2008/2009
CALENDAR

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

Dalhousie University
Inspiring Minds
www.dal.ca

Published by:
Office of the Registrar
February 2008
Smoke Free/Scent Free Dalhousie

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

The University has also acted to support its many students and employees who report that they are harmed when they are exposed to scents which are present in many scented personal care products. Scents in perfume, cologne, hair-spray, after-shave, and even some soap and fabric softeners, cause serious illness in people who are sensitive to these chemicals. To provide an environment which supports teaching and learning, Dalhousie asks students, staff, faculty and visitors, to refrain from using such scented products while at the University. The scent reduction program is part of a broader effort to limit, to the fullest extent practical, exposure to all chemicals in our buildings.

For more information on the Smoking Policy and the Scent Reduction Program, contact the Safety Office by email at Safety.Office@dal.ca or consult the websites www.dal.ca/scentfree and www.dal.ca/smokefree.
Table of Contents

Academic Class Add/Drop Dates—2008/2009 .......................... 1
Definitions ................................................................................ 3
Class Codes ............................................................................... 4
Undergraduate Programs .......................................................... 6
Dalhousie University ............................................................... 7
Executive Officers ................................................................... 7
Admission Requirements ......................................................... 9
General Admission Requirements .......................................... 9
Application Submission ........................................................... 19
University Regulations ............................................................ 20
General .................................................................................. 20
Recission of Acceptance into a Program .................................. 20
Official Examination Regulations ........................................... 20
Policy in the Event that a Formal Examination Cannot be Completed at the Regularly Scheduled Time ................................................. 21
Policy for the Scheduling of Classes/Examinations ................. 21
Retention of Student Work ...................................................... 21
Freedom of Information and Protection of Privacy .................. 21
Release of Information About Students ................................... 21
Policy on Accessibility for Students with Disabilities ............... 22
Procedures Regarding Students with Learning Disabilities .......... 22
Policy on Submission of Student Papers ................................... 23
Intellectual Honesty ................................................................ 23
Discipline ................................................................................ 24
Academic Dishonesty ............................................................... 24
Senate Discipline Committee ................................................... 25
Code of Student Conduct ........................................................ 26
Protection of Property .............................................................. 28
Suspension or Dismissal from a Program on the Grounds of Professional Unsuitability—Faculty of Health Professions 29
Guide to Responsible Computing ............................................. 29
Academic Regulations ............................................................. 30
Agriculture .............................................................................. 42
Programs Offered .................................................................... 42
College of Continuing Education .............................................. 42
Introduction ........................................................................... 42
Programs and Services .......................................................... 42
Interdisciplinary Studies ......................................................... 45
Entrepreneurial Skills Program ............................................... 45
Learning Connections ............................................................ 46
Faculty of Architecture and Planning ......................................... 47
School of Architecture ............................................................ 47
School of Planning .................................................................. 57
College of Arts and Science ..................................................... 64
Introduction ............................................................................ 64
Degree Requirements ............................................................. 65
General .................................................................................. 65
Programs .............................................................................. 66
Faculty of Arts and Social Sciences ........................................... 72
African Studies ....................................................................... 73
Arabic .................................................................................... 73
Arts and Social Sciences ........................................................ 74
Canadian Studies .................................................................... 76
Chinese (Mandarin) ................................................................. 79
Classics .................................................................................. 79
Community Design .................................................................. 86
Contemporary Studies ............................................................ 87
Costume Studies ..................................................................... 95
Early Modern Studies Program .............................................. 95
English ................................................................................. 102
Creative Writing ..................................................................... 103
Environmental Studies ............................................................ 110
European Studies .................................................................. 111
Film Studies .......................................................................... 114
French ................................................................................... 115
Gender and Women's Studies ............................................... 149
German ................................................................................. 131
Health Studies ....................................................................... 136
History .................................................................................. 137
History of Science & Technology .......................................... 155
International Development Studies ........................................ 161
Italian Studies ........................................................................ 168
Journalism ............................................................................ 170
Law ....................................................................................... 172
Linguistics ............................................................................ 173
Music ..................................................................................... 175
Introduction ............................................................................ 176
Philosophy ............................................................................ 188
Political Science ..................................................................... 196
Religious Studies ................................................................... 207
Russian Studies ..................................................................... 211
Sociology and Social Anthropology ......................................... 215
Spanish .................................................................................. 228
Theatre ................................................................................... 233
Faculty of Computer Science .................................................. 243
Computer Science .................................................................. 244
Informatics ............................................................................... 252
Software Engineering ............................................................. 255
Faculty of Engineering ............................................................. 257
Engineering ............................................................................ 259
Biological Engineering ........................................................... 267
Chemical Engineering ............................................................. 267
Civil and Resource Engineering .............................................. 268
Civil Engineering .................................................................... 276
Electrical and Computer Engineering ...................................... 277
Environmental Engineering ..................................................... 284
Food Science ........................................................................... 284
Industrial Engineering ............................................................ 285
Materials Engineering ............................................................ 290
Mechanical Engineering ........................................................ 291
Mineral Resource Engineering ............................................... 296
Process Engineering and Applied Science ............................... 296
Software Engineering ............................................................. 308
Faculty of Health Professions ................................................... 310
Disability Management ........................................................... 312
Health Sciences ....................................................................... 314
Health Services Administration .............................................. 331
Health Professions, Interdisciplinary ....................................... 334
Health and Human Performance ............................................. 334
Health Promotion .................................................................... 336
Kinesiology ............................................................................ 340
Leisure Studies ........................................................................ 346
Nursing .................................................................................. 349
Occupational Therapy ............................................................. 357
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 program. Students should be aware that enrolment in many programs is limited and that students who are admitted to programs at Dalhousie are normally required to pay deposits on tuition fees to confirm their acceptance of offers of admission. These deposits may be either non-refundable or refundable in part, depending on the program in question. While the University will make every reasonable effort to offer classes as required within programs, prospective students should note that admission to a degree or other program does not guarantee admission to any given class. Students should select optional classes early in order to ensure that classes are taken at the most appropriate time within their schedule. In some fields of study, admission to upper level classes may require more than minimal standing in prerequisite classes.

Dalhousie University does not accept any responsibility for loss or damage suffered or incurred by any student as a result of suspension or termination of services, classes or courses caused by reason of strikes, lockouts, riot, 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 4J4
Telephone: (902) 494-2450
Fax: (902) 494-1630
E-mail: Registrar@dal.ca

Dalhousie Calendars on the Web

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

Other Programs

Information on programs offered by the Faculties of Dentistry, Law and Medicine, can be found in the Dentistry, Law, Medicine Calendar. Information on programs offered by the Faculty of Graduate Studies can be found in the Graduate Studies Calendar.
# Academic Class Add/Drop Dates 2008/2009

## General Information

### Academic Class Add/Drop Dates

**2008**

- **May 5** - Summer Academic term begins
- **May 19** - University closed
- **June 1** - Last day to apply to graduate in October
- **June 15** - Last day to change from Dalhousie to King's and vice versa

### Other Academic Dates

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

---

## Academic Class Add/Drop Dates (For financial deadlines and refund dates, visit [www.dal.ca/studentaccounts](http://www.dal.ca/studentaccounts))

<table>
<thead>
<tr>
<th>Part of Term Identifier</th>
<th>Start of Classes</th>
<th>Last Day to Register</th>
<th>Last Day for Late Registration</th>
<th>Last Day to Add Classes</th>
<th>Last Day to Drop without &quot;W&quot;</th>
<th>Last Day to Change from Audit to Credit and Vice Versa</th>
<th>Last Day to Drop with &quot;W&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer Term 2008</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>June 2 - Aug 27, 2008</td>
<td>May 23, 2008</td>
<td>July 8, 2008</td>
<td>August 6, 2008</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>June 5 - June 27, 2008</td>
<td>May 23, 2008</td>
<td>June 13, 2008</td>
<td>June 20, 2008</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fall Term 2008</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Y</td>
<td>September 4 - December 1, 2008</td>
<td>September 2, 2008</td>
<td>October 3, 2008</td>
<td>November 3, 2008</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Winter Term 2009</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>January 5 - April 9, 2009</td>
<td>January 14, 2009</td>
<td>January 16, 2009</td>
<td>February 2, 2009</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Summer Term 2009</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>May 4 - July 31, 2009</td>
<td>May 15, 2009</td>
<td>June 3, 2009</td>
<td>June 24, 2009</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year</td>
<td>Month</td>
<td>Date</td>
<td>Event</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>-------</td>
<td>------</td>
<td>-------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>November</td>
<td>11</td>
<td>In lieu of Remembrance Day - University closed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>November</td>
<td>13</td>
<td>IPL Module - Disability (Intermediate) dentistry, health professions and medicine</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>November</td>
<td>15</td>
<td>Last day to apply for admission to winter term</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>December</td>
<td>1</td>
<td>Classes end, full term</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>December</td>
<td>13</td>
<td>Examinations begin</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>December</td>
<td>15</td>
<td>Last day to apply to graduate in May</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>January</td>
<td>1</td>
<td>New Year’s Day - University closed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>January</td>
<td>5</td>
<td>Classes begin, winter term</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>February</td>
<td>6</td>
<td>Munro Day - University closed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>February</td>
<td>23</td>
<td>Study break begins</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>March</td>
<td>2</td>
<td>Classes resume</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>March</td>
<td>4</td>
<td>IPL Module - Family violence (Intermediate), dentistry, health professions and medicine</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>April</td>
<td>9</td>
<td>Classes end, regular session</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>April</td>
<td>10</td>
<td>Good Friday - University closed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>April</td>
<td>13</td>
<td>Examinations begin, regular session</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>May</td>
<td>27</td>
<td>Examinations end, regular session</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>May</td>
<td>4</td>
<td>Co-op summer academic term begins</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>May</td>
<td>18</td>
<td>Victoria Day - University closed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>May</td>
<td>19-27</td>
<td>Spring convocations</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>July</td>
<td>1</td>
<td>Canada Day - University closed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>July</td>
<td>2</td>
<td>Last day to apply to graduate in October</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>July</td>
<td>31</td>
<td>Co-op Summer academic term ends</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>August</td>
<td>3</td>
<td>Halifax/Dartmouth Natal Day - University closed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>August</td>
<td>4</td>
<td>Examinations begin, commerce co-op, computer science and engineering</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>August</td>
<td>8</td>
<td>Examinations end, computer science and engineering</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>August</td>
<td>14</td>
<td>Examinations end, commerce co-op</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Admission Dates 2008/2009

Final Dates for Receipt of Applications for Admission

Regular Session 2008/2009

Faculties of Arts and Social Sciences, Computer Science, Engineering, Management, and Science
International Students (except USA) .................. April 1
Transfer Students entering from Canada or USA3 ...............June 1
Returning Dalhousie Students6 ..............................August 15
Diploma in Meteorology .........................................June 1
Faculty of Architecture and Planning
Bachelor of Community Design1 ..........................June 1
Bachelor of Environmental Design Studies9 ..................March 1
Faculty of Health Professions
Pharmacy ............................................................February 1
Social Work, Health Sciences .....................................February 15
Bsc (Recreation) 1, Bsc (Kinesiology)1, and
Bsc (Health Promotion)1 .................................June 1
Bsc (Nursing) for Post RN1 .................................August 1
Health Services Administration (DHSA, DEHSM) ............July 1
Bsc (Nursing) ...................................................March 15
Diploma in Nurse Practitioner Studies for Remote & UnderServed
Communities (DNPS) .........................................June 1
Diploma in Disability Management (DDM) .....................July 15

Internal Transfers3
Fall term ..........................................................September 22

Dentistry4
Dds ..........................December 1
Dental Hygiene ..................................................March 15
Clinical Practice..................................................October 1
Dentistry Qualifying Program .............................September 1
Bachelor of Dental Hygiene (Bdh) ..........................September 1
Paediatric General Practice Residency Program .........October 1

Medicine4
Md ...............................................................October 31

Law4
LLB ..............................................................February 27

Winter Term
RA and Bsc programs only .................................November 15
BSc (Nursing) for Post RN only..............................November 15
Returning Dalhousie Students6 .........................November 15
BEDS Transfer students ..................................November 15

Definitions

The following definitions are intended to facilitate an understanding of the calendar and to define all words and phrases used in the calendar which may have specific meanings.

