceans. Lectures will focus on the 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: BILK 2006.03 and BILK 3020.03 (for similar behaviour class), STAT's 1060.03

CROSS-LISTING: BILK 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 patterns of distribution, and planning for statistical analysis. Informal lectures and laboratories will complement field exercises. The major focus will be on the development and utilization of methods specific to the type and trophic levels of the habitat area, the depth and the water. 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 benthos, measurement of environmental factors, and fundamentals of sampling and experimental design.

INSTRUCTOR(S): R. Scheduling
FORMAT: Lecture, Lab
PREREQUISITE: BIOL 2060.03 or BIOL 2001.03 and/or 2002.03
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 ocean 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): H. Whitehead
FORMAT: Lectures 3 hours
PREREQUISITE: BIOL 2001.03 or 2003.03, 2060.03, MATH 1000.03, STAT 1060.03, 2080.03 or equivalent. MATH/STAT 1060.03 and/or 2080.03 or equivalent. MATH 1000.03 or equivalent. MATH/STAT 1060.03 and/or 2080.03 or equivalent. MATH 1000.03 or equivalent.

CROSS-LISTING: BIOL 4335.03, BIOL 4075.03

MARI 4075.02: Nutrition in Aquaculture.
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 biologically active, carbohydrates, and digestion in aquatic animals.

INSTRUCTOR(S): N. McAllister Irwin
FORMAT: Lecture, lab
PREREQUISITE: BIOL 4074.03
CROSS-LISTING: BIOL 4075.03

MARI 4350.03: 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 exploitation, 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 web, 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 models and 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. Callan
FORMAT: Lecture 3 hours
PREREQUISITE: BIOL 2001.03 or 2003.03, 2060.03, MATH 1000.03, STAT 1060.03 or permission of instructor.
CROSS-LISTING: OCEA 4350.03, BIOL 4353.03

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) biological 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 2000.03 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. MATH/STAT 1060.03 and/or 2080.03 or equivalent. MATH 1000.03 or equivalent. MATH/STAT 1060.03 and/or 2080.03 or equivalent. MATH 1000.03 or equivalent.

CROSS-LISTING: BIOL 4369.03, OCEA 4610.03, 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; ecological 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): J. Grant
FORMAT: Lecture 3 hours
PREREQUISITE: At least 2 of BIOL 2000.03, BIOL 2001.03 or 2003.03 or OCEA 2050.03.
CROSS-LISTING: BIOL 4360.03, 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 well 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): M. Lewis
FORMAT: Lecture 3 hours, some labs
CROSS-LISTING: BIOL 4662.03, OCEA 5280.03, OCEA 4250.03

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 current literature.

INSTRUCTOR(S): M. Lewis
FORMAT: Lecture 3 hours, some labs
CROSS-LISTING: BIOL 4662.03, OCEA 5280.03, OCEA 4250.03

MARI 4663.03: History of Marine Sciences.
The 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, HIST 5371.03, SCIE 4001.03

MARI 4664.03: 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 5380.03, OCEA 4350.03

460 Marine Biology
MARI 4800X/Y.06: Special Topics in Marine Biology. Available as 4800X.06, 4801X.06, 4802X.06, 4803X.06, 4804X.06, 4805X.06. 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/topics.html.

NOTE: Students taking 4800X/Y.06 must register in both X and Y as 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 programmes. 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/~biology/2/index.htm) 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 as 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.

MARI 8880.00: Honours Qualifying Examination.
This is an ability requirement of all Biology and Marine Biology Honours students and is normally taken concurrently with MARI 4901X/Y.06/4902.03. Students are required to attend weekly seminars for two academic terms where they and other students in BIXC 4901X/ Y.06 (4901X/4902.06) 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 are 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.

INSTRUCTOR(S): P. Collins, A. Pinder, B. Pohajdak

FORMAT: Weekly seminars 1.5-3.0 hours.

RESTRICTION: Honours students normally in their final year of study.

MARI 8891.00: Co-op Workterm I.
PREREQUISITE: MARI 8890.00

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
Lecturers
Cameron, E., MA (Oxon)
Hilburn, R., BSc, MSc, PhD (Washington)
Surryall, A., MA (U. Moses), AB (Boston)

Postdoctoral Fellows
Brundlund, Johan (Stockholm)
Chan, O-Yeat (Illinois)
Dalili, K., PhD (Rutgers)
Hervik, S., PhD (Cambridge)
Jonsen, Ian (Alberta)
Kenney, Toby (Cambridge)
Manna, Dante (Tulane)
Peralta, Before (Adam Mickiewicz)
Wang, H., PhD (Ottawa)

Learning Centre Director
Stevens, P., BSc (Dalhousie)

Statistical Consultant
Grover, V.

Adjunct Professors
Astatkie, T. (NSAC)
Beattie, M. (MtA)
Bonato, A. (Wilfred Laurier)
Bonner, H. (Memorial)
Brunner, H. (Memorial)
Chipman, H. (Acadia)
Clarke, N. (Acadia)
Clements, J. (UBC)
Cole, D. (Sunnybrook & Women’s Health Science Centre, Toronto)
Dawson, R. (SMU)
Dawson, R. (SMU)
Fitzpatrick, S. (UPEI)
Fry, R. (SFU)
Geist, B. (Dalhousie)
Haynes, R. (Acadia)
Hines, P. (IRDC)
Hurt, D. (IRDC)
McLennan, R. (Waterloo)
McRae, K. (AFH Res. Ctr. Kentville)
Morissette, K.M. (Dal)
Muir, P. (SMU)
Quinn, R. (Dal)
Sutherland, W.R. (Dal)
Thompson, A.C. (Dal)
van den Hoogen, R. (SFU)

Research Associate
Piccinini, R. (Milan)

Information concerning programmes and classes in Mathematics follows immediately below. For Statistics, please refer to the corresponding section of this Calendar.

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 programme 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.

II. Degree Programmes
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 programme are strongly urged to include CSCI 1100.03, 1101.03. 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 40 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.”

Mathematics
Location: Chase Building
Halifax, NS B3H 3J5
Telephone: (902) 494-2572
Fax: (902) 494-5130
Email: chair@mathstat.dal.ca
Websites: http://www.mathstat.dal.ca

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)
Fast, R., BSc, PhD (McCallum)

Note that many programmes 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 40 of this calendar.

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Students in any Mathematics programme are strongly urged to include CSCI 1100.03, 1101.03.

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 40 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.”
Mathematics 463

A. 20-credit BSc Honours in Mathematics

In addition to satisfying the Faculty of Science regulations for Honours Programmes, all Honours programmes in mathematics must include the following classes.

Departmental Requirements

2000 level
- MATH 2001.03/2002.03
- MATH 2030.03/2035.03 and 2055.03
- Two other credits in mathematics at or above the 2000 level - not including classes listed below.

3000 level
- MATH 3030X/Y.06
- MATH 3055X/Y.06

4000 level
- MATH 4055X/Y.06
- Honours Research Project
- Two other credits at or above the 4000 level.

Students may choose programmes 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 programmes must be approved by the Honours advisor.

Students interested in applied mathematics are advised to select a programme 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 3260.03
- MATH 3300.03
- MATH 3330.03
- MATH 3400.03

Students interested in pure mathematics are advised to select a programme 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/MATH 3120.03
- MATH 3540.03

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 programme 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 programme should consult the Mathematics Honours advisor. Combined programmes 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 programmes 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 programmes must satisfy University Regulations, but are designed to satisfy the interests and needs of the student.

Students contemplating a combined honours programme 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 programme. A qualifying year would usually be necessary.

C. 20-credit BSc Major in Mathematics

Departmental Requirements - Major

2000 level
- MATH 2001.03/2002.03
- MATH 2030.03/2035.03 (or 2055.03)
- One other mathematics credit at or above 2000 level

3000 level
- Four other mathematics credits at or above the 3000 level

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 3260.03
- MATH 3300.03
- MATH 3330.03
- MATH 3400.03

Students wishing to concentrate in Pure Mathematics should choose the extra mathematics classes from
- MATH 3030X/Y.06
- MATH 3070.03
- MATH 3080.03
- MATH 3090.03/MATH 3100.03
- MATH 3110.03/MATH 3120.03
- MATH 3540.03

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 3070.03
- MATH 3080.03
- MATH 3030X/Y.06
- MATH 3090.03/MATH 3100.03
- MATH 3110.03/MATH 3120.03
- MATH 3540.03

Students wishing to do a double major in Mathematics and Statistics or Mathematics and Computer Science are advised to consider modelling their programmes on the corresponding combined Honours programme 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 and Minor in Mathematics with BCS Degree

2000 level
- MATH 2001.03/2002.03
- MATH 2030.03/2035.03 (or 2055.03)

3000 level
- Two credits at or above the 3000 level
D. Co-op Education in Mathematics
Co-op Education in Mathematics is a programme 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 (SCEE 2000.00) 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 programmes available within the Department, in the areas of:
- Mathematics
- Statistics
- Combined programmes

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 programme 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 (494-8661)
Email: janssen@mathstat.dal.ca

E. Other Programmes

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 programmes. The requirements are as for the appropriate degree programme 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 programmes. The requirements are as for the appropriate degree programme 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 88 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 programmes. The requirements are as for the appropriate degree programme with the completion of the following classes:
- One of CSCI 11300.03, CSCI 1101.03, CSCI 2103.03, or CSCI 2133.03
- Two of CSCI 31303.03, CSCI 3130.03, CSCI 31303.03, and CSCI 3137.03
- One additional CSCI half-credit at or above the 2000 level

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 Programmes section of this calendar, page 443 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 44 for details.

Concentration in Environmental Science
The Faculty of Science offers a Combined Honours or Double Major degree with Concentration in Environmental Science. Consult the Environmental Programmes section of this calendar, page 443 for details.

Concurrent BSc/DiplEng
The Faculty of Engineering and the Faculty of Science have agreed to offer a concurrent BSc/DiplEng degree program. This programme allows students to complete requirements for the BSc (15-credit) and DiplEng degrees in as little as five years. Consult the degree requirements section, page 45 for details.

Certificate in Actuarial and Financial Mathematics
This programme 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 programme 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 programme in Mathematics and/or Statistics.
2. Completion of the following mathematics classes: MATH 1000, MATH 1010, MATH 2030, MATH 2181, MATH 2200, MATH 2000, MATH 3110, MATH 3300 and MATH 3000.
3. Completion of the following four statistics classes STAT 2060, STAT 2070, STAT 3010 and STAT 3130.

Certificate in Applied and Computational Mathematics
This programme 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 programme in Mathematics or an equivalent program;
2. Completion of the following mathematics classes:
   - MATH 2400, MATH 1000, MATH 1010, MATH 2030, MATH 2002, MATH 2181, MATH 2200, MATH 2300
   - MATH 3110, MATH 3210, MATH 3260, MATH 3330, MATH 3400
   - One additional half-course at 2000 level

IV. Class Descriptions
Class descriptions for Mathematics can be found in the calendar under Mathematics.

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 49, College of Continuing Education for more details).

**MATH 0099.00: Academic Math.**
This non-credit class is intended for students who want to upgrade their math skills for admission to the Bachelor of commerce, Management or Nursing programmes. The class begins with a review of algebra and problem solving skills, then continues with an investigation of linear, quadratic, exponential and log functions. Systems of linear equations, matrices, as well as basic statistics, are taught. Analysis and trigonometry are also studied.

**FORMAT:** Class 3 hours, tutorial 1 hour

**PREREQUISITE:** At least grade 10 math or equivalent

**MATH 0100.00: Pre-Calculus Mathematics (NS Grade 12 Pre-Calculus Math).**
This full-year non-credit class has been designed for students who need to upgrade their skills in order to take calculus. The class begins with a thorough review of the required algebra and then investigates, in detail, the different families of functions: linear, quadratic, absolute, radical, inverse, polynomial, rational, exponential, logarithmic and trigonometric. The concepts of derivative and limit are explored, emphasis is placed on applying functions to real-world situations as well as developing a repertoire of problem-solving skills.

**FORMAT:** Class 3 hours, tutorial 1 hour

**PREREQUISITE:** At least Grade 11 regular or advanced math. Grade 12 regular math is recommended.

**MATH 0111.00: Pre-Calculus 12.**
This 1 term class is designed for students who wish to prepare for calculus. The concepts of derivative and limit are explored. Rational functions, exponential functions with base e, and trigonometry using radian measure are studied.

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.

**NOTE:** MATH 1000.03 and MATH 1010.03 listed below introduce the basic ideas of the calculus, and together constitute a solid foundation for study in the Sciences (Physics, Chemistry, Biology, etc.), as well as for further study in Mathematics. Students who require one or both of these classes, but are uncertain of their ability to handle them, are invited to take the diagnostic and remedial services offered in the Mathematics Learning Centre, located in the basement of the Chase Building.

**FORMAT:** 3 hours class, tutorial 1.5 hours

**PREREQUISITE:** Grade 12 regular or advanced math

**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, 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 1003.03: The Mathematics of Multimedia.**
This class will introduce students to the mathematics behind animation, graphics and sound. Students will learn how to animate objects at various speeds under linear and nonlinear motion, how to use and manipulate colour under different models, how pitch relates to trigonometric and logarithmic functions, and how curves and matrices can be used to manipulate and compress graphic files. The class will teach students to apply mathematics directly within a programming environment in order to explore the relationship between Mathematics, Computer Science and Art.

**NOTE:** Registration in this class is restricted to students in the Faculty of Arts and Social Sciences. It cannot be used to partially satisfy the BSc mathematics requirement.

**FORMAT:** Lecture 3 hours

**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 before replaces MATH 1110.03 and MATH 1120.03 as one way to satisfy the Mathematics requirement for the B. Comm. programme. 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 Mathematics 442 or equivalent

**EXCLUSION:** MATH 1110.03, MATH 1120.03

**MATH 1215.03: Mathematics and Statistics.**
This course emphasizes the application of calculus to the life sciences. The concepts and content studied include derivatives, techniques of differentiation, logarithmic and exponential functions, optimization, basic ordinary differential equations, integration, and techniques and applications of integration.

**NOTE:** Students who have already received credit for MATH 1215.03 cannot subsequently receive credit for MATH 1115.03

**FORMAT:** Lecture/tutorial

**EXCLUSION:** MATH 1000

**MATH 1500X/Y.06: Calculus.**
This class is intended primarily for students who anticipate taking an honours programme in the physical or mathematical sciences. The topics...
of Mathematics 1000/1010 are covered, but in greater depth. Mathematics 1500 is equivalent to a credit to Mathematics 1000/1010.

**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 Mathematics 1000/1010 and 1500.

**MATH 2001.03/2002.03:** Intermediate Calculus I and II.

The topics of these two classes include: derivatives, 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 1001.03

**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 Mathematics 441 or equivalent

**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 2060.03:** Introduction to Probability and Statistics I.

See class description for STAT 2060.03 in the Statistics section of this calendar.

**FORMAT:** Lecture 3 hours

**PREREQUISITE:** MATH 1001.03

**MATH 2080.03:** Statistical Methods For Data Analysis & Inference.

See class description for STAT 2080.03 in the Statistics section of this calendar.

**FORMAT:** Lecture 3 hours

**PREREQUISITE:** Nova Scotia Mathematics 441 or equivalent

**CROSS-LISTING:** CSCE2121.03

**MATH 2113.03:** Discrete Structures II.

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:** CSCE2121.03 or MATH 2112.03

**CROSS-LISTING:** CSCE2123.03

**EXCLUSION:** COMP 2670.03

**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). 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 2408.03

**MATH 2200.03:** Mathematical Modelling I.

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 2090.03 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; data-fitting and generating 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 1100, MATH 2001.

**MATH 2505.03:** Introductory Analysis.

For honours students and other serious students of mathematics. Topics include: the axioms for the real number system, properties 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 utilised.

**FORMAT:** Lecture 3 hours, MLC

**PREREQUISITE:** MATH 1001.03 or 1110.03

**466 Mathematics**
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 2002/1202.03 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.
A brief 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 3090.03: Advanced Calculus I.
An introduction to Fourier series. Topics covered include half range expansions, expansions on other intervals, convergence theorems, differentiation and integration of Fourier series and the complex form of Fourier series. Also an introduction to special functions, including gamma and beta functions and orthogonal polynomials and some of their properties is given.
FORMAT: Lecture 3 hours
PREREQUISITE: MATH 2002.03 and 2040.03

MATH 3100.03: Advanced Calculus II.
Topics covered include properties of functions defined by integrals; differentiation under the integral sign, tests for the convergence of improper integrals, improper multiple integrals and functions defined by improper integrals. Also considered is the Fourier integral and various other integral transforms, a review of multiple integrals and vector field theory. Green's, Stokes' and the divergence theorems and related matters are also considered.
FORMAT: Lecture 3 hours
PREREQUISITE: MATH 3090.03

MATH 3110.03: Differential Equations.
The aim of this class is to give students the ability to analyse 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 3100.03

MATH 3170.03: Introduction to Numerical Linear Algebra.
See class description for CSCI 3113.03, in the Computer Science section of this calendar.
CROSS-LISTING: CSCI 3113.03

MATH 3260.03: Mathematical Modelling II.
A second semester course in mathematical modelling. Emphasis is placed on the construction of appropriate mathematical models and their analysis, both analytically and using numerical methods. The applications chosen are drawn from a wide range of fields.
FORMAT: Lecture 3 hours
PREREQUISITE: MATH 3001.03 (in Mathematics) or MATH 3000.03 (in Statistics)

MATH 3300.03: Optimization.
An introduction to the concepts and applications of linear and non-linear 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 covers graph theory, with an emphasis on applications and modelling. Topics include paths and cycles, shortest route problem, connectivity and coreness, minimum spanning trees, network flows, planar graphs, matchings, assignment problem, graph colouring and applications to scheduling, Hamilton cycles and the Travelling Salesman Problem.
PREREQUISITE: MATH 2112 or MATH 2200

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 3 hours
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 3500.X/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, extreme, 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 2315.03, 2505.03

MATH 3540.03: Basic Set Theory. An introduction to the basic topics of set theory, including equivalence relations, order, recursion, the axiom of choice, ordinals and cardinals.

MATH 3700.03: Mathematics for Economics. See class description for ECON 3700.03 in the Economics section of this calendar.
CROSS-LISTING: ECON 3700.03

MATH 3800.03: Financial Mathematics. This class is an introduction to derivative pricing. Topics include: binomial tree model, stochastic calculus, Black-Scholes model, market price of risk, log-normal models.
PREREQUISITE: MATH 3030.06 or equivalent

MATH 4010.03: 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.
PREREQUISITE: MATH 3030.06 or equivalent
CROSS-LISTING: MATH 5010.03

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 3050.06
CROSS-LISTING: MATH 5045.03

MATH 4055.03: Advanced Algebra II. Topics may include: Algebra over a field, classical representation theory of groups and algebras, linear and Jordan algebras. Additional topics may be covered at the discretion of the instructor.
FORMAT: Lecture 3 hours
PREREQUISITE: MATH 3050.06
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 3050.06
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. This course is an introduction to probability theory. The course will cover the following topics: measure theory, random variables, probability distributions, independence, laws of large numbers, central limit theorem, Markov processes, martingales, and Brownian motion.
PREREQUISITE: MATH 3090.06
CROSS-LISTING: MATH 5090.03

MATH 4116.03: Cryptography. This course is an introduction to modern cryptographic techniques and its mathematical foundations. The material covered includes: elementary number theory and algebra, classical cryptography; 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, 2010.03, and at least one full-year mathematics course beyond the first year
CROSS-LISTING: CSC 4116.03

MATH 4130.03: Analysis of Algorithms. See class description for CSC 4130.03 in the Computer Science section of this calendar.
CROSS-LISTING: CSC 4130.03

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.
MATH 4136.03: Topics in Category Theory.
PREREQUISITE: MATH 3030.06 or permission of the instructor.
FORMAT: Lecture 3 hours
CROSS-LISTING: MATH 5136.03

MATH 4140.03: Introduction to Functional Analysis.
PREREQUISITE: MATH 2135.03 and 3500X/Y.06
FORMAT: Lecture 3 hours
CROSS-LISTING: MATH 5140.03

MATH 4150.03: 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 3210.03 or permission of instructor.
CROSS-LISTING: PHyc 5160.03, MATH 4160.03

MATH 4160.03: Operator Theory.
An introduction to the theory and applications of continuous linear operators on Hilbert spaces, culminating with the spectral theorem, and including such topics as spectrum; adjoint; symmetric; self-adjoint; unitary; and normal operators; polar decomposition; differential and integral operators; C^* algebras; Gelfand's Theorem; and the spectral theorem.
FORMAT: Lecture 3 hours
PREREQUISITE: MATH 4101.03 and 4140.03
CROSS-LISTING: MATH 5160.03, PHYC 4160.03/5160.03

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 3210.03 or permission of instructor.
CROSS-LISTING: PHyc 5160.03, MATH 4160.03

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 and 3000.03 or 2000.03, 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 of differential equations 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 LaSalle's 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 applications covered depend on the specific interests of the instructor and the students.
FORMAT: Lecture 3 hours
PREREQUISITE: MATH 4200.03
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) Norm-Liouville Theory, (ii) the method of Separation of Variables (Eigenfunction expansions), (iii) Green's Functions and (iv) the method of Integral Transformations. 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 3160.03
CROSS-LISTING: MATH 5220.03

MATH 4230.03: Partial Differential Equations.
This course 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 2001, MATH 2002

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
such problems, 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 2001.03, some knowledge of linear programming and the theory of algorithms is recommended.

CROSS-LISTING: MATH 5520.03

MATH 4300.03: 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 2000 or CSCI 3110 or permission of the instructor
CROSS-LISTING: MATH 5300.03, CSCI 4115.03

MATH 4340.3: Discrete Random Structures.

The combination of probability theory and combinatorics has given rise to both a new rich 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 used also 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 4350/5350 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, combinatorial 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 will show how to model various non-combinatorial mathematics combinatorially. Examples include a formal version of the Carley-Hamilton Theorem, the Little-Oxford problem, and simultaneous coset representations.

FORMAT: Lecture
PREREQUISITE: MATH 2060.03 and MATH 3003X/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 modeling aspects of cosmology.

FORMAT: Lecture 3 hours.
PREREQUISITE: Instructor's permission
CROSS-LISTING: MATH 5410.03, PHYC 4601.03/5601.03

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 forms, curvatures, theorems egregium; intrinsic versus extrinsic; geometry; parallel transport, geodesics.

2. Tensors. Tensor spaces and duals; invariance; covariance; contravariance; exterior and tensor algebras.


4. Riemannian Geometry. The metric tensor; length of curves and volume. Tensor fields. Intrinsic differential operations: pull-backs, the vector brackets, the exterior derivative. Differential forms and integration.

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 3005/5005 or permission of the instructor
CROSS-LISTING: MATH 5610.03, PHYC 4651.03/5651.03

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 3110.03
CROSS-LISTING: CSCI 4112.03

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 3005/5005 or MATH 3006/5006 or permission of the instructor
CROSS-LISTING: MATH 5800.03

MATH 4900.03: Combinatorial Game Theory.

This course looks at 2-player games of strategy where there are no chance devices and both players have perfect information—Go, Chess, Checkers and Dots-And-Boxes 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 2002.03/2040.03 or MATH 3003X/Y.06 or permission of the instructor
CROSS-LISTING: MATH 5900.03

MATH 4950.03: Honours Research Project.

This class is required for students in the honours programme. 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 enrolling in their project.

NOTE: Students will be required to take two full 4000-level classes in addition to this one.
MATH 5054.03: Wavelet theory and numerical applications.

The purpose of this class is to present the theory of wavelets, illustrate why they provide us with a particularly powerful tool in mathematical analysis and indicate how they can be used in applications.

FORMAT: Lecture
PREREQUISITE: MATH 4140 or consent of instructor

MATH 8891.00: Co-op Work-Term I.
PREREQUISITE: SCIE 2700.00

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
Senior Instructor
Murray, L. E., PhD (2nd) (Molecular Genetics)

I. Introduction
The Department of Microbiology and 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 Microbiology programme 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 programme in Cellular and Molecular Immunology. The Immunology programme is designed for students interested in fundamental questions in molecular immunology, tumour immunology, autoimmunity or inflammation, and defences against microbial infections. These programmes provide the education needed for graduate studies or for professional activities after graduation in microbiology and/or immunology.

II. Degree Programmes
There are 21-credit Major and Double Major programmes in Microbiology 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 programme (see below) must consult a departmental advisor, preferentially prior to registration for 2nd year classes. Biology Majors are advised that classes in Microbiology and 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 416 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. The Department wishes to draw the attention of students to the class, SCIE 1111.03, which fulfills the writing class requirement for BSc students.

A. 20-credit BSc with Honours in Microbiology and Immunology
This programme 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 programme must normally have obtained a grade of B or better in first year BSc, and CHEM and/or an above median grade in DSP (Dalhousie Integrated Science Programme) and must, in their 2nd year, obtain a grade of at least B in MICI 2100.03 (BIOC 2004.03). Students must consult an undergraduate advisor.

Departmental Requirements

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<tr>
<th>2000 level</th>
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<tr>
<td>BIOC 1010.03/1011.03 or BIOC 1020.03/1021.03</td>
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- CHEM 1011.03/1012.03 or CHEM 1041.03/1042.03
- Two of the following: MATH 1000.03, 1010.03 or STAT 1060.03

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<th>2000 level</th>
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<tr>
<td>MICI 2100.03</td>
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<tr>
<td>BIOC 2001.03</td>
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<td>BIOC 2043.03 and 2601.03</td>
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<tr>
<td>CHEM 2401.03 and CHEM 2402.03</td>
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| 3000 level (See Note 2, below) |
| BIOC 3403.03 |
| MIC 3003.03 |
| MIC 3114.03 |
| MIC 3115.03 |
| MIC 3118.03 (or BIOC 3113.03 or MIC 3119.03) |

| 4000 level |
| MIC 4000.06 |

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 2113.03, 3119.03, 3241.03, 4027.03, 4028.03, 4114.03, 4115.03, 4116.03, 4118.03, 4502.03, 4610.06
- BIOC 4010.03, 4403.03, 4404.03, 4501.03, 4503.03, 4505.03, 4506.03
- BIOC 2014.03, 3504.03, 3501.03, 3502.03, 3513.03, 3522.03, 4101.03, 4104.05
- FOSC 3003.03, BIOC 3241.03

Notes:
1. In the following core classes, MICI 2100.03, 3033.03, 3114.03, 3115.03, 3116.03 (or equivalent) and MICI 4000.03 -- you must achieve a minimum grade of B in five and a minimum grade of B- in the sixth class.
2. The honours research thesis (MICI 4000.06) can be done in either the Microbiology and Immunology, Biochemistry and 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. Similarly, it should be noted that Biology Majors may conduct their honours thesis project (i.e., BIOC 4000.06) in this Department. 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.
4. If you do not meet the prerequisites listed for a class (or fail to obtain permission from an instructor), the Registrar's Office will be informed and your name will be deleted from the class list.

B. BSc with Combined Honours in Microbiology and Immunology and Biochemistry
Students in this programme must complete 11 credits above the 1000 level in Microbiology & Immunology and Biochemistry; students are eligible to participate in a work co-op programme.

Departmental Courses Required at Upper Levels
- CHEM 2401.03 and 2402.03
- BIOC 2300.03 and 2601.03
- MICI 2100.03 or BIOC 2100.03 or BIOC 2004.03
- BIOC 2021.03, 3030.03
- BIOC 3241.03, 3240.03
- MICI 3033.03, 3114.03, 3115.03, 3118.03 or alternatives
- MICI 4610.06 or BIOC 4610.06
- one credit from either BIOC 4403, 4404, or 47XX

Either MICI 4000.06 or BIOC 4610.03 (or that of which, with approval, can be carried out in either department).
C. BSc with Combined Honours in Microbiology and Immunology and Biology

Students in this programme 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 1011.03/1011.05 or BIOL 1012.03/1012.03 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.

Advisors: C. Barnes and D.B. Stoltz (Microbiology and Immunology); J. Wright (Biology).

D. 20-credit Major and Double Major in Microbiology and Immunology

Students should consult a departmental Undergraduate Studies Advisor.

Departmental Core Courses Required

2000 level
- BIOL 1010.03 or BIOL 1011.03 or CHEM 1010.03 or CHEM 1011.03 or CHEM 1012.03 or CHEM 1013.03
- CHEM 2401.03 or CHEM 2402.03 (or CHEM 2411.03) see note below.

3000 level
- BIOL 3003.03, MICI 3033.03, MICI 3114.03, MICI 3115.03 and MICI 3116.03 or MICI 3119.03 with a grade of C- or better.

Notes:
1. CHEM 2401.03/2402.03 are prerequisites for some advanced classes in Biochemistry and Molecular Biology. You may limit your options if you take CHEM 2441.03 instead. Please talk to a supervisor prior to making a decision.
2. 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 and Immunology

Cooperative Education in Science (Co-op) is a programme 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 2800.03) in the fall term of the year they join.