Academic Dismissal
Required withdrawal from a program due to unsatisfactory academic performance (see Academic Regulations, page 39, section 20).

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

Academic Sessions
1. Regular session: September - April
2. Fall term: September - December
3. Winter term: January - April
4. Summer term: May - August

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

Audit Student
A student permitted to attend classes but not expected to prepare assignments, write papers, tests or examinations. Credit is not given nor is a mark awarded for classes. Classes appear on the transcript with the notation “Aud”. Audit students must apply in the normal way. Students may register to audit a class only after the first day of classes.

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

Clerkship
See Internship

Clinical Practice
See Internship

Co-operative Education
A program where academic study is combined with career related work experience.

Co-requisite
Requirement which must be fulfilled concurrently with the class being considered.

Course
The term “class” is used in place of the word course.

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

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

CRN
Each class has a CRN attached to it (course reference number) This number is to be used when registering for classes.
Email
Email is an authorized means of communication for academic and administrative purposes within Dalhousie. The University will assign all students an official email address. This address will remain in effect while the student remains a student and for one academic term following a student’s last registration. This is the only email address that will be used for communication with students regarding all academic and administrative matters. Any redirection of email will be at the student’s own risk. Each student is expected to check her or his official email address frequently in order to stay current with Dalhousie communications.

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

Externship
See Internship.

Fieldwork
See Internship.

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

Good Standing
Students who meet the required GPA are considered to be in good academic standing. (see Academic Regulations, page 39, section 18)

Grade Point Average (GPA)
- Weighted sum of the grade points earned, divided by the number of credit hours earned.
- Term GPA: Classes taken in a single term.
- Cumulative GPA: All classes taken while registered in a level of study.

Internship, Fieldwork, Clinical Practice, Externship, Practicum, Clerkship
These terms are used in Faculty of Health Professions’ programs to describe practical professional educational experiences that are conducted in a non-university setting such as a health or social service agency.

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

Level of Study
The following levels of study:
- AC - Architecture/Engineering (Years 3 and 4)
- HP* - Health Professions
- UG - Arts & Social Sciences
- Computer Science
- Engineering (Years 1 and 2) and Bachelor of Food Science Management
- Science

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

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

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

Practicum
See Internship.

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

Probation
Warning to students that their academic performance is unsatisfactory and that they will be dismissed from their program unless their performance improves by the end of the next term. (See Academic Regulations, page 39, section 19).

Scholarship GPA
See Awards section page 536.

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

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

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

Undergraduates
Students who are candidates for an undergraduate degree or diploma.

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

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

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

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

Class Codes
Numbers
3000 level classes are introductory
2000-4000 level classes are advanced
5000/9000 level are Graduate level (with some exceptions)

Credit Hours—examples only
0.06 credit hours = 1 full credit
0.03 credit hours = ½ credit
0.00 credit hours = no credit
Subject Codes

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

AGRI - Agriculture
ANAT - Anatomy & Neurobiology
ARBL - Arabic
ARCH - Architecture
ARTC - Applied Health Services Research
ASSC - Arts and Social Sciences Interdisciplinary
BIOC - Biochemistry and Molecular Biology
BIOE - Biological Engineering
BIOI - Biology
BIOT - Biotechnology
BMNG - Biomedical Engineering
BUSI - Business Administration
CANA - Canadian Studies
CH&E - Community Health & Epidemiology
CHEE - Chemical Engineering
CHEM - Chemistry
CHIR - Chinese
CIVL - Civil Engineering
CLAS - Classics
COMM - Commerce
CPST - Complimentary Studies
CRWR - Creative Writing
CSCI - Computer Science
CTMP - Contemporary Studies
DCYT - Diagnostic Cytology
DEHY - Dental Hygiene
DENT - Dentistry
DMUT - Diagnostic Medical Ultrasound Technology
ECED - Electrical and Computer Engineering
ECOM - Electronic Commerce
ECON - Economics
EDUC - Education
ENGR - Engineering
ENGL - English
ENGM - Engineering Math
ENV - Environmental Engineering
ENVI - Environmental Studies
ENVQ - Environmental Science
ERTH - Earth Sciences
EURO - European Studies
FOCS - Food Science & Technology
FRSN - French
GEOG - Geography
GERM - German
GWST - Gender and Women's Studies
HAP - Health and Human Performance
HAED - Health Education
HESA - Health Services Administration
HINF - Health Informatics
HIST - History
HLTH - Health Professions
HPRD - Health Promotion
HSAI - Health Services Administration (International)
HSCE - Health Sciences
HISTC - History of Science and Technology
HUCD - Human Communication Disorders
IBIS - Interdisciplinary Studies
IENG - Industrial Engineering
INFO - Information Management
INFX - Informatics
INTD - International Development Studies
INTVE - Interdisciplinary Studies (Graduate)

INNS - Engineering Internetworking
ITAL - Italian
JOUR - Journalism
KINE - Kinetics
KING - King's Foundation Year Programme
LAW - Law
LEIS - Leisure Studies
MARA - Marine Affairs
MARL - Marine Biology
MATH - Mathematics
MDLT - Medical Lab Technology
MECH - Mechanical Engineering
MED - Medicine
MEDS - Medical Science
MCM - Management
MECI - Microbiology & Immunology
MINE - Mining Engineering
MUSC - Music
NESC - Neuroscience
NUMLT - Nuclear Medicine Technology
NURS - Nursing
OCCU - Occupational Therapy
OCEA - Oceanography
ORAL - Oral & Maxillofacial Surgery
PATH - Pathology
PETR - Petroleum Engineering
PGMD - Post-Graduate Medicine
PGPH - Post-Graduate Pharmacy
PHAC - Pharmacology
PHAR - Pharmacy
PHIL - Philosophy
PFPC - Physics and Atmospheric Science
PHTL - Physiology
PHTY - Physiotherapy
PLAN - Planning
POLI - Political Science
PSRS - Psychodiagnosics
PSY - Psychology
PuAD - Public Administration
RADT - Radiological Technology
RECH - Registration Course - Graduate
RELIS - Religious Studies
RSRT - Respiratory Therapy
RUSN - Russian Studies
SCCE - Science
SLWK - Social Work
SOZA - Sociology and Social Anthropology
SPAN - Spanish
STAT - Statistics
THIE - Theatre
TVPR - Transition Year Programme
VBC - Clinical Vision Science
Undergraduate Programs

Faculty of Architecture and Planning
Bachelor of Environmental Design Studies (2 years)
Bachelor of Community Design (3 years)
Bachelor of Community Design (4 year honours)

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

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

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

Faculty of Health Professions
Diploma in Disability Management (2 years)*
Diploma in Emergency Health Services Management (1 year)
Diploma in Health Services Administration (1 year)
Diploma in Nurse Practitioner Studies for Remote and Under-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) (3 years)**
Bachelor of Science (Pharmacy) (4 years)
Bachelor of Social Work (5 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 (3 years)
Bachelor of Science Recreation/Bachelor of Management (5 years)

Faculty of Science
Bachelor of Science/Bachelor of Arts (3 year concentration)
Bachelor of Science/Bachelor of Arts (4 year major)*
Bachelor of Science/Bachelor of Arts (4 year double major)*
Bachelor of Science/Bachelor of Arts (4 year concentrated honours)*
Bachelor of Science/Bachelor of Arts (4 year combined honours)*
Bachelor of Science/Bachelor of Engineering Concurrent (5 years)*
Diploma in Meteorology (1 year)
*Also available as a co-op program.
**Offered jointly by Engineering and Computer Science. Also available as a co-op program.
*** Final class admitted in September 2004.
Dalhousie University

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

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

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

In 1997, the Technical University of Nova Scotia amalgamated with Dalhousie University, creating a dynamic new centre of advanced technical education and research in Nova Scotia, in the areas of architecture, computer science and engineering. The University of King’s College, situated adjacent to the Dalhousie campus, is an affiliated institution, and its students in Arts and Science receive Dalhousie degrees in the name of both institutions. Degrees in agriculture, awarded to students of the Nova Scotia Agricultural College, are awarded by Dalhousie in co-operation with the College.

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

Executive Officers

President and Vice-Chancellor
Tom Traves, BA, MA, PhD

Vice-Presidents

Academic and Provost
Alan Shaver, BSc (Hon), PhD

Finance and Administration
Ken Burt, BA, MBA

External
Floyd W. Dykeman, BA, MPL

Student Services
Bonnie Neuman, BA, MA, EdD

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

Associate Vice-President, Academic
Lorry Maloney, R.P.F., BFA, MA, PhD

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

Assistant Vice-President, Financial Services
Ian Nason, RComm

Assistant Vice-President, Human Resources
Katherine Sheehan, BA, CHRP

Deans of Faculties

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

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

Computer Science
Michael Shepherd, MSc, PhD (Western)

Dentistry
David S. Precious, OM, DD, MSc, FRCD, FRCDS, FADI, FACP, FRCS (England)

Engineering
L. Joshua Lees, BSc, MSc, PhD (Dal), PEng

Graduate Studies
Carolyn Watkins, BSc, MSc, MLIS (Western), PhD (TUNIS)

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

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

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

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

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

College of Continuing Education
Andrew Cofranco, BSc, MBA

College of Arts and Science, Provost
Marian Binkley, BA, MA, PhD (Toronto)

Administrative Officers

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

University Librarian
William Mee, AB, 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
Board of Governors

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

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

Chancellor
Dr. Richard B. Goldbloom, O.C.