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 taught 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 1003.00/Y.06 or instructor’s consent

MICI 1100.03: Health Science Microbiology.

Elementary bacteriology and immunology includes a study of thestructure 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.

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 or 2011 is allowed as an alternative option); as such, it is directed primarily to second year students. In fact, roughly three out of four Department of Microbiology and Immunology Co-op requires permission from the Microbiology and Immunology Co-op Academic Advisor and Science Co-op Manager. In addition, a GPA of 3.50 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 3.50 for continuance in the programme. 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

C-o-p Academic Advisor in Microbiology/Immunology: Dr. Stoltz (944-2360)
Email: dstoltz@dal.ca

Professor of Science
course is not appropriate for students who are taking or have previously taken other biology courses.

INSTRUCTOR(S): G. Faulkner, G. Rowden, K. West, R. Lisvski

FORMAT: Lecture 3 hours

PREREQUISITE: Grade of B or better in MICI 2100.03 or BIOC 204.03

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, freeze-fracture, colloidal gold probes, autoradiography, -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.


FORMAT: Lecture 3 hours, lab project

PREREQUISITE: Grade of B or better in MICI 2100.03 (or BIOC 204.03) and BIOL 2010.03

CROSS-LISTING: BIOC 3024.03

MICI 3033.03: Microbial Genetics. Hereby 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 BIOC 204.03), BIOC 2300.03 and BIOC 2610.03, BIOC 2010.03 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 2200.05, BIOC 2200.03 and BIOC 2010.03 and concepts from other courses 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 BIOC 204.03), BIOC 2300.03 and BIOC 2610.03, BIOC 2010.03 and BIOC 3400.03 (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 will focus on mechanisms governing the generation and regulation of cell-mediated and humoral immune responses. Topics to be 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 BIOC 204.03), BIOC 2300.03 and BIOC 2610.03, BIOC 2010.03 and BIOC 3400.03 (a B average in these classes with a minimum B in any one)

MICI 3118.03: Medical Bacteriology. This class is designed to give a strong background in medical bacteriology. Lectures will cover 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 BIOC 2400.03

MICI 3119.03: Physiology of the Prokaryotic Cell. The class is designed to introduce students to microbial physiology and to give students an appreciation of the complex physiological processes within microbial cells that are needed for the interaction with the host and environment. Topics discussed include molecular architecture and assembly of cell parts, metabolism and energy production, enzyme and gene regulation, utilization of energy for cell activities, and adaptation responses to host and environmental challenges.

INSTRUCTOR(S): S. Lee, R. Davidson

PREREQUISITE: MICI 2100 (or BIOC 2300 and BIOC 2301, BIOC 2302 and BIOC 2303), CHEM 2401.03 (or 2441.03)

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 J. Wolansky

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): J. Marshall

FORMAT: Lecture/presentation/discussion

PREREQUISITE: Minimum grades of B+ in a 3000 level Microbiology, Pathology or Biochemistry class. Permission of instructor required.

CROSS-LISTING: MICI 5010.03, PATH 5010.03

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 presentations 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 Immunology 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

474 Microbiology and Immunology
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 will consist of lectures and student-led presentations and discussions of current publications (chosen by the course coordinator). Each week will be focused on a single theme but covering topics in the gastrointestinal tract and respiratory and genitourinary systems. Students will typically present two publications in the course. Evaluations will be based on student presentations (50%), 3-page double-spaced written summaries of the discussion following (their own) presentations (20%), and 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 (15%). 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 will use 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 tissue production. The class may include student presentations of reviews and original research papers, and will emphasize the use of modern molecular biological tools in problem solving.

INSTRUCTOR(S): R. Gandino
PREREQUISITE: MICI 3103.03 plus an advanced class in Bacteriology (MICI 3110.03 preferred)
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, switch expression, 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 will consist of lectures and student-led presentations and discussions of current publications (chosen by the course coordinator). Students will typically present two publications in the course. Evaluation will be based on student presentations (50%), 5-page double-spaced written summaries of the discussion following (their own) presentations (30%), and 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 (15%). 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: BIO 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 will consist of 2 laboratory modules (each of 4 weeks duration, one full day per week) and a scientific writing module (15 hours in total of tutorials and computer-based assignments) 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 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 programme. 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.

FORMAT: Laboratory (48 hours total) and 15 hours of tutorial/computer assignments
PREREQUISITE: Consent of the coordinator
CROSS-LISTING: BIOC 4601.03, MICI 5601.03

MICI 4602.03: Laboratory Techniques in Molecular Biology II
This class will consist of 2 laboratory modules (each of 4 weeks duration, one full day per week) and a scientific writing module (15 hours in total of tutorials and computer-based assignments) 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 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 programme. 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.

FORMAT: Laboratory (48 hours total) and 15 hours of tutorial/computer assignments
PREREQUISITE: Consent of the coordinator
CROSS-LISTING: BIOC 4601.03, MICI 5602.03

MICI 4610.06: 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, one full day per week or two 7-hour sessions 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 undergraduate students 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(S): L. Murray and P. Liu
INSTRUCTOR(S): Faculty members of the Departments of Biochemistry & Molecular Biology, and Microbiology & Immunology
FORMAT: Twelve 6-hour labs and three 5-hour tutorials/computer assignments
PREREQUISITE: BIOC 3402.05 and MICI 3030.03 (Grade B or higher). Note: MICI 4601 and MICI 4602 is equivalent to MICI 4610
CROSS-LISTING: BIOC 5610.06, MICI 5610.06, BIOC 4610.06, BIOC 4610.06, BIOI 4013.06, BIOI 5610.06

MICI 4700/X.Y.06: Directed Research Project
This class is in most respects equivalent to MICI 4900.08. 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
Faculty of Science

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 3013.03, 3114.03, 3115.03 and 3116.03 (or equivalent)

MICI 4701.03/4702.03: Advanced Topics in Microbiology and Immunology.

This is an independent studies class intended to permit further study of a specific topic of interest, or to correct a deficiency in a student’s programme.

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 programme.

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

Life Sciences Centre

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Telephone: (902) 494-3417

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Dean

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Programme Advisors

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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 programmes 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 Programmes

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 40 of this calendar.

A. 20-credit BSc with Honours in Neuroscience

This programme, 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 programme. Students interested in the Neuroscience Honours degree programme should consult with Dr. S. Adams 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 programme 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 programme 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.

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.X.03 or PSYO 1012.X.03) or Introductory Biology classes (BIOL 1010.X.03 or BIOL 1020.X.03 or BIOC 1010.X.03 or BIOC 1020.X.03 or SCI 1510.X.27 or 1530.X.27 or 1531.X.33. An A-average is typically required for admission to Honours.

Students taking SCIE 1920.X.21 (DSB for Environmental Science) and wish to enter into a Neuroscience programme should consult one of the Neuroscience advisors.

Departmental Requirements

1000 level

- MATH 1010.03
- One half credit in Mathematics (ideally, but not necessarily, MATH 1010.03)
- BIOL 1010.X.03 or BIOL 1020.X.03 or CHEM 1011.X.03 or 1012.X.03
- Either PHYC 1100.X.06 or 1300.X.06 or PSYO 1011.X.03 or 1012.X.03 or PSYO 1011.X.03 or 1012.X.03
- Or in lieu of the above, SCIE 1510.X.27, 1530.X.27, 1534.X.27, or 1531.X.33
- Students are strongly recommended to take both PHYC 1100.X.06 or 1300.X.06 or PSYO 1011.X.03 or 1012.X.03 or PSYO 1011.X.03 or 1012.X.03 prior to finishing their degree.

2000 level

- NESC 2007.03
- NESC 2470.03
- NESC 3001.03
- PSYO 3201.03
- Either PHYC 3137.03 or PHYC 3165.03 or PHYC 3190.03 or PHYC 3227.03 or PHYC 3237.03 or PHYC 3260.03 or PHYC 3270.03 or PHYC 3670.03 or MATH 1010.03
- At least one additional half credit selected from NESC 3044.03, 3045.03, 3051.03, 3052.03, 3125.03, 3131.03, 3132.03, 3133.03, 3134.03, 3135.03, 3163.03, 3190.03, 3227.03, 3237.03, 3260.03, 3270.03, 3670.03, 3770.03, 3790.03, 3970.03, BIOC 3200.03, BIOL 3020.03

3000 level

- NESC 3044.03
- NESC 3045.03
- NESC 3051.03
- NESC 3052.03
- NESC 3053.03
- NESC 3131.03
- NESC 3132.03
- NESC 3133.03
- NESC 3134.03
- NESC 3135.03
- NESC 3163.03
- NESC 3190.03
- NESC 3227.03
- NESC 3237.03
- NESC 3260.03
- NESC 3270.03
- NESC 3770.03
- NESC 3790.03
- BIOC 3200.03
- BIOL 3020.03

4000 level

- NESC 4000.X.06
- Two half credits selected from NESC 3000.X.04 or 3000.X.05
- 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 Sociology, History, Philosophy, etc. Students proposing to take such a course of study must consult with an Honours advisor in both departments to arrange programme details.

If Neuroscience is chosen as the primary subject in a Combined Honours degree, the following classes are required.

1000 level

- MATH 1010.03
- One other half credit in Mathematics (ideally, but not necessarily, MATH 1010.03)
- BIOL 1010.X.03 or BIOL 1020.X.03 or CHEM 1011.X.03 or 1012.X.03
- PSYO 1011.X.03 or 1012.X.03 or PSYO 1012.X.03 or 1022.X.03
- Or, in lieu of the above, SCI 1510.X.27, 1530.X.27, 1534.X.27, or 1531.X.33
- Students are strongly recommended to take PHYC 1100.X.06 or 1300.X.06 prior to finishing their degree.

2000 level

- NESC 2007.03
- NESC 2470.03
- NESC 3001.03
- PSYO 3201.03
- Either PHYC 3137.03 or PHYC 3165.03 or PHYC 3190.03 or PHYC 3227.03 or PHYC 3237.03 or PHYC 3260.03 or PHYC 3270.03 or PHYC 3670.03 or MATH 1010.03
- At least one additional half credit selected from NESC 3044.03, 3045.03, 3051.03, 3052.03, 3125.03, 3131.03, 3132.03, 3133.03, 3134.03, 3135.03, 3163.03, 3190.03, 3227.03, 3237.03, 3260.03, 3270.03, 3670.03, 3770.03, 3790.03, 3970.03, BIOC 3200.03, BIOL 3020.03

3000 level

- NESC 3044.03
- NESC 3045.03
- NESC 3051.03
- Two additional half credits selected from NESC 3044.03, 3045.03, 3051.03, 3052.03, 3125.03, 3131.03, 3132.03, 3133.03, 3134.03, 3135.03, 3163.03, 3190.03, 3227.03, 3237.03, 3260.03, 3270.03, 3670.03, 3770.03, 3790.03, 3970.03, BIOL 3020.03
- BIOL 3020.03

4000 level

- NESC 4000.X.06
- Two half credits selected from NESC 3000.X.04 or 3000.X.05
- 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 3001.03
- PSYO 3201.03
- Either PHYC 3137.03 or PHYC 3165.03 or PHYC 3190.03 or PHYC 3227.03 or PHYC 3237.03 or PHYC 3260.03 or PHYC 3270.03 or PHYC 3670.03 or MATH 1010.03
- At least one additional half credit selected from NESC 3044.03, 3045.03, 3051.03, 3052.03, 3125.03, 3131.03, 3132.03, 3133.03, 3134.03, 3135.03, 3163.03, 3190.03, 3227.03, 3237.03, 3260.03, 3270.03, 3670.03, 3770.03, 3790.03, 3970.03, BIOC 3200.03, BIOL 3020.03

3000 level

- NESC 3044.03
- NESC 3045.03
- NESC 3051.03
- Two additional half credits selected from NESC 3000.X.04 or 3000.X.05
- Honours Qualifying Exam.

4000 level

- NESC 4000.X.06
- Two half credits selected from NESC 3000.X.04 or 3000.X.05
- One additional half credit (or two half credits) in Neuroscience classes at the 3000/4000 level.
- If students undertake, as part of a Combined Honours degree, another programme of study that requires BIOC 2010.X.03, they should substitute another half-credit elective in a Neuroscience topic at the 2000 level for BIOC 2010.X.03.

C. 20-credit BSc with Major in Neuroscience

This programme is intended to provide a four-year survey of neuroscience, and is designed for students not anticipating subsequent graduate-level training in neuroscience or related disciplines. The Major programme thus differs from the Honours programme 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 (PSY 1011.03/1012.03 or PSY 1021.03/1022.03) or Introductory Biology classes (BIO 1011.03/1011.03 or BIO 1021.03/1021.03) 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 1101.03)
- BIO 1010.03/1011.03 or BIO 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
- CHEM 1011.03/1012.03
- BIO 1010.03/1011.03 or BIO 1020.03/1021.03
- 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, BIO 2200.03, BIO 2300.03, PHYC 2260.03

3000/4000 level
- Two half credits of laboratory classes selected from NESC 3044.03, 3137.03, 3270.03, 3440.03, 3579.03
- Two more half credits selected from: NESC 3005.03, 3041.03, 3134.03, 3135.03, 3136.03, 3137.03, 3165.03, 3190.03, 3227.03, 3257.03, 3270.03, 3272.03, 3274.03, 3275.03, 3276.03, 3700.03, 3709.03, 3717.03, 4077.03, 4078.03
- Two additional full credits (or four half credits) in Neuroscience classes at the 3000/4000 level.

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 1101.03)
- BIO 1010.03/1011.03 or BIO 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
- BIO 1010.03/1011.03 or BIO 1020.03/1021.03
- 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, BIO 2200.03, BIO 2300.03, PHYC 2260.03

3000/4000 level
- Two half credits of laboratory classes selected from NESC 3044.03, 3137.03, 3270.03, 3440.03, 3579.03
- Two more half credits selected from: NESC 3005.03, 3041.03, 3134.03, 3135.03, 3136.03, 3137.03, 3165.03, 3190.03, 3227.03, 3257.03, 3270.03, 3272.03, 3274.03, 3275.03, 3276.03, 3700.03, 3709.03, 3717.03, 4077.03, 4078.03
- Two additional full credits (or four half credits) in Neuroscience classes at the 3000/4000 level.

I. Class Descriptions

In 2006/2007, the full-credit Introduction to Psychology classes were divided into two half-credit classes. PSY 1000X/Y.06 became PSYO 1011.03 and 1022.03, and PSY 1000X/Y.06 became PSYO 1011.03 and 1022.03. If a class now requires PSYO 1011.03 and 1022.03 as prerequisites, this requirement may also be met by either PSY 1010.03 or PSYO 1011.06.

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 whose 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.

**NESC 2130.03: Introduction to Neuropsychology.** Building on the knowledge of holistic aspects of brain function gained in NESC 2270.03, this class explores the neuronal basis of activity in all nervous systems. Starting with an analysis of the structure of neurons, the class will examine topics such as neural coding, the evolution of behaviour, and animal communication. We will study the behaviour of a wide range of animals. 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 2072.03 and/or NESC/PSYO 2570.03, respectively.

**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 cortices 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 2070.03 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 (with a grade of B- or better)

**CROSS-LISTING:** PSYO 2470.03

**EXCLUSION:** NESC/PSYO 2570.03

**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):** Staff

**FORMAT:** Lecture 3 hours

**PREREQUISITE:** NESC/PSYO 2070.03 or instructor's consent

**CROSS-LISTING:** PSYO 2570.03

**EXCLUSION:** NESC/PSYO 2072.03

**NESC 3000X/Y.08: Independent Research in Neuroscience.** Primarily for Honours students wishing further experience in neuroscience research. Students not in the Honours programme normally will be expected to have a grade of B- or better in Psychology 2000.03, a high level of performance in other Neuroscience courses, and an overall B+ (GPA 3.55) 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 is prepared to supervise the course of study. 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 3000.X/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: NESC/PSYO 3000.X/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): Staff

FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and one of NESC/PSYO 2470.03 or PSYO 2770.03
CROSS-LISTING: PSYO 3005.03
EXCLUSION: NESC/PSYO 2140.03 or NESC/PSYO 2470.03

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 1003.X/Y.06 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. Schulman
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 3003.X/Y.06

NESC 3034.03: 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 will be expected to develop the ability to complete a full, independent project.

INSTRUCTOR(S): L. Philmore
FORMAT: Research lab 4 hours
PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO 2501.03, and one of NESC/PSYO 2470.03 or PSYO 2770.03
CROSS-LISTING: PSYO 3041.03
EXCLUSION: PSYO 3061.03

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 is not the case. This class will examine the neural basis for the perception of light, colour, depth and form in a variety of species, including several as specialized mechanisms of natural processing. In addition, this 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): Staff
FORMAT: Lecture 3 hours, research lab 1 hour
PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and one of NESC/PSYO 2470.03 or PSYO 2770.03
CROSS-LISTING: PSYO 3051.03
EXCLUSION: NESC/PSYO 3051.06

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 ear; 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
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 the tools of cell biology that are specific to excitable cells. Topics will include ion channels, protein trafficking, neurons and glia, mechanism of neurotransmitter release, synaptic and metabotropic neurotransmitter receptors, secondary messengers, gene expression, axon 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: BIOC 2011.03 (B+ or better) or permission of instructor
CROSS-LISTING: BIOC 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 the laboratory class, we will explore the methods, findings and theories that have driven recent advances in our understanding of attention. While laboratories will emphasize behavioral 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. Klener
FORMAT: Lecture 3 hours, research lab 2 hours
PREREQUISITE: NESC/PSYO 2130.03 or NESC/PSYO 2150.03, and one of NESC/PSYO 2130.03 or NESC/PSYO 2150.03 or NESC/PSYO 2570.03
CROSS-LISTING: PSYO 3131.03
EXCLUSION: NESC/PSYO 3132.06

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 neuroimaging, neurovascular 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: NESC/PSYO 2130.03 or NESC/PSYO 2150.03, and one of NESC/PSYO 2130.03 or NESC/PSYO 2150.03 or NESC/PSYO 2570.03
CROSS-LISTING: PSYO 3132.03
EXCLUSION: NESC/PSYO 3132.06

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, trauma, and hippocampal processes. The lectures will emphasize cognitive behavioral approaches to the study of memory with an explicit focus on empirical research methods, data, and interpretation of results.

INSTRUCTOR(S): T. Taylor-Henricks
FORMAT: Lecture 3 hours, research lab 2 hours
PREREQUISITE: NESC/PSYO 2130.03 or NESC/PSYO 2150.03, and NESC/PSYO 2570.03
CROSS-LISTING: PSYO 3133.03
EXCLUSION: NESC/PSYO 3133.06

NESC 3134.03: Research Methods in Psycholinguistics.

This class covers the cognitive bases of language processing from a number of perspectives. Topics will include: Comparisons of human language with other communication systems; first and second language acquisition; processing at the phonological, morphological, lexical, sentence, and discourse levels; roles of attention and memory in language processing; relationship of music and mathematics to language; computational modeling of language acquisition and processing; the processing of signed languages such as American Sign Language; and the neural basis of language processing. 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.

INSTRUCTOR(S): A. Newman
FORMAT: Lecture 3 hours, research lab 2 hours
PREREQUISITE: NESC/PSYO 2130.03 or NESC/PSYO 2150.03, and NESC/PSYO 2570.03
CROSS-LISTING: PSYO 3134.03
EXCLUSION: NESC/PSYO 3134.06

NESC 3137.03: Research Methods in Cognitive Neuroscience.

The focus of this class will be on the methodological approaches as well as the techniques used to study human cognition from a neural perspective. Readings will be used in which cognitive functions such as memory, language, perception and attention are examined using brain imaging methods; methods discussed will include positron emission tomography (PET), functional magnetic resonance imaging (fMRI), magnetoencephalography (MEG), electroencephalography/event-related potential measures (EEG/ERP) and eye movement recordings. Students will learn about these methods, their strengths and weaknesses, as well as how they can be used together to draw a complementary conclusion. Students will conduct several research projects in the laboratory and will learn the basics of human electrophysiological recording and analysis methods. Students will serve as experimenters and subjects for class experiments and will be responsible for producing written laboratory reports for each experiment.

RECOMMENDED: NESC/PSYO 2130.03
INSTRUCTOR(S): A. Newman
FORMAT: Lecture 2 hours, research lab 2 hours
PREREQUISITE: NESC/PSYO 2130.03 or NESC/PSYO 2150.03, and NESC/PSYO 2570.03
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 behaviors taken from a wide range of animals, both invertebrates and vertebrates. 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. Adams
FORMAT: Lecture 2 hours, research lab 2 hours
PREREQUISITE: NESC/PSYO 2160.03 or BIOC 3082.03, and NESC/PSYO 2570.03 or BIOC 3070.06 or MARI 4070.06, and PSYO/PSYO 2010.03 or NESC/PSYO 2012.03 or one of following Biology classes: 2003.03, 2004.03, 2005.03, 2030.03, 2060.03
CROSS-LISTING: PSYO 3165.03

Neuroscience 481
NESC 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) propensities, 4) thematic structures, 5) speech comprehension, 6) speech production, 7) speech acts, 8) discourse, and 9) language development. INSTRUCTOR(S): B. Rusak. FORMAT: Lecture 3 hours. PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and NESC/PSYO 2130.03. Please note: Major and Honours students in the third year of the Linguistic programme do not require these prerequisites. They will, however, require a Prerequisite Override from the instructor before being able to register for the course.

CROSS-LISTING: PSYO 2390.03

INSTRUCTOR(S): J. Stamp. FORMAT: Lecture 3 hours. PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and one of NESC/PSYO 2120.03, 2150.03, 2170.03, 2270.03, or PSYO 2770.03. SIGNATURE REQUIRED

NESC 3237.03: 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 behavioral 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. McGone. FORMAT: Lecture 3 hours. PREREQUISITE: PSYO 2000.03 or NESC 2007.03, or either NESC/PSYO 2170.03 or NESC/PSYO 3270.03, and NESC/PSYO 2310.03 is helpful.

CROSS-LISTING: PSYO 2327.03

NESC 3260.03: Biological Rhythms. The temporal structure of animal and human physiology is governed by an internal temporal metronome. This internal clock is the circadian clock, which is especially evident in the rhythm of sleep and wakefulness. Other examples include the rhythm of eating and drinking, release of hormones and the production of enzymes, and the onset and offset of reproductive cycles. The circadian clock is affected by environmental factors, such as light and temperature, and is reset by these factors on a daily basis, hence the term “circadian.” The circadian clock is also affected by internal factors, such as the level of the hormone melatonin, which is produced by the pineal gland and released in a rhythmic manner. The circadian clock is also affected by internal factors, such as the level of the hormone melatonin, which is produced by the pineal gland and released in a rhythmic manner. The circadian clock is also affected by internal factors, such as the level of the hormone melatonin, which is produced by the pineal gland and released in a rhythmic manner. The circadian clock is also affected by internal factors, such as the level of the hormone melatonin, which is produced by the pineal gland and released in a rhythmic manner. The circadian clock is also affected by internal factors, such as the level of the hormone melatonin, which is produced by the pineal gland and released in a rhythmic manner.

INSTRUCTOR(S): W.H. Baldridge and F.M. Smith (Anatomy and Neurobiology). See class description for ANAT 2100.03 in the Anatomy and Neurobiology section of this calendar.

FORMAT: Lecture/lab 3 hours. PREREQUISITE: PSYO 2000.03 or NESC 2007.03, or either NESC/PSYO 2170.03 or NESC/PSYO 3270.03, and NESC/PSYO 2470.03. SIGNATURE REQUIRED

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 neuroanatomical-approach techniques are recommended 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 used both in sensory and motor system preparations. Neuronal activity is introduced by way of techniques usually selected from the following: K-G pipetting of neurons, immunocytochemistry, dye-tracing of connections, and electronmicroscopy of the visual system or central nervous system.

SIGNATURE REQUIRED

INSTRUCTOR(S): Staff. FORMAT: Lab 3 hours. PREREQUISITE: PSYO 2000.03 or NESC 2007.03, NESC/PSYO 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. Moumennezhad. FORMAT: Lab 3 hours. PREREQUISITE: PSYO 2000.03 or NESC 2007.03, NESC/PSYO 2470.03 and 2570.03, or NESC/PSYO 3270.03, and instructor’s consent.

CROSS-LISTING: PSYO 3371.03

NESC 3440.03: Neuroanatomy. See class description for ANAT 2100.03 in the Anatomy and Neurobiology section of this calendar.

INSTRUCTOR(S): W.F. Baldwin and F.M. Smith (Anatomy and Neurobiology). FORMAT: Lecture/lab 3 hours

PREREQUISITE: ANAT 2100.03 or permission of the instructor.

CROSS-LISTING: ANAT 2310.03, 2311.03, 2312.03

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 behavior, and neurogenetic analysis of human behavior. 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.
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 functions, 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 neurological aspects of psychology.

INSTRUCTOR(S): T. Perrot-Sinal
FORMAT: Lecture 3 hours
PREREQUISITE: NESC/PSYO 2570.03, AND BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03 or SCIE 1920X/1921 or SCIE 1950X/51 or SCIE 1960X/Y 21 or SCIE 1540X/Y 27; BOL 2020.03 and BOL 2030.03.
CROSS-LISTING: PSYO 3470.03
EXCLUSION: NESC/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): Staff
FORMAT: Lecture 3 hours
PREREQUISITE: NESC 3770.03 or NESC 3775.03, and NESC/PSYO 2470.03 or PSYO 2770.03
CROSS-LISTING: PSYO 3770.03
EXCLUSION: NESC/PSYO 3770.06 or 3771.06.

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, FMRI scan experiments, and 8) neural models of language processing.

INSTRUCTOR(S): Staff
FORMAT: Lecture 3 hours
PREREQUISITE: NESC/PSYO 3770.03 and instructor's consent
CROSS-LISTING: PSYO 3779.03
EXCLUSION: NESC/PSYO 3770.06

NESC 3970.03: Molecular Neuroscience.

This class introduces basic concepts in Neuroscience, 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 messenger RNAs, receptors, intracellular signaling cascades, transcription factors, and proteins. 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.

INSTRUCTOR(S): T. Trappenberg
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, perceptions and associative attractor networks, and system-level organizations such as invarient 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.
CROSS-LISTING: PSYO 4230.03

400-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.

See class description for PSYO/NECS 3501.03 or instructor's consent.
CROSS-LISTING: PSYO 4070.03

NESC 4070.03: Neuroscience Seminar.

FORMAT: Seminar 2 hours
PREREQUISITE: NESC/PSYO 2470.03, 2770.03 or 3270.03, or instructor's consent
CROSS-LISTING: PSYO 4070.03, ANAT 3970.03.

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
PREREQUISITE: Restricted to NESC/PSYO Honours Students
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 system 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
CROSS-LISTING: PSYO 4170.03

NESC 4230.03: Human Performance Topics.

FORMAT: Seminar 2 hours
CROSS-LISTING: PSYO 4230.03

Neuroscience 483
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 level 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 defense mechanisms will also be studied.

COORDINATOR(s): 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 4509.03, BIOC 4806.03, and BIOL 4407.03

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.

COORDINATOR: H.A. Robertson
FORMAT: Lecture 3 hours
PREREQUISITE: NESC 4374.03 (with a grade of B or better).
CROSS-LISTING: PHAC 4509.03, 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 discuss 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.

INSTRUCTORS: Staff
CROSS-LISTING: PSYD 4503/C/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. Courses will consist of review papers and research papers. Students will present the research papers and discuss the class in the discussion. Grades will be given for presentations and participation in discussion and for an essay, which will be a critical inquiry into one of the topics covered in the class.

FORMAT: Seminar 2 hours
PREREQUISITE: NESC/PSYD 4240.03, NESC/PSYD 4240/03
CROSS-LISTING: PSYD 4740.03

Oceanography

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Dean
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Chairperson of Department
Boudreau, B.P. (494-5057)
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McEwan, A. (494-3021)
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Kelley, D. (494-1694)

Professors Emeriti
Bosom, A.J., MA (Carolina), PhD (Scraps), FRCSC
Foxman, R.O., MSc (Winn., & Mary), Ph.D (UBC)
Mills, E., BSc (Car.), MSc, Ph.D (Yale), P.S.

Professors
Beaumont, C., BSc (Sussex), Ph.D (Dal), (Canada Research Chair)
Bentzien, P., BSc (McGill), MSc (UBC), Ph.D (McGill) (cross appointment with Biology), DFC Chair in Fisheries Resource Conservation Genetics
Bowden, B.P., BSc (UBC), MSc (Texas A & M), Ph.D (Yale)
Cullen, J., BSc (Dal), Ph.D (Oomens) (NSERC/Salishan Research Chair) (Gillam Chair in Ocean Studies)
Grazel, J., BSc (Ouak), MSc (South Carolina)
Graubatch, B.J., BSc (Liverpool), Ph.D (Cambridge) (NSERC/MARTEC/ AUS Research Chair)
Hay, A., BSc, MSc (Winn.), Ph.D (UBC)
Hill, P.S., AB (Dartmouth), Msc (Ph.D) (Wash)
Lawrence, M.M., BSc, MSc, PhD (UBC)
Leuten, K.E., BA (Ontario), MSc (Temple), PhD (MIT)
Moore, R.M., BA (Ontario), Ph.D (Southampton)
Ruddick, B.R., BSc (Uvic), Ph.D (MIT)
Thompson, K.J., BSc, MSc, PhD (Uah) (jointly with Mathematics and Statistics) Canada Research Chair

Associate Professors
Folkins, J., BSc (Dal), MSc, Ph.D (Toronto) (cross appointment with Department of Physics and Atmospheric Science)
Kelley, D., BSc (Mt A), Ph.D (Dal)
Mattsson, A., BSc (McGill), MSc, Ph.D (UBC), Ph.D (UBA) (NSERC UFA)
Sheng, J., BSc (East China Tech. Univ.), MSc, PhD (U. of Min) (NSERC/ MARTEC/AUS Research Chair)
Taggart, C.T., BSc (Carleton), MSc (York), Ph.D (McGill)
Thomas, H., BSc (Dawidow), Ph.D (Rosevelt)

Assistant Professors
Fennel, K., MSc, Ph.D (Bristol), Canada Research Chair
Gentilman, W.C., BSc (McGill), PhD (Dartmouth) (cross appointment with Engineering Mathematics)
Kimura, M., BSc (Glasguth), MSc, Ph.D (Dal) (NSERC/ACER Scholar)
Ross, T., BSc (Marmot), Ph.D (Marmot) (NSERC UFA)

Honorary Adjunct Professors
Brice, M., MSc (Buenos Aires), Ph.D (UNY)
Crandall, P., BSc, Ph.D (Dal)
Frank, K.T., BSc, Ph.D (Tulane)
I. Introduction

Oceanography is an interdisciplinary 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 opportunities 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, and Earth Sciences. Honours students in these Combined Honours Programmes 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 Programmes section of this calendar for more information. Students registering in the combined programme. Students should also consult the handbook “Undergraduate Studies in Chemistry” for more information. Honours students in these Combined Honours Programmes must be passed with a grade of C or better.

II. Degree Programmes

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 40 of this calendar.

A. Combined Honours Programme: 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 programme in Marine Biology/Oceanography are that the students take a minimum of 11 credits beyond 1000 level in the two subjects with not more than 7 nor fewer than 4 in either. Core Biology requirements for the current Marine Biology Programme (e.g. 1000-3000 level courses in the Calendar) are unchanged. Other courses currently required by the Marine Biology Programme in Chemistry, Mathematics, and Statistics are unchanged; however, the 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 seeking with faculty in Oceanography on their honours research would be required to enroll in BIOL 4900.06 as well as BIOL 9990.00.

Required Classes

- OCEA 2000X/Y.06 The Blue Planet
- *CHEM 3200.03 The Moving Ocean
- *OCEA 3002.03 The Salty Sea
- *CHEM 5003.03 Dynamics of Biological Oceanography
- *OCEA 4140.03 Biological Oceanography
- BIOL 4900.06 Honours Thesis/Project
- BIOL 9990.00 Honours Qualifying Examination

Electives

- OCEA 4140.03 Fisheries Oceanography
- *CHEM 4303.03 Benthic Ecology
- *CHEM 4403.03 History of Marine Sciences
- *CHEM 4480.03 Marine Micromodel
- *CHEM 4703.03 Deep Sea Biology
- OCEA 4203.03 Biology of Phytoplankton
- OCEA 4600.03 Invertebrate Fisheries and Aquaculture
- OCEA 4751.03 Environmental Impacts in Marine Ecosystems

B. Combined Honours Programme: 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, 2401.03, 2402.03, 2400.03, and 2402.05 must be part of this combined honours programme 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 programme. Students should also consult the handbook “Undergraduate Studies in Chemistry” for more information. Courses 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 1010.03 + 1011.03 Differential and Integral Calculus I & II
- *PHYS 1200.06 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 + 2402.03 Thermodynamics + Kinetics and Dynamics
- *CHEM 2401.03/2402.03 Organic Chemistry
- CHEM 2951.03 Environmental I

3000 and 4000 level classes (chemistry)

- *CHEM 5020.03 + 5202.03 Spectroscopy & Separations + Instrumental Methods
- *CHEM 4203.03 + 4205.03 Environmental II + Chemometrics
- Three classes from CHEM 31XX, 33XX, 40XX
- *CHEM 9890 Honours Qualifying Exam

Oceanography and related classes

- OCEA 2000.06 The Blue Planet
- OCEA 2800.05 Climate Change
• ERTH 4000.00 Advanced Field School (NB: 0 credit hours)
• ERTH 3303.03 Stratigraphy
• ERTH 3140.03 Structural Geology
• ERTH 2205.03 Introduction to Palaeontology
• ERTH 2203.03 Sediments and Sedimentary Rocks
• ERTH 2110.03 Field Methods
• ERTH 2303.03 Sediments and Sedimentary Rocks
• ERTH 1903.03 Structural Geology
• ERTH 1903.03 Stratigraphy
• ERTH 4400.01 Advanced Field School (NB: 0 credit hours)
• ERTH 4390.03 Tectonics

Additional credits ERTH credits will be chosen from the following list so that the total of OCEA and ERTH classes is between 11 and 13 credits.

• ERTH 2400.03 Marine Geoscience
• ERTH 3030.03 Igneous Petrology
• ERTH 3203.03 Metamorphic Petrology
• ERTH 3320.03 Quaternary Sedimentary Environments
• ERTH 3503.03 Exploiting GIS
• ERTH 4130.03 Fluid Flow Reentry
• ERTH 4270.03 Applied Geophysics
• ERTH 4410.03 Quaternary Dating and Palaeontology
• ERTH 4302.03 Micropalaeontological and Global Change
• ERTH 4320.03 GIS Applications to Environmental...


E. Combined Honours Programme: 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 not more than 8 nor fewer than 4 in either. Oceanography courses 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 3002.03 Climate Change
- OCEA 3003.03 Dynamics of Biological Oceanography
- OCEA 3004.03 The Last Billion Years
- OCEA 4116.03 Introduction to Geological Oceanography
- OCEA 4140.03 Introduction to Biological Oceanography
- OCEA 4203.03 Fisheries Oceanography
- OCEA 4210.03/STAT4900.03 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 4223.03 Introduction to Acoustical Oceanography
- OCEA 4290.03 Advanced Chemical Oceanography
- OCEA 4311.03 Fluid Dynamics I
- OCEA 4312.03 Beothic Ecology
- OCEA 4315.03 Environmental Impacts in Marine Ecosystems
- OCEA 4550.03 Marine Geophysics
- OCEA 4570.03 Deep Sea Biology
- OCEA 4590.03 Marine Modelling

Required Statistical/Mathematics Courses
- MATH 2001.03 Intermediate Calculus I
- MATH 2002.03 Intermediate Calculus II
- MATH 2010.03 Matrix Theory and Linear Algebra I
- MATH 2040.03 Matrix Theory and Linear Algebra II
- STAT 2590.03 Exploratory Data Analysis
- STAT 2800.03 Introduction to Probability and Statistics
- STAT 2801.03 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 4840.03 Advanced Statistical Theory I
- STAT 4850.03 Applied Multivariate Analysis
- STAT 4860.03 Data Analysis
- STAT 4900.03/OCEA4900.03 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 4861.03 Advanced Statistical Theory I
- STAT 4851.03 Applied Multivariate Analysis
- STAT 4862.03 Data Analysis
- STAT 4901.03/OCEA4901.03 Time Series Analysis I

Either
- OCEA 4200.03 Honours Thesis
- OCEA 4950.03 Honours Research Project

1 - Not all of these classes are taught yearly. Students must consult with the Oceanography Department to determine available classes. Students should also be aware of prerequisites or permission needed for any of these classes.
2 - Only one of OCEA 3002.03 and OCEA 4140.03 can be counted towards the Combined Honours degree. OCEA 3002 is currently offered in the summer session.
3 - Students in the programme must have co-supervisors in each Department, unless they are in the Co-op program in which case, they may have only one supervisor. Each Honours student must be approved by one of the Oceanography Department's Honours Co-ordinator(s) and the appropriate Department's Honours Co-ordinator.

Fundamental Science
As part of the first year requirements students must take either Integrated Science Programme (ISP), or CHEM 1011/1012, MATH 1000/1010, and PHYS 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 2000/X.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 ecosystem. 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
CROS4-I/INT4CL/PHYC 2800.03
OCEA 3001.03: The Moving Ocean.
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 the deeper properties of 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 continentscale 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 3270

OCEA 3002.03: The Salty Sea.
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 lead 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): B. Boudreau
FORMAT: Lecture 3 hours
PREREQUISITE: OCEA 1012 or equivalents, and OCEA 2000
EXCLUSION: OCEA 3270

OCEA 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 a first 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 physical and chemical 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: MAST 3003.03, BOX 3003

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 an understanding of the dynamic nature of the earth/oceans/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 analytical techniques as environmental probes. 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 Mountain Salinity crisis, the onset of ice ages in the Pleistocene, and glacial outbreak floods. The course will have two trips.
INSTRUCTOR(S): Hill, P.
PREREQUISITE: OCEA 2000, Y and ERTH 1010 and ERTH 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 be able to appreciate these processes (sources, sinks and transport mechanisms) and the resulting geological cycles. This class is an introduction to the governing principles and processes of aqueous 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 (25-pH and activity-diagram) 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 ERTH 1010.03/1020.03
CROSS-LISTING: ERTH 3420.03

OCEA 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 seismology, 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. Louden
FORMAT: Lecture 3 hours
PREREQUISITE: Instructor's consent
CROSS-LISTING: OCEA 5110.03

OCEA 4120.03: Introductory 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: Introductory Chemical Oceanography.
This class covers the major and minor constituents of seawater, 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: 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 system scientists will be discussed, as will the role of the Earth in the global carbon cycle and the energy budgets of the ocean. They will be exposed to the primary productivity processes in marine systems and the current problems and observations that provide the basis for analysis and understanding of marine ecosystems. 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. All Mathematics students must simultaneously attend all classes and activities associated with MATH 490. All Statistics students must simultaneously attend all classes and activities associated with STAT 490.

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, both in the time and frequency domains is introduced. The class is applied and students are required to develop their own computer programs in the analysis of time series drown from real problems. Topics to be discussed include the nature of time series, stationarity, auto and cross correlation 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): M. Dowd

FORMAT: Lecture 3 hours

PREREQUISITE: Instructor consent

CROSS-LISTING: STAT 4900.03/5900.03, OCEA 5220.03

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): R. Greblech

FORMAT: Lecture, 3 hours

PREREQUISITE: Instructor's consent

CROSS-LISTING: OCEA 4221.03

OCEA 4222.03: Estuary, Coast and Shelf Dynamics.

This class discusses the physical processes that operate on continental shelves to create long waves, tides, tidal mixing, thermohaline circulation, wind forcing, upwelling, etc. Both observations and models for these processes are discussed. INSTRUCTOR(S): J. Sheng

FORMAT: Lecture, 3 hours

PREREQUISITE: Instructor's consent

CROSS-LISTING: OCEA 4222.03

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

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: MAT12101.03 and 2802.03 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 C02 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 isotopic 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: tensorial 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): A. Hay
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: PHCY 4311.03, PHCY 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 biostatistics.
INSTRUCTOR(S): J. Grant
FORMAT: Lecture 3 hours
PREREQUISITE: Instructor’s consent
CROSS-LISTING: BIOL 4666.03, OCEA 5301.03, MATH 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.
FORMAT: Lecture 3 hours
PREREQUISITE: Instructor’s consent
CROSS-LISTING: BIOL 4664.03, OCEA 5311.03, SCIE 4001.03, HIST 3073.03, HSTC 3331.03

OCEA 4350.03: 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
CROSS-LISTING: OCEA 5350.03
CO-REQUISITE: BIOL 2801.03, 2860.03, MATH 1000.03, STAT 1060, or permission of the instructor.

OCEA 4350.03: Marine Geophysics.
See class description for ESRH 5610.03 in the Earth Sciences section of this calendar.

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 2001.03, 2060.03, MATH 1000.03, 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): M. Lewis
FORMAT: Lecture 3 hours
PREREQUISITE: OCEA 4212.03, MATH 4220.03 and Instructor’s consent
CROSS-LISTING: OCEA 5380.03

OCEA 4411.03: Atmospheric Dynamics I.
See class description for PHCY 4411.03 in the Physics and Atmospheric Science section of this calendar.

OCEA 4412.03: Atmospheric Dynamics II.
See class description for PHCY 4412.03 in the Physics and Atmospheric Science section of this calendar.

OCEA 4500.03: Atmospheric Physics I.
See class description for PHCY 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 4541.03 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

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Professor Emeritus
Betts, D.D., BSc (Dal), PhD (McGill), FRSC - Research

Professors
Dahle, J.K., BSc (Dal), MSc, PhD (UBC), FRSC, NSERC/3M Canada Industrial Research Chair, Canada Research Chair, Batteries & Fuel Cells - cross appointment with Chemistry.
Drummond, J.R., BA, MA, PhD (Oxford), FRSC, Canada Research Chair, Remote Sensing of Atmopsheres.
Dunlap, R.A., BSc (Worcester), AM (Dart), PhD (Clark)
Gerlach, D.J., BSc (Ausilia), PhD (McMaster), FRSC - Research
Greatbatch, R., BSc (Liverpool), PhD (Cambridge), NSERC/MARITIC/MRC Industrial Research Chair - primary appointment with Oceanography.
Jericho, M.H., BSc, MSc (Dal), PhD (Cambridge), FRSC - George Mann Professor of Physics
Kreuzer, H.L., MSc, DSc (Bonn), FRSC, A.C. Fales Professor of Theoretical Physics
Rotermund, H.H., PhD (Berlin)
Senba, M., BSc, MSc (Tokyo), PhD (Research)
Stroink, G., BSc, MSc (Edin), PhD (McGill), PEng - cross appointment with the School of Biomaterial Engineering.
White, M.A., BSc (Western), PhD (McMaster), University Research Professor - primary appointment with Chemistry.
Zwanziger, J., BA (Chicago), PhD (Cornell), Canada Research Chair in NMR Studies of Materials - primary appointment with Chemistry

Associate Professors
Folkins, I., BSc (Dal), MSc, PhD (Toronto) - cross appointment with Oceanography.
Hescott, K., BSc (Toronto), PhD (Simon Fraser), P. Phys.
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Greatbatch, R., BSc (Liverpool), PhD (Cambridge), NSERC/MARITIC/MRC Industrial Research Chair - primary appointment with Oceanography.
Jericho, M.H., BSc, MSc (Dal), PhD (Cambridge), FRSC - George Mann Professor of Physics
Kreuzer, H.L., MSc, DSc (Bonn), FRSC, A.C. Fales Professor of Theoretical Physics
Rotermund, H.H., PhD (Berlin)
Senba, M., BSc, MSc (Tokyo), PhD (Research)
Stroink, G., BSc, MSc (Edin), PhD (McGill), PEng - cross appointment with the School of Biomaterial Engineering.
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Hescott, K., BSc (Toronto), PhD (Simon Fraser), P. Phys.
Hill, I.C., BSc, PhD (Queen's)
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 programmes are arranged to do this in an orderly, efficient way.

The Honours programme is a focussed, intensive programme aimed at satisfying the requirements outlined in the Degree Requirements section, page 40 of this calendar. 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).

I. Introduction

II. Degree Programmes

There are two main programmes: The 20 credit Honours in Physics and the 20 credit BSc with a Major in Physics. In addition, there are combined Honours and Major Programmes, a Co-operative Education Programme 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 programme can also be taken as part of a 20-credit BSc. Details of each programme are given below.

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 40 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 programme with staff members of the department, and should consult with the Chairperson or the Undergraduate Advisor of the department by the beginning of the second year.

Departmental Requirements

A Concentrated Honours Programme in Physics will normally include the following classes:

1000 level

• PHYC 1100/X/Y.06 or 1300/X/Y.06 or SCIE 1501/X/Y.27 or 1510/X/Y.33
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 3460.03, PHYC 3540.03 and PHYC 4550.03.

Computer Science

Mathematics

Chemistry

Earth Science

Physics

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 programme should, in any case, consult the departments before the beginning of their second year of study. Examples of such programmes 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 SCIE 1510X/Y.33

2000 level
- PHYC 2140.03/2150.03
- PHYC 2515.03/2510.03

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
- MATH 3003.03/3004.03
- MATH 3110.03/3120.03
- MATH 3130.03/3140.03
- MATH 3220.03/3230.03
- MATH 3240.03/3250.03

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
- MATH 3011.03/3012.03

The 15-credit BSc can be combined with a Diploma in Engineering (see also III.A. below)

Completion of the 15-credit BSc with appropriate Physics classes can lead to admission into the Diploma in Meteorology Programme (see IV).

E. Co-op Education in Physics
Co-operative Education in Science (Science Co-op) is a programme 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 2801.00) in the fall term of the year they join.

The scheduling of Science Co-op work terms must be taken into account in planning class selection. Consult with the Physics Co-op Academic Advisor for your work term sequence.

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Co-operative Education in Science (Science Co-op) is a programme 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 2801.00) in the fall term of the year they join.

The scheduling of Science Co-op work terms must be taken into account in planning class selection. Consult with the Physics Co-op Academic Advisor for your work term sequence.

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The scheduling of Science Co-op work terms must be taken into account in planning class selection. Consult with the Physics Co-op Academic Advisor for your work term sequence.
III. Interdisciplinary Opportunities

In addition to combined honours, opportunities exist to combine other degrees in Physics with the many programmes Dalhousie offers. Below are listed interdisciplinary opportunities which may be of particular interest. Please contact the Undergraduate Coordinator for details.

Physics and Engineering

The following Programmes can be taken concurrently:
1. BSc/DipEng: Students can complete the requirements for the BSc (15-credit) and the DipEng, as little as three as five years.
2. BSc/BEng: Students can complete the BSc (15-credit) and the BEng degrees as little 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 programmes, you should register for the standard first year Engineering programme 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: ERTH 2590.03, 3130.03, 4270.03, 4280.03.

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 programmes. The requirements are as for the appropriate degree programme 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 78.

Minor in Community Design

The minor in community design is available to students registered in the BSc 20-credit major and honours programmes. The requirements are as for the appropriate degree programme 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. D. Degree Programmes page 493.

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 Programmes 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.

Concentration in Environmental Science

The Faculty of Science offers a Combined Honours or Double Major degree with Concentration in Environmental Science. Consult the Environmental Programmes 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 programme. The student follows the regular 20-credit BSc in Physics. The minimum requirements are:

- PHYC 1100X/Y.06
- PHYC 2141.03/2151.03
- PHYC 2153.03/2163.03
- Two other full credits at the 2000 level or above in Physics
- MATH 1000.03/1010.03
- MATH 2001.03/2002.03
- MATH 2300.03 and (MATH 2400.03 or MATH 2401.03)
- STAT 1010.03
- CSCI 1011.03/1012.03
- Plus thirteen half-credit electives (some of which could be additional Physics classes).

The required Meteorology classes are:

- PHYC 4400.03/4450.03
- PHYC 4500.03/4510.03
- PHYC 4411.03/4412.03
- PHYC 4501.03/4502.03
- OCEA 420.03
- PHYC 4700.03, OCEA 420.03, or other classes approved by Programme Coordinator to total one additional half credit.

Students are encouraged to ensure that their programme meets the requirements for the 15-credit BSc, by the end of Year 3.

B. Diploma in Meteorology

For admission into this programme, a general 15-credit BSc degree in Mathematics, Physics, 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 programme is available at: http://www.atmos.dal.ca/dmet/.

C. Atmospheric Science

After completion of the Diploma programme, students are eligible to be considered for admission to a graduate programme 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 1300.03. This class will develop problem-solving techniques in preparation for topics to be covered in PHYC 1100X/Y.06 and PHYC 1300.03. Contact the College of Continuing Education located at 1220 LeMarchant Street, 2nd Floor or by calling (902) 494-2257. This class is offered in the Fall and Summer sessions only (see College of Continuing Education for more details: http://collegeofcontinuinged.dal.ca/index.html).
PHYC 1000X/Y.06: Survey of Physics.

EXCLUSION: Credit will be given for only one of PHYC 1000X/Y.06, PHYC 1320.03 is strongly recommended for Kinesiology students 1310.03 is strongly recommended for all first year Kinesiology students. from the Department is required for students not in Kinesiology. PHYC 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.

EXCLUSION: Credit will be given for only one of PHYC 1000X/Y.06, PHYC 1310.03 and 1320.03 instead.

PREREQUISITE: High School Physics equivalent to Nova Scotia Grade 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 Henson College at: http://www.dal.ca/conted/.

PHYC 1000X/Y.06: Introduction to Physics.

1. This class is not acceptable in the Engineering programme.
2. 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.

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 MLAT, and Medicine, Dentistry and Applied Health Sciences. It is accepted as a prerequisite to advanced physics in physics when combined with MATH 1000.03 and 1010.03. Basic concepts in physics are applied, where possible, to illustrate 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 programme.
2. 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.

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1. This class is not acceptable in the Engineering programme.
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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. from the Department is required. 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. PHYC 1310.03 is strongly recommended for all first year Kinesiology students. from the Department is required. 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. from the Department is required.
PHYC 2310.03: Energy and the Environment.

The physical principles and limitations of renewable energy sources 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 impact of these energy options on the global climate and environment will be discussed.

INSTRUCTOR(S): R. Dunlop
FORMAT: Lecture, 3 hours; Tutorial, 1.5 hours
EXCLUSION: Students who have previously taken PHYC 3330 can not take PHYC 2310.

PHYC 2451.03: Astronomy I: The Sky and Planet.

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, A/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 2450.06, A/Y

PHYC 2500.03: Oscillations and Waves.

PHYC 2505.03: Mechanics and Relativity.

PHYC 2510.03: Electricity and Magnetism.

PHYC 2515.03: Modern Physics.

This introduction to quantum physics discusses some of the difficulties of classical physics in explaining blackbody radiation, photodetector 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 Schrodinger equation is applied to one-dimensional examples. The concept of tunnelling through classically forbidden regions is discussed. Tutorials are offered.

INSTRUCTOR(S): D.A. Tindall
FORMAT: Lecture, 3 hours; Tutorial, 1.5 hours

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 1200.03 or permission of the instructor

PHYC 2800.03: Climate Change.

The Earth's climate has changed on time scales from hundreds of millions of years as a result of tectonic activity to times 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 geomorphology 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
CROS-LISTING: OCEA 2800.03, GEOG 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 2100.03 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 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, 3 hours; lab, 6 hours
PREREQUISITE: PHYC 3000.03, or permission of instructor

PHYC 3160.03: Topics in Physics.

This course 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

PHYC 3170.03: Topics in Physics.

PHYC 3180.03: Contemporary Physics.

This course introduces students to topics of current interest in physics. Presently, topics include high temperature superconductivity, quantum Hall effect, neutrino oscillations, gravitational radiation and fusion reactors.
PHYS 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. PREREQUISITE: PHYC 2101.03 or permission of the instructor.

PHYS 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. Keusner.

PHYS 3250.03: Computational Methods in Physics.
PHYS 3250 is organized to cover one major topic in numerical computations: Programming, data analysis, and numerical modeling. Computations will be performed on a Unix system. A modern programming language will be introduced. Concepts such as types, flow control, library modules, and language extensions will be explored. The course will be taught interactively so that students gain practical experience in solving the problem at hand. Topics in data analysis will include spline interpolations, linear and nonlinear regression, the power spectral density, integration and differentiation. The modeling unit will focus on finite difference methods, and will explore some of the basic equations in Physics. Specialized topics in numerical computations will be covered throughout the term so that the students have an opportunity to apply their new skills. FORMAT: Lecture 3 hours.

PHYS 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 X-ray imaging will be explained. INSTRUCTOR(S): M.A. White.

PHYS 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 PHYS 3300.03 and PHYS 3340.03. INSTRUCTOR(S): D. Labre.

PHYS 3350.03: 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): J. Hill.

PHYS 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.
PHYC 4180.03: Nuclear and Particle Physics. This is an introductory class in nuclear physics. Topics discussed include: nuclear-nucleon interactions, nuclear structure, gamma transmutation, alpha decay, beta decay, nuclear reactions and elementary particle physics.

INSTRUCTORS: 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.

INSTRUCTORS: R. Dunlap

FORMAT: Lecture 3 hours

PREREQUISITE: PHYC 3400.03 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. Contiene tensor mathematics, flow kinematics, equations of motion, viscous flow, potential flow, convection, turbulence, and basic aerodynamics.

INSTRUCTORS: D. Kelley

FORMAT: Lecture 3 hours

PREREQUISITE: Subject to instructor approval

CROSS-LISTING: PHYC 5311.02, OCEA 4311.03, OCEA 5311.01

PHYC 4411.03: Atmospheric Dynamics I. The basic laws of fluid dynamics are applied to studies of atmospheric motion, including the atmospheric boundary layer and synoptic scale weather disturbances (the familiar highs and lows on weather maps). Emphasis will be placed on the blend of mathematical theory and physical reasoning which leads to the best understanding of the dominant physical phenomena.

INSTRUCTORS: T. Duck

FORMAT: Lecture 3 hours

PREREQUISITE: PHYC 2140.03 and MATH 3110.05 or permission of the instructor

CROSS-LISTING: PHYC 5411.03, OCEA 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.

INSTRUCTORS: T. Duck

FORMAT: Lecture 3 hours

PREREQUISITE: PHYC 4411.03 or permission of the instructor

CROSS-LISTING: PHYC 5412.03

PHYC 4500.03: Atmospheric Physics I. The first part of the course deals with a tour 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 5400.03, PHYC 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, PHYC 5610.03

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 mixing processes 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: OCEA 4500.03/5500.03, PHYC 5520.03

PHYC 4540.03: Synoptic Meteorology I. This class introduces the student to the principles 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: OCEA 4541.03/5541.03, PHYC 5540.03

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 causes 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: OCEA 4550.03/5550.03, PHYC 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, Microwave 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

CROSS-LISTING: PHYC 5570.03, PHYC 5570.05

PHYC 4585.03: 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 well-being. Origin of the atmosphere. Nitrogen, oxygen, carbon, sulfur cycles. Climate and the greenhouse effect. Atmospheric transport and turbulence. Stratospheric ozone. 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 phenomena. A self-contained introduction to cosmology will be given and no prior knowledge of differential geometry or general relativity will be assumed.

INSTRUCTORS: R. Martin

FORMAT: Lecture 3 hours

PREREQUISITE: PHYC 2140.03 and one year chemistry course

CROSS-LISTING: CHEM 4650/5650, PHYC 4585.03, PHYC 5585.03

PHYC 4586.03: 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: PHYC 3000.03 or permission of the instructor

CROSS-LISTING: MATH 4600.01/5600.01, PHYC 5600.03

PHYC 4600.03: 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
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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: MATH 4410.03/5410.03, PHYC 5660.03

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: G. Stroink
FORMAT: Independent research, typically 6 hours/week. This course can be taken in either the first or second semester.
PREREQUISITE: PHYC 4800 and permission of the coordinator and supervisor.

PHYC 4850.03: Honours Research Project II.
Students in the honors stream will do a second research project or continue the project started in PHYC 4800 under the direction of a faculty member. A research plan, interim progress reports and a formal final report are required. The final grade will be based on an evaluation of the reports and an oral presentation.
COORDINATOR: G. Stroink
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: www.psychology.dal.ca

Dean
Taylor, K., BSc (St. FX), PhD (U. 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 Room 3262), or phone (902) 494-3417.

Professor Emeritus
LoLordo, V.M., AB (Brown), PhD (Penn)

Professors
Barresi, J., BSc (Brown), MA (S. Calif.), MS, PhD (Wisc)
Brown, R.E., BSc (Victoria), MA, PhD (Dal), Faculty of Science Killam Professor in Psychology

Lyons, E., BSc, MD (Dalhousie), PhD (BC), Major appointment in Pediatrics

Semba, K., BEd, MA (Tokyo), PhD (Rutgers), Major appointment in Anatomy and Neurobiology

 Adaime, S., BSc (Toronto), PhD (McGill)
**Faculty of Science**

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Symons, D., BSc (McGill), MA, PhD (Western), Psych/Acadia
Valla, T.M., BSc (Dalhousie), MA, PhD (Western), Psych/QEII Health Sciences Centre

Waschbusch, D.A., BSc (Wisconsin), MSc, PhD (Pittsburgh), Center for Childhood and Families/Univ. of Buffalo

Watt, M., BA (St. Fx), PhD (Dalhousie), Psych/St. Francis Xavier Univ.