Chancellor Emeritus
Dr. Isabell Cohen
Sir Graham Day
Dr. Ruth Goldbloom

Executive
Hon. Lorne Clarke
Senator James S. Cowen, Chair
Mr. Mike Tipping
Dr. Lloyd A. Fraser
Ms. Cathy MacNutt, Vice-Chair
Mr. Dan Miles, Honorary Secretary
Mr. Robert Chisholm
Mr. William Black
Dr. Jim Spatz
Mr. Bruce Towler, Honorary Treasurer
Dr. Tom Travis, President

Members
Mr. Jay Abbas
Mr. Jamie Baillie
Ms. Elizabeth Bade
Mr. Level Chan
Prof. Richard Evans
Dr. Richard Goldbloom
Ms. Lynn Irving
Ms. Nancy MacGarrow-Williams
Prof. Sunny Marche
Mr. Robert Radchuck
Mr. David Russell
Mr. Chris Smith
Mr. Lawrence Sturdy
Mr. Jim Wilson
Ms. Shannon Zimmerman

University Secretary
Susan Brousseau

Observer for Faculty Association
Dr. Kevin Grundy

Senate

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

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

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

Chair of Senate
Lloyd A. Fraser, EdD

Vice Chair of Senate
Peter M. Butler, PhD

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

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

Dalhousie University reserves the right to rescind any acceptance of an applicant into a program or to rescind an offer of admission of an applicant into a program. Please refer to University Regulations, page 20.

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

I. General Admission Requirements

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

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

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

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

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

5. For Students from Quebec
   Students attending high schools offering Grade 12 must meet the distribution and average requirements outlined for students from the Atlantic provinces, or first-year CEGEP with minimum 70% overall average, with no individual academic subject below 65%.

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

6. Students from Outside Canada

American High School Curriculum
If you’re studying in an American-based curriculum (in the United States, or abroad), you are required to present a Grade 12 high school average of “C” or better. In addition, you must present an SAT I score (a minimum combined SAT I score of 1600 on the new SAT test or 1100 on the old SAT test) or an ACT score of 25 or better.

British Curriculum (GCSE and GCE)
If you are studying in a British-patterned curriculum (GCSE) 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.

Advanced Placement, International Baccalaureate, Advanced Level and Baccalaureat (French Baccalaureat) courses may be eligible for transfer credits. Please refer to section 12. Admission Requirements by Country.

Admission Requirements by Country

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

7. English Language Proficiency Requirements

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

• Test of English as a Foreign Language (TOEFL)
  • TOEFL (computer-based) - 79
  • TOEFL (paper-based) - 58
  • TOEFL (IBT) - 80

• 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 (CAPE) - 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
• IB Higher Level English course A1, A2 with a minimum grade of 4
• AP English Examination (Language Composition, Literature and Composition) with a minimum grade of 4
• O-Level GCSE or IGCSE English language or English Literature course with a minimum grade of B
• Student has graduated from a Dalhousie-recognized school which uses English as the primary language of instruction and the student has spent three successful years in the English program
• Student has studied full-time for at least three years (or equivalent in part-time studies) in a secondary school where the language of instruction and examination in the country was English
• Student has studied full-time for at least one year in a recognized university where the language of instruction and examination in the country was English and the course curriculums require proficiency in

Admission Requirements 9
8. Language Training

Students who meet the academic admission requirements whose English proficiency minimum test scores are TOEFL PBT 550, CBT 213, or IELTS 7.0 or MELAB 7.0 or CanTest 4.0 or CAEL 60 may be offered part-time Dalhousie admission with the co-requisite of completing a full-time approved English training program.

9. Students with Learning Disabilities

Dalhousie University is committed to providing equal educational opportunities and full participation for students with learning disabilities. See University Regulations, page 25 for complete information.

10. Mature Students

If you are at least 23 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 Program as a mature student. To directly enter a degree program, you must meet the academic requirements. Dalhousie’s College of Continuing Education provides a wide variety of services to mature and/or part-time students and welcomes the opportunity to discuss your special needs with you. It is recommended that prospective students meet with an advisor well in advance of their application so you can plan and be advised of all opportunities. For information on admission as a mature student, contact the College of Continuing Education at (902) 494-2526.

11. Transfer Students

Students wishing to apply for transfer credit should consult Academic Regulation 7, in this calendar. Certified copies of class descriptions from calendars are acceptable in lieu of originals. Certificates in languages other than English or French must be accompanied by certified translations into English. Students applying with one year or less of university work must also submit high school transcripts. The minimum GPA for admission as a transfer student may be varied by program of study. Please contact the Registrar’s Office for more information.

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

12. International Baccalaureate, Baccalauréat (French Baccalauréat) 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.

<table>
<thead>
<tr>
<th>AP Course</th>
<th>Dalhousie Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>AP Biology</td>
<td>Biology 1012</td>
</tr>
<tr>
<td>AP Chemistry</td>
<td>Chemistry 1013/1015 and 1023/1025</td>
</tr>
<tr>
<td>AP Computer Science</td>
<td>Computer Science 1101/1103</td>
</tr>
<tr>
<td>AP Economics</td>
<td>Economics 1101/1103 and 1104/1105</td>
</tr>
<tr>
<td>AP English</td>
<td>English 1000/1001</td>
</tr>
<tr>
<td>AP French</td>
<td>French 1000/1001 or 1002/1003</td>
</tr>
<tr>
<td>AP Geography</td>
<td>Geography 1000/1001 or Earth Sciences 1010/1011</td>
</tr>
<tr>
<td>AP History</td>
<td>History 1100/1101 and 1102/1103</td>
</tr>
<tr>
<td>AP Information Technology</td>
<td>Computer Science 2000/2010 and Sociology/Social Anthropology 1999/19</td>
</tr>
<tr>
<td>AP Latin</td>
<td>Latin 1000/1001</td>
</tr>
<tr>
<td>AP Mathematics</td>
<td>Mathematics 2010/2012</td>
</tr>
<tr>
<td>AP Music</td>
<td>Music 1001/1003 and 1002/1004 (students may consult department for possible advanced standing)</td>
</tr>
<tr>
<td>AP Philosophy</td>
<td>Philosophy 1000/1002</td>
</tr>
<tr>
<td>AP Psychology</td>
<td>Psychology 1005/1006</td>
</tr>
<tr>
<td>AP Spanish</td>
<td>Spanish 1020/1021</td>
</tr>
<tr>
<td>AP Theatre</td>
<td>Theatre 1005/1006 (elective)</td>
</tr>
<tr>
<td>AP Theory of Knowledge</td>
<td>Philosophy 1000/1001 (elective)</td>
</tr>
</tbody>
</table>

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

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 designee (e.g., Registrar) to undertake class work at Dalhousie

Please consult the Registrar’s Office for more information concerning application and transfer credits.

- The required student visa to study in Canada
• Proof of adequate health insurance for the duration of the stay in Canada
• Proof of proficiency in English

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

14. Canadian and Local Students attending Dalhousie as Visiting Students
All students wishing to attend Dalhousie for a university on a letter of permission from their home university must submit the following:
• A completed application for admission
• Letter of permission from the home university
• Students applying from universities outside the Halifax Regional Municipality must also submit an application fee. Local visiting students in the Halifax Regional Municipality are not required to pay an application fee.

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

II. Specific Program Requirements

A. Faculty of Architecture and Planning

1. School of Architecture

1. Bachelor of Environmental Design Studies (BEDS)

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

2. Minimum Academic Requirements
The School works with applicants with a good academic record and creative ability. The minimum requirements for admission are:
• A portfolio of design work that demonstrates creativity and/or artistic skill; it may include freehand drawings, paintings, furniture, sculpture, craft objects, creative photography, construction projects, etc.
• Two or more years in a university degree program (or five full-year courses, twenty half-year courses, or a combination), with a 2.5 grade point average (B- average), including the following courses:
  • A full-year course (or two half-year courses) in mathematics or natural sciences, for which Grade 12 math is a prerequisite; e.g., algebra, calculus, trigonometry; astronomy, biology, botany, chemistry, engineering, geology, geography, physics, zoology;
  • A full-year course (or two half-year courses) in humanities or social sciences; e.g., art history, classics, literature, music history, philosophy; anthropology, political science, psychology, sociology;
  • A full-year course that emphasizes written composition (often designated by a university as “writing requirement” or “writing intensive”).

2. 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.

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

3. Documents
A BEDS applicant must submit all of the following items before the application can be reviewed:
1. To be submitted to the Registrar’s Office:
• Undergraduate application form
• Undergraduate application fee (see University Fees in this Calendar)

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

2. To be submitted to the School of Architecture:
Admissions, School of Architecture
Dalhousie University
Halifax, NS B3H 4B8

• An official academic transcript from all previous post-secondary institutions (to be sent directly by the institution).
• A portfolio of design work (about 10-15 items) that demonstrates creativity and/or artistic skill. The portfolio may include freehand sketches, paintings, furniture, sculpture, craft objects, creative photography, construction projects, etc. Building designs are not expected. Three-dimensional objects and large works should be included as photographs so that the portfolios can be sent safely and easily through the mail. The portfolio need not be large or elaborate; a folder or binder is sufficient. The applicant’s name and address should be identified on the portfolio and any separate items.
• A letter written by the applicant, describing his/her interest in architecture and in the BEDS program, and giving the Admissions Committee some information about the applicant as a person: aspirations, interests, travel, activities, etc.
• Three letters of recommendation, including at least one from an academic instructor.
• Evidence of competency in English for applicants whose native language is not English (see University Admission Requirements in this Calendar).

To confirm receipt of the items above, please contact the Architecture Office: arch.office@dal.ca or (902) 494-3971.

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

2. School of Planning

2a. Bachelor of Community Design
High School completion (grade 12 or academic equivalent)
• English
• Academic Math
• One Science (Biology or Geography are recommended)
• 2 additional university preparatory courses
• Minimum average of 70%
General Information

12. Admission Requirements

• Minimum final grades: English - 65%, Other Subjects - 60%

2. Bachelor of Music

• Satisfy the requirements for Bachelor of Arts
• Demonstrate proficiency as instrumental or vocal performer in an audition/interview
• Submit the supplementary application form for the Department of Music

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

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

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

3. Diploma in Costume Studies (2 years)

• Minimum 65% in Grade 12 English
• Classes as outlined on page 226

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

C. Faculty of Computer Science

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

1. Bachelor of Computer Science

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

2. Bachelor of Informatics

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

3. Bachelor of Software Engineering

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

D. Faculty of Engineering

1. Bachelor of Applied Science in Food Science

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

2. Bachelor of Engineering

2.a From High School

• English
• Pre-calculus mathematics

• Overall average - 70%
• Other Subjects - 60%
• English - 65%

2.b Transfer Students

Students wanting admission with advanced placement in the Engineering degree program are advised that at least one half of the class work must be completed at Dalhousie including the final two study terms with a full course load. Transfer of credits will not be granted for any class in which a final grade was less than C or equivalent, or for any class in which a final grade was granted conditionally.

2.c Associated Universities

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

2.d Program Admission

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

Every engineering program has a defined maximum enrollment; therefore places are assigned on a competitive basis. The criteria for this competition is the average grade over all credits completed to date in the curriculum of the Diploma of Engineering; this will be referred to as the engineering grade point average (EGPA). Note that courses that are not required for the Diploma will not be counted in the EGPA.
The procedure is as follows:

1. By February 15, each student must specify ordered preferences for the three or more engineering programs. The application may be for conditional acceptance into any two of an engineering program, or for full acceptance into your three of an engineering program.

2. Any student who has completed all of the entry requirements for an engineering program, with an ECPE of 3.30 or better, will be guaranteed a place in that engineering program.

3. In a single competition, students with an ECPE greater than or equal to 2.00 and less than 3.30 will be assigned conditional places (your two) or full places (your three) in engineering programs, proceeding in strict order of ECPE.

4. Any student with an ECPE between 1.70 and 2.00 may be offered conditional acceptance on academic probation, provided that all course work for the Diploma of Engineering have been completed, and provided that there is space in an engineering program for which they have no course deficiencies.

5. Any student with an ECPE of less than 1.70 will not be offered acceptance.

6. Students with more than two course deficiencies of the entry requirements for an engineering program, or missing more than one credit, will not be offered acceptance into the Upper Division of that program.

2.2 Other Situations

Students who wish to enter the Faculty of Engineering and who have completed a program equivalent to that offered by the Associated Universities should submit complete transcripts of their university studies to the Registrar’s Office prior to June 1. Such students will be placed in the program at a level determined by the Faculty of Engineering if they meet the entry and promotional requirements of the Faculty of Engineering. The Faculty may permit persons not registered for a degree at the University to enroll in individual classes. Such students are referred to as non-degree students. Registration takes place on the dates shown in the Calendar of Events.

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

E. Faculty of Health Professions

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

Affirmative Action

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

Statement Regarding Criminal Records Check

The Faculty of Health Professions of Dalhousie University does not require a Criminal Records Check or other screening procedure (e.g., Vulnerable Sector Screen) as a condition of admission into its programs. However, students should be aware that such record checks or other screening procedures may be required by facilities outside the University used for clinical, fieldwork or co-op placements or experiences related to an academic course assignment, which, in some instances, may be a requirement for graduation. It is the student’s responsibility to have such procedures completed.

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

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

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

Deposit

Due to the large number of applications, a non-refundable deposit of $200.00 (applicable to tuition fees) is required on admission. For transfer students, this deposit is payable within three weeks of notification of acceptance.

1. Diploma in Disability Management

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

Applicants with an academic high school completion, or who already possess a university degree are admissible according to Dalhousie standards and should apply through the regular admissions process. Applicants without high school completion, or a GED, can apply as mature students. They should meet the following requirements:

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

2. School of Health and Human Performance

2a. Bachelor of Science (Health Promotion)

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

- English (minimum 70%)
- Biology or Chemistry (minimum 70%)

Transfer students

Students already engaged in a university program can transfer into the Health Promotion program. A minimum grade point average of 2.30 (on a 4.00 scale) or higher is required. Experienced persons in the workplace may be admitted as mature students. Inquiries about admission to this program should be directed to the School of Health and Human Performance.

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

2b. Bachelor of Science (Kinesiology)

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

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

Transfer Students

In order to be admitted to the Kinesiology program, students transferring from other university programs are expected to have a minimum GPA of 2.30 (on a 4.00 scale).
Admission Requirements

General Information

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

1. High School Applicants

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

1. High School Applicants

- Completion of academic Grade 12 with at least five Grade 12 university preparatory classes, including:
  - English
  - Biology or Chemistry
  - Academic Mathematics
  - 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 assess admission requirements
- No grade lower than 70% in the 5 classes
- Personal suitability for the practice of the selected health profession

2. Applicants with Previous University Experience

- Completion of classes in English, Math and two sciences as outlined above for high school applicants. If these classes were not taken as part of post-secondary study, they must be at the academic Grade 12 level with a minimum grade of 70%.
- GPA of 2.75 in most recent year of full-time studies
- Personal suitability for the practice of the selected health profession

3. Alternative Admissions

(See definition of Mature Student, page 4)

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

4. Application Submission

Applicants must submit the following:

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

5. Non-Academic Criteria

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

6. Personal Suitability

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 (Post-Diploma Program)

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

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

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

The program comprises 40-credit hours of university study (equivalent to five years full-time study). In recognition of the reality that potential students are likely to be working full-time, the program is available on a part-time basis.

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

1. Admission Requirements

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

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

2. Documentation Required

• Completed Dalhousie application form plus application fee
• Official transcript of diploma program, plus official transcripts from any other post-secondary institution attended
• Current registration number with applicable Canadian professional association or college, or photocopy of current membership card

• Letter of intent
• Resume with two contact references (two letters of reference for AAC program)

3. Guidelines for Letter of Intent

This letter provides the opportunity for applicants to expand upon their previous post-secondary institutions, work experience, personal and professional motivation, professional development, academic performance, and how applicant thinks this program will contribute to their career or most recent year of studies (30 credit hours).

Admission Requirements 15

4.a Diploma in Health Services Administration

Applicants must meet the Dalhousie University undergraduate admission requirements. You may not apply from high school. A complete application consists of the following documents:
• Application and fee
• An official transcript of the record of work done at high school and previous post-secondary institutions
• One letter of reference
• Resume

4.b Diploma in Emergency Health Services Management

Applicants must meet the Dalhousie University undergraduate admission requirements. In addition, applicants are required to have worked or volunteered at least 3 years within the Emergency Health Services industry. You may not apply from high school. A complete application consists of the following documents:
• Application and fee
• An official transcript of the record of work done at high school and previous post-secondary institutions
• One letter of reference
• Resume

5. School of Nursing

5.a Bachelor of Science (Nursing) - Basic

Admission to the Bachelor of Science Nursing program is limited. Not all applicants who meet the minimum requirements can be accepted. Requirements differ based on the previous education and background of the applicant.

1. Selection criteria

The selection criteria used by the Admissions Committee include:
• Place of residence
• Academic performance

1.a Place of Residence

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

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

1.b Academic performance

High School Applicants

• Satisfactory completion of grade 12 or equivalent with at least five academic university preparatory classes including:
  • English
  • Biology
  • Chemistry
  • Academic Math
• A minimum grade of 70% in the required academic grade 12 subjects as outlined above for High School applicants; or
• A minimum overall average of 70% in the 5 university preparatory classes used to meet admission requirements

Applicants with Previous University Experience

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

2. Special Cases

In exceptional circumstances, special consideration may be given by the Admissions Committee to applicants who do not meet all admission requirements.

3. Affirmative Action

The School of Nursing has an Affirmative Action Policy for residents of Nova Scotia who belong to the indigenous Black and Aboriginal population. Applicants wishing to apply under the Affirmative Action Policy must check “Yes” on the Supplemental Form. Applicants must meet the minimum admission requirements.

4. Final Date for Receipt of Applications for Admission

March 15th
5. Notification
Each applicant is notified of the status of their application by mail, normally by the end of May. Those applicants who are put on the waiting list may expect to hear about acceptance as late as September. Incomplete and late applications will not be considered.

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

For High School students the $200 deposit is payable by May 15th in order to reserve a place in the program.
For all other applicants the $200 deposit is payable within three weeks of receipt of written notification of acceptance in order to reserve a place in the program.

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

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

Courses required for admission are the following Dalhousie courses:
- CHEM 1010.03 and 1011.03 or 1021.03 and 1022.03 or equivalent
- MATH 1000.03 or 2215.03 and STAT 1060.03 or 2060.03 or equivalent
- BKR 1011.03 and 1012.03 or BKR 3021.03 and 3022.03 or equivalent
- ENGL 3020.03 or ENGL 3101.03 and 3102.03 or equivalent
- One full year of a Social Sciences (one full credit or 2 half credits in a single subject).

Transfer credits will not be granted for students who exceed the minimum admission requirements. The problem-based curriculum which integrates science, pharmaceutical and practice requires that students complete all class work in the four year program.
Incomplete applications and applications submitted after the deadline, February 1 (see Application Dates for details), will not be considered.

1. Selection Criteria
The selection criteria used by the Admissions Committee include:
- Place of residence
- Academic performance
- Assessment of non-academic criteria

The assessment of non-academic criteria accounts for 40% of the applicants’ overall total score. Applicants will be assessed on the following non-academic criteria:
- motivation
- ability to relate to others
- self-appraisal
- maturity
- professional attitude
- problem solving

The assessment of non-academic criteria accounts for 40% of the applicants’ overall total score. Applicants will be assessed on the following non-academic criteria:
- motivation
- ability to relate to others
- self-appraisal
- maturity
- professional attitude
- problem solving

1.b Academic Performance
Applicants are chosen for evaluation of non-academic criteria based on an initial screening of academic performance. Academic performance is calculated on all prerequisites and the most recent year of university or high school.
In the case of academic credits currently in progress, the initial screening will be based on full-merit grades. The final assessment of academic performance is based on the applicants’ grades and accounts for 60% of the applicants’ overall total score. Applicants should note that admission is on a competitive basis so that the ability to obtain consistently better than average grades would be an asset for the applicant. An academic record containing failures or poor grades makes the prospect of admission very unlikely.

1.c Assessment of non-academic criteria
Application applicants who have obtained a high level of academic performance in the initial screening are invited for evaluation of non-academic criteria. Applicants will be invited to the College of Pharmacy to participate in an interview and to complete a questionnaire. Applicants will be assessed on the following non-academic criteria:
- motivation
- ability to relate to others
- self-appraisal
- maturity
- professional attitude
- problem solving

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

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

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

4. Special Cases
In exceptional circumstances, special consideration may be given by the Admissions Committee to applicants who do not meet all admission requirements.

4.a Affirmative Action
The College of Pharmacy has an Affirmative Action Policy for residents of the three Maritime provinces who belong to the indigenous Black and Aboriginal population. Applicants wishing to apply under the Affirmative Action Policy must check “yes” on the Supplemental Form. Applicants must receive a minimum of 60% in each of the five prerequisites listed.

8. School of Physiotherapy
Please refer to the Dalhousie University Graduate Calendar.
9. School of Social Work

9a. Bachelor of Social Work

1. Recommended preparation for Social Work

1a. Academic

The Academic requirements for the Bachelor of Social Work degree are the same for the on-campus and the on-line distance delivery methods. The minimum academic requirement is five general university credits in subject areas other than social work.

There are no specific class pre-requisites for the BSW program. Potential social work applicants are advised to take social science courses (sociology, psychology, women’s studies, and English are a few suggestions):
- a minimum cumulative grade point average of 2.70 (B- or 70%) on a 4.3 scale.

1b. 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. Volunteer 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.