Yoon, M.G., BS (Seoul), PhD (Berkeley), Psych/Dalhousie

**Assistant Professors**

Barrett, S.P., BA (St. Fx), PhD (McGill)
Cardin, P., BSc (Dalhousie), MA, PhD (Toronto), Clinical PhD Programme Coordinator

Daoust, H., BSc, UPEI (PhD) (Dalhousie)
Duffy, K., BA (St. Thomas), MA, PhD (McMaster)
Frankland, R.W., BSc (McMaster), MSc, PhD (Dalhousie)
Harman, K., BSc (Toronto), MSc (Ottawa), PhD (Carleton), Major appointment in Physiology.

Inglis, J.A. (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)
Karlo, M., BA (Memorial), MSc, PhD (Alberta), Major appointment in the School of Human Communication Disorders

Navsman, A., BA (Winnipeg), MSc, PhD (Ottawa); Canada Research Chair in Cognitive Neuroscience

Perrot-Sinal, T.S., BSc, PhD (Western)

Philibrown, L., BA (WLU), MA, PhD (Queen's)

Smith, L.A. (Dalhousie), MSc (Britain), PhD (Dalhousie), Major appointment in Pediatrics

Westwood, D.A., BSc, MSc, MA, PhD (Waterloo), Major appointment in the School of Health and Human Performance

**Senior Instructors**

Georges, S., BSc, MSc, MA (Univ. of Moncton)

Hoffman, R.S., BA (Colorado), MA, PhD (Dalhousie)

Lesure, J., BSc (Dalhousie), MSc (MUN), PhD (Adelaide)

Schellinck, H., BSc, MSc, PhD (Dalhousie)

Stemp, J., BSc (Dalhousie), PhD (Cambridge)

**Adjunct Professors**

Backman, J., BA (Dalhousie), MA, PhD (Dalhousie), Psych/Centre

Chimpan, K., BA (UPEI), MA, PhD (Western, Psych/Nova Scotia Hospital

Cipriani, A., BA (McGill), MA, PhD (Queen's), UPEI

D'Arcy, R.C.N., BSc (Victoria), MSc, PhD (Dalhousie), Institute for Biodiagnostics (Atlantic)/National Research Council Canada

Dunham, P.J., BA (Dalhousie), MA, PhD (McMaster), Institute for Biodiagnostics (Atlantic)/National Research Council Canada

Fukai, J., BA, PhD (Western), Psych/QEII Health Sciences Centre

Furst, B., BSc (Dalhousie), MSc (Memorial), BA, PhD (McMaster), Institute for Biodiagnostics (Atlantic)/National Research Council Canada

Greiner, B., Dr. Phil. (Univ. of Lund, Sweden), Schrödinger and Killam Postdoctoral Fellow

Joo, J., BA (Dalhousie), MA, PhD (Dalhousie)

Kiefte, M., BA (St. Fx), MA, PhD (Alberta), Major appointment in Pediatrics

Lui, G., PhD, (UBC)

McLeod, P., MSc, PhD (Dalhousie), Psych/Acadia

Rodger, R.S., MA (Edin), PhD (Queen's), Bellant

Service, E., BA, MA, Lic. Phil., PhD (Harvard), Psych/Univ. of Helsinki & Dalhousie

Shaw, S.R., BSc (London), PhD (St. Andrews), Psych/Dalhousie

Smith, S.M., BA (Bishop's), MA, PhD (Queen's), Psych/Saint Mary's Univ.

Song, C., BSc (East China Normal Univ.), MD in Chinese Medicine (Hu Nan Medical Univ.), BSc (East China Normal Univ. and Chinese Acad. of Sciences), PhD (National Univ. of Ireland), Canada Research Chair in Psychoneuroimmunology, Biomedical Sciences, AVC/UPEI

Symons, D., BSc (McMaster), MA, PhD (Western), Psych/Acadia

**Postdoctoral Fellows**

Boroska, J., PhD (Jagiellonian Univ., Krakow, Poland)
Borycz, J.A., PhD (Polish Academy of Science, Krakow, Poland)

Greiner, B., Dr. Phil. (Univ. of Lund, Sweden), Schrödinger and Killam Postdoctoral Fellow

Groh, C., Dr. rer. nat. (Univ. of Wurzburg, Germany)

Hamamatsu, Y., PhD (Osaka City University, Japan)

Liu, M., PhD, PhD (Univ. of Edinburgh, Chenghu, China)

Li, C., PhD, (UCL)

Takemura, S., 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 ecology, physiology, or even cellular biology has begun to blur. On the other hand, important tasks are being made to such disciplines as anthropology, sociology, and philosophy. The student will find that the diverse subject matter includes three main areas: the study of 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 perspective 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 programme, 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 programme, in Psychology should note that there are limitations on the number of students that can be accepted into these programmes in any given year. Failure to complete 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 programmes. Students are advised to register as early as possible for required classes to secure a space within a programme, 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 300-level laboratory classes, Major and Honours students, and those enrolled in the 15-credit BA or BSc Concentration programme, should take 200-level prerequisites for at least two 300-level laboratory classes. Laboratory classes fill rapidly, and not all laboratory classes are offered every year.

**Enrolment of Other Students**

Only Major and Honours students, and those who have declared a 15-credit BA or BSc Concentration programme in Psychology may enrol in
II. Degree Programmes

A. BA or BSc with Honours in Psychology

Students enrolled in either the BA or BSc Honours programme 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 programme 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 programme can be obtained from an Honours Advisor. Students can be put in touch with an academic advisor by contacting the Psychology Main Office (LSC 326S or 494-3417).

Registration Notes:
1. Students wishing to undertake an Honours programme 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 programme requires Departmental (and then University) approval.
2. It is recommended that students in the Honours programme 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.

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.

Departmental Requirements

1000 level

PSYO 1011.03, 1021.03 or 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 programme will include three required full-credit classes and three elective full-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 (Fall term), with a grade of B or better
- PSYO 2201.03 Statistical Methods I (Winter term)
- PSYO 2707.03 Brain and Behaviour (not 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 2120.03 Introduction to Cognition
  - PSYO 2130.03 Learning
  - PSYO 2160.03 Animal Behaviour
  - PSYO 2170.03 Hormones and Behaviour
  - PSYO 2220.03 Abnormal Behaviour

(Total = 3.0 full or 6 half credits)

3000 level

- PSYO 3005.03 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 3001.03) or a half-credit Directed Project in Psychology class (PSYO 3001.05) from Category C to obtain experience that will assist them in preparing for their 4000-level Honours thesis. In planning their programme, 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 Sensory Neuroscience I. Vision (LAB)
PSYO 3044.03 Learning and Conditioning Lab (LAB)
PSYO 3051.03 Sensory Neuroscience II. Hearing and Speech (LAB)
PSYO 3063.03 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 3135.03 Research Methods in Cognitive Neuroscience (LAB)
PSYO 3165.03 Neurobiology* (LAB)
PSYO 3166.03 Cognitive Neuroscience
PSYO 3227.03 Principles of Human Neuropsychology
PSYO 3227.03 Drug And Behaviour
PSYO 3261.03 Biological Rhythms*
PSYO 3276.03 Developmental Neuroscience*
PSYO 3371.03 Neuroscience Laboratory I* (LAB)
PSYO 3372.03 Neuroscience Laboratory II* (LAB)
PSYO 3373.03 Behavioural Neuroscience
PSYO 3374.03 Behavioural Neuroscience Laboratory* (LAB)
PSYO 3376.03 Molecular Neurobiology*
PSYO 3371.03 Molecular Neurobiology*
PSYO 3371.03 Molecular Neurobiology*
PSYO 3371.03 Molecular Neurobiology*

*Requires PSYO/NESC 2470.03 as prerequisite.
Faculties of Science

• Three additional half-credit, second-year classes

• PSYO 4500X/Y.06 Honours Thesis

• PSYO 3502.03 Statistical Methods II

• PSYO 3224.03 Forensic Psychology

• PSYO 3225.03 Health Psychology

• PSYO 3260.03 Personality

• PSYO 3202.03 Psychology (recommended for students planning to take advanced Neuroscience classes)

• PSYO 2770.03 Brain and Behaviour (not recommended for students planning to take advanced Neuroscience classes)

• PSYO 2501.03 Statistical Methods I (Winter term)

• PSYO 2000.03 Methods in Experimental Psychology (Fall term), with a grade of B or better

• PSYO 2090.03 Developmental Psychology

• PSYO 1503X/Y.21, 1504X/Y.27 or 1510X/Y.33 with a grade of B- or better

• 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

• PSYO 3502.03 Statistical Methods II

• PSYO 2770.03 Brain and Behaviour (not recommended for students planning to take advanced Neuroscience classes)

Category B. Clinical, Developmental, History, Personality, and Overviews of Psychology

PSYO 3100.06 Advanced General Psychology

PSYO 3202.03 Psychometrics (LAB)

PSYO 3503.03 Experimental Social Psychology (LAB)

PSYO 3509.03 Methods in Developmental Psychology (LAB)

PSYO 3522.03 Early Development

PSYO 3505.03 Development of Language and Literacy Abilities

PSYO 3512.03 Methods in Experimental Clinical Psychology (LAB)

PSYO 3212.03 Childhood Psychopathology

PSYO 3220.03 Clinical Psychology

PSYO 3244.03 Forensic Psychology

PSYO 3225.03 Health Psychology

PSYO 3260.03 Personality

PSYO 3202.03 Psychology (recommended for students planning to take advanced Neuroscience classes)

Category C. Directed Research Classes for Potential Honours Students

• PSYO 3001.06 Independent Research in Modern Psychology

• PSYO 3002.06 Directed Project in Psychology

Overall Total = 9.0 full-credit or 18 half-credit classes.

B. Combined Honours

It is possible for students to take a Honours degree combining Psychology with another subject (other than Neuroscience). Students planning to take such a course of study must consult with an Honours advisor in both departments to arrange programme details.

If Psychology is chosen as the primary subject in a Combined Honours programme, the following classes should be taken:

2000 Level

• PSYO 2201.03 Methods in Experimental Psychology (Fall term), with a grade of B or better

• PSYO 2501.03 Statistical Methods I (Winter term)

• PSYO 2770.03 Brain and Behaviour (not recommended for students planning to take advanced Neuroscience 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-credit 4000-level seminar classes.

(Total 7.5 full or 15 half credits)

If Psychology is chosen as the secondary subject in a Combined Honours programme, the five full credits (or an equivalent number of half credits) of Psychology classes specified in the Concentration programme will constitute the Psychology component of the Combined Honours programme.

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 programme 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 programme 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: SOCSA 2100X/Y.06 and one of SOCSA 2570.03, 3280.03, 3285.03 or 3291.03 (B- or better)

• Completion of two 160-hour practica in approved forensic settings prior to graduation.

For further information about this programme, 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 and 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). 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 1910X/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 programme 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 2201.03 Methods in Experimental Psychology (Fall term)

• PSYO 2501.03 Statistical Methods I (Winter term)

• PSYO 2770.03 Brain and Behaviour (not recommended for students planning to take advanced Neuroscience courses)

OR

• PSYO 2470.03 Introduction to Neuroscience I. Brain Systems (recommended for students planning to take advanced Neuroscience courses)

Elective Second-Year Classes are:

• Three half-credits required from -

PSYO 2090.03 Social Psychology

PSYO 2000.03 Developmental Psychology

502 Psychology
PSYO 2130.03 Introduction to Cognition
PSYO 2140.03 Learning
PSYO 2160.03 Animal Behaviour
PSYO 2270.03 Hormones and Behaviour
PSYO 2220.03 Abnormal Behaviour

(Total = 3.0 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 full-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 3050.03 Perceptual Processes
PSYO 3040.03 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* (LAB)
PSYO 3084.03 Social Cognition
PSYO 3113.03 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 3135.03 Research Methods in Cognitive Neuroscience (LAB)
PSYO 3160.03 Neurology* (LAB)
PSYO 3161.03 Psycholinguistics
PSYO 3227.03 Principles of Human Neuropsychology
PSYO 3237.03 Drugs and Behaviour
PSYO 3260.03 Biological Behaviours
PSYO 3270.03 Developmental Neuroscience*
PSYO 3370.03 Neuroscience Laboratory I* (LAB)
PSYO 3371.03 Neuroscience Laboratory II* (LAB)
PSYO 3372.03 Genes, Brain, and Behaviour
PSYO 3373.03 Behavioural Neuroscience
PSYO 3375.03 Behavioural Neuroscience Laboratory* (LAB)
PSYO 3376.03 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 3011.06 Advanced Cognitive Psychology
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 Child Developmental Psychology
PSYO 3220.03 Clinical Psychology
PSYO 3244.03 Forensic Psychology
PSYO 3252.03 Health Psychology
PSYO 3260.03 Personality
PSYO 3300.03 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 = 4.0 full or 8 half credits)

Overall Total = 7.0 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 programme will constitute the Psychology component of any 20-credit Double Major programme.

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 programmes 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 contacted by 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
• Two full credits, or four half credits, at or above the 1000 level are required to concentrate their studies 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 1010.03, 1012.03 or PSYO 1021.03, 1022.03 or SCE 1910X/Y.27, 1500X/Y.53 with a grade of B- or better
• PSYO 2090.03 Developmental Psychology
• PSYO 2080.03 Social Psychology
• PSYO 2060.03 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

(Total = 3.0 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.

Psychology 503
Category A. Brain, Language, Learning, and Cognition
PSYO 1000X/Y.03: Introduction to Psychology and Neuroscience I: From Neuron to Person.

PSYO 1001X/Y.06 or PSYO 1001.06. 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 1000X/Y.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 an overall B- average in two half-credits of introductory psychology. Students should take the following combination of classes: PSYO 1011.03 or 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 1012X/Y.06, SCIE 1500X/Y.30, SCIE 1501X/Y.27, SCIE 1502X/Y.21,
SCIE 1503X/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 an overall B- average in two half-credits of introductory psychology. 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 1022X/Y.06, SCIE 1500X/Y.30, SCIE 1510X/Y.27, SCIE 1502X/Y.21,
SCIE 1503X/Y.27, SCIE 1510X/Y.33

Category B. Clinical, Developmental, History, Personality, and Overviews of Psychology
PSYO 3010.06: Advanced General Psychology
PSYO 3020X.03: Psychometrics (LAB)
PSYO 3021.03: Principles of Human Neuropsychology
PSYO 3025.03: Drugs and Behaviour
PSYO 3026.03: Biological Psychobiology*
PSYO 3070.03: Neuroscience Laboratory I (LAB)
PSYO 3071.03: Neuroscience Laboratory II (LAB)
PSYO 3075.03: Genetics, Brain and Behaviour
PSYO 3077.03: Behavioural Neuroscience
PSYO 3078.03: Behavioural Neuroscience Laboratory* (LAB)
PSYO 3090.03: Neurolinguistics
PSYO 3090.06: Independent Research in Modern Psychology

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 Regulations 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 divisions. PSYO 1000X/Y.03 became PSYO 1011.03 and 1012.03, PSYO 1010X/Y.06 became PSYO 1011.03 and 1021.03. 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 1000X/Y.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 an overall B- average in two half-credits of introductory psychology. PSYO 1011.03 or PSYO 1012.03, as prerequisites, this requirement may also be met by either PSYO 1000X/Y.06 or PSYO 1001.06.

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 programmes 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 programmes.

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 programme in Psychology. It is recommended that students in other programmes wishing to Minor in Psychology elect to undertake a Double Major in Psychology and their primary field of study. For information, students should contact the Chair of the Undergraduate Programme Committee.
psychology. Students should take the following combination of classes: PSYO 1011.03 and PSYO 1012.03 or PSYO 1021.03 and PSYO 1022.05.

INSTRUCTOR(S): Staff
FORMAT: Lecture 3 hours
EXCLUSION: PSYO 1010X/Y.06, PSYO 1011X/Y.06, PSYO 1012X/Y.06, PSYO 1011X/Y.08, PSYO 1012X/Y.08, PSYO 1021X/Y.08, PSYO 1022X/Y.08
PREREQUISITE: PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03 or SCE 1500X/Y.21, SCE 1501X/Y.27, SCE 1502X/Y.27, SCE 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 1022.03. 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 1021.03, biweekly laboratory tutorials are not available to supplement material covered during lectures.
NOTE: Students wishing to take 2000-level classes in Psychology must have an overall B- average in two half-credits of introductory psychology. Students should take the following combination of classes: PSYO 1011.03 and PSYO 1012.03 or PSYO 1021.03 and PSYO 1022.05.

INSTRUCTOR(S): Staff
FORMAT: Lecture 3 hours
EXCLUSION: PSYO 1000X/Y.06, PSYO 1010X/Y.06, PSYO 1011X/Y.06, PSYO 1012X/Y.06, PSYO 1011X/Y.08, PSYO 1012X/Y.08, SCE 1500X/Y.21, SCE 1501X/Y.27, SCE 1510X/Y.33

PSYO 2000.03: Methods in Experimental Psychology.
An introduction to the methodological tools research psychologists use to study behavior. Emphasis is placed on experimental design and the legitimacy of inferences drawn from experimental results. Lectures proceed from a discussion of the general problems of using the scientific method in studying behavior to a more specific examination of the analytic procedures commonly employed to investigate human and animal behavior. 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 enrollment limitations, only Dalhousie students with a Major or Concentration in Psychology or Neuroscience may enroll in this class, unless space is available after the first class.

INSTRUCTOR(S): B. Frankland, R. Hoffman and J. Leary
FORMAT: Writing intensive, lecture 2 hours, lab 2 hours
PREREQUISITE: PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03 or SCE 1500X/Y.21, SCE 1501X/Y.27, or SCE 1510X/Y.33 (with a grade of B- or better)
EXCLUSION: NSC 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 human and animal behavior. Emphasis is placed on the behavior of a wide range of animals. Concepts from evolutionary theory, neuroscience, endocrinology and psychology, animal behaviorists attempt to explain why animals behave the way they do. The class will examine topics such as mate choice, the evolution of behavior, and animal communication. We will study the behavior of a wide range of animals.

INSTRUCTOR(S): S. Adams or S. Gadebois
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 1001.03/1002.03 or PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03 or SCE 1500X/Y.21, SCE 1501X/Y.27, SCE 1510X/Y.33 (with a grade of B- or better)
CROSS-LISTING: NSC 2148.03

PSYO 2160.03: Animal Behaviour.
An introduction to chemical signals of the neural, endocrine, and immune systems and the ways in which these neurochemicals 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 behvioural development, sexual, aggressive and maternal behaviour. Other topics covered are: neuroendocrine-reproductive, pheromones; sex differences in the brain; neurotransmitters; pheromones; stress.

INSTRUCTOR(S): R.E. Brown
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 1001.03/1002.03 or PSYO 1021X/Y.03/1022X/Y.03 or SCE 1500X/Y.27, SCE 1501X/Y.27, or SCE 1510X/Y.33 (with a grade of B- or better), or BOL 1010.03/1011.03 or BOL 1020.03/1021.03
CROSS-LISTING: NSC 2160.03

PSYO 2170.03: Hormones and Behaviour.
An introduction to the chemical signals of the neural, endocrine, and immune systems and the ways in which these neurochemicals 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 behvioural development, sexual, aggressive and maternal behaviour. Other topics covered are: neuroendocrine-reproductive, pheromones; sex differences in the brain; neurotransmitters; pheromones; stress.

INSTRUCTOR(S): R.E. Brown
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 1001.03/1002.03 or PSYO 1021X/Y.03/1022X/Y.03 or SCE 1500X/Y.27, SCE 1501X/Y.27, or SCE 1510X/Y.33 (with a grade of B- or better), or BOL 1010.03/1011.03 or BOL 1020.03/1021.03
CROSS-LISTING: NSC 2170.03
Faculty of Science
506 Psychology

one will be admitted until they have completed PSYO 2000.03 with a grade

academic record indicates an ability to perform at the honours level. No

written report on the research is submitted at the end of the term. All students

reports will be given in an all-day conference for the entire class. A formal

oral analysis of experiments. In the lab meetings, the student will give oral

periods are devoted to an introduction to the design and statistical

preparing a research project which the student then conducts. The lecture

Honours students to the design, execution and analysis of independent

As a continuation of PSYO 2000.03, this class introduces prospective

Psychology.

EXCLUSION: PSYO/NESC 2071.03

CROSS-LISTING: 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 grade of B-
or better)

EXCLUSION: PSYO 2123.03

PSYO 2270.03: Introduction to Neuropsychology.

This class explores not only normal but also abnormal brain function, as

revealed by the consequences of trauma, disease, and surgical

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. Porter

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)

INSTRUCTOR(S): Staff

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 2270.03

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

independent functions. 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

subcortical regions. 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; rather,

students wishing explicit instruction in those fields should see the

Calendrical entries for PSYO/NESC 2470.03 and/or PSYO/NESC 3701.05, 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 (with a grade of B-
or better), or BIOL 1010/1011 or BIOL 1020/1021

CROSS-LISTING: NESC 2470.03

EXCLUSION: PSYO/NESC 2700.03

PSYO 2500.03: Contemporary Research Problems in

Psychology.

As a continuation of 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

thesis in Psychology. While admission to the course is 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+ (CPA 3.38) will normally be expected.

SIGNATURE REQUIRED

COORDINATOR: B. Earhard

INSTRUCTOR(S): S. Edgson, R. Hoffman

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

statistical procedures and the associated experimental or quasi-

experimetal designs. Specific topics include univariate and bivariate
descriptive statistics, and univariate (z-test, t-test, ANOVA), and bivariate

interventional statistics.

NOTE: 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 2070.03, or instructor's consent

EXCLUSION: PSYO 3300.03

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

neurosystems. 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 neuronal

dysfunction will be discussed.

INSTRUCTOR(S): S. Adams

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO/NESC 2470.03 or instructor's consent

CROSS-LISTING: NESC 2570.03

EXCLUSION: PSYO/NESC 2072.03

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 different 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

programme. Students planning to take advanced Neuroscience classes should register for PSYO/NESC 2470.03

INSTRUCTOR(S): S. Adams

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 2702.03

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

programme normally will be expected to have a grade of B or better in

PSYO 2200.03, a high level of performance in other psychology classes,

and an overall B+ (CPA 3.38) 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. This work will not be given credit until the letter is completed.

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 3000.06

EXCLUSION: PSYO/NESC 3001.03

PSYO 3001.03: Directed Project in Psychology.

This class provides a directed research experience. Primarily for Honours students wishing further experience and understanding of psychological research. Students not in the Honours programme normally will be expected to have a grade of B or better in PSYO 2000.03, a high level of performance in one of the psychology classes, and an overall B+ (GPA 3.50) average. Students 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. Earhardt

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 3000.03/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, previous or concurrent enrolment in one other PSYO/NESC 3000-level class, and Coordinator's consent.

CROSS-LISTING: NESC 3005.03

EXCLUSION: PSYO/NESC 3001.03

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): K. Duffy

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO 2501.03, PSYO/NESC 2400.03 or PSY 2700.03

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 1000X/Y.06 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. Schellenberg

FORMAT: Lecture/semester 3 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): Staff

FORMAT: Lecture 3 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. Phihmore

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 3044.03

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. Phihmore

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 3043.03

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 retina 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 commons 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, PSYO 2501.03, PSYO/NESC 2140.03 or PSYO/NESC 2470.03 or PSYO 2770.03

CROSS-LISTING: NESC 3051.03

EXCLUSION: PSYO/NESC 3001.03

PSYO 3052.03: Sensory Neuroscience II: Audition.

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, speech perception, human communication disorders, and/or audiology. The class emphasises 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 ear; 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 behavioral performance; theories of speech production; theories of speech perception; acoustic and linguistic contributions to speech perception.

**INSTRUCTOR(S):** D.P. Phillips

**FORMAT:** Lecture 1 hour, research lab 2 hours

**PREREQUISITE:** PSYO 2000.03 or NESC 2007.03, and one of PSYO 2080.03 and PSYO 2090.03

**EXCLUSION:** PSYO/NESC 3130.06

**CROSS-LISTING:** NESC 3131.03

**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 2901.03, and PSYO 2080.03

**PSYO 3092.03: Early Development.**

This course 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 2900.03

Please note: Major and Honours students in the third year of the Linguistics programme 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 2901.03, 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 2900.03

Please note: Major and Honours students in the third year of the Psychology programme do not require these prerequisites. They will, however, require a Prerequisite Override from the instructor before being able to register for the class.

**PSYO 3131.02: Methods in 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 neuroscience evidence (human neuroimaging, single unit recording, breakdown 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 2901.03, and one of PSYO/NESC 2130.03 or PSYO/NESC 2130.03 or PSYO/NESC 2130.03

**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 behavior. 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. McMillan
FORMAT: Lecture 3 hours, research lab 2 hours
PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO 2501.03, and one of PSYO/NESC 2310.03 or PSYO/NESC 2315.03 or PSYO/NESC 2320.03
CROSS-LISTING: NESC 3165.03
EXCLUSION: PSYO/NESC 3130.03

PSYO 3135.03: 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 behavioral approaches to the study of memory with an explicit focus on empirical research methods, data, and interpretation of results.

INSTRUCTOR(S): T. Taylor-Helmich
FORMAT: Lecture 3 hours, research lab 2 hours
PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO 2501.03, and PSYO/NESC 2315.03
CROSS-LISTING: NESC 3335.03
EXCLUSION: PSYO/NESC 3130.03

PSYO 3133.03: Research Methods in Psycholinguistics.
This class covers the cognitive bases of language processing from a number of perspectives. Topics will include: Comparisons of human language with other communication systems; first and second language acquisition; processing at the phonological, morphological, lexical, sentence, and discourse levels; roles of attention and memory in language processing; relationship of music and mathematics to language; computational modeling of language acquisition and processing; the processing of signed languages such as American Sign Language; the neural bases of language processing. 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.

INSTRUCTOR(S): A. Newman
FORMAT: Lecture 3 hours, research lab 2 hours
PREREQUISITE: PSYO 2300.03 or NESC 2305.03, PSYO 2501.03, and PSYO/NESC 2315.03
CROSS-LISTING: NESC 3343.05
EXCLUSION: PSYO/NESC 3130.03

PSYO 3137.03: Research Methods in Cognitive Neuroscience.
The focus of this class will be on the methodological approaches as well as the techniques used to study human cognition from a neural perspective. Readings will be used in which cognitive functions such as memory, language, perception and attention are examined using brain imaging methods; methods discussed will include positron emission tomography (PET), functional magnetic resonance imaging (fMRI), magnetoencephalography (MEG), electroencephalography/event-related potential measures (EEG/ERP), and eye movement recordings. Students will learn about these methods, their strengths and weaknesses, as well as how they can be used together in a complementary fashion. Students will conduct several research projects in the laboratory and will learn the basics of human electrophysiological recording and analysis methods.

INSTRUCTOR(S): A. Newman
FORMAT: Lecture 2 hours, research lab 2 hours
PREREQUISITE: PSYO 2300.03 or NESC 2305.03, PSYO 2501.03, and PSYO/NESC 2315.03
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 behaviour, ecology and neuroscience. In this class, we will examine the neural control of selected behaviours taken from a wide range of animals, both invertebrates and vertebrates. 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. Adams
FORMAT: Lecture 2 hours, research lab 2 hours
PREREQUISITE: PSYO/NESC 2305.03 or PSYO/NESC 2501.03 or PSYO/NESC 2701.03 or PSYO/NESC 2707.03, or one of the following Biology classes: 2003.03, 2004.03, 2005.03, 2006.03
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) propositional, 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 programme 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 3382.03

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 correctional system, and the community. The student can expect to become knowledgeable about psychological services, and to develop an understanding of the role of science and research in psychology. The class will bring 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/NESC 2215.03

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 2300.03 or NESC 2305.03, and PSYO/NESC 2215.03

EXCLUSION: 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): C. Chambers
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and PSYO 2220.03

EXCLUSION: PSYO 2130.03

CROSS-LISTING: NESC 3225.03
PSYO 3270.03: 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 those abilities when parts of the brain are damaged or diseased? How do clinicians diagnose and rehabilitate clients with brain disorders? Which behavioral 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 imaging, and 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.

INSTRUCTORS: J. McCague
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 2000.03 or NESC 2270.03 or PSYO/NESC 2470.03 or PSYO 2770.03; PSYO/NESC 2130.03 is helpful
CROSS-LISTING: NESC 3270.03

PSYO 3237.03: Drugs and Behaviour. An introduction to behavioral psychopharmacology. The lectures involve basic anatomy, physiology, and chemistry of the nervous system. Behavioral effects and underlying mechanisms of various psychoactive drugs will be discussed. Specific topics will cover alcohol, tobacco, amphetamines, cocaine, opium, hallucinogens, tranquilizers, and antidepressants.

INSTRUCTORS: J. Stamp
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 2000.03 or NESC 2270.03; PSYO 2470.03 or 2570.03, or PSYO 2770.03
CROSS-LISTING: NESC 3237.03
EXCLUSION: PSYO/NESC 2370.03

PSYO 3260.03: Biological Rhythms. The temporal structure of animal and human physiology is governed by both endogenous circadian 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) circadian clocks are the most prominent; they generate rhythms in sleep, reproduction, intellectual functioning, and most other endogenous functions. This class examines the nature of these rhythms and their physiological substrates, with an emphasis on the clock neurons involved in rhythm generation and synchronization in a variety of species. It also explores the hypothalamic role of circadian mechanisms in sleep disorders, jet lag, and depression.

INSTRUCTORS: B. Raouf
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 2000.03 or NESC 2270.03 or PSYO 2470.03 or 2570.03, or PSYO 2770.03
CROSS-LISTING: NESC 3260.03

PSYO 3270.03: Developmental Neurosciences. 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 neural 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, neuro-neuron interactions and synapse formation using invertebrate and vertebrate examples.

INSTRUCTORS: K. Duffy
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 2000.03 or NESC 2270.03, 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?

INSTRUCTORS: Staff
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 2000.03 or NESC 2270.03, and PSYO 2480.03 or PSYO 2501.03
EXCLUSION: PSYO 2280.03

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 neuroanatomical approaches are favored 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 neurons, immunocytochemistry, dye-tracing of connections, and electronmicroscopy of the visual system or central nervous system.

SIGNATURE REQUIRED
INSTRUCTORS: Staff
FORMAT: Lab 3 hours
PREREQUISITE: PSYO 2000.03 or NESC 2270.03, PSYO/NESC 2470.03 or 2570.03, or PSYO 2770.03, 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
INSTRUCTORS: I. Meinertzthun
FORMAT: Lab 3 hours
PREREQUISITE: PSYO 2000.03 or NESC 2270.03, PSYO/NESC 2470.03 or 2570.03, or PSYO 2770.03, 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.

INSTRUCTORS: C. Moore
FORMAT: Lab 3 hours
PREREQUISITE: PSYO 2000.03 or NESC 2270.03, and PSYO 2301.03

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
INSTRUCTORS: B.W. Frankland
FORMAT: Lecture 4 hours, skills lab 2 hours
PREREQUISITE: PSYO 2000.03 or NESC 2270.03, PSYO 2501.03, and instructor’s consent

510 Psychology
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): Staff
FORMAT: 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 genes and behaviour in animals and humans. The class will consist of four sections: basic genetics, neurogenetics, neurogenetic analysis of animal behavior, and neurogenetic analysis of human behavior. During the class, topics in bioinformatics 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/NSC 2470.03 or PSYO/NSC 2770.03, and BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03 or SCIE 1501X/Y.27 or SCIE 1504X/Y.21 or SCIE 1504X/Y.27; BIOL 2020.03 and BIK 2030.03 are useful
CROSS-LISTING: NESC 3670.03
EXCLUSION: PSYO/NSC 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 behavioral plasticity, memory, and the physiological mechanisms underlying behavioural disorders. Students should be familiar with experimental research methods, and have some background in biological or neurosciences.
INSTRUCTOR(S): T. Perrot-Sinal
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO/NSC 2470.03 or PSYO/NSC 2770.03, and BIOL 2020.03 or PSYO 2770.03
CROSS-LISTING: NESC 3770.03
EXCLUSION: PSYO/NSC 2670.03

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 behavior. Students will be expected to acquire skills in animal handling, animal care, recovery surgery, behavioral observations, and histological analysis of the brain. Acquisition of these skills will 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: Research lab 3-4 hours
PREREQUISITE: PSYO/NSC 2770.03 and instructor's consent
CROSS-LISTING: NESC 3775.03
EXCLUSION: PSYO/NSC 3770.06

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/NSC 2470.03 or PSYO/NSC 2770.03
CROSS-LISTING: NESC 3790.03

PSYO 3970.03: Molecular Neuroscience.
This class continues concepts introduced in PSYO/NSC 2770.03, 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/NSC 2770.03
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 need for 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 programme. 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 chairs of the Undergraduate Programme Committee with: (a) a one page description of the proposed course of study, (b) a letter from a staff member agreeing to supervise the programme outlined. A copy of the completed project, and a mark, must be submitted to the Undergraduate Programme Committee chairman 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
PREREQUISITE: PSYO/NSC 3580.06 or instructor's consent
CROSS-LISTING: NESC 4001.03

PSYO 4040.03: Learning Applications in Clinical and Social Psychology.
FORMAT: Seminar 2 hours
PREREQUISITE: PSYO 2470.03 or 2570.03
CROSS-LISTING: NESC 4040.03

PSYO 4050.03: Topics in Perception.
FORMAT: Seminar 2 hours
PREREQUISITE: PSYO/NSC 3051.03 or instructor's consent
CROSS-LISTING: NESC 4050.03

PSYO 4070.03: Neuroscience Seminar.
FORMAT: Seminar 2 hours
PREREQUISITE: PSYO/NSC 2470.03, 2770.03 or 3270.03, or instructor's consent
CROSS-LISTING: NESC 4070.03

Faculty of Science
Psychology 511
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
CROSS-LISTING: NESC 4140.03

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 behaviors 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
This programme prepares students for degrees in Biology, Earth Sciences, Ecology, Marine Biology, and Earth Sciences, as well as the Atmospheric and Ocean Sciences, Environmental Science, 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 programme, 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. 10 hours / tutorials 2 hours (optional)
CROSS-LISTING: BIO 1010.03 and BIO 1011.03, CHEM 1011.03 and CHEM 1012.03 or CHEM 1041.03 and CHEM 1042.03, ERTH 1080.03 and ERTH 1090.03, MATH 1000.03, and STAT 1060.03

This programme 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 programmes 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 programme, 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 approx. 10 hours / lab and other activities approx. 10 hours / tutorials 2 hours (optional)
CROSS-LISTING: BIO 1010.07/1011.07, CHEM 1011.03/1012.03 or 1041.03/1042.03, MATH 1000.03/1010.03, PSYO 1005.03 or 1006.03, PSYO 1001.03/1012.03 or PSYO 1021.03/1022.03 and STAT 1060.03

SCIE 1504:27: DISP for Life Sciences.
This programme 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 appropriate 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

Science, Interdisciplinary
Immunology, and Psychology. This 4.5-credit DISP programme, combined with the half-credit PHIL 1010, 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 12 hours / labs and other activities 10 hours / tutorials 3 hours (optional)
CROSS-LISTING: BIOC 1010.03 and 1011.03, CHEM 1011.03 and 1012.03 or 1041.03 and 1042.03, ERTH 1000.03 and 1000.03, MATH 1000.03 and 1001.03, PSYO 1000.06 or 1001.06, 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 Programme

This programme provides comprehensive first-year preparation for any science major or honours degree, including any area of emphasis in 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 3.5 credit SCIE 1510 combined with the half-credit PHIL 1010 is 4.0 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 12 hours / labs and other activities 10 hours / tutorials 3 hours (optional)
CROSS-LISTING: BIOC 1010.03 and 1011.03, CHEM 1011.03 and 1012.03 or 1041.03 and 1042.03, ERTH 1000.03 and 1000.03, MATH 1000.03 and 1001.03, PSYO 1000.06 or 1001.06, PSYO 1011.03/1012.03 or PSYO 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. McOuat
FORMAT: Lecture/tutorial
CROSS-LISTING: BIOC 3500X/Y.06, HIST 3010X/Y.06, HIST 3200/ 3201X/Y.06
EXCLUSION: HIST 2201.03, BIOC 3902.03, BIOC 3902.03, 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 programme; all Science Co-operative Education students are required to register for and attend, upon acceptance into the programme. A grade of FWS 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. Cooperative 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

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. Wills
PREREQUISITE: Two years of university study
CROSS-LISTING: ERTH 3060.03, ENVG 3050.03, GROC 3500.03, ERTH 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 also the importance of technological changes upon marine science.

INSTRUCTOR(S): E.L. Mills
FORMAT: Lecture 3 hours
PREREQUISITE: Instructor's consent
CROSS-LISTING: BIOC 4664.03, OCEA 4331.03/5331.03, HIST 3073.03, HIST 3073.03, MAR 4664.03

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Director of Division
Smith, B., MSc (Calgary), PhD (Berkeley)
Faculty Advisors
Smith, B., MSc (Calgary), PhD (Berkeley/Undergraduate Advisor and Co-op)
Sukoo, E., PhD (Waterloo) (Graduate)
Professor Emeritus
Field, C.A., MSc, PhD (Northwestern)
Professors
Gabor, G., MSc, PhD (Eotvos)
Gupta, R.P., MSc (Agra), PhD (Delhi)
Hamilton, D.C., MA, MA (University of Toronto)
Smith, B., MSc (Calgary), PhD (Berkeley)
Thompson, K., MSc (Manchester), PhD (Liverpool) - (jointly with Oceanography)
Assistant Professors
Sukoo, E., PhD (Waterloo)
Zhao, Youggan, MSc (Western Kentucky, PhD (British Columbia) - (jointly with Management)
Assistant Professors
Belso, R., PhD (Ottawa) - (jointly with Computer Science)
Bielowska, J., MA, PhD (Toscan & MI)
Dowd, M., MBA, PhD (Dalhousie)
Fleming (Mills), J., MSc (TUNS), PhD (Dal)
Gu, H., MSc (Peking), PhD (Hong Kong)
Herbringer, C., MSc (Paris), PhD (Dal)
Adjunct Professors
Andrews, F., NSAC
Chiphima, H., Ascada
Cole, David (Sunnybrook & Women's Health Science Center, Toronto)
McRae, K., (AHBC)
Ryan, D. (UEP)
Lecturer
Hibbison, R., BSc, MSc, PhD (Washington)
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 programmes offered by the Department.

I. Degree Programmes
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 programmes, and a 20-credit majors programme in Statistics available to students. In addition, there is a Co-op programme. Any student interested in such a class of study should consult the Director of Statistics, Department of Mathematics & Statistics.

A. Honours in Statistics
The Honours programme 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 2010.03
• MATH 2020.03
• MATH 2000.03/2040.03 or 2135.03
• STAT 2060.03
• STAT 2080.03
• STAT 2050.03
• STAT 3400.03
• Two 3000 level Mathematics courses chosen in consultation with the statistics honours advisor.

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

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 2010.03
• MATH 2020.03
• MATH 2000.03/2040.03 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 3400.03
• At least two more credits in Statistics at or above the 3000 level
D. 15-credit BSc with Concentration in Statistics

Departmental Requirements

1000 level
• STAT 1060.03
• MATH 1000.03

2000 level
• MATH 2001.03
• STAT 2060.03 or MATH 2002.03
• STAT 2080.03
• STAT 2090.03

3000 level
• STAT 3360.03
• STAT 3340.03
• STAT 3330.03 or STAT 3380.03
• STAT 3460.03
• STAT 3350.03

Note: Some students may take STAT 2050.03 and/or STAT 2060.03 in the fall term of their 1st year if they have taken STAT 1060.03 in the fall term. Students are also advised to take STAT 2080.03 and MATH 1100.03/1101.03/1102.03 or MATH 1100.03/1101.03/1102.03 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 program. Students who wish to enter the program in the spring term must undertake the Science Co-op Seminar Series (SCIE 2800.00) in the fall term of the year they join the program. A grade of Pass is required before students undertake their 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 component of the Science-Cooperative Education program.

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, STAT 8892.00, STAT 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, STAT 8892.00, STAT 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.

II. Class Descriptions

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. Cooperative Education seminars are required by the Canadian Association for Cooperative Education. Students are required to have a Dalhousie University e-mail address with their name in it. Students are also advised to check their e-mail every workday. See www.dal.ca/SciCoop 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 2060.03. Other possibilities are STAT 2060.03 and STAT 2080.03. Credit will not be given for STAT 1060.03 if credit has previously been obtained for STAT 2860.03

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 2500.00, MGMT 2501.03

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
STAT 2060.03: Introduction to Probability and Statistics.
Rigorous introduction to probability and statistical theory. Subject matter is developed systematically with the fundamentals of probability and following with statistical estimation and testing. The interrelationships 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 2060.03 and 3360.03.

FORMAT: Lecture 3 hours, MLC
PREREQUISITE: STAT 1060.03 or STAT 2060.03
CROSS-LISTING: STAT 5060.03
EXCLUSION: ENGMM 2520.03

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 design, 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. Students will design and carry out a simple experiment as part of this class. A natural sequel for this class is STAT 3540.03.

FORMAT: Lecture 3 hours, MLC
PREREQUISITE: STAT 1060.03 or STAT 2060.03
CROSS-LISTING: MATH 2080.03, ICON 2280.03
EXCLUSION: ENGMM 2520.03, MGMT 2922.03

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 rigorous 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), inference, 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 2060.03, MATH 2010.03 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 following topics are covered on the subject with an emphasis on planning and control. The basic concepts of replication, blocking and randomization are examined. The second main subject is treatment questions and structure. The ideas of factorial design, split plot and incomplete plot designs are presented. We conclude with a look at response surface methodology.

FORMAT: Lecture 3 hours
PREREQUISITE: STAT 2060.03, MATH 2010.03 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 2011.03
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 multistage 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 inference 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 5066.03 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.
The development of design and analysis techniques for sample surveys. Topics 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 2060.03 and a third year analysis class, instructor’s consent
CROSS-LISTING: MATH 4090.03/5090.03, STAT 5090.03

Statistics 517
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 3460.03, or equivalent  
CROSS-LISTING: STAT 5400.03  
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 queuing 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 programmes 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 3460.03, 3400.03, 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 3460.03, 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 programme. 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 coordinator before undertaking their project.  
STAT 8891.00: Co-op Work-Term I.  
PREREQUISITE: SCE 2800.00  
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 housed at the University. These include:

Atlantic Health Promotion Research Centre
Director: Ranee Lyons, PhD
Coordinator: S. Cumold, MPA

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 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.

Atlantic Institute for 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 Regional Magnetic Resonance Centre
Director: J.W. Zwanziger, BA, MB, 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 Department. It is concerned with applications of magnetic resonance spectroscopy to problems in chemistry, materials science, biology, biochemistry, and related areas. It has current instrumentation that 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.dal.ca

Atlantic Health Promotion Research Centre (ARC)
Director: David M. Byers
Phone: (902)444-7366
Website: http://arc.medicine.dal.ca/

Established in 1967, the ARC conducts basic biomedical research in the fields of lipid metabolism and cell signaling, 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 (DAOCEN), http://genomics.medicine.dal.ca/, and is affiliated with the IWK Chemometrics & 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, CH, Heart and Stroke Foundation, National Cancer Institute, Atlantic Innovation Fund, and the IWK Health Centre.

Brain Repair Centre
Chair: Dr. Ivar Mendrez, 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 multidisciplinary 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-BID).

• 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 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 in 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.

Centres and Institutes 519
Canadian Institute of Fisheries Technology (CIFT)

Director: R.A. Sperry, PhD

The Canadian Institute of Fisheries Technology was established in 1979 at the former Nova Scotia Technical College (now TUNS). The Institute's facilities include:

- Specialized laboratory and seafood pilot scale processing equipment, and support services.

The Institute's facilities include:

- Food process engineering pilot plant
- Sensory evaluation laboratory
- Food processing laboratory
- Food processing pilot plant
- Low temperature storage facility
- Food physical properties laboratory
- Microbiological laboratory

These areas contain specialized instruments and food processing equipment to enable experimental processing, laboratory analysis, and product storage evaluation. In addition to computer-controlled cold storage facilities, the pilot plant is equipped for experimental processing, including freezing, chilling, thermal processing, drying and smoking, centrifugal separation, and modified atmosphere storage.

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, seafood microbiology, food chemistry, 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) 494-3110
Fax: (902) 494-2105
Director: Rebecca Tansson

This Centre, established in 1975, advances instruction, publication, research and development education programmes in African Studies. Associated faculty hold appointments in departments and are concentrated in the social sciences and humanities. The Centre organizes academic and informal seminars and public policy conferences on Africa and encourages interdisciplinary interest at all levels on African subjects and issues. It cooperates with the International Development Studies department and with the Lester Pearson International Office.

Centre for Environmental and Marine Geology

Director: Professor D.J. Scott

Established 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 1985 the role of the centre has changed, reflected in the new name, which better describes the work being done now where marine geology is combined with environmental problems. We have 3 new faculty that expand expertise into new environmental and physical properties of sediments, fish/food process engineering, computational fluid dynamics in the food processing industry, food safety and preservation, food rheology, food fermentation and beverage science.

These areas contain specialized instruments and food processing equipment to enable experimental processing, laboratory analysis, and product storage evaluation. In addition to computer-controlled cold storage facilities, the pilot plant is equipped for experimental processing, including freezing, chilling, thermal processing, drying and smoking, centrifugal separation, and modified atmosphere storage.

Educational Opportunities

Undergraduate (BSc) and graduate (MSc and PhD) programmes are available through the Food Science and Technology programme.
Centre for International Business Studies

Location: 6100 University Avenue
5th floor, Suite 5063
Halifax, NS
B3H 3J5

Director: Gregory Webb
Phone: (902) 494-1602
Fax: (902) 494-1483
Email: gregory.webb@dal.ca

Administrative Secretary: Maggie Lapp
Phone: (902) 494-4553
Fax: (902) 494-1483
Email: m.lapp@dal.ca

Student Exchange Coordinator: Timothy Richard
Phone: (902) 494-2224
Fax: (902) 494-1483
Email: tim.richard@dal.ca

Website: http://iwb.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 programmes and outreach services. It carries out these functions within the administrative framework of the School of Business Administration. CIBS supports a wide range of learning experiences including the Foreign Business Program, Financial Risk Management Field Study, 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 M.B.A. study.

Centre for Marine Vessel Development and Research (CMVDR)

Director: Julio Militzer, 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 survivability and capsizing behaviour in extreme seas
- Optimal hull forms for minimum resistance
- Ship manoeuvrability 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 Programme 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 3m. 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 0.5m (1.5ft).

Computing Facilities

CMVDR and the post-graduate Naval Architecture Programme has sophisticated and networked Computer Systems to support its advanced research work.

The computer systems are used for running numerical computations, required for the ongoing development of numerical techniques to solve complex hydrodynamic problems. Advanced 2D and 3D visualisation software is also developed on the systems as the real-time dynamic simulations can be carried out and displayed.

In addition to advanced hydrodynamic and hydroelastic software development, CMVDR has commercial hull design and analysis software packages, including FastShip, GHIS, ShipEd 2001, Aship and ABE SafeHall. These are used to complement research efforts, and to instruct naval architecture students.

RBC Centre for Risk Management, Faculty of Management

Director: Ronald Peel, PhD, PEng
Phone: (902) 494-1769
Coordinator: Janet Lord, Centre for Integrated Research and Learning, Faculty of Management
Phone: (902) 494-7294
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 & 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 programmes 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 programmes 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 programmes directed by the Centre address the design of cost-effective on-site wastewater systems, soil erosion processes, drinking water treatment, the use of monitoring cisterns for domestic water supply, water purification, waste 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 Dosedel, Air Flotation (SAF) and coagulation 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 programme 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 cooperates with academic units in the training of undergraduate and graduate students who have an interest in water resources. The Centre also participates in the programme 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 Côté

The Eco-Efficiency Centre (EEC) was established in 1998 as a partnership between the Department of Energy, the Nova Scotia Resource Recovery Fund Board, the Nova Scotia Department of Environment and Labour, Nova Scotia Department of Economic and Rural Development, Industry Canada, the Atlantic Canada Opportunities Agency and agencies such as the Atlantic Canada Opportunities Agency, the National Research Council’s Industrial Research Assistance Program (IRAP), Environment Canada, the Nova Scotia Department of Environment and Labour, Nova Scotia Department of Economic, the Nova Scotia Resource Recovery Fund Board Inc., and the Greater Halifaxes Partnership.

European Union Centre of Excellence

Director: F. Laursen, 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
The Institute for Research in Materials (IRM) was 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 eighteen 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/graduateresearch 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 (STXM)
- Ressoul computer system
- Ultrasonic immersion testing equipment
- Hot press
- Grinido Sonic
- High-speed motion recorder/analyzer.

These facilities are open to external users. Please contact IRM@dal.ca for details.

**Law and Technology Institute**

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 the 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. 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 ITCan, and the International Society for Law and Technology. The Institute hosts the McCarthy Tetrault 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 Detzurah and Scansa. 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

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**

The Institute, which is housed in the Law School, carries out research and consultancy activities and also directs the NELF academic specialization. Its primary researcher is the holder of an appointment as a senior Canada Research Chair in Ocean Law and Governance. In addition to their scholarly research and publication activities, faculty and staff associated

[URL: www.irm.dal.ca]

**Institute for Research in Materials (IRM)**

**Director:** Mary Anne White, BSc, PhD

**Administrative**

**Office:** 6136 Coburg Rd.

**Halifax, NS B3H 1S9**

**Phone:** (902) 494-8016

**Fax:** (902) 494-8016

**Website:** www.irm.dal.ca

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- Scanning thermal microscope (STXM)
- Ressoul computer system
- Ultrasonic immersion testing equipment
- Hot press
- Grinido Sonic
- High-speed motion recorder/analyzer.

These facilities are open to external users. Please contact IRM@dal.ca for details.

**Law and Technology Institute**

**Phone:** (902)494-1449

**Fax:** (902)494-1316

**Email:** lynda.corkum@dal.ca

**Website:** http://www.dal.ca/law/lati

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**Marine & Environmental Law Institute**

**Director:** Monta L. McConnell, BA, LLB, PhD

**Associate Director:** Meinhard Doele, BSc, LLB, LLB, JD

**Location:** Dalhousie Law School

6061 University Avenue

Halifax, NS B3H 4H9

**Phone:** (902) 494-1988

**Fax:** (902) 494-3136

**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 NELF academic specialization. Its primary researcher is the holder of an appointment as a senior Canada Research Chair in Ocean Law and Governance. In addition to their scholarly research and publication activities, faculty and staff associated with these research groups are invited to become Associate Members of IRM. See www.irm.dal.ca/graduateresearch for details.
with the Institute 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-government organizations in Canada and overseas. The Marine & Environmental Law Institute is also the editorial office of the Ocean Yearbook, a major international 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 Marine & Environment Law Institute has observer status with UN agencies, works closely with on-campus student groups such as the Environmental Law Students’ Society and frequently collaborates closely with other disciplinary and interdisciplinary graduate programmes and other scholars at Dalhousie University and with marine and environmental organizations in Canada.

**Minerals Engineering Centre**
Director: Georges J. Kipnurse, Ph.D., P.Eng
Phone: (902) 494-6110
Location: 1360 Barington Street
Hull House, NS B3X 1X4
Fax: (902) 494-3957
Website: http://mineralsengineering.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, clay, and other materials
- Size analysis, including screening, sieving, and sub-size analysis
- Dense liquid analysis
- Preparation of thin sections
- Physical and chemical analytical methods using atomic absorption, spectrophotometric and wet chemical techniques
- Analysis of samples including geological, metallurgical ores, industrial minerals, coals, metals, alloys and water
- Mineral processing tests covering the whole range of investigative techniques from bench scale to pilot plant, including crushing, grinding, classification, gravity separation, dense medium separation, magnetic separation, electronic 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@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 programmes 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 Rouch, MBA, P.Eng
Coordinator: Janet Lord, Centre for Integrated Research and Learning
Phone: (902) 494-1134
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 Centre supports 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 and international linkages with other academic institutions that are involved in the field of entrepreneurship.

**The Nova Scotia CAD/CAM Centre**
Location: 1360 Barington Street
P.O. Box 1080
Hull House, NS B3X 1X4
Fax: (902) 494-3242
Contact: Debbie Brown, Administrative Assistant

Established: April 29, 1983, as a cost-recovery, industry-oriented Centre within the Faculty 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 (AM) 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-François Trottier, P.Eng in June 2001.

Director: Dr. Jean-François Trottier, P.Eng
Phone: (902) 494-3990
Fax: (902) 494-3342
Contact: Debbie Brown, Administrative Assistant

**Advanced Manufacturing (AM) Group**
Coordinator: Dr. Andrew Wadsworth (949-3901)
Manager: Mr. Robert Warner, P.Eng (949-6096)
Manufacturing, research and technical support services to:
- Dalhousie Faculty of Engineering
- private industry
- government agencies: DND, DREA, IIO
- Areas of Expertise:
  - CAD/CAM training and technical support in MasterCAM, SmartCAM, Solid Edge and Pro/Engineer
  - prototype design and machining with CNC machines
  - rapid plastic part prototypes by injection molding and thermoforming
  - reserve engineering and inspection with a Mitutoyo CNC Coordinate Measuring Machine (CMM)

Mr. Warner teaches IENG 3321: Manufacturing Processes, and co-teaches MENG 4631: CAD/CAM and MENG 4638: Geometric Dimensioning and Tolerancing. Mr. Warner also provides evening courses for Pro/Engineer and Solid Modeling.

Intelligent Structures and Innovative Materials (ISIM) Group
Research Professional: Dean Forgeron, P.Eng (494-2847)
- R&D of novel reinforcing fibres 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 structural health monitoring of buildings and structures
- remote monitoring and intelligent data processing
- innovative steel-fine concrete decks for bridges, wharves and parking garages
- modeling of buckling and post-buckling failures
- operates R&D - 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, SmartCAM, Solid Edge, Pro/Engineer
- CNC milling centre Mori-Seiki MV Junior Series
- CNC turning centre linde 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
- CNC milling machine Fanuc-ml-3.2 i axis (for training purposes only)
- Injection Molding Machine (25 Ton Arburg, 1.2 oz shot)
- Ground Penetrating Radar Infrastructure Inspection System (400MHz to 1500 MHz)
- ASTM C1018-97 closed-loop testing
- Australian Round Determinate Panel test
- South African Waterbed test
- Creep and Fatigue of Materials
- 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
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- 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 programmes 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 Programme (CRC)
- Canadian Foundation for Innovation (CFI)
- Grace Canada Inc.
- 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 1973 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.B. Baird, PhD, P.Eng
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 programme of seeking out and examining alleged safety-related defects. The major portion of the programme 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 one or 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 programmes 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 92,000 graduates of Dalhousie University. A global network of volunteers keeps alumni informed and involved with the university. By providing many programmes 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 listen to our 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.alumni.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 by登陆到www.turnitin.com. Resources for developing awareness among students, and to help them avoid plagiarism are available at http://learningandteaching.dal.ca/turnitin.

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 all fans 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 “noize” in-court 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 climbing gym and a children’s play area. For those who prefer recreational activities there are a great number of fitness, leisure and aquatic instructional programs.

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4. Black Student Advising Centre

The position of the Black Student Adviser was created by Dalhousie University, initiated by the Black Canadian Students’ Association to provide information to assist and support new, prospective and returning students, faculty and staff of African descent. The Centre is intended to foster a sense of community with other students on campus and to increase intercultural awareness.

The adviser may organize programme activities and arrange local community tours which assist students in developing contact within the African Nova Scotian Community. The adviser can provide confidential services, individual 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 available on scholarships, bursaries, employment and upcoming community events.

The Centre is meant to be beneficial to all students, faculty and staff as a result of increasing awareness and sensitivity to students of African descent and their issues and presence within the University community.

For further information contact: Office Room 418 of the Student Union Building; phone (902) 494-6648; fax (902) 494-8013; email: BSAC@dal.ca; webpage: www.dal.ca/busc.

5. Chaplaincy at Dalhousie

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 Chaplain’s office 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, Baptist, 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 Chaplaincy Office,” “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 Chaplaincy Office.”

Office hours are 9 a.m. to 4 p.m., Main Level, 1321 Edward Street. Our phone number is 494-2207. 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/chaplaincy.

6. Counselling Services

The Counselling Services Centre offers programmes 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 programmes, 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 programmes is available in the Frank C. Lawson Career Information Centre. The Internet, CD-ROMS, reference files and bulletin boards, 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 C. 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 programmes and workshops is available on the Dalhousie Counselling Services website: www.counsellingservices.dal.ca.

7. 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, 401 Building, 1360 Barrington Street. Employees may obtain a DalCard at the DalCard Office at the Student Service Centre on the Sexton campus. See www.dal.ca/dalcard for more information.

8. Dalhousie Arts Centre

Designed as a multipurpose facility, the Dalhousie Arts Centre is home to four University departments: Dalhousie Arts Centre (Rebecca Colin 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 Colin 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 Stepping Tom to name a few. Other performing and visual arts spaces in the Arts Centre include: The St James Dunn Theatre (240 seat), The MacMurray Studio, Studio II, The MacAulay 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 programmes.

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.

9. 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 Union Act of the Nova Scotia legislature as the single voice of Dalhousie students. All student activities on campus are organized by the Dalhousie 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 836 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 by 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 Services, Travel Cafe, The Grasswood, 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 494-1305 or email dalsu.info.ca. Check out the website at www.dal.ca, or my.dal.ca.

10. 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 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 programme 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 programme of study.

Students with disabilities are encouraged to contact the Residence Office at (902) 494-1554, or email housinginfo.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 permitted to live with the expenditure 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 residence, 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.

The responsibility of the individual student in all cases to make a separate online application to the university housing office if the student has made an accommodation decision. For information on housing fees, see the Fees section of the Calendar.