1c. References

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

1d. Personal Statement

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

1e. Personal Suitability for Social Work

Ability 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 illustrates examples of criteria used to assess unsuitability in aptitude and fitness. Other behaviour may also be considered:
- unethical (as defined by the Nova Scotia Association of Social Workers Code of Ethics)
- any medical condition that affects an individual’s ability to perform as a social worker if that condition is chronic and/or affects judgement.
- persistent substance abuse (e.g. Alcoholism, drug addiction, use of illegal drugs)
- conviction of criminal activity (e.g. Sexual assault, fraud and drug trafficking)

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

2. Application Procedure

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

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

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

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

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

We strongly suggest printing these forms using a laser or a high-resolution ink-jet printer.
- Dalhousie Undergraduate Application for Admission
- BSW Application Information and Instructions
- BSW Applicant’s Checklist, Part B
- BSW Form Personal Statement Cover Sheet
- BSW Form Recommendation 1. Academic
- BSW Form Recommendation 2. Work
- BSW Form Recommendation 3. Volunteer
- BSW Form Work & Volunteer Experience Summary

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

3. Selection criteria and process

Enrollment is limited to a specified number of places that are offered each year to the best qualified candidates as selected by the School’s Admissions Committee. Equal consideration is given to part-time and full-time applications. Applicants indicate if they are applying for on-site or distance study and the applications for each delivery method are given separate consideration. Please note that it is not possible to transfer between on-site and the online delivery or to register in classes other than those applicable to the delivery method for which the student has been accepted.

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

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

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

4. Admission Requirements

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

4a. Academic Eligibility

An initial screening is made on the basis of academic eligibility. Grades from the last 60 credit hours attempted (equivalent to two years of full-time study), including failures, are used to determine the cumulative admission average. Grades and grade point averages are interpreted...
according to the grading scale of the university attended, as stated in the
transcript key. In the case of academic credits currently in progress,
calculations are made on the basis of Fall-term grades. Credits from non-
university programs do not qualify for consideration and are not included
in the cumulative university average.

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

4. Admission Requirements 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.

5. Distance Study
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 online learning managemen
system known as the Blackboard Learning System (BLS).

Students are expected to participate in ongoing discussions in the course.
This requires students to post comments on the course discussion boards,
to respond to other students’ postings, and to work in small groups as
required. The web-based courses provide the opportunity for a high-level
of interactivity amongst students and between students and instructors.
Please note that this delivery method differs significantly from
theoretical courses. Regular ongoing access to a home computer is
essential for effective interactivity in your courses.

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

If you are thinking about studying by distance we suggest you visit
www.distanceteaching.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 k.b for more information.

F. Faculty of Management
1. Bachelor of Commerce Co-op
   • English
   • Academic mathematics **
   • 3 other acceptable academic classes
   • Minimum final grades:
     • English, Math - 65%
     • Other subjects - 60%
   ** Required Math for Commerce:
     • NS - Math 12 (academic or advanced) or Pre-Calculus 12 or Calculus 12
     • PEI - Math 621 or 611
     • NB - Math 120, 121, 122
     • NFLD - Math 3204, 3205 or 3207
     • Western Canada - Math 12, Math 30, Math 31, Math 40
     • Ontario - Math 12 U or OMC.

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

Regardless of what program they were previously enrolled in, students
who have earned at least 4 full credits (or 8 half-credits) in the following
areas will usually be able to enter directly into the second year of
Commerce Co-op at Dalhousie:

• Business in a global context (half-year course)
• Micro Economics (half-year course)
• Macroeconomics (half-year course)
• Core Business Applications (Computer Science) (half-year course)
• Business Communications (written) (half-year course)
• Business Communications (oral) (half-year course)
• Introduction to Financial Accounting (half-year course)
• One other full-year (or two half-year) courses, in any area of study
• Mathematics for Commerce (half-year course)

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

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

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

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

2. Bachelor of Management
   • English
   • Math **
   • 3 other acceptable academic classes
   • Minimum final grades:
     • English, Math - 65%
     • Other subjects - 60%
   ** Required Math for Bachelor of Management:
     • NS - Math 12 academic or advanced or pre-calculus.
     • PEI - Math 621 or 611
     • NB - Math 120, 121, 122
     • NFLD - Math 3204 or Math 3205 or 3207
     • Western Canada - Math 12, Math 30, Math 31, Math 40
     • Ontario - Math MDM4U or MHT4U or MCV4U

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

G. Faculty of Science
1. Bachelor of Science and Bachelor of Science Co-op
   • English
   • Pre-calculus Math
   • 3 other acceptable university-preparatory classes
   • Minimum final grades:
     • English, Math - 65%
     • Other subjects - 60%
   • Overall Average - 70%
   • It is recommended that students have two science subjects.
2. Dalhousie Integrated Science Program (DISP)
   • Satisfy requirements for Bachelor of Science
   • At least one grade 12 or science class
   • Minimum grades:
     • English 75%
     • Mathematics 80%
     • Overall average 80%

3. Diploma in Meteorology
   • For students entering from another university, a 15-credit BSc or preferably, a 20-credit BSc, in physics or mathematics or chemistry with appropriate physics classes
   • Strong background in mathematics and physics
   • Classes taken should also include statistics and computer science
   • Dalhousie also offers an integrated program that leads to a BSc in physics and the Diploma in Meteorology. (See the Physics Department entry, page 490 for details.)

H. Faculties of Dentistry, Law, Medicine, and Graduate Studies
   For information concerning admission into these faculties, consult the appropriate calendar, or contact the appropriate faculty office directly.

III. Application Submission

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 BBA, BSc, BEd, BEdM, BMed, BComm and Special Student programs. The application deadline for January admission is November 15.

2. Response to Applications
   Dalhousie will respond to your application as promptly as possible and will advise you of any missing documentation. Please notify the Registrar’s Office if your address changes to avoid any delay in notification.
   When documentation is complete, applications are forwarded to the appropriate admissions committee. Although every effort is made to obtain decisions quickly, there will be some delay at times, particularly with limited enrollment programs. There may also be some delay in admission decisions for programs starting beyond the next academic session.
   As soon as decisions are made, applicants will be advised by mail.

3. Early acceptance
   Applicants currently attending high school, who have good academic records and an admission average in the mid 70’s or higher may be given early acceptance, conditional on satisfactory completion of work in which they are currently enrolled.

4. Final acceptance
   Applicants must successfully complete high school classes in the required subjects with a minimum average of 70%. An official transcript of final grades must be submitted to the Registrar’s Office.

It is the responsibility of each applicant to ensure that the application file is complete. The following must be submitted by each applicant to the Office of the Registrar:
   • A completed application form (forms not properly completed will delay processing)
   • The appropriate application fee for the program (refer to Application for Admission form)
   • For students applying directly from high school, an official record of high school work
   • An official academic transcript from all previous post-secondary institutions (if applicable)
   • Evidence of competency in English for applicants whose native language is not English (see Section 7 on English Language Tests, page 9)
   • Supplementary information as required for specific programs
   • Mature applicants should also enclose a letter
   Documents, once submitted, become the property of Dalhousie University and cannot be returned.
General Information

University Regulations

General

1. The Senate is charged with the internal regulations of the University, including all matters relating to academic affairs and discipline, subject to the approval of the Board of Governors. Within the general policies approved by Senate, academic requirements are administered by the Faculty concerned.

2. All students must agree to obey all the regulations of the University already made or to be made in addition to the above University regulations. Students must also comply with the regulations of the Faculty in which they are registered, and pay the required fees and deposits before entering any class or taking any examinations.

3. For the purpose of admission to the University, the place of residence of a student is the place of domicile. This is normally presumed to be the place (country, province, etc.) where the parents or guardian’s home is located. That place remains unchanged unless the Registrar is satisfied that a place of residence is established elsewhere. No person under sixteen years of age is admitted to any class except on the specific recommendation of the admissions committee of the relevant Faculty or School, which shall take into account all aspects of the applicant’s preparedness for the class or program involved, and which may attach such conditions to the applicant’s admission as the committee judges appropriate.

4. All students must report their local address while attending Dalhousie. It may be changed with the Registrar's Office and/or the relevant Faculty, Department or School.

5. Email is an authorized means of communication for academic and administrative matters. Any redirection of email will be considered in writing by the Registrar for communication with students regarding all Dalhousie communications.

6. Each question should be started on a separate page.

7. 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.

8. Candidates are required to present their valid Dalhousie ID card at all examinations.

9. No articles such as books, papers, etc. may be taken into the examination room unless provision has been made by the examiner for reference books and materials to be allowed to the students. All books, papers, etc. not specified on the printed paper as well as electronic computing, data storage and communication devices must be deposited with the invigilator. Calculators may be used at the discretion of the instructor.

10. Students withdrawing voluntarily from the University should consult the individual faculty regulations and the Fees section of this Calendar. Students withdrawing voluntarily from a Faculty such a student may apply to another Faculty. However, in assessing the application, previous performance will be taken into consideration.

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 must provide proof of name change to the Registrar’s Office.

12. Rescission of Acceptance into a Program

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

13. Recipient of Acceptance into a Program

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

Official Examination Regulations

1. Candidates will not be admitted to the Examination Room more than thirty minutes after the beginning of the examination. Candidates will not be permitted to leave the examination within the first thirty minutes.

2. Candidates are required to present their valid Dalhousie ID card at all examinations scheduled during the official examination periods and sign the signature list when used.

3. No articles such as books, papers, etc. may be taken into the examination room unless provision has been made by the examiner for reference books and materials to be allowed to the students. All books, papers, etc. not specified on the printed paper as well as electronic computing, data storage and communication devices must be deposited with the invigilator. Calculators may be used at the discretion of the instructor.

4. Candidates may not leave their seats during an examination except with the consent of the invigilator.

5. Answers to questions must be written on the right hand pages and properly numbered. The left hand pages may be used for rough work, but no sheets may be detached.

6. Each question should be started on a separate page.

7. If more than one book is used, the total number should be marked in the space provided above. The other books should be properly marked and placed inside the first book. All books supplied must be returned to the invigilator.

8. Candidates found communicating with one another in any way or under any pretext whatsoever, 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.
4. If a formal examination cannot be written at its scheduled time, it is the
responsibility of students to check the Registrar’s Website for when the
examination will be rewritten and to notify the Registrar of the time and place of the rewrite on the
Website of the Registrar (www.registrar.dal.ca).

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 prorated for the actual time written, will be marked as completed and
be released without restriction.

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.registrar.dal.ca).

3. In all cases in which a formal examination cannot be written at its
scheduled time and special arrangements must be made, it is essential
that faculty ensure that all students in the class are treated fairly and
equitably and according to the evaluative criteria in the class
description given to students at the beginning of the term.

If an examination is terminated under point #1, any student who
feels disadvantaged by not having been able to write an examination
for the length specified in the class description, may appeal through the
appropriate departmental or school appeal mechanism for an
examination of the specified length. Appeals will be in writing and in a
timely fashion. If the appeal is granted, arrangements for such a
makeup examination will be made between the student and the class
professor.

4. If a formal examination cannot be written at its scheduled time, it is
the responsibility of students to check the Registrar’s Website for when the
examination will be rewritten. Announcements will be made as soon as
possible after the original time, normally within 24 hours, and rewrites
will normally take place within the regular examination period.

Policy for the Scheduling of Classes/ Examinations

Normally, the University schedules and conducts classes on weekdays,
i.e., Monday to Friday; and sometimes Saturday, and examinations on
weekdays and Saturdays, but not Sundays or statutory holidays.
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. Arrangements for such
makeup examinations will be made between the student and the class
professor.

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

The University reserves the right, in exceptional circumstances, to
retain or destroy student records for the duration of the student’s
tenure and for a period of seven years after graduation
for the purposes of university affairs. Where the Registrar holds
student records for a period longer than the seven-year period,
the student will be advised that information they provide along with other
information in the student file will be used in conjunction with university
practices for internal university use and will not be disclosed to third
parties except in compliance with the FOIPOP Act or as otherwise
required by law.

Release of Information About Students

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

I. Disclosure to students of their own records
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
appropriate, have the right to receive transcripts of their own
academic record. These transcripts will be marked “STUDENT”. The
University will not release copies of transcripts if
students owe monies to the University.
3. If transcripts are issued for a student while a senate discipline case is
pending and the committee subsequently makes a decision that affects
the student’s transcript, revised transcripts will be sent to recipients if
transcripts are issued while the case was pending.

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

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

III. Disclosure to Third Parties

1. The following information is considered public information and may be
released without restriction:
   - Name
   - Period of Registration
   - Certificates, Diplomas, Degrees awarded
   - Field of Study (as relates to degree awarded)
   - “Hometown and Awards/Distinctions”
   - *As indicated in the convocation program.

*University Regulations 21
2. Information will be released without student consent to persons in compliance with a judicial order or subpoena or as required by federal or provincial legislation.
3. Necessary information may be released without student consent in an emergency, if the knowledge of that information is required to protect the health or safety of the student or other persons. Such requests should be directed to the Registrar.
4. In compliance with Statistics Canada requirements, a student’s national personal identification number assigned by the university or college first attended will routinely appear on a student’s transcript of record.
5. The Federal Statistics Act provides the legal authority for Statistics Canada to obtain access to personal information held by educational institutions. The information may be used only for statistical purposes, and the confidentiality provisions of the Statistics Act prevent the information from being released in any way that would identify a student.
6. Other than in the above situations, information on students will be released to third parties only at the written request of the student, or where the student has signed an agreement with a third party, one of the conditions of which is access to her/his record (e.g., in financial aid). This restriction applies to requests from parents, spouses, credit bureaus and police.

Policy on Accessibility for Students with Disabilities

1. Dalhousie University is committed to providing equal opportunity for qualified students with disabilities. To demonstrate full respect for the academic capacities and potential of students with disabilities, the University seeks to remove attitudinal and environmental obstacles that may prevent academically-qualified students with disabilities from participating fully in University life. The University understands that persons with disabilities may have different ways of doing things, recognizing that performance is not inferior merely because it is different.
2. The University recognizes, subject to its financial and other resource constraints, that qualified students with disabilities have a right to:
   a) full access to all educational programs;
   b) full access to the educational process and learning environment (including but not limited to classes, laboratories, workshops);
   c) full access to the University campus; and
   d) full access to University facilities and services.
3. The University recognizes that qualified students with disabilities have a right to assistance that is individualized with respect to scope and pace, consistent with the student’s needs, legitimate academic demands, and the University’s capacity to respond.
4. To ensure that qualified students with disabilities may pursue quality post-secondary education, the University shall:
   a) be proactive in fostering, creating and maintaining a barrier-free environment, including:
      i) the provision of support services, within reasonable financial and resource limitations; and
      ii) promoting an attitude of respect for persons with disabilities, and
   b) promoting sensitivity to the needs and abilities of persons with disabilities;
4.2 inform the University community about the services available to qualified students with disabilities and seek to ensure that such services are delivered in ways that promote equity;
4.3 where warranted and without compromising the academic standards, and through the relevant academic authority, modify:
   a) workload;
   b) examination procedures;
   c) other class requirements; and
   d) scholarship and other financial assistance requirements; and
4.4 take all reasonable steps to consult students with disabilities as fully as possible about decisions relating to matters affecting them.
5. In accordance with provisions in the Human Rights Act, the University may also define essential requirements for professional performance for students in programs, where these are appropriate, and this policy is not intended to replace or supersede these requirements.
6. Students with disabilities requiring assistance from the University shall:
   a) the provision of support services, within reasonable financial and resource limitations; and
   b) promoting an attitude of respect for persons with disabilities;
   c) other class requirements; and
   d) scholarship and other financial assistance requirements; and
6.1 initiate contact with the Advisor to Students with Disabilities and make the nature of their disability and/or their needs known; and
6.2 be expected to undertake a reasonable measure of self-advocacy to ensure they are provided with an equal opportunity by Dalhousie University.
7. The responsibility to implement these policies throughout the University rests on all members of the University community, including all faculty, administration, staff, students and the Advisor to Students with Disabilities.

Procedures Regarding Students with Learning Disabilities

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

I. Admission

Students with diagnosed learning disabilities who meet the current admission requirements may apply for special consideration. The University may modify 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.

22 University Regulations
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 states that academic accommodation is typically provided in consultation with the student and the Advisor to Students with Disabilities. 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 program(s); and the ability of the University to provide reasonable accommodations.

C. Types of Academic Accommodation

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

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

D. Appeals

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

E. Release of Information About Students

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

III. Support Services

Dalhousie University endeavours to provide a broad range of support services to all of its students. Such support services may include personal counseling, academic counselling, academic advising, and academic skill training.

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

Policy on Submission of Student Papers

Any instructor may require student papers to be submitted in both written and electronic (computer-readable) form, e.g., a test file on floppy disk or as an email attachment. The instructor may submit the material to a third-party computer-based assessment system 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 disability and informing a member of the University's academic community, not just to the individual faculty member and students in whose class an offence occurs.

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

Examples of Academic Offences

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

A. Plagiarism

Plagiarism is considered a serious academic offence which may lead to the assignment of a failing grade, suspension or expulsion from the University. It is a penalty resulting 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:
1. Failure to attribute authorship when using a broad spectrum of sources such as written or oral work, computer codes, programs, artistic or architectural works, scientific projects, performances, web page designs, graphical representations, diagrams, videos, and images;
2. Submitting all or part of the work of another from the Internet and submitting as one's own;
3. The use of a paper prepared by any person other than the individual claiming to be the author.

Examples of plagiarism are:
1. claiming to be the author.
I. Preamble

The University attaches great importance to the contribution of original thought to learning and scholarship. It attaches equal importance to the appropriate acknowledgement of sources from which facts and opinions have been obtained.

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

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

II. Academic Integrity Officers

A. 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.

1. Academic Integrity Officers are associated with the Faculties of the University or the Dalhousie University.

2. The Academic Integrity Officer shall act between the student and instructor, and may also appear at Hearing Panels of the Discipline Committee or the Discipline Appeals Board to present the case against the student.

3. The Academic Integrity Officer is the Dean of the Faculty. The Dean may further delegate this role to one or more members of his/her academic staff except those who are Senate Officers, who are otherwise involved in the student discipline process, or who otherwise have a potential conflict of interest relative to this role. Annually the name of the delegate(s) shall be communicated in writing to the Senate who shall report to Senate.

4. The Academic Integrity Officers shall meet as a group with the Senate Discipline Committee at least once a year to discuss relevant policy issues and training requirements with a view to maximizing consistency and predictability in the administration of academic offenses across the University. Such meetings will be convened and chaired by the Secretary of Senate.

III. Faculty Procedures

1. When an academic offense is suspected, the instructor shall submit a report of the offense to the Academic Integrity Officer of the Faculty, which is responsible for the delivery of the course of study, or in the case of the offense to the graduate thesis or the non-course graduate materials, to the Academic Integrity Officer of the Faculty of Graduate Studies.

2. Upon receipt of the material from the instructor, the Academic Integrity Officer shall determine whether or not the material supports a prima facie case that the student has committed an academic offense. If not prima facie case is made out, no further steps are taken in relation to the allegation, and the instructor and student will be so advised in writing.

3. If a prima facie case is established, then the Academic Integrity Officer will take the following further steps:

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.

- Attributing to another student an assignment that he or she may copy for submission;
- Allowing another student to copy answers during an examination.

E. Misrepresentation

Any person who provides false or misleading information during an investigation of a suspected academic offense is guilty of an offense. The Senate Discipline Committee or the Discipline Appeals Board may impose the following penalties:

1. suspension or expulsion from the University;

2. the assignment of a failing grade, suspension or expulsion from the University or the withdrawal of a degree previously awarded.

Academic Dishonesty

I. Preamble

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

II. Academic Integrity Officers

1. Academic Integrity Officers are associated with the Faculties of Dalhousie University.

2. The Academic Integrity Officer shall act between the student and instructor, and may also appear at Hearing Panels of the Discipline Committee or the Discipline Appeals Board to present the case against the student.

3. The Academic Integrity Officer is the Dean of the Faculty. The Dean may further delegate this role to one or more members of his/her academic staff except those who are Senate Officers, who are otherwise involved in the student discipline process, or who otherwise have a potential conflict of interest relative to this role. Annually the name of the delegate(s) shall be communicated in writing to the Senate who shall report to Senate.

4. The Academic Integrity Officers shall meet as a group with the Senate Discipline Committee (SDC) at least once a year to discuss relevant policy issues and training requirements with a view to maximizing consistency and predictability in the administration of academic offenses across the University. Such meetings will be convened and chaired by the Secretary of Senate.

III. Faculty Procedures

1. When an academic offense is suspected, the instructor shall submit a report of the offense to the Academic Integrity Officer of the Faculty, which is responsible for the delivery of the course of study, or in the case of the offense to the graduate thesis or the non-course graduate materials, to the Academic Integrity Officer of the Faculty of Graduate Studies.

2. Upon receipt of the material from the instructor, the Academic Integrity Officer shall determine whether or not the material supports a prima facie case that the student has committed an academic offense. If not prima facie case is made out, no further steps are taken in relation to the allegation, and the instructor and student will be so advised in writing.

3. If a prima facie case is established, then the Academic Integrity Officer will take the following further steps:
7. Upon being advised of the finding and agreed penalty, the Secretary of Senate to determine if the student has a record of prior academic offence(s).

6. If the Academic Integrity Officer's assessment is that there is sufficient evidence to support a finding that the student has committed an academic offence, AND that the appropriate penalty for the student’s conduct is any of the penalties described in section IV page 26, except those listed in subparagraphs 5 to 9 the Academic Integrity Officer shall provide the option of accepting the finding and proposed penalty, or of proceeding to the Senate Discipline Committee for a full hearing. The option shall be presented to the student within 5 working days of the meeting, and the student shall have 2 working days to respond. In the event that the student elects to accept the finding and proposed penalty, the Academic Integrity Officer shall advise the Senate of the finding.

5. The Senate Discipline Committee shall: a) be comprised of ten representatives of the faculty elected by Senate; b) have the power to discipline a student who, before or during the course of the disciplinary process involving him or her but prior to adjudication, has: a) been expelled; b) earned a grade of "F" with a grade of "O" for the first time; c) committed an academic offence, AND that the appropriate penalty for the student's conduct is any of the penalties described in section IV page 26, except those listed in subparagraphs 5 to 9; d) been expelled; e) been compelled to withdraw from the class, program or University prior to being disciplined.