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Resources and Services

528 Resources and Services

Any dining hall on campus.

Wired for ResNet (high speed Internet), local telephone service and cable TV service are provided.

Located close to the Dalplex and to St从中 Hall, where students normally have their meals. Facilities include study rooms, a computer lab and a large common area on the upper floor.

Dalhousie’s newest co-ed residence, Ridley Hall opened in September, 2004. It is located on LeMarchant Street, behind the Student Union Building, and offers 49 single rooms.

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. In all, 64 residents will live in 48 single rooms, with 6 junior and 2 senior apartments.

B. Sexton Campus

i. Gerard Hall

Gerard Hall is a 12-story traditional style co-ed residence that houses 198 students in single 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 Shireff Hall.

2. Non-Traditional On-Campus Housing, including apartments

A. Main Campus

i. Residence Houses

Dalhousie also has two residence houses, which are co-ed. Both were once single family homes and have their own kitchens, living rooms and bathrooms. The character of these homes has been maintained as much as possible. Although they are generally occupied by students in graduate programmes 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. Laundry, cooking utensils and small appliances are not provided. Students share kitchen and living areas. 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.

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. Rooms are wired for ResNet (high speed Internet), local telephone service and cable TV service.

Meal plans are not mandatory, but may be purchased separately to use at any dining hall on campus.

ii. 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-story building is located close to the Dalplex and to St从中 Hall, where students normally have their meals. Facilities include study rooms, a computer lab and a large common area on the upper floor.

Dalhousie’s newest co-ed residence, Ridley Hall opened in September, 2004. It is located on LeMarchant Street, behind the Student Union Building, and offers 49 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. In all, 64 residents will live in 48 single rooms, with 6 junior and 2 senior apartments.

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iii. Glengary Apartments

Located on the Sexton Campus on Edward Street, Glengary Apartments is a four-story 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 bathrooms. There are also four 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 available 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.

iii. Fenwick Place

Dalhousie’s 25-storied 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 Sexton 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.

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.

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 Ridley 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 those 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 programme 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) 494-3365
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
Halifax, N.S. BIH 1H2
Telephone: (902) 494-2075
Email: housing@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
1230 Fielden/Beard Street
Halifax, N.S. E1H 3P6
Telephone: (902) 494-2429
Email: och@dal.ca
Website: www.dal.ca/och

ResNet

Location: Dalhousie University
1443 Seymour St.
Halifax, N.S. B3H 3M6
Telephone: (902) 494-3365
Email: resnet@dal.ca

11. 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 practice, 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.

Certification 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 at 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, 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.

• Studios. 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 BHS 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), or you can visit the CLT website at http://learningandteaching.dal.ca

12. International Student & Exchange Services

The International Student & Exchange Services (ISES) office is committed to welcoming, supporting, and returning new and returning international and exchange students to Dalhousie. ISES provides a resource and activity centre for international students. Advisers 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 programmes 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 (Sixton Campus) at 1300 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
The Office of the Ombudsperson 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 programmes 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 programme 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/Office (ILC) 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.

14. Libraries

The Dalhousie University Library System is organized to accommodate the needs of the undergraduate teaching programmes, graduate and faculty research projects, and professional schools. The system is made up of the following components: the Kalam 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, 2006, the holdings of the Dalhousie Libraries include over 1,280,000 volumes of books, bound periodicals, documents and bound reports, 480,000 microfilm and microfiche, 100,000 maps and other media, 10,500 music scores and 10,600 music recordings. The libraries subscribe to 10,000 serials titles, including 5,400 electronic titles.

Dalhousie libraries participate in Novanet, a network which shares a single automated online catalog 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.

15. 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 web site http://maturestudents.dal.ca.

16. 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 206, 132 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.

17. 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. Other functions include the registration of all students, providing personal identification to students, and maintaining Dalhousie's student records. The registrar's office maintains the registration and student records, and disseminates information concerning student registration, academic regulations and appeals, program choices, and academic resources. The registrar's office also provides access to a wide range of support services, such as the Counselling Services Centre. The Registrar's Office also issues transcripts, diplomas and certificates, and provides information on academic, financial, and other matters.

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 Sexton Campus. Students attending classes at Sexton Campus can also access Registrar's Office services at the Student Service Centre located in Building B on the Sexton Campus.

Inquiries may be directed to:

The Registrar

Dalhousie University

Halifax, NS

Canada    B3H 4H6

Telephone (902) 494-6280

Fax: (902) 494-6580

Email: admissions@d:dal.ca

18. Sexual Harassment Office

Sexual harassment, in general terms, is unwelcome, sexually oriented attention or actions of a deliberate or negligent nature. It can adversely affect one's working or learning environment or participation in University life. It is a form of discrimination on the basis of sex, gender and/or sexual orientation and is prohibited by the Nova Scotia Human Rights Act. Sexual harassment can take many forms including, but not limited to, comments, jokes or insults about a person's gender, sexual orientation or appearance; lowering or suggestive looks; displays of offensive pictures or material; unwanted sexual propositions or demands; persistent unwanted contact after the end of a relationship; and unwanted physical or sexual contact. It may involve promises of reward for complying with sexual demands or threats of retribution for failing to comply with such demands. It can also create an uncomfortable environment in which to work, live or study through continued sexual comments, suggestions or pressures.

Dalhousie University is committed to an environment free from sexual harassment and has a policy and procedures in place to deal with concerns. This policy can be found on the Dalhousie Web page at http://wwwsexualharassment.dal.ca and copies are available from the Sexual Harassment Office and members of the Sexual Harassment Resource Group.
If you feel that you are being harassed, whether by a professor, teaching assistant, staff member, co-worker, student or client, talk to someone. Sexual harassment usually does not go away if you ignore it. If you are able, tell the person as clearly, firmly and directly as you can that the behavior is unacceptable and that you want it to stop immediately. If this does not stop the behavior or if you are unable to communicate your concerns (for fear of reprisal or concerns for your safety and comfort), it is time to involve others. 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 on an academic offense. 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: susan.brousseau@dal.ca
Website: http://www.studentadvocacy.dal.ca

Please note that due to chemical sensitivities of persons who work and frequent this office, our environment must be scent free.

20. 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 appropriate 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 on an academic offense. Our goal is to make the often unpleasant experience of challenging or being challenged by University Administration less intimidating.

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Email: susan.brousseau@dal.ca
Website: http://www.studentadvocacy.dal.ca

21. Student Clubs and Organizations

Students seeking information on clubs and societies should call the Dalhousie Student Union office at 494-1200 or check the DUSC Website at www.dusca.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 residential-based, within faculties, or university-wide. Some are decades old with long traditions, others are more recent 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.

22. Student Employment Centre

The Student Employment Centre (SEC) assists you in:

- preparing a full range of career and work possibilities that match your career goals;
- applying for and obtaining information on employment opportunities and prospective employers;
- connecting with employers through campus interviews, job listings, referrals, direct application, networking, job search events, publications, and/or information technology;
- developing and maintaining relationships with employers that provide career development and employment opportunities for you.

Please refer to SEC website at www.dal.ca/sec for more information on programs and services.

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 concerns. The Vice-President, Student Services, is the chief student services officer, coordinating the activities of student services across campus. Academic Success Services (which encompasses Academic Advising, the Black Student Advising, The Chaplaincy, Learning Connections, Student Accessibility Services, Studying for Success, Tutoring, the Writing Centre) Athletics and Recreational Services; Bookstores; Counselling Services; Health Services; Housing, Conference and Ancillary Services; International Student and Exchange Services; Office of the Ombudsperson; Registrar’s Office; Sexton Student Service Centre; Student Employment and Volunteering; Trademarks, University Food Services.

Students who experience difficulties with their academic programmes or who are uncertain about educational goals, major selection, honour’s or advanced major information, degree regulations, changing faculties, inadequate study skills, or conflicts with faculty and regulations, can seek the assistance of the Academic Advisers in the Vice-President’s Office.

24. Studying for Success

As part of Student Academic Success Services, Studying for Success offers programmes 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 Services 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 novelties, self-help manuals and other reference material. As well, you can find titles by Dalhousie authors.

The Stationery department carries all necessary and supplementary stationary and supplies. The Campus shop carries gift items, mugs, clothing and crested wear, cards, jewellery, class rings, backpacks, novelties and frisbees. A Special Order department is located at the customer service area and will order and ship books worldwide.

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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 2300 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 15000 LeMarchant Street (Building B) and is open from 9:30 a.m. - 4:45 p.m. Monday to Friday. It supplies tests 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 its 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. It is responsible for all centrally managed computing and communications facilities.

UCIS manages a campus-wide communications network which interconnects office systems, laboratory systems, departmental computers, and central facilities. This network is connected to the CANet research and education network and to the worldwide Internet. UCIS is also responsible for University telephones.

UCIS manages a variety of systems including email, MyDal portal, WebCT, net storage, web servers, and many others. In cooperation with the relevant academic departments, UCIS also supports numerous personal computer teaching laboratories which are situated throughout the campus. It is strongly recommended, however, that students have access to a personally owned microcomputer with Internet access, especially for word processing, personal email and WWW use, as most university facilities are heavily used for discipline-specific class work.

All students may have access to campus computing facilities on an individual basis or in conjunction with the classes that they take. Network ports and wireless connections for personally used computers are available in several campus locations and in residence rooms.

UCIS also manages the campus computer store (PCP), provides non-credit computer-related classes, offers a hardware maintenance service for micro-computers, operates an online class delivery service (WebCT), a Web authoring service, an Electronic Text Centre, and is a partner in the Killam Library Learning commons. UCIS also is a partner with the Killam Library in providing the university’s Anti-Plagiarism service.

UCIS Help Desks are operated in the Computer Centre basement of the Killam Library, and in B Building, Sexton Campus, ground floor, adjacent to the Student Service Centre.

28. University Health Services

The university operates a medical clinic in Hove Hall, 4240107, and a medical clinic at 15000 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 10:30 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 province. 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 arrange for the Health Service; preferably with a statement from the doctor.

29. Volunteering

Please refer to Student Employment Centre.

30. Writing Resource Centre

The Writing Resource Centre’s programmes 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.

The Centre currently offers three services. The Q&A Office in the Learning Commons allows students to obtain advice on writing issues. Tutors at the Q&A also make appointments, respond to email questions and answer the Centre’s phone. A second service is the one-on-one session available to students requiring individual writing support. 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 Resource Centre by visiting the Q&A in the Learning Commons, calling 494-1963 or emailing at writingcentre@dal.ca.

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Contact the Writing Resource Centre by visiting the Q&A in the Learning Commons, calling 494-1963 or emailing at writingcentre@dal.ca.
I. Introduction

The following section of the calendar outlines the University Regulations on academic fees for both full-time and part-time students enrolled in programmes 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 registration schedule.

I. 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, 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.

II. University Regulations

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 2007.

A. Deposits

1. Admission Deposit

A non-refundable deposit of $200 is payable on admission by all new undergraduate and some graduate students. Students in specified limited enrolment programmes (see below) must pay the deposit within three weeks of receiving an offer of admission. Undergraduate students accepted before 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 and qualifying Dentistry students and Internet working students are required to pay a non-refundable $2500 admission deposit.

Limited Enrolment Programmes include:
- Master of Business Administration
- Master of Environmental Studies
- Master of Library and Information Studies
- Master of Public Administration

All programmes 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.
Section A.

The following regulations apply to the payment of academic fees.

a. Students registered in more than one programme are required to pay separate academic fees for each programme.

Section B.

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.

Section C.

Students are required to pay separate academic fees for each programme.

Section D.

The payment of academic fees is required for the registration of all students. Non-payment of fees will result in the loss of registration privileges and the need to re-register.

Section E.

Students are expected to pay the full amount of their fees by the due date as specified.

Section F.

The University reserves the right to amend the fee structure as necessary.
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 Canadians Citizens or permanent residents are required to pay an additional fee referred to as a “Differential Fee” in the amount of $325.00 maximum per term, subject to increase in 2007/2008. There is a proportional change for part-time international students. International and qualifying Dentistry and Internet working students are exempt. Graduate Students please see Section 4.4 of the Graduate Studies Calendar to determine the number of terms 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 retractive 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.student.services@dal.ca).

Health Insurance - International Students (2006/2007 fees, for information only)

- Single - $650.00 per year
- Family - $1,850.00 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.

I. Class Changes, Refunds and Withdrawals

Please consult Student Accounts for all financial changes 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 and fees will be completely refunded, but no substitutions will be allowed from a programme.

Important Information Regarding Refunds

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.

A valid Dalhousie University ID must be presented in order for the student to receive a refund.

f. No fee adjustment will be made for a student changing their degree or programme as follows:

Regular (Sept. - April) and Full Terms
- After September 22
- Winter Term
- After January 15
- Summer Term
- After May 18

J. Refund Schedule

Please visit www.dal.ca/studentaccounts in June of 2007 to view the new refund schedule.

K. Delinquent Accounts

Accounts are considered delinquent when the balance of fees has not been paid by September 21 for the fall term, (January 14 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, 2006 the rate of interest is 9.00% per annum.

A student whose account is delinquent for more than 30 days will be deemed University privilege including access to transcripts. A student will be renotated upon payment of the fees outstanding, the arrears interest and a $50.00 nonpayment 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 21, 2007.

(January 14, 2008 for students registered for winter term, and May 23, 2008 for students registering for the summer term).
M. Provincial Bursaries and University Scholarships

These 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, 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. Currently, the tax credit for students is calculated by deducting the following from academic fees paid: Student Union fees, health plans and society fees. Seventeen percent (17%) of the remaining balance constitutes the tax credit. 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, 2006-2007 full-time student union fees are $56.50 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 information or Student Services website, www.dal.ca/studentservices for further details.

2. Student Service Fee

Student Service provides and supports various Dalhousie Services including health services and athletics. For information only, 2006-2007 Student Service fee is $93.00 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
• Duplicate Membership
• Link to Access 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 those 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 schedule is 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:

<table>
<thead>
<tr>
<th>Fee Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Fee</td>
<td>Residence, Non-Residence, International, Fax, ResNet (local Internet access)</td>
</tr>
<tr>
<td>Late Graduation Application Fee</td>
<td>Except for the following programmes which require payment of a $70.00 application fee: Occupational Therapy, Pharmacy, Rehabilitation, Social Work, Diploma programmes in Paramedical, Environmental Studies, Health Services, and Medical Laboratory Technologies, Dentistry including Dental Hygiene, Law and Graduate Studies. Other appropriate, contact Registrar’s office for details. Note: Fees are subject to change after publication of this calendar.</td>
</tr>
<tr>
<td>- Metro</td>
<td>DalCard Office</td>
</tr>
<tr>
<td>- Canadian</td>
<td>Registrar</td>
</tr>
<tr>
<td>- International</td>
<td>Registrar</td>
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<td>Registrar</td>
</tr>
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<td>- Student Union Application Fee</td>
<td>Registrar</td>
</tr>
</tbody>
</table>

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 2006/2007 is $116.00. Please refer to the Student Services website, www.dal.ca/studentaccounts for further information.

Q. Statements and Monthly Notices

Statements will be mailed at the beginning of each term. Subsequent monthly payment reminders which include adjustments will be sent to the student's official Dalhousie email address. To receive a monthly mailed statement in addition to an email notification, please contact Student Accounts to arrange a billing address.

III. Residence Fees

The following are 2006/07 rates.

<table>
<thead>
<tr>
<th>Residence Room and Board Rates</th>
<th>Location</th>
<th>Style of Accommodation</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residence Room and Board Rates</td>
<td>Howe Hall</td>
<td>Traditional</td>
<td>All students except for students in Non-Traditional Residences.</td>
</tr>
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<td>Non-Traditional</td>
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<td>Residence Room and Board Rates</td>
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<td>All students except for students in Non-Traditional Residences.</td>
</tr>
<tr>
<td>Residence Room and Board Rates</td>
<td>Metro</td>
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</tr>
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<td>All students except for students in Non-Traditional Residences.</td>
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Prices listed do not include the non-refundable $50.00 application fee.
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 10 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, Fenwick Place, or the Student Service Centre (Sexton Campus) 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 Christmas holidays.

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, Strmsell Hall, Eliza Ritchie Hall, Bailey Hall, Gerard Hall, Mini-Residences, Gorgory 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 (Christmas vacation 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. These students wishing to stay beyond the residence term may do so for a daily or weekly rate. Please contact the appropriate residence for details.

### 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).

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### 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.

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Discretionary power in exceptional circumstances remains with the Director of Housing, Conferences and Ancillary Services.

Once offered admission to an academic programme of study at Dalhousie, students are eligible to submit a housing application with the required $50 admission deposit. 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.

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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 programme 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 the entrance or in-course and/or rebates (as listed below) of a scholarship from the Registrar’s Office (Awards). The Statement of Scholarship Terms contains some of the more pertinent policy items for easy reference.

2. Bursary: An award granted on the basis of need and/ or economic status.

3. Medal: An award based on general academic excellence, or proficiency in a specific area of study.

4. Prize: An 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 by 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 programme at Dalhousie University. A full class load for most designated programmes 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 programme.) Likewise 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 programmes for the eligible degree/diploma programmes. Please contact the Awards Office prior to changing programmes.

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 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. Renewable entrance awards are renewable for the duration of the programme (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 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 programme during the academic year (or term in the Co-op programmes). 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). 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 programmes in the participating faculties who have completed a full class load (minimum 30 credit hours for most programmes) during 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. Cwsp-students who are on a work term during the calendar year, must 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 these 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. Cut-offs 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 programme, 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 Registrar's Office - Awards.

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 Programme Considered for Assessment
Changing degree/diploma programmes 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 cws-students).

N. Record of Scholarships
Awards are recorded on the academic records of the students. The University retains the right to reassess 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, you would forfeit eligibility for continuation of your scholarship. Graduation constitutes completion of programme. 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 programme other than a “limited enrollment” one. If you are enrolled in a programme 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 is October 31, 2007.

Students may appeal under the following grounds:
- extraneous 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 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 31st.

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
Awards

3. The second group, Dalhousie Entrance Scholarships, are awarded for subject to change without notice.

5. Transfer Students are not eligible for entrance scholarships. Entrants

4. Admitted students will be considered for an entrance scholarship in

3. The applicants are assessed on a mutually competitive basis for the

2. In its assessment of entrance scholarship candidates, the University 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 (2006/07 values) are $4,000, $5,000, and $8,000 per year. The renewable scholarships are tenable for the duration of the programme 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

3. The applicants are assessed on a mutually competitive basis for the

A. Scholarship Assessment Criteria

B. Quick View Entrance Scholarships (subject to change)

Entrance Renewable Scholarships

$8000 (Chancellor’s Scholarships)

- 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

$5000

- 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

$4000

- 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.

3. Admitted students will be considered for an entrance scholarship in one of seven academic faculty groups, namely that programme 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 sciences, 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 programme).

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: (a) the level of course difficulty of classes (AP, IB, A/AS-Level); (ii) the number of university-preparatory classes beyond the minimum five and; (iii) 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 programme.

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, knowledge, nursing, and recreation), management (includes commerce and management), science (includes DIRS), 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.
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.

Fairfax Financial Holdings Limited Entrance Award

Two renewable awards, valued at $5,000 each, are awarded annually to assist worthy candidates entering an undergraduate programme at Dalhousie University. The scholarships are established to encourage students to begin their academic 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. Students will be selected on the basis of financial need but outstanding academic achievement, independently documented outstanding achievement, commitment to community and other extracurricular activities could also be influential. The scholarship is tenable for the duration of an undergraduate programme or a maximum of four years (whichever comes first) based on a 3.00 GPA 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 valued at $3,000 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.

The Lockwood Memorial Scholarships

These scholarships have been established from an endowment by the late Reginald and Anne T. Lockwood of Liverpool, N.S. Ten renewable scholarships valued at $4,000 per year, plus a number of $4,000 non-renewable scholarships are awarded annually. Candidates for Lockwood 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 Queens County—High schools outside the preferred area but within Nova Scotia may each recommend one student for consideration. 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 programme or a maximum of four years (whichever comes first) based on a 3.00 GPA over 30 credit hours (full load). Recipients of non-renewable scholarships may have the 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 Scholarships

This Scholarship was established by Maple Leaf Foods for students entering the programme 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 other 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 scholarships for entering high school students. Scholarship values and renewal criteria are set by the student’s level of study in a programme. Total scholarship value is
Awards

$16,000 over four years. Scholarships will be given to students with demonstrated financial need, a recognized initiative to funding their own education who possess strong leadership abilities. The deadline for nominations is March 1. Nominations forms are to be sent to the Assistant Registrar, Awards. Applications 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 programme who has the intention of furthering her/his studies in the area of mental health. Contact the School of Nursing for further information.

North Nova Scotia Highlanders Memorial Award*
An award of up to $300 is available to an entering student 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 Manager of Student Athletics, Dalplex, Dalhousie University, Halifax, NS, B3H 3J5. Deadline: June 30.

Shelton and Maryrose 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 C.D. Howe Scholarships in Engineering
The C.D. Howe Memorial Foundation has established an endowment to provide a scholarship of not less than $5,000. 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 programme. 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 programme provided that the holders maintain high academic standing and remain in the engineering programme. Application not required.

The A. Murray Mackay Scholarship
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 two, 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 programme and no application is 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 programme 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.

Christine Irvine Memorial Scholarship
Established in memory of Christine Irvine, former Dean of Women at Dalhousie, by her brother Leslie M. Irvine. Funds one or more entrance scholarships for students from Bridgetown, Annapolis Valley of Nova Scotia. Application not required.

The Percy Bertram Jollota Scholarships
From the Estate of Jean Mineva 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 programmes 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 thereof to be used for scholarships. This fund has been designated for entrance scholarships. Application not required.

The Hector McInnes Memorial Scholarships
In December 1957, an anonymous donor gave the University $50,000 for undergraduate scholarships as a memorial to the late Mr. McInnes. Application not required.

The Silvanus A. Morton Memorial Scholarship
The Silvanus A. Morton Scholarship Fund was established in 1972 to provide undergraduate scholarships as a memorial to the late Mr. McInnes. Application not required.

The Hector McInnes Memorial Scholarships
In December 1957, an anonymous donor gave the University $50,000 for undergraduate scholarships as a memorial to the late Mr. McInnes. Application not required.

The Hector McInnes Memorial Scholarships
In December 1957, an anonymous donor gave the University $50,000 for undergraduate scholarships as a memorial to the late Mr. McInnes. Application not required.

Hartford Life Insurance Scholarships
Under the Will of the late Mr. Oxley’s will made provision for the establishment 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 in-course scholarships. The University has allotted this fund to the entrance scholarship plan. Application not required.

Scholarship honour 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 established 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 3.5 is maintained while carrying a full course load. Application not required.

The School of Nursing RN 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 programme neither directly from high school nor from a full year of university. Assessment is made by the School of Nursing. 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 programme neither directly from high school nor from a full year of university. Assessment is made by the School of Nursing. Application not required.

A trust has been established under the Will of the late Marguerite Vernon I. Vernon Scholarship
Application not required.

The Alexander Sinclair Scholarship
A renewable scholarship has been established to recognize the long association of the Upham family with Dalhousie University. The 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.

L.A. & Edith Upham Scholarship
A renewable scholarship 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.

Margarette J. Vroomen Scholarship
A trust has been established under the Will of the late Margarette Vroomen whereby, from time to time, a scholarship will be assigned to Dalhousie University for an academic year. Application not required.

3. Entrance Scholarships in the Portfolio to Fund
Generic Scholarships (Internal Assignment) No Application Required - Automatic Consideration
The scholarships listed in this section are used for funding purposes; students do not apply for them. Application not required.
Awards

The Harold A. Renouf Scholarship
An endowment has been established to provide an annual scholarship for students entering the Bachelor of Commerce programme. Application not required.

The Lois J. Robertson Scholarship
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. Solon Scholarship
Under the Will of the late Dr. David M. Solon, the University received a sum of money. The Board of Governors decided that this 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, Queens County, and rural Haliburton County. A student 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 up to three scholarships of $1,000 each. Of the 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. This scholarship includes a financial need component and consideration of extra-curricular activities, in addition to the attainment of high academic standing. The second scholarship is named the Ruth Skaling Murray Scholarship, in memory of a dedicated alumna of the Dalhousie Women's Division. (The third award is open to returning students.) Application not required.

4. Shad Valley and International Baccalaureate (IB) Scholarships
Shad Valley Scholarships
Two renewable scholarships of $15,000 ($4,000 per year) are offered to top high school applicants who have participated in Shad Valley. Automatic consideration if indicated on 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) 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 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 III 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.

E. The Canadian Merit Scholarship Foundation
The Foundation has been established 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 for a period 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. Names must meet the admission requirements for Dalhousie University and the programme which the student wishes to undertake.

III. In-Course Scholarships
(Applicable to those scholarships administered by the Registrar's Office. Selection criteria may be different for those administered by individual faculties/schools/departments.)

All Dalhousie students in eligible programmes in the participating faculties who have completed a full class load (a minimum of 30 credit hours for most programmes) 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 theawards 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 F.

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

Athletic Endowment Fund
This fund is used to support student athletes who are entering or continuing varsity sports at Dalhousie. Each year up to $20,000 may be available. Budget for a scholar may be met wholly or partially by a Dalhousie University Scholarship and/or one of the named athletics fund scholarships. Participation in varsity sports is required.

To be eligible, students entering Dalhousie from high school must have a minimum admissions average of 80% and, for returning students, a min. 2.30 GPA. Recipients will be selected based on academic achievement and leadership, in addition to exceptional athletic achievement. Recipients will also have demonstrated positive attributes in the areas of citizenship, community service and sportsmanship.

To apply, student athletes must submit a letter of application along with a supporting letter from the appropriate Dalhousie varsity head coach. Both documents must be submitted to the Athletic Endowment Fund, c/o Director, Athletics and Recreational Services, Dalhousie University, 6260 South St, Halifax, NS B3H 3J5 by April 20 of each year.

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.

544 Awards
1. Endowments or Annual Givings used by the University to Fund Students’ Scholarships

The following scholarships are administered by the Registrar’s Office.

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. Application not required.

Betta Sigma Phi Scholarship to Dalhousie University
The Halifax-Dartmouth City Council of Beta Sigma Phi sorority has established an endowment of $5,000 whereby the annual income will provide 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 secretory 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 programme. Application not required.

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. Application not required.

Minnie F. Burbidge Scholarships
In her Will the late Minnie F. Burbidge bequeathed the residue of her estate to Dalhousie University. In 1948 the sum of $40,000 was endowed to provide undergraduate, usually in-course, scholarships. Application not required.

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. Application not required.

Dharmu 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 programme. Application not required.

Marjorie F. Ellis Scholarships
The late Marjory F. Ellis bequeathed one-half of the remainder of her estate to Dalhousie University for scholarships to worthy students. Application not required.

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. Application not required.

The Mr. & Mrs. H.D. Hewitt Scholarship Fund
This scholarship was established by the members of the Student Accessibility Fund to support disabled students. To be eligible, students must be registered with Dalhousie Student Accessibility Services and have a min. 60% admissions average if entering Dalhousie from high school or a B+ (3.5 GPA) average for current Dalhousie students. Transfer students are also eligible and require a min. B-average.

Applications must apply by writing, taping or filming a personal statement on why they would benefit from this scholarship. Financial need is not a consideration. The deadline to submit a personal statement to the office of Dalhousie Student Accessibility Services is November 1.

Awards
Awards

546 Awards

Awards required. Deadline: September 30.

Aliant Ambassador Scholarship

Awards required. Deadline: April 30.

Environova Scholarship

Awards required. Deadline: April 30.

Colin Gash Scholarship

Awards required. Deadline: September 30.

The Harry Kitz Fund

Awards required. Deadline: April 30.

The Medjack Architectural Design Scholarship

Awards required. Deadline: April 30.

The Newfoundland Association of Architects Scholarship

Awards required. Deadline: April 30.

Nathan T. Ashkins Scholarship

Awards required. Deadline: April 30.

Robert Bruce Scholarship

Awards required. Deadline: September 30.

Dalhousie Club of New York Scholarships

Awards required. Deadline: September 30.

The Stora Enso Port Hawkesbury Undergraduate Scholarship in Atlantic Canada

Awards required. Deadline: September 30.

The Charles and Cecilia Zwerling Scholarship

Awards required. Deadline: April 30.

The Robert Bruce Scholarship

Awards required. Deadline: September 30.

The Alumni Branch Scholarship

Awards required. Deadline: September 30.

The St. John's Newfoundland and Labrador Alumni Undergraduate Scholarship

Awards required. Deadline: September 30.
The following scholarships are administered by the Registrar's Office.

D. Faculty of Arts and Social Sciences

Dr. Frederick J. Gaudet Scholarship
Dr. Gaudet bequeathed to the University in 1978 a sum of money to provide a scholarship in Arts. Application not required.