4. The Senate Discipline Committee may make a decision to refer the matter to the Senate Discipline Committee; b) to refer the matter to the Senate Discipline Committee for a limited hearing; c) to dismiss the matter, provided that the student maintains a regular full-time program of study for the remainder of the second term; d) to refer the allegation to the Senate Discipline Committee.

3. If the academic discipline database maintained by the Senate Registrar and any others are notified of the finding and penalty for the student's conduct is any of the penalties described in section IV page 26, except those listed in subparagraphs 5 to 9, the Academic Integrity Officer shall provide the student with the option of accepting the finding and proposed penalty, or of proceeding to the Senate Discipline Committee for a full hearing. The option shall be presented to the student within 5 working days of the meeting, and the student shall have 2 working days to respond. In the event that the student elects to accept the finding and proposed penalty, the Academic Integrity Officer shall advise the Senate of the finding.

2. The Senate Discipline Committee shall: a) be comprised of ten representatives of the faculty elected by Senate; b) have the power to discipline a student who, before or during the course of the disciplinary process involving him or her but prior to adjudication, has: a) been expelled; b) earned a grade of "F" with a grade of "O" for the first time; c) committed an academic offence, AND that the appropriate penalty for the student's conduct is any of the penalties described in section IV page 26, except those listed in subparagraphs 5 to 9; d) been expelled; e) been compelled to withdraw from the class, program or University prior to being disciplined.

1. The Senate Discipline Committee shall: a) be comprised of ten representatives of the faculty elected by Senate; b) have the power to discipline a student who, before or during the course of the disciplinary process involving him or her but prior to adjudication, has: a) been expelled; b) earned a grade of "F" with a grade of "O" for the first time; c) committed an academic offence, AND that the appropriate penalty for the student's conduct is any of the penalties described in section IV page 26, except those listed in subparagraphs 5 to 9; d) been expelled; e) been compelled to withdraw from the class, program or University prior to being disciplined.

The Senate Nominating Committee shall arrange for nominations to fill casual vacancies for the remainder of the second term.
IV. Penalties
The range of penalties which may be imposed by the Senate Discipline Committee shall 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. restoration 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. report of the assignment that triggered the discipline;
3. a failing grade or mark or assessment in the piece of work triggering the discipline;
4. failure of the class or seminar or program;
5. failure of the academic year;
6. suspension for an academic term or year (to a maximum suspension of three (3) academic years);
7. expulsion from the University;
8. loss of a current or continuing scholarship, or both, or loss of eligibility to receive or to maintain scholarships or prizes or bursaries; and
9. removal from the Dean's List.

PLEASE NOTE: If transcripts are issued for a student while a Senate Discipline case is pending, and the Committee subsequently makes a decision that affects the student's transcript, revised transcripts will be sent to recipients of transcripts issued while the case was pending.

University of King's College

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

Code of Student Conduct

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

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

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

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

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

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

II. Code Of Conduct

A. Definitions
1. In this Code, the word "premises" includes lands, buildings and grounds of the University, or other places or facilities used for the provision of the University's programs or services or for University-approved events and activities.

2. In this Code, "student" means a person:
   a) engaged in any academic work or placement which leads to the recording and/or issue of a mark, grade or statement of performance by the appropriate authority in the University or another institution; and/or
   b) registered, enrolled in, attending any course or class, or otherwise participating as a learner in any activity which entitles the person to the use of a University library, library materials, library resources, computer facility or dataset.

3. In this Code, the words "Dalhousie University" refer to Dalhousie University and include any institutions affiliated with it, where such inclusion has been agreed upon by the University and the affiliated institution, with respect to the premises, facilities, equipment, services, activities, students and other members of the affiliated institution.

4. Unless otherwise stated, a student will only be liable for conduct that she or he knew or ought reasonably to have known would constitute conduct prohibited under this Code.

5. Nothing in this Code shall be construed to prohibit peaceful assemblies and demonstrations, or lawful picketing, or to inhibit freedom of speech.

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

1. occurs on the premises of Dalhousie University;
2. occurs elsewhere in the course of activities sponsored by Dalhousie University (or by any of its faculties, schools or departments), or where the conduct is alleged to adversely affect, disrupt or interfere with another person's reasonable participation in Dalhousie University programs or activities;
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; or
3. is subject to action under a residence discipline policy unless some non-academic discipline as required by a college, faculty or school; or
4. is subject to action under a residence discipline policy unless some non-academic discipline as required by a college, faculty or school; or
5. is subject to the disciplinary authority of the Dalhousie Student Union.

C. Offences
1. General Information
   a) No student shall assault another person sexually, or threaten any other person with sexual assault or commit an act of sexual harassment towards another person.
   b) No student shall otherwise assault another person, threaten any other person with bodily harm, or cause any other person to fear bodily harm.
   c) No student shall create a condition that unnecessarily endangers the health or safety of other persons.
1. Whenever possible and appropriate, reason and informal measures shall be used to resolve issues of individual behavior before resort is made to formal disciplinary procedures.
2. Any person may make a complaint against any student for misconduct.
3. The Vice-President, Student Services, or designate shall conduct an investigation to determine if the complaint has merit and/or if it can be disposed of informally by mutual consent of the parties involved in the manner acceptable to the Vice-President, Student Services, or designate.
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.
5. If an informal disposition of the complaint results, such disposition shall be final, and there shall be no subsequent proceedings.
6. The decision of the informal advocate as to whether the complaint is justified shall be final.
7. A complaint shall be prepared in writing and directed to the Vice-President, Student Services.
8. A complaint shall be presented to the accused student in written form.
9. All complaints shall be made to formal disciplinary procedures.
10. A complaint shall be investigated to determine if the complaint has merit and/or if it can be disposed of informally by mutual consent of the parties involved in the manner acceptable to the Vice-President, Student Services, or designate.
11. 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.
12. If an informal disposition of the complaint results, such disposition shall be final, and there shall be no subsequent proceedings.
5. The Vice-President, Student Services, shall report annually to Senate regarding the number and nature of complaints that are disposed of informally.

6. If the complaint cannot be resolved informally through the procedures described in Section 3, or if in the judgment of the Vice-President, Student Services, it is not appropriate for the complaint to be so resolved, the Vice-President, Student Services, shall refer the complaint to the Senate Discipline Committee for a formal hearing. In determining whether to refer a case to the Senate Discipline Committee, the Vice-President, Student Services, may seek advice from a student Discipline Advisor or other appropriate source.

7. Where there are criminal or civil proceedings pending against the student for conduct related to the complaint, the Vice-President, Student Services, may defer prosecution of the complaint on such terms and conditions as are appropriate in the circumstances (including, an interim suspension) until the conclusion of all or part of such proceedings where the circumstances of the case warrant. Conviction of a criminal offence will be considered prima facie evidence of a parallel offence under this Code.

8. Any statements an accused student makes to the Vice-President, Student Services, or designate in the course of an attempt to resolve a complaint informally may not be submitted to the Senate Discipline Committee as evidence.

9. Hearings shall be conducted by the Senate Discipline Committee according to procedures determined by the Committee. In other than exceptional circumstances, a hearing by the Senate Discipline Committee shall occur within sixty calendar days of the referral of the complaint to the Committee.

10. The President or designate shall appoint a person to present the complaint.

11. A student who fails to appear at a hearing, the hearing may proceed, provided that the student has been given adequate notice. Except in the case of a student charged with failing to obey the summons of the Committee or University official, no student may be found to have violated the Student Code solely because the student failed to appear before the Committee. In all cases, the evidence in support of the complaint shall be presented and considered.

E. Sanctions

1. In each case in which the Senate Discipline Committee determines that a student has violated the Student Code, the sanction(s) shall be appropriate by the Vice-President.

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’s conduct violates or has violated institutional regulations; b) Probation – A written notice of specified regulations. Probation is for a designated period of time and includes the possibility of more severe disciplinary sanctions if the student is found to have violated 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 be the form of appropriate service and/or monetary or material replacement; e) Disciplinary Sanctions – Work assignments, service to the University or other such disciplinary assignments that are considered appropriate by the Discipline Committee; f) Conditions – Conditions may be imposed upon a student’s continued attendance; g) University Suspension – Suspension of the student from the University for a specified period of time, after which the student is eligible to return. Conditions for readmission may be specified; h) University Expulsion – Permanent separation of the student from the University.

3. More than one of the sanctions listed above may be imposed for any single violation.

4. Other than suspension 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 be prevented with a sanction or sanctions imposed under the procedures of this Code. Such refusal will constitute grounds for the imposition of additional sanctions.

6. The Committee may direct that a sanction be held in abeyance if a student’s registration at the University is interrupted for any reason.

F. Interim Suspension

In the following circumstances, the President, or a designee, 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 of or 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 designee may determine to be appropriate.

3. A student who is 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 the Senate. The Committee shall hear the matter, including submissions by the President or designate, within ten working days, and shall have the authority to confirm, negate, or alter the terms of the interim suspension.

Protection of Property

1. Dalhousie University is the owner and/or occupier of the lands and buildings which comprise its campuses. In addition to all other processes set out in this Calendar (including the Code of Student Conduct), the University reserves the right to exercise all rights and remedies available to it pursuant to any statute, by-law, regulation, ordinance, order, or otherwise, in order to protect campus property and the well-being of members of the University community.

2. Without limiting the foregoing, Dalhousie University may issue a notice against a student pursuant to the Protection of Property Act prohibiting entry to all or part of the campuses or prohibiting a particular activity or activities on all or part of the campuses, where circumstances warrant. Such a notice may be issued either separately or in conjunction with the procedures set out in the Code of Student Conduct. In other than exceptional circumstances, the President or the designated agent within the University may make a written notice to the Vice-President, Student Services, providing detailed reasons for the request and the process followed leading up to the request for the notice, including details of when the student was advised that his or her behaviour or activities were inappropriate and ought to cease, the reasons provided to the student, and whether the student was afforded the opportunity to respond or to rectify behaviours or cease the inappropriate activity.

3. A notice under the Protection of Property Act may also be issued by Dalhousie University in relation to the Student Union Building at the request of the Student Union. In the case of urgent or emergency situations, such a notice may be issued immediately. If the Student Union request is to have a prohibition extend beyond seven (7) days for a registered Dalhousie University student, the Student Union shall make a written request to the Vice-President, Student Services, providing detailed reasons for the request and the process followed leading up to the request for the notice, including details of when the student was advised that his or her behaviour or activities were inappropriate and ought to cease, the reasons provided to the student, and whether the student was afforded the opportunity to respond or to rectify behaviours or cease the inappropriate activity.

4. A Dalhousie University student may appeal any notice issued against him or her under the Protection of Property Act in writing to the Vice-President, Student Services.

28 University Regulations
Suspension or Dismissal from a Program on the Grounds of Professional Unsuitability – Faculty of Health Professions

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

The following list includes examples of behaviours that might indicate unsuitability for the various health professions. The nature of these behaviours is such that, should any of them ever be repeated, grievous harm could be caused to clients. This list should not be considered to be all inclusive:
1. a criminal act (e.g., assault, sexual assault, fraud, and drug trafficking) which according to established Faculty processes was determined to be of such a nature as to bring discredit 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 the allegations heard.