The Hyman I. Jacobson Scholarship
Under the will of the late Hyman I. 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 Laura 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 programme (that is a student entering the 3rd or 4th year of the Majors programme). In the absence of a suitable candidate from the Majors programme, the scholarship will be awarded to a student entering the 3rd or 4th year of the Honours programme. If there are no suitable candidates from English, the selection will be made by the Department of Music.

The Archibald MacMechan ChapterIFODE Scholarship in English
This scholarship of about $1,800 was presented to Dalhousie University as an endowment by the Archibald MacMechan Chapter, Imperial Order Directors of the Empire. It is intended for a Dalhousie student of special ability in English, and preference is given to graduates who intend 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 programme, 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 endowed 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 programme abroad.

At the discretion of the Department, the fund may also be used to provide financial assistance for on-campus students maintaining 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, the Wilson Ex-Class announced the establishment of a scholarship fund. The scholarships, in honour of Professor Wilson, are open to students in history.

4. Music
The Borneff/Garci Memorial String Scholarship
A scholarship will be given to a student who is entering the third- or fourth-year of a music degree programme who in the opinion of the Department has demonstrated outstanding ability as a string player. The fund was established to honour the memory of two significant string music teachers, George Borneff and Arthur Garci.

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. Curry Memorial Scholarship in Music
The North British Society established this scholarship in memory of the Honourable Lauchlin D. Curry 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 programme, 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 $1,000 awarded to the student entering the fourth year of his/her undergraduate degree programme 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 (excluding 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 programme who, in the opinion of the Department, demonstrates outstanding achievement in organ, piano, harpsichord or keyboard performance, choral music or other church music. The minimum value of the scholarship is $400.

The Effie May Ross Fund
At the discretion of the Department of Music’s Scholarship Committee, a scholarship may be awarded from the Effie May Ross Fund to an outstanding vocalist or instrumentalist enrolled with ‘advanced standing’ in a degree programme in Music: BMusic, BA/BSc Combined Honours, BA Combined Honours Music and Theatre. Other awards may be given at the discretion of the Department.

The Effie May Ross Scholarships in Music
An endowment fund of $25,000 was established under the will of the late Effie May Ross. The income is to be used to establish yearly scholarships to (a) the most promising vocalist student from the Maritime Provices or Newfoundland who requires financial assistance; and (b) on recommendation of the Senate of Dalhousie University to the most promising Maritime or Newfoundland student in the playing of the Piano, Organ, Violin or Cello who is in need of financial assistance. Scholarships range in value and number.

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...
Awards

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 programmes 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 Zuck Scholarships
Three scholarships awarded annually to fourth-year students in each of the three streams of Theatre: Theatre Studies, Technical Scenography and Acting.

E. Faculty of Computer Science

Unless otherwise noted, selection for these awards is carried out by the Faculty of Engineering Scholarships & Awards Committee, augmented by representatives from Architecture and Computer Science. Application forms are available from the offices of the appropriate dean.

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 programme. Selection is carried out by the Scholarship & Awards Committee of the Faculty of Engineering. Application required. Deadline: September 30.

Macanowski Foundation Entrance Scholarship
This foundation has established a $1,100 award for a student who fulfills or is expected to fulfill the minimum entrance requirements for admission to the BEds programme 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 through the Office of the Associate Dean of Engineering at Dalhousie. Application deadlines for awards in this section are stated.

President's Associates (Entrance) Scholarship
The President's Associates Entrance Scholarship has been made possible by members of the Associate's Programme (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 fulfill the entrance requirements for an undergraduate degree programme in Architecture or for entrance into third year of Engineering or Computer Science. Application required. Deadline: April 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 programme. 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 $100. Eligible applicants are Nova Scotia students registered in the senior year of Civil Engineering. Basis is academic achievement, leadership ability and financial need. Application required. Deadline: September 30.

Atlantic Farm Mechanization Show Environmental Engineering (Entrance) Scholarship
The Atlantic Farm Mechanization Show established this award of $100. The scholarship is awarded on the basis of applicant’s academic record in the Environmental Engineering Programme. Selection will be carried out by the Scholarship & Awards Committee of the Faculty of Engineering in consultation with the Chair of the Environmental Engineering Programme after students come to Dalhousie. Application required. Deadline: April 30.

Dr. M. Roy Foran 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 academic standing and demonstrated need. Application not required. Deadline: September 30.

The Aliant Ambassador Scholarship
A one-year award open to students registered in Year 4 or 5 of an Architecture and Planning, Computer Science, or Engineering programme. Selection is carried out by the Faculty of Engineering. Application required. Deadline: September 30.

The Aliant Ambassador Scholarship
A one-year award open to students registered in Year 4 or 5 of an Architecture and Planning, Computer Science, or Engineering programme. Selection is carried out by the Faculty of Engineering. Application required. Deadline: September 30.

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The Aliant Ambassador Scholarship
A one-year award open to students registered in Year 4 or 5 of an Architecture and Planning, Computer Science, or Engineering programme. Selection is carried out by the Faculty of Engineering. 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 $200, will be awarded to the top-ranked students fulfilling the entrance requirements for the Faculty of Engineering, who have not yet completed the first academic year. Application required. Deadline: April 30.

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 programme. 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 to Dalhousie students in the fields of Mechanical, Chemical, Electrical or Civil Engineering. 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 of 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. Application not required.

J. Douglas Kline Memorial Scholarship
The Kline Foundation has established a $1,100 award for a student who fulfils or expects to fulfil the minimum entrance requirements for the Engineering and Applied Science programmes. The award is made on the basis of merit and need, with preference given to students enrolled in the programmes of Mining and Materials Engineering. Application required. Deadline: September 30.

The Donald MacFadgen Memorial Scholarship
The Mining Society of Nova Scotia has established this award of $500. Eligible students are registered in the Junior Year of the Faculty of Engineering. The award is made on the basis of merit and need, with preference given to students enrolled in the programmes of Mining and Materials Engineering. Application required. Deadline: September 30.

The 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 graduate work in Chemical Engineering from McGill University in 1962. He returned to the Nova Scotia Technical College in 1965 whom he taught for 30 years. This 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 S.K. Malhotra Scholarship
This scholarship was established by Maple Leaf Foods for students entering the third year (Upper Division) of the BEng programme in 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 fulfils or expects to fulfil the minimum entrance requirements for the Engineering degree programme. Application not required. Deadline: April 30.

The Maritime and Northeast Pipeline Legacy Scholarship
Two scholarships, in the amount of $2,000 each, are awarded annually to students entering the third year (Upper Division) of the BEng programme at Dalhousie. Preference will be given to students from the Atlantic Provinces, the first studying with a concentration in Environmental or Marine 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 BEES programme 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 Dalhousie University. The Committee may also weigh financial and other considerations in reaching a decision. Application required. Deadline: April 30.
Gordon C. McCansland Scholarship
Mrs. Elizabeth C. McCansland established this award of $1,000. Eligible candidates must have fulfilled or expect to fulfill the minimum entrance requirements into the third year of the undergraduate Civil Engineering programme 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 programme. 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 fulfill the minimum entrance requirements into third year of an undergraduate programme 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 fulfill the minimum entrance requirements into your three of an engineering undergraduate programme 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 Scholarship & Awards Committee of the Faculty of Engineering in consultation with the Chair of the Civil Engineering programme. Application required. Deadline: April 30.

Guru Nanak Scholarship
Dr. and Mrs. D.S. Chehil established this scholarship to encourage black Nova Scotia students to qualify for 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 award 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 the 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 are residents of Newfoundland and Labrador and 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 programme in Architecture and 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) in 1929. He received an Honorary degree (D.Eng.) from the College in May, 1960. Application required. Deadline: September 30.

Nove Scotia Power Centenial 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 Dalhousie 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 community involvement in 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 programme at Dalhousie. Application required. Deadline: April 30.

The Everette Pattenson Memorial Scholarship
Ocean Contractors Limited established this award of $1,000. Professor Pattenson 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 Pattenson 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. D admissibility of the applicant’s record at Dalhousie. Candidates must have fulfilled or expect to fulfill the minimum entrance requirements into third year of an undergraduate programme in the Faculty of Engineering. Application required. Deadline: April 30.

Dr. Douglas G. Pincusk Scholarship
Amiris Systems Inc. has established a $2500 third year entrance scholarship in honour of Dr. Douglas G. Pincusk. 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.

Position 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 programme in the Faculty of Engineering. The award is made on the basis of the applicant’s academic record. Selection is made 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.

Position 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 record and involvement in extracurricular activities. Scholarship recipients may be offered term employment with Nova Scotia Power. The Selection Board considers academic excellence, personality, and involvement in extracurricular activities. 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 Programme (1994-96). The members represent business, industry, friends, faculty and university administrators. The 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 fulfill the entrance requirements for an undergraduate degree programme in Architecture and Planning or for entrance into third year of Engineering or Computer Science. Application required. Deadline: April 30.
Awards

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 Fellowships
Five awards of $1,000 each were established from the Bruce and Dorothy Rosetti bequest. Candidates must have fulfilled or expect to fulfill the minimum entrance requirements for entrance into third year an undergraduate degree 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 programme 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 programme in the Faculty of Engineering or Computer Science. 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 $1,800. Candidates must have fulfilled the minimum entrance requirements in the upper division of an accredited undergraduate engineering degree programme 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 Scottsham Dairy Group Scholarship
This scholarship was established by the Scottsham Dairy Group for students enrolled in third or fourth year studies in the programme leading to the Bachelor of Applied Science (Food Science) programme 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 programme 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 students who achieve 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 Scholarship 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 1964, William Stairs, Son & Morrow Limited of Halifax, on the occasion of the 100th 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 Scholarship
The Walter Gardner Stanfield bequest provides two awards, valued at $1,000 each, to students who fulfill or are expected to fulfill the minimum entrance requirements into third year of Engineering or Computer Science. Application required. Deadline: April 30.

Stora Enso Port Hawkesbury Ltd. Scholarship
Stora Enso Industries has established three awards of $1,000 each to commemorate the 25th anniversary of the company in Nova Scotia.

Dr. William Wilson Scholarships
Dr. William Wilson, former President of the Technical University of Nova Scotia has established an annual scholarship open to students entering the third or fourth year engineering programme in the Faculty of Engineering. The Scholarship is awarded on the basis of the applicant’s academic record at the Associated University. Application required. Deadline: April 30.

Estate of Dr. R.S. 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 programme in the Faculty of Engineering of this University. The award is based on the academic record of the applicant during Year Three of the programme. 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 Shaw Group Scholarship in Civil Engineering
This scholarship is awarded annually to a student entering the third or fourth year of Engineering. 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 programme. This scholarship is renewable for recipients maintaining a GPA of 3.5 in each subsequent academic study term. Eligible students must complete an application and provide an essay discussing their views on engineering in business. Deadline: January 15

G. Faculty of Health Professions

1. School of Health and Human Performance

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 programme specializing in outdoor leadership at Dalhousie. Selection will be based on academic achievement and professional ability. Apply through the School.

VIIIth 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

Dr. R.M. MacDonald Scholarship
This scholarship, named in honour of the first Dean of the Faculty of Health Professions (1963-1977), is awarded each October to one or more students entering the Nurse Practitioner Programme.

Applications must have achieved a minimum GPA of 3.0 or equivalent in their prerequisite university courses and/or their nursing diploma. Applicants must submit a letter of application outlining how they intend to contribute to the nurse practitioner role; two letters of reference which address the applicant’s academic ability and potential contribution to the role and an official transcript of previous university work, if relevant.

Applications should be submitted to the School of Nursing, c/o Programme Coordinator. Deadline: October 31.

552 Awards
3. College of Pharmacy

Sanofi Aventis Scholarship
This scholarship of $5,500 is to be presented annually to an outstanding pharmacy student who has successfully completed one or more years at the College of Pharmacy.

The Ralph H. Jenkins Memorial Pharmacy Scholarship
This scholarship is awarded by the Prince Edward Island Pharmaceutical Association to a student from Prince Edward Island who has achieved a high academic standing.

The Col. J.D.B.F. MacKenzie Scholarship
This scholarship of $1,000 is awarded by the New Brunswick Pharmaceutical Society to a student from New Brunswick who excels in the first-year classes of the Pharmacy curriculum.

The Dr. Jessie I. MacKnight Scholarship
This scholarship of $1,000 is awarded by the New Brunswick Pharmaceutical Society to the student from New Brunswick who excels in the second-year classes of the Pharmacy class.

The New Brunswick Pharmaceutical Society Scholarship
This scholarship of $1,000 is awarded by the New Brunswick Pharmaceutical Society to the student from New Brunswick who excels in the third-year classes of the Pharmacy curriculum.

4. School of Social Work

M. Caroline Prince Scholarship
An endowment fund 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 BWV and MSW 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 NSACCP and to the qualities of courage, generosity, persistence, and leadership that characterize Dr. Ruck’s life and work. Application required.

H. Faculty of Management

Unless otherwise stated, these scholarships are administered by the academic unit. Please consult the departments directly for details.

Acadian Lines Limited Scholarship
An endowment fund by Acadian Lines Limited in support of the T. Eaton Co. Limited and Mr. John David Eaton. The 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 the Registrar’s Office.

The Commodore Bruce S. Oland Scholarship
A scholarship of $1,000 is to be awarded annually to a student entering the third or fourth year in the Commerce degree programme. The recipient will have demonstrated high academic standing and an interest in the investment field. Application not required.

The Harry Margolian Scholarships in Commerce
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 NSACCP and to the qualities of courage, generosity, persistence, and leadership that characterize Dr. Ruck’s life and work. Application required.

The Halifax firm of McCurdy Printing and Typesetting Limited Scholarship
This scholarship was established in recognition of the distinguished service rendered by Ronald G. Smith. An amount of $400 will be 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 academically during the preceding year(s) of study in the Bachelor of Commerce programme. 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 programme, Management programme, or in the MBA programme, a competition involving a case study of a family business is assessed viability of the proposed business and demonstrated commitment and ability of the student. Application required by the Registrar’s Office.

The St. John’s University Scholarship Fund
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 Saguenay 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 programme who has obtained a high standing on the basis of his/her average marks in a full year’s class, of which one class must be in accounting. Application not required.

Ernst and Young Scholarship
A scholarship of $500 will be awarded to a third-year student in Commerce who has achieved 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 $50,000 scholarship awarded by the Centre for International Business Studies to a student entering the third year of the Commerce programme majoring in International Business. A work term at EDC in Ottawa is also part of the scholarship. Application is required by department.

Stuart 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 progressing to a degree in Commerce. Application not required. Awarded automatically by the Registrar’s Office.

The Harry Margolian Scholarships in Commerce
A scholarship of $2,000 is to be awarded annually to a student entering the third or Fourth Year in the Commerce degree programme. The recipient will have demonstrated high academic standing and an interest in the investment field. Application not required.

The Commerces Business Studies
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 Ralph H. Jenkins Memorial Pharmacy Scholarship
This scholarship is awarded by the Prince Edward Island Pharmaceutical Association to a student from Prince Edward Island who has achieved a high academic standing.

The Col. J.D.B.F. MacKenzie Scholarship
This scholarship of $1,000 is awarded by the New Brunswick Pharmaceutical Society to a student from New Brunswick who excels in the first-year classes of the Pharmacy curriculum.

The Dr. Jessie I. MacKnight Scholarship
This scholarship of $1,000 is awarded by the New Brunswick Pharmaceutical Society to the student from New Brunswick who excels in the second-year classes of the Pharmacy class.

The New Brunswick Pharmaceutical Society Scholarship
This scholarship of $1,000 is awarded by the New Brunswick Pharmaceutical Society to the student from New Brunswick who excels in the third-year classes of the Pharmacy curriculum.
Awards

The Department of Biology, the University may offer scholarships to students who have achieved a high academic standing, as determined by the Honours/Undergraduate Awards Committee. Each year, the Biology Department will select the most deserving students to receive these scholarships. Application not required.

The Belle Crowe Scholarship

Applicants must be in their second, third or fourth year of studies. The awardees must be engaged in a course of studies directed toward a career in exploration geophysics in the province's mineral resources sector as well as scholastic achievement. Selection is based upon the student's contribution to the development of the science discipline. Applicants must have been in New Brunswick for seven years, or have his/her immediate family reside in that province.

The AstraZeneca Scholarship

This scholarship is awarded 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.

The Carl Mushkat Memorial Scholarship

Awards will be made on a rotational basis between the subject areas. The recipient will have achieved a high academic standing, as determined by the Honours/Undergraduate Awards Committee. Application not required.

The L.A. DeWolfe Memorial Scholarship

In the fourth year of the honours Chemistry programme, the recipient will have achieved a high academic standing, as determined by the Honours/Undergraduate Awards Committee. Application not required.

The E. Walter Todd Scholarship

Selection is based upon the student's contribution to the development of the science discipline. Applicants must have been in New Brunswick for seven years, or have his/her immediate family reside in that province.

The Ross Stewart Smith Scholarships

The Ross Stewart Smith Scholarships provide scholarships to outstanding students entering the second, third or fourth year of the Honours Chemistry programme. Application not required.

The Sarah M. Lawson Scholarships in Botany

The Sarah M. Lawson Scholarships in Botany are awarded to the most promising honours biology student third year. That student shall hold the Hugh P. Bell Scholarship in the fourth year of the honours programme.

The Professor of Mathematics Scholarship

The Professor of Mathematics Scholarship is given to support summer or fall (for Co-op students) research projects in botany at either the undergraduate or graduate level.

The Hugh P. Bell Scholarship in Botany

The Hugh P. Bell Scholarship in Botany is awarded to the most promising honours biology student third year. That student shall hold the Hugh P. Bell Scholarship in the fourth year of the honours programme.

The Professor of Mathematics Scholarship

The Professor of Mathematics Scholarship is given to support summer or fall (for Co-op students) research projects in botany at either the undergraduate or graduate level.

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

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.

The Betty Spronker Scholarship

Betty Spronker 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 E. Walter Todd Scholarship

A bequest by the late Belle Chisholm Crowe, formerly of Truro, and a Commerce programme based upon academic achievement, leadership ability and qualities of personality and character. Application not required.

1. Faculty of Science

Unless otherwise stated, these scholarships are administered by the Office of the Registrar.

I. Awards

The AstraZeneca Scholarship

In 1968 the Class of 1928 established the H.P. Bell Fund to provide one or more scholarships. Application not required.

The L.A. DeWolfe Memorial Scholarship

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The E. Walter Todd Scholarship

A bequest by the late Belle Chisholm Crowe, formerly of Truro, and a Commerce programme based upon academic achievement, leadership ability and qualities of personality and character. Application not required.
5. Mathematics and Statistics

The Ralph and Frances Lewis Jeffrey Scholarship
From the Estate of Frances E. Jeffrey 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 Mathematics and Physics with the highest cumulative GPA. Students must be in their second, third, or fourth year of studies.

6. Physics

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 Sexton Campus Alumni Association provides a medal which is to be awarded to the youngest student personality, scholarship and leadership during a course of studies at the University who has exhibited the most outstanding qualities of academic and extra-curricular scholarship.

6. Physics

Lorne O.L. Titus Scholarship
Four scholarships are available to full-time students majoring in Biology, Math and Physics with the highest cumulative GPA. Students must be in their second, third, or fourth year of studies.

7. Psychology

Brimer Memorial Scholarship in Psychology
The Charles J. Brimer Memorial Fund was established during 1973 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.

8. Psychology

Lorne O.L. Titus Scholarship
Four scholarships are available to full-time students majoring in Biology, Math and Physics with the highest cumulative GPA. Students must be in their second, third, or fourth year of studies.

9. Mathematics and Statistics

Dalhousie Student Development Awards
A number of awards of up to $5,000 will be offered each year. For information and application forms contact the Department of Athletics & Recreational Services, Dalplex. Completed application forms are to be returned to that Department by June 1st. Announcements will be made through the Registrar's Office - Awards.

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 $500, 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 $500 for a prose 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 typewritten copy 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 the Joseph Howe Prize or for the James DeMille Prize, as the case may be.
   d) The envelope should 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. For any 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.
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 panel 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 a sufficiently high standard of merit.

The Dalhousie Review will offer 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 typewritten composition(s) since the copies cannot be returned.

The Clare Murray Foshee Poetry Prize
One or more prizes will be awarded for the best poems, of any length, submitted by Dalhousie undergraduates. Prize money approximates $450, which is the net income from a fund established by friends in memory of the poetess Mrs. Clare Murray Foshee, BA (1935). 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.
Awards

The SLT Bruce Galloway Memorial Prize
Friends, family and shipmates of Sub-Lieutenant Bruce David Galloway, a member of the Ship’s Company of HMCS 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 programme 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 Robert and Katherine Glovin Award
An endowment has been established to provide an annual prize for the outstanding 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
In 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 SLT Bruce Galloway Memorial Prize
Friends, family and shipmates of Sub-Lieutenant Bruce David Galloway, a member of the Ship’s Company of HMCS 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 programme 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.

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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-TUNI 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.

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 programmes.

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 programmes. 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 programme. The recipient cannot have received the Governor General’s Silver Medal or University Silver Medal.

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.

School of Planning Service Prize
This prize is awarded to a graduating Community Design student who has made a significant contribution to community design beyond the School.

Universities Medal in Community Design
This prize is awarded to a graduating Community Design student who has made a significant contribution to community design beyond the School.

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 programme a medal in recognition of superior achievement in Classics.

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 Avic Bennett Prize
This prize ($500 plus a complete set of the New Canadian Library) is one of six established by Mr. Avic 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 written 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 Tutees-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 given 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 $500 for an undergraduate student, who shows an enquiring and original mind, in the second or third year of study in the Honours or Majors programme 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 and family in memory of his wife, the late Margaret Nicoll Pond, a gifted teacher of English and a devoted alumnus 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 programme.

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
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 Mr. 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 British and/or the Commonwealth countries. This prize is funded by a gift from Dr. David Jospeh and Dr. Karen Ostergaard.

University Medal in History
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
This fund provides an annual prize for the best essay by a First-Year student in a first-year class.
Awards

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 amongst those who graduate with First Class Honours.

10. Linguistics
University Medal in Linguistics
The Department of Linguistics 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 in Dalhousie from 1969-2003, 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) programme 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 programme.

The Beatrice Daviss Music Prize
A prize established with donations made by family, colleagues and friends of Professor Ray D. Byham, who taught in Dalhousie from 1969-2003, 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) programme or equivalent.

The James H. Aitchison Award
Established by John W. Beveridge (BA, Honours 1971) for students who was instrumental in founding the Department. The prize will be awarded annually to a student entering the third or fourth year of an undergraduate degree programme in Music who, in the estimation of the Department, shows particular potential in an orchestral instrument.

The “Sing Sonas” Prize in Choral Music
The Nova Scotia Chapter of the Society for the Preservation 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 programme in Music who, in the estimation of the Department, demonstrates outstanding aptitude and achievement leading to a professional career in an area of choral music (conducting, composing, arranging, singing, etc.). Normally awarded to a third-year student, with the discretion of the Department it may be used as a Graduation Prize.

The William Triff Racial 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 Triff.

The William Triff/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 Programme of the Scotia Festival of Music. This award is named after the late Canadian Pianist and Dalhousie Faculty member, William Triff.

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 programme.

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 programme.

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 programme.

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 programme.

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 programme 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 programme 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 E. 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.

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 programme.

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 Programme who have shown promise in, and passion for, acting.

Theatre Department Awards Fund  
This fund supports three awards to recognize the achievements of outstanding students in the Theatre department: 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 Programme may be eligible.

The awards will normally be made at the commencement of students’ third year of study in the Theatre programme with the exception of the Basil Cook Award which will be made to students in their second year.

Jopling Award for Outstanding Theatre Studies  
Earning from this fund are used to support an annual award to assist students enrolled in the Theatre Department to further their knowledge of theatre by study in another country during the summer. Eligible students must be enrolled full-time in a programme of study in the Theatre Department and have completed at least one year (both fall and winter semesters) of their programme of study. In addition, eligible students will have been accepted to study theatre at an institution in a country 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 Programme.

Christine Zuck Book Award  
Recognizes an outstanding graduating honours student in Theatre Studies.

18. Transition Year Programme  

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 Programme 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 Programme 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 Programme. Contact the Director of the Programme 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 a computer science major 20-credit programme (BSc or BCS) 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.

Ada Byron Award  
Students are eligible to receive the award for each term in which they achieve a minimum 3.50 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.

Entrepreneurship Award  
The Entrepreneurship Award is sponsored by the Faculty of Computer Science, by GINIUS, and by the Natural Sciences and Engineering Council of Canada to promote and support entrepreneurial activities among computer science students at Dalhousie University.

Awards 559
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 3.50 at the time the award is presented. Students enrolled in CSCI 2101 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.

**Gold Award**

Students enrolled in a computer science major 20 credit programme (BCS or BSc) 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.

**Silver Award**

Students enrolled in a computer science major 20 credit programme (BCS or BSc) 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.

**Bronze Award**

Students enrolled in a computer science major 20 credit programme (BCS or BSc) 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 all university courses (with particular emphasis on their design project) and who has demonstrated the greatest potential for a career in energy 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 programme of studies at Dalhousie.

**The Atlantic Land Improvement Contractors Association Award**

Established by Dr. Max L. Baker in memory of his wife Louie are two awards, the Louie I. Baker Awards in Technical Communication. The Louie I. Baker Awards in Technical Communication are given annually to the graduating student in Industrial 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 environmental engineering. Value: $750.

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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. Cope 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 programme 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 programme of studies at Dalhousie.

Michael Lister Memorial Award
To honour the memory of Michael Lister BEng’67, 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 programme 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 programme. The award is $500.

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 programme 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 programme. 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 enrols in Engineering Faculty.

The William Stairs Memorial Prize
This prize consists of a medal which is presented annually to the student who achieves 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 1984 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 in Materials Engineering.

University Medal in Mining Engineering
This medal is awarded annually to the graduate who has attained the highest academic standing in Mining Engineering.

The Robert Walter Award
Given to the student who best combines fellowship, sportsmanship and scholarship, the Robert Walter Award is the highest honour which the Engineering Society can bestow upon its graduates. The award consists of an engraved gilt 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 achievement.
Awards

562 Awards

The Fifth Canadian Congress on Leisure Research set up an endowment to provide an annual award to a student who has graduated from 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.

Matthew Knox 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 programmes.

Matthew Knox, a fourth year Bachelor of Science (Kinesiology) student who demonstrates exceptional interest and ability in research in one of the four undergraduate degree programmes.

Matthew Knox Award
This award was inaugurated in 2005 to recognize and honor 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 one of the oldest of the international study awards available to Canadian students.

Oxford University. The Rhodes Scholarship, first established in 1902, is the oldest of the international study awards available to Canadian students. It is considered one of the most prestigious awards in the world.

The criterion 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.

The Dr. Hugh A. Noble Award
This award is given to a graduating student from one of the four undergraduate degree programmes in the School of Health and Human Performance. The awarding is based on academic accomplishments, qualities of citizenship as shown by involvement outside the University, leadership qualities as demonstrated in activities inside the University, and an estimate of the candidate’s potential for contributing to the profession.

Dr. John C. Pooley Sportsperson Award
This award is presented to the student who has contributed significantly to the development of a sport.

University Medal in Health and Human Performance
Please refer to G. Faculty of Health Professions, 1. University Medals on page 561 for details.

The Women’s Division of the Dalhousie Alumni Association Hi/HP Medals
These 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.

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3. School of Health Sciences

3a. For Graduating Students

BBSc 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 BBSc 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.

Pediatric Radiography Clinical Award
This award, consisting of a letter of commendation and a cash award is sponsored by the IWK Health Center and is awarded to a full-time graduating student in Radiological Technology who is based on high standards of clinical practice and the respect of patients’ rights and needs as individuals.

Radiologist’s Awards
These awards valued at $250.00 each, are sponsored by the QEII Health Sciences Radiologist Group and are awarded to a full-time student graduating in each of the Nuclear Medicine, Diagnostic Medical Ultrasound and Radiological Technology programmes with highest cumulative GPA.

Respiratory Therapy Faculty Academic Award
This award valued at $100.00 is sponsored by the BBSc Respiratory Therapy faculty and is awarded to a full-time graduating student in 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 561 for details.
Certificate for Highest Academic Achievement in the Post RN Stream

This prize is awarded to a student graduating from the Post RN Degree Programme with the highest academic average.

The Melda Dashewsky Memorial Award

The recipient of this monetary award is a student graduating from the basic degree programme who has demonstrated interest and proficiency in Oncology Nursing. This award is provided by Mrs. Dashewsky’s husband in her memory. It was previously awarded to a student graduating from the Victoria General Hospital School of Nursing.

Mary Lou Elliotson Prize in Clinical Nursing

Professor Mary Lou Elliotson was the Associate Director, Undergraduate Programme Planning and Development at the School of Nursing. Professor Elliotson 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

This award is given to 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 Programme

The recipient of this award is the student graduating from the basic or Post RN degree programme with the highest academic average.

The IWK/Medical Staff Award for Excellence in Children’s Nursing

The recipient of this award will be a student graduating from the basic programme who has demonstrated excellence in the area of children’s nursing.

The IWK/Medical Staff Award for Excellence in Women’s and Newborn Nursing

The recipient of this award will be a student graduating from the basic programme 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.

Ruth May Award

This award is given to one or more nursing students in the Neonate Practitioner Programme in recognition of clinical excellence and professional growth. Applicants must have a GPA that increases over each term or have a cumulative GPA of B+ or higher, with a final GPA of no less than B+. Applicants must provide a letter to the Awarding Committee, through the School of Nursing, stating how the programme has contributed to their personal and professional growth. Deadline: May 1.
Awards

QEII Health Sciences Centre Award for Professional Practice in Nursing

Selected by his/her peers, this award recognizes the graduating BScN, Bachelor of Nursing, and Post-BScN student who demonstrates the qualities of Professional Practice. The recipient epitomizes the Standards of Nursing Practice of Accountability and Responsibility, Continuing Competence, and Application of Knowledge and Advocacy, and the CNA Code of Ethics for Registered Nurses.

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 (Rhô Rhô 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. S. R. Singh Prize in Anatomy

This book prize is awarded to the highest standing student in ANAT 1010/11 among Nursing and Pharmacy enrollees. 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-BScN programme 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 561 for details.

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 programme.

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 programme. 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 3050 (Endocrine PBL block) at the College of Pharmacy.

BioMedical Diagnostics Award

An award of $500 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. Burbridge Memorial Award

This award of $2,000 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 attitude and proficiency for the profession, and demonstrate potential of making future contributions to the profession of pharmacy.

The F.R. Clayden Prize

This price 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. Emmodee 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. The candidate must have maintained 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.

Nova Scotia College of Pharmacy Dr. F. J. Emmodee Cooke Award

One award of $1,000 will be awarded annually to a Nova Scotia Student who demonstrates a commitment to professionalism integrity and compassion. Applied to the College of Pharmacy.

Jean Couto Award

This $3,000 award was introduced in 1996 by Jean Couto 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 1996, 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. Dickson 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 book prize is awarded annually to a pharmacy student who, in the view of the College's Awards Committee, demonstrates strong leadership skills 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. Frost 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 Killam Award

Shoppers Drug Mart Associates and the pharmaceutical industry have established an endowment to pay tribute to William Killam 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 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. MacKeight 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 programme and in the fourth year multi-skilled laboratory. It is desirable that the recipient demonstrate an interest in hospital pharmacy practice.

**The Helen Condon Marshall Award in Pharmacy**

This endowment was established in memory of Helen Condon Marshall, a student at 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 degree 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.

**McKeen 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 Forest 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 a book, 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 Shoppers Drug Mart Associates in memory of the late Donald Moore, a well known locum in hospital and community pharmacy in New Brunswick. This $1,000 award is presented to students entering third year, who have demonstrated outstanding interest, aptitude 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 a student who has attained the highest aggregate mark during his/her four years at the College of Pharmacy.

**The Nova Scotia College of Pharmacists Centennial Award**

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 $500.

**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 interest in hospital pharmacy. The financial need of the student may be considered in selecting the recipient for the award of $1,000.

**Novapharm Pharmacy Award**

This award is given to the student who excels in the second year Pharmacokinetics class.

**Perigo Award of Excellence in Non-prescription Medication Studies**

This award of $200US and engraved plaque is presented to a second year student who has the highest grade in PHAR 2070 (Skills Lab II).

**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 2033.

**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 programme exposes student winners to several facets of the profession including the pharmaceutical industry, interactive 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 of ($1250) presented to a student from both third and fourth 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 offered by a community pharmacy. (PET not included.)

**The B. Trevo Pugley Memorial Pharmacy Award**

This award was established by a bequest from the Estate of B. Trevo Pugley 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. Pugley Award**

These awards were established by a bequest from the Vera B. Pugley 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 obtained the second highest aggregate mark during his/her four years at the College of Pharmacy.
Awards

566 Awards

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 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.

   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 programme. The awardee will be the 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 programme. The awardee will be the one who has fulfilled the high scholastic standard for this award.

   1. 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 4th year science student who is judged to have the best overall performance in the Honours Research Project (Biochemistry 4601/4605).

   Kilmer MacMillan Memorial Book Prize
   This prize is awarded annually to the student who achieves the highest aggregate mark for the three half-classes, BIO 3301, 3302 and 3400.

   Douglas Russell Memorial Book Prize
   In memory of Dr. Douglas Russell, the Department of Biochemistry and Molecular Biology has established a prize to be awarded to the student with the highest standing in Biochemistry 2200, a class which covers its existence in large part to his efforts.

   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 Stuart Luckie Gibson Memorial Prize
   The School of Business Administration offers a prize to the graduating student in the general Bachelor of Commerce programme 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 programme concentration is Finance, whose career preparation is Money Management, who achieves excellent performance in COOBE 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.

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   University Medal in Commerce
   The School of Business Administration offers a medal to the top graduate in the Bachelor of Commerce programme. The awardee will be the 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 programme. The awardee will be the one who has fulfilled the high scholastic standard for this award.

   1. 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 and 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 4601/4605).

   Kilmer MacMillan Memorial Book Prize
   This prize is awarded annually to the student who achieves the highest aggregate mark for the three half-classes, BIO 3301, 3302 and 3400.

   Douglas Russell Memorial Book Prize
   In memory of Dr. Douglas Russell, the Department of Biochemistry and Molecular Biology has established a prize to be awarded to the student with the highest standing in Biochemistry 2200, a class which covers its existence in large part to his efforts.

   1. Commerce

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   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 programme. The awardee will be the 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 programme. The awardee will be the one who has fulfilled the high scholastic standard for this award.

   1. 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 and 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 4601/4605).

   Kilmer MacMillan Memorial Book Prize
   This prize is awarded annually to the student who achieves the highest aggregate mark for the three half-classes, BIO 3301, 3302 and 3400.

   Douglas Russell Memorial Book Prize
   In memory of Dr. Douglas Russell, the Department of Biochemistry and Molecular Biology has established a prize to be awarded to the student with the highest standing in Biochemistry 2200, a class which covers its existence in large part to his efforts.
2. Biology

The Alomos 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’hai B’yth Prize
Two prizes are available annually to students for the highest standing in Biology 1011.01 and Biology 3111.01, when offered.

Developmental Biology Prize
This prize of $500 is awarded annually to the top student, based on percentage grade mark, in Developmental Biology (BIOC 3951).

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 at Dalhousie University through Marine Biology Students (DAMES) 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.

Dr. Min Leong Li Memorial Prize in Marine Biology
An endowment has been established to fund an annual prize to a Third-Year student in the Cooperative Education programme in Marine Biology. The recipient will be the one who is deemed to be the best, assessed on academic standing and work term performance.

Dr. Osvald Knop Prize in Chemistry
The Dr. J.C. Ogden memorial Prize is given to the top student in Limnology (Biology 4810) and honours the late Dr. J.C. (Peter) 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 programme in recognition of superior achievement.

University Medal in Marine Biology
The Department established this medal in 1968-69 to be awarded, where appropriate, to the student who stands highest among the First Class Honours graduates in the Marine Biology programme.

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 2061, 2003, or 2004).

3. Chemistry

The John Hamilton Barrett Prize
This is the gift of his widow, Mrs. Mervorie Barrett. It is offered annually at the end of the fourth year of the class to a student who has shown potential 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-Amnell 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. Amnell received his BSc (High Honours) from Dalhousie in 1959 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 programme.

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 programme to that student who has achieved satisfactory academic standing in Third- and 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, NH, on May 19, 1903, and was 1st President of the Class of ’25 at Dalhousie. After earning his PhD at 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.

Dr. Oswald Knop Prize in Chemistry
This 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 completed the third undergraduate year and 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 Bartlew Memorial Award
The family, friends and classmates of David Bartlew 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...
6. Environmental Programmes

**Environmental Programmes Award**

This award is given to Environmental Programmes students in their third year of study who have shown academic promise in her/his environmental course work.

**Environmental Programmes Honour Society Medal**

The Honour 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 who has submitted and defended the best thesis.

**Owen Hertman Prize**

The Owen Hertman Prize is granted annually to an Environmental Programmes student who has been awarded the Thesis Prize and has shown excellence in both academic record and leadership qualities.

**University Medal in Environmental Science**

The Department of Environmental Science offers 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 in the Co-op Mathematics Programme 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.

**Dr. Emil and Mrs. Stella Blum Prize in Mathematics**

A fund was established by Dr. Ely 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. Buttenhausen 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 programme in Mathematics or Statistics, or a combined Honours programme 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 Computer Science from 1992 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 either a mathematics or statistics programme, and has achieved the highest grade in MATH/CSCI 2113 (discrete Structures II).

**The Ellen McLaughlin McFarlane Prize**

Established by friends and colleagues of the late Ellen McLaughlin McFarlane, Class of 1927. Initially, the Fund is to provide an annual prize to a student who at the end of his/her first year in the honours programme has achieved the highest standing. (*Normally, this would be upon the completion of the second year at Dalhousie.)*

**The Waverley Prize**

This prize will be awarded annually to the student with the highest standing in Mathematics 1010.

**The Sir William Young Gold Medal**

Established 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.)

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For more detailed information, please visit the Department of Mathematics and Statistics or the Department of Earth Sciences website.
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 programme.

Awards

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 Programme.

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 programme.

9. Physics

The Dr. William J. Archbold 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 programme with first class standing.

The Dr. E.W. Goatley Memorial Prize

This is to be awarded to the undergraduate student who best exemplifies the qualities of Dr. E.W. Goatley 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 programme. The fund was established under the will of the late Mr. Derry A. McKittrick.

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 move to the 1851 Exhibition Scholarship. The prizes are in memory of his brother, Burgess McKittrick, who graduated in 1887. 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 undergraduates in the study of Physics. The undergraduate awards are scholarships.

Darrell Montgomery Memorial Prize

An endowment has been set up to provide an annual prize to a third-year student in the Physics BSc/4 or 4-year 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 programme.

The University Medal in Physics

The Department of Physics and Atmospheric Science offers 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 Deans list for three consecutive years and winning 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 the study of Psychology.

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 Hube/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 Hube, the Neuroscience Institute changed the name of the Hubes. 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 programme.

University Medal in Psychology

The Department of Psychology offers a medal to the top graduating student with First Class Honours in the programme.

Dr. Lillian E. White Prize

A bequest from the Estate of Dr. Lillian E. White established an endowment to fund a prize to an undergraduate student in Psychology and in Neuroscience. The Department has assigned the prizes for use in recognizing the best performance of a student in second year in each programme.

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 programme. 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 more 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 base load for student loan purposes is 30. The Borrower must carry not fewer than 15 credit hours, distributed equally between terms, i.e. 15 credit hours for fall and 15 credit hours for winter. If your particular programme does not conform to this scheme, you should apply to Student Aid for funding for only that term in which your class load would fulfill this regulation. National 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, other than Quebec residents, 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 2800
Station Main
Edmonton, AB    T5J 4R4
Fax: (780) 422-6455
Tel: (780) 422-6455 (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.bcsap.bc.ca

**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
1-888-667-9268 (Atlantic Provinces, Ontario and Quebec only)
www.studentaid.gnlb.ca

**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) 673-7190
1-888-661-0793
www.nted.gov.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) 424-9240 (metro)
1-888-565-8420 (within province)
Street location: Trade Mart Building, 2011 Brunswick at Cogswell Street, Halifax, N.S.
http://studentloans.ednet.ns.ca

**Nunavut**

Adult Learning & Post-Secondary Services
Nunavut Department of Education
Box 380
Arctic, NU
Fax: 1-877-860-0167
1-877-860-0600
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 6Z9
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 200
16 Harvey St
Charlottetown, PE    C1A 7N8
Fax: (902) 368-6144
Tel: (902) 368-4640
www.studentloan.pe.ca

**Québec**

Residents of Quebec 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
3005 Albert Street, Walter Scott Building
Regina, SK    S4P 3V7
Tel: (306) 787-9620
1-888-917-9278
www.student-loan.sk.ca

**Yukon Territory**

Students Financial Assistance
Advanced Education Branch
Department of Education
Government of Yukon
P.O. Box 2503
Whitehorse, YT    Y1A 2C0
Fax: (867) 667-9535
Tel: (867) 667-9929
1-888-661-6468 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 programme 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, Harry Hicks Academic Administration Building or online www.register.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. Susan 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 programme 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 (as defined in Academic Regulations) is also expected. Students whose financial need 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 Programme and/or supplementary assistance to help qualifying students with a portion of their educational costs.

**A. General—All Faculties**

   **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 programme.

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 programme.

**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 administered by the University 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 Birks Family Foundation. Apply through the general online bursary programme.

**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 programme.

**Ernest Brohaut Memorial Bursaries**

These bursaries were established by the gift of Mrs. Ernest Brohaut 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. Brohaut. The bursaries are to be continued throughout the classes of the students if they maintain excellent academic standing and show genuine need. Apply through the general online bursary programme.

**The Lt.(E) Harry J. Brevor, MBE, CD, RCN (Ret.), Memorial Bursary**

A special endowment fund to assist a Dalhousie student who is taking 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. Brohaut. The bursaries are to be continued throughout the classes of the students if they maintain excellent academic standing and show genuine need. Apply through the general online bursary programme.

**Howard C. Clarke International Study Award**

A special endowment fund to assist a Dalhousie student who is participating in a recognized study abroad or exchange programme 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 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 programme.

**Leone 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 Napierina College in Trinidad should such students attend Dalhousie. Apply through the general online bursary programme.
Dalhousie Leadership Bursaries
A limited number of bursaries are available annually to students who have exhibited a record of considerable leadership achievement. 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 Fund in memory of students of the University, whether deceased or still living. The existence of the fund will be commemorated by a note in the Remembrance Book, to be added at an appropriate time to any names of persons in whose memory contributions have been made. The income from the Fund may be used at the discretion of the Selecting Committee, in accordance with the terms under which the contributions were made. It is understood that the income will be used to assist needy students.

Anne Lavers House Hall Bursary
The Anne Lavers House Hall Bursary was endowed by alumnus and friend of House Hall, to provide financial assistance to a Dalhousie student who is a current House Hall resident. It is named in honour of Anne Lavers, staff member of House Hall, and also an individual who has made a positive contribution to the residence community at House Hall. Application information is posted within the residence each January.

Awards

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 programme.

The John Dunlop Memorial Bursary
To honour the memory of the late Mr. John Dunlop, who died in 1966, this bursary is available to assist descendants of members of the Canadian Provost Corps who served in Military District No. 6. Apply through the general online bursary programme. Deadline: April 30.

The Neil and Jessie Matheson Bursaries
Established under the will of Miss Margaret J. Matheson, Trans, 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 programme.

The Rev. Kenneth Mackenzie Bursary
Mrs. Harriet Mackenzie Morrison of Stornoway, Scotland, daughter of the Rev. Kenneth Mackenzie of Pictou County, bequeathed $5,000 to the university in 1867 to be used as a bursary fund. Apply through the general online bursary programme.

The Number 6 Provost Corps Bursary
Senator Donald Oliver Bursary for Black Atlantic Canadians
Hugh J. MacGregor and Senator Donald Oliver (LL.B. 1946) endowed 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 programme. Deadline: October 31.

The Rev. Kenneth Mackenzie Bursary
Established to provide financial assistance to students who are residents of the town of Springhill, Cumberland County. Apply through the general online bursary programme.

The Rev. Kenneth Mackenzie Bursary
Established to provide financial assistance to students who have exhibited a record of considerable leadership achievement. 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.

Alfred George Davaille 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 students in an undergraduate programme (as commonly understood), and demonstrate financial need to the satisfaction of the Selecting Body. Apply through the general online bursary programme.

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 programme.

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 programme. Apply through the general online bursary programme.

Finches Hamilton Grant Bursaries
An endowed bursary fund was established under the will of the late Constance Patricia Hamilton in the amount of $18,000, the income to be used to assist students. Apply through the general online bursary programme.

MacCallum S. Grant Charitable Foundation Bursary
The MacCallum S. Grant Charitable Foundation supports a number of students. Apply through the general online bursary programme.

Mackinnon Bursary
A bursary was provided to assist descendants of the late John Mackinnon and/or his wife, who were members of the Canadian Provost Corps. Apply through the general online bursary programme.

The Rev. Kenneth Mackenzie Bursary
Established to provide financial assistance to students who have exhibited a record of considerable leadership achievement. 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.

The Rev. Kenneth Mackenzie Bursary
Established to provide financial assistance to students who are residents of the town of Springhill, Cumberland County. Apply through the general online bursary programme.

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The Rev. Kenneth Mackenzie Bursary
Established to provide financial assistance to students who are residents of the town of Springhill, Cumberland County. Apply through the general online bursary programme.
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: September 6.

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 programme. Deadline: October 31.

Superintemp Bursary
This bursary, valued at $1,000, is awarded annually to a mature undergraduate student who has demonstrated financial need. Apply through the general online bursary programme. Deadline: October 31.

SNIF Study Work International Fund
SNIF 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. Deadline: October 31.

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 programme.

Dean and Marie Tripler Bursary
Provides one or more bursaries to students who have graduated from Sir John A. Macdonald High School. Apply through the online bursary programme.

Helen Tupper Memorial Bursary
Provides one or more bursaries for students in their first year of an undergraduate degree programme at Dalhousie University. Apply through the general online bursary programme.

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 programme.

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. Applications are available from the Alumni Office, Dalhousie University, MacDonald Building, and should be submitted to the same location and addressed to the Chair of the Scholarship Committee, Women’s Division. Deadline: November 30.

B. Faculty of Architecture and Planning

A number of bursaries, based on financial need, will be offered directly from the Faculty of Architecture and Planning. Application forms are available from the Offices of the Dean of Engineering or Architecture and Planning.

Birds Family Foundation Bursary
The Birds 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. 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. Goldblum Bursary
This fund was established in 1995 to honour Dr. Goldblum CM, on the occasion of her installation as Chancellor of the Technical University of Nova Scotia. This fund is awarded annually to a female student entering her third year of study in the Faculty of Architecture and Planning. 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 Programme. 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 $1000 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 fulfill the minimal entrance requirements for the B8 and S26 programme in Architecture and Planning, 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 totalling 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 programme.

Margaret Neacomb Layton Harrigan Brink Bursary
This bursary was established in memory of Margaret Neacomb 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 school system. The award is 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 $300. Applications will apply to the general online bursary programme as well as to the Department of Music Scholarships Committee. Deadline: October 31.

Eric Stanley Hills 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 programme.

Wilfred E. Hills Bursary
The late Mrs. Olga Munro Hills made provision for the establishment of the Wilfred E. Hills 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 programme.

Dr. Rosemary Theresa Holtan & Stephen A. Holtan Bursary
Provides financial assistance for one or more undergraduate students who are majoring in English. Apply through the general online bursary programme.

Annie S. MacKenzie Class of 1911 Bursary
Under the will of the late Eunice N. 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 the County of Victoria (as defined by the boundaries then in effect in 1937) Nova Scotia. Character and financial need are the main criteria. Apply through the general online bursary programme.

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 show artistic excellence in theatre (acting), writing, design, etc. Eligible recipients will have completed at least one year of study in their undergraduate programme at Dalhousie.
Awards

574 Awards

University. Applicants will apply to the general online bursary programme as well as to the Department of Theatre's Awards Committee. Deadline: October 31

Charles and Mary MacLean Bursary in Music
Established to honour the memory of Charles G. MacLean, who was active in the musical life of Dalhousie University, and his wife, Mary Jackson MacLean, who has devoted much of her life to amateur theatre. This bursary is awarded to one (or more) undergraduate student(s) in the Music Department who have (have) shown artistic excellence in music (vocal, instrumental or other). Eligible recipients will have completed at least one year of study and an undergraduate programme at Dalhousie University. The value of the award is $2,000. Applicants will apply to the general online bursary programme as well as to the Department of Music.

Sexton Campus

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. The 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 entrance 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 fulfill the minimal entrance requirements for an undergraduate programme 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 Red Shoemaker Memorial Bursary
The bursary has been established by the Student Union of Dalhousie and is supported by students, alumni, family, friends and colleagues. Mr. Shoemaker was the Athletic Director of TUNS from 1988 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 petroleum form 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

1. Studley Campus

J. Winston MacDonald Bursary
An endowment has been established to provide an annual bursary to a student enrolled in the Engineering programme 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.

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 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 programme.

Susan (Con) Wickwire Bursary in Engineering
An endowment has been established in memory of Susan (Con) 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.

2. Sexton Campus

Unless otherwise noted, selection for these bursaries is made by the Undergraduate Awards and Scholarships Committee of the Faculty of Engineering. Application forms are available from the Office of the Dean of Engineering. Deadlines: October 31.

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 student enrolled 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 entrance 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 fulfill the minimal entrance requirements for an undergraduate programme 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 Red Shoemaker Memorial Bursary
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E. Faculty of Engineering

1. Studley Campus

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creativity through high academic performance in design courses and/or extra curricular activities. Deadline: September 30.

J.D. (Dan) Arting Memorial Nova Scotia Road Builders Association Bursary
This bursary was established in 1995 to honour Dr. Goldblum 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 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. Goldblum Bursary
This bursary was established in 1995 to honour Dr. Goldblum 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 award is made on the basis of financial need, provided that the applicant is maintaining an acceptable academic standard. Deadline: September 30.

The Michael G. Johnston Memorial (Entrance) 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.

The John J. Jodrey (Entrance) Bursary
This bursary, valued at $500 has been established in memory of John Jodrey by former employers, friends and colleagues. Dr. Sherwood was a dedicated professor in the Mining Engineering programme at Dalhousie for many years. Eligible students are to be registered in the Junior Year of the Mining Engineering programme of the B.Eng. The applicant must show evidence of participation in Dalhousie athletics, with an emphasis on intra-murals and financial need, provided that the applicant is maintaining an acceptable academic standard. Selection is carried out by the Awards Committee of the Faculty of Engineering. Deadline: September 30.

The Dr. H.G. Sherwood Memorial Entrance Bursary
This bursary was established in memory of Dr. H.G. Sherwood by former employers, friends and colleagues. Dr. Sherwood was a dedicated professor in the Mining Engineering programme at Dalhousie for many years. Eligible candidates must have fulfilled or expect to fulfill the minimum entrance requirements for an undergraduate programme in Architecture and Planning, or for entrance into the third year of Computer Science and Engineering. The award is made on the basis of financial need, provided that the applicant is maintaining an acceptable academic standard. Selection is carried out by the Awards Committee of the Faculty of Engineering. Deadline: September 30.

Lan Noseworthy Bursary
This bursary has been established in memory of lan Noseworthy by his family and friends. Mr. Noseworthy was a fourth-year student in Chemical Engineering at the time of his death. Eligible students are to be registered in the fourth year of a Bachelor of Engineering in Chemical Engineering. The award is made on the basis of demonstrated financial need and satisfactory academic standing. Deadline: September 30.

Nova Scotia Department of Transportation and Public Works Bursary
This endowment has been established to provide a bursary (ies) of $1,250 to one or more full-time student(s) who are considered permanent residents of Nova Scotia and entering the third year of the undergraduate programme 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 programme 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, valued at $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 programme 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.

Mining Engineering Bursary
Mining Engineering Graduates of Dalhousie have established this bursary of $200. Eligible students are to be registered in the Junior or Senior Year of the Mining Engineering programme of the B.Eng. The applicant must be maintaining a passing average. The award is made on the basis of financial need. Although extenuating circumstances will be considered, a statement of net earnings from the applicant’s summer employer will be required. Deadline: September 30.

The Rod Shoveller Memorial Bursary
This bursary, valued at $500 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 1988 to 1991 and acted as counsellor, mentor and friend to 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, who 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 Wade Gates Memorial Entrance Bursary
This bursary, valued at $500 has been established by the Student Union of Dalhousie and is supported by students, alumni, family, friends and colleagues. Mr. Gates was a technologist in the Department of Chemical Engineering at Dalhousie for many years. Eligible students are to be registered in the Junior Year of the Chemical Engineering programme 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 N.S. Road Builders Association Bursary
This fund was established in 1995 to honour Dr. Goldblum 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 award is made on the basis of financial need, provided that the applicant is maintaining an acceptable academic standard. Deadline: September 30.

Awards   575
Awards
Awards

1. College of Pharmacy

Awards

Apply to the College of Pharmacy.

The Pfizer Bursary

This bursary of $500 is awarded to a deserving student who demonstrates financial need. Apply to the College of Pharmacy.

Two bursaries of $750 each are awarded annually to students who have completed two or three years of study at 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 of study at the College of Pharmacy. Submit an application to the College of Pharmacy.

Boehringer Ingelheim Canada Ltd. Pharmacy Bursary

This bursary of $500 is awarded to a pharmacy student entering third or fourth-year classes. 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 45 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.

Ell Lilly Bursary

This bursary of $1,000 is awarded to a student who has satisfactory academic standing and demonstrates financial need. Apply to the College of Pharmacy.

George Macdonald Bursary

An endowment has been established to award a bursary to a deserving pharmacy student, from the Atlantic Provinces who has successfully 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

This bursary of $500 is awarded to a student who has satisfactory academic standing and demonstrates financial need. Apply through the general online Bursary Programme.

New Brunswick Pharmaceutical Society Bursaries

The New Brunswick Pharmaceutical Society offers four bursaries to be awarded to the students from New Brunswick completing the first, second, and third years of the Pharmacy class. The amount of each bursary is $1,000. The bursaries are awarded on the basis of need to those students who have satisfactorily completed the academic requirements, and those who have a satisfactory academic record and demonstrate financial need. Apply to the College of Pharmacy.

Astra Zeneca Bursaries

Two bursaries of $750 each are offered annually from Astra Zeneca. Apply to the School of Nursing, demonstrating their interest and proficiency in Cancer Nursing. Applicants who have selected (an) oncology/palliative care nursing elective course(s) in their programme 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.

Pharmachoice Bursary

This bursary of $500 is awarded 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.

Shoppers Drug Mart Community Pharmacy Bursaries

Shoppers Drug Mart will sponsor three bursaries of $500 each to students who have successfully completed at least one year of study at this University. In any one year the maximum award given to any student will be $1,000. Consideration is based on financial need, contribution to varsity sport and academic standing. Apply to the Director of Athletics, Dalplex.

Denton Hurdle Memorial Bursary

An endowment has been established to honour the memory of Denton Gordon Clifford Hurdle (BPhys. Ed. ’80) by providing a bursary to a student in the School. The student must be a Bermudian citizen and, preferably, a graduate of Warwick Academy, Bermuda. The student must have achieved an academic average of at least 85% (or the equivalent in the Bermudian School system) in the year in which application is made. The student must have demonstrated a capacity to contribute to the University community through qualities of leadership and athletic ability. Currently under review.

3. 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 1 (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.

4. 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 programme. Applicants who have selected (an) oncology/palliative care nursing elective course(s) in their programme 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.

School of Nursing Undergraduate Bursary

This endowment is established to provide an annual bursary to one or more students in the second or third year of the Bachelor of Nursing programme. Students enrolled in the accelerated programme must have completed at least one full year of the undergraduate nursing programme 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 and are due in October.
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 programme.

2. The following bursaries are administered by the School
   
   **The Janet Lee Myers Memorial Bursary**
   For one or more students in the Bachelor of Social Work degree programme at Dalhousie University who are in need of financial assistance.

   **The G. Faculty of Management**
   
   **The Galilee Equity Management Bursary**
   Five bursaries in the amount of $1,000 each shall be given to students who have completed at least their first year of study in the Bachelor of Commerce programme. Students must demonstrate both financial need and an interest in the area of international business. Apply to the School of Business Administration.

   **Knight, Bain, South, Holbrook Atlantic Limited Bursary**
   This Company sponsors an annual bursary to a student in the Bachelor of Commerce programme on the basis of financial need. The recipient will have achieved satisfactory standing. Apply through the School of Business Administration.

   **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.

   **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 demonstrated financial need and are interested in areas which most closely reflect Sonja Weil's work in child and family therapy. Apply to the School of Social Work.

   **H. Faculty of Science**
   
   **Andrew Lee Dennis Memorial Bursary**
   A memorial bursary is open annually to one or more female students enrolled in the Bachelor of Science programme who have demonstrated financial need and satisfactory academic standing. Apply through the general online bursary programme.

   **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 Beddones-Edris in his father's memory. A bursary is available to a second- or third-year chemistry student. Please apply to the Department of Chemistry.

   **Mathematics & Statistics Bursary Fund**
   An annual bursary is to be awarded to a student enrolled in the second, third or fourth year of an undergraduate programme, 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 programme. 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 programme 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 programme.

   **Professor J. 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 programme. 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 programmes and who are in need of financial support. Apply through the general online bursary programme. 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 need, a student must be planning to take between 20% and 50% 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 engaged in 6 credit hours per term will be considered for bursaries. Apply through the general online bursary programme.

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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