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

Guide to Responsible Computing

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

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

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

A. Basic Principles

Individuals should use only those University computing facilities that 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 that 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. making illegal copies 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;
   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. They should respect the computer access privileges of others.

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.
General Information

30  Academic Regulations

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

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

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

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

3. Workload

3.1 Regular Year

3.1.1 College of Arts and Science

Five full credits (10 credit hours) per academic year shall be regarded as constituting a normal workload for a student. Students wishing to increase their workload to six half credits (18 credit hours) in any term should consult with an academic advisor in the appropriate department or school. Students in their final year of study or who, in the preceding year of study earned a sessional GPA of less than 3.00 shall not exceed five classes per term. NOTE: University Exploration students may take a maximum of 4 full-credits (24 credit hours) per regular session.

3.1.2 School of Business

Five full credits in the first and second years, six half credits in the academic term in the third year and first term of the fourth year, and five half credits in the final academic term, will be regarded as constituting a normal workload for a BComm/C-Sys 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 for more than one half credit per term, nor to any student who, in his/her first year of study or who, in the preceding academic term, earned a grade point average of less than 3.00.

3.2 Summer Session

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

4. Registration

1. It is a student’s responsibility to register. Registration material for September 2008 will be available on the web at www.registrar.dal.ca in February. Registration for classes is completed using Da.online. Students are strongly encouraged to register early.

2. A student is registered only after financial arrangements have been made at the Student Accounts Office.

3. The final step in registration is obtaining an ID card or validating an existing ID card at the DalCard Office.

30 Academic Regulations
4. Space in class. Enrolment is limited in all classes, and admission does not guarantee that space will be available in any class or section. However, no student in a graduating year may be excluded from a class required by that student to meet degree program requirements because of lack of space. This rule does not apply to elective courses or to introductory sections of classes. Any student in a graduating year who encounters such a situation should immediately consult the department chair, school director or dean.

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

5. Class Changes and Withdrawal

5.1 Class Changes

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

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

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

5.2 Withdrawal

Non-attendance does not, in itself, constitute withdrawal. Withdrawals are effective when a student withdraws from classes on the Web at www.dal.ca/online/ or written notification is received at the Office of the Registrar.

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

6. Counting of Credits for Two Dalhousie Undergraduate Degrees

Students who hold one undergraduate degree from Dalhousie and who wish to gain a second undergraduate degree must fulfil the requirements of the second degree program. 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.

1. Only credits that are applicable to the program for the second degree may be counted for credit.

2. Each credit earned forward must have a grade of C or higher.

6.1 College of Arts and Science

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

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

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

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

Normally, two credits will be in a subject other than the area of concentration.

6.2 Management

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

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

6.3 Health Professions

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

6.4 Architecture and Planning

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

6.5 Computer Science and Engineering

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

6.6 Transfer Credits from Dental Hygiene

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

7. Transfer Students

7.1 Transfer Credits - All Faculties

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

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

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

College of Arts and Science and Faculty of Management classes that are more than ten (10) years old may not be used to fulfil degree requirements unless a waiver is granted. See Regulation 15, page 33 for information on other faculties.

No classes taken at another institution will be counted towards fulfilment of the concentration, major or honours or Commerce core area requirement of a bachelor’s degree without specific advance approval from the appropriate department/school/college at Dalhousie.

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

For the BComm Co-op degree, a minimum of ten (10) full credits (plus 3 work terms) must be taken, of which at least eight (8) must be in the core area and include the three work term half class credits.

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

Note: Transfer credits will not be awarded for work completed while a student was academically ineligible.
7.2 Architecture and Planning
For the BEDS degree, at least one third of the credits required in the third and fourth years must be taken while registered in the BEDS program at Dalhousie. Classes taken to qualify for admission should not be converted to transfer credits unless they are equivalent to BEDS classes. For the Bachelor of Community Design, at least half of the credits must be taken at Dalhousie, including half in the major field.

7.3 Computer Science
For the BCSc degree, at least half of the credits must be taken at Dalhousie. Ten CSCI classes, including 6 of the 3rd and 4th year CSCI classes, must be taken at Dalhousie.

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

7.5 Procedures
As soon as the student’s record has been assessed, the Office of the Registrar will inform the student which transfer credits have been awarded. The number of credits which have been approved, and which Dalhousie classes may not be taken, will be included in the letter. If more credits have been approved than can be applied to the student’s program, the Registrar’s Office will decide the appropriate transfer credits. Transfer credits awarded on admission appear in a Dalhousie transcript as credits only; no marks are shown.

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

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

7.6 Classes Taken at Other Universities on Letter of Permission
A student who wishes to take classes at other institutions while registered at Dalhousie must obtain approval in advance on a form available online at www.registrar.dal.ca/forms. A Letter of Permission will be provided if all the following conditions are met:

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

The departments of French, German, Russian Studies, and Spanish have special arrangements wherein up to 5 full credits taken at other universities may be considered as part of a student’s program at Dalhousie (see Regulation 13, page 33). A Letter of Permission will be included in the letter should any circumstance be granted credit for it. Fees are payable as indicated under Fees. A class may not be changed from credit to audit or from audit to credit status after the last date for dropping classes without “W” (see the schedule of Academic Class Add/ Drop Dates).

11. Experimental Classes—College of Arts and Science
Experimental classes, on any subject or combination of subjects to which arts or sciences are relevant, and differing in conception from any of the courses regularly listed in departmental offerings, may be offered on the initiative of students or faculty members. If formed on the initiative of students, the students concerned shall seek out faculty members to take part in the classes. Whether formed on the initiative of students or on the initiative of faculty members, the faculty members who wish to take part must obtain the consent of their department.

The class may be offered over the regular session or for one term only. A class shall be considered to be formed when at least one faculty member and at least eight students have committed themselves to taking part in it for its full length.

Classes may be formed any time before the end of the second week of classes in the fall term to run the regular session or fall term, or any time before the end of the second week of classes in the winter term. If they are formed long enough in advance to be announced in the calendar, they

9. Part-Time Students
Part-time students are reminded of the university policy that limits programs of study to 10 years from the date of initial registration in the College of Arts & Science and the Faculty of Management. See Regulation 15, page 33 for details on duration of study. Note also, regulation 7 above concerning the number of credits that must be completed at Dalhousie.

9.1 College of Arts and Science
Part-time study is available in the College of Arts and Science. Admission requirements and regulations are the same for all students. Part-time students are encouraged to consult with the College of Continuing Education for advice on their academic programs and other matters (see College of Continuing Education).

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

9.3 Faculty of Health Professions
Because of the restriction on the duration of undergraduate studies (see Academic Regulation 15, page 33), the opportunity for part-time study is limited in the majority of programs.

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

9.4 Faculty of Architecture and Planning
Part-time study is available in the Bachelor of Environmental Design Studies (BEDS) program. Part-time study is available in the Bachelor of Community Design (BCDS) program.

9.5 Faculty of Engineering
Part-time study is available in the Bachelor of Computer Science (BCS) program.

9.6 Faculty of Computer Science
Part-time students may be admitted to the Bachelor of Computer Science program.

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

11. Experimental Classes—College of Arts and Science
Experimental classes, on any subject or combination of subjects to which arts or sciences are relevant, and differing in conception from any of the courses regularly listed in departmental offerings, may be offered on the initiative of students or faculty members. If formed on the initiative of students, the students concerned shall seek out faculty members to take part in the classes. Whether formed on the initiative of students or on the initiative of faculty members, the faculty members who wish to take part must obtain the consent of their department.

The class may be offered over the regular session or for one term only. A class shall be considered to be formed when at least one faculty member and at least eight students have committed themselves to taking part in it for its full length.

Classes may be formed any time before the end of the second week of classes in the fall term to run the regular session or fall term, or any time before the end of the second week of classes in the winter term. If they are formed long enough in advance to be announced in the calendar, they
shall be so announced, in a section describing the Experimental Program; if they are formed later, they shall be announced (a) in the Dalhousie Gazetto, (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 on 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 full-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 five 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.

12.2 Summer Session

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

13. International/Exchange Programs

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

12.3 Academic Sessional Deadlines

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

14. Preparation for Other Programs

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

Graduate Studies: Able and ambitious students are encouraged to consider seriously entering a graduate program at Dalhousie or elsewhere. The normal requirement for admission to a graduate program is an honours degree or the equivalent.

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

Dental Hygiene: Completion of 5 full credits at the university level of one regular session’s duration in the following: biology, psychology, sociology, a writing class, a one-term course in introductory statistics and a one term course in introductory chemistry. For details, see the Dentistry, Law and Medicine calendar.

Dentistry: See the Dentistry, Law and Medicine calendar.

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

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

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

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

15. Duration of Undergraduate Studies

15.1 College of Arts and Science/Faculty of Management

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

15.2 Faculty of Health Professions

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

15.3 Faculty of Architecture and Planning

Students in the BEdS program are normally required to complete their degree within four years. Students in the Bachelor of Community Design program must complete their degree within ten years.
### Student Exchange and Study Abroad Agreements

#### Department-based Programs

<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>
</tr>
</thead>
<tbody>
<tr>
<td>French</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Italian</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>German</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spanish</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer Science</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engineering</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Architecture</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical Services Administration</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physiotherapy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Department</td>
<td>Country</td>
<td>Name of University</td>
<td>Eligible Students</td>
<td>Duration</td>
<td>Fees paid to</td>
<td></td>
</tr>
<tr>
<td>-------------------------</td>
<td>---------------</td>
<td>---------------------------------------------------------</td>
<td>-------------------</td>
<td>----------</td>
<td>--------------</td>
<td></td>
</tr>
<tr>
<td>Occupational Therapy</td>
<td>England</td>
<td>University of Northampton</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Netherlands</td>
<td>Utrecht University</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Northumbria College</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td>England</td>
<td>University of Manchester</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Anglia Ruskin University</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td>New Zealand</td>
<td>Auckland University of Technology</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Norway</td>
<td>University of Akersnes</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sweden</td>
<td>Linköping University of Technology</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Luleå University</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dalarna University</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td>India</td>
<td>Hindu College of Technology</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of Jyväskylä</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of Sydney</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of Ottawa</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of Turku</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of Helsinki</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of Tampere</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of Auckland</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of British Columbia</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of Pennsylvania</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of Illinois</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td>Master of Science in Social Work</td>
<td>England</td>
<td>London Clinical Psychology</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of Sheffield</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of York</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of Manchester</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of Birmingham</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of Leeds</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of Bath</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of Warwick</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of Southampton</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of Southamption</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of Northampton</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of Manchester</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of Turku</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of Hertford</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of Bedford</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of Liverpool</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of Manchester</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of Sheffield</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of York</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of Manchester</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of Bath</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of Hertford</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of Bedford</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of Liverpool</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>University of Southamption</td>
<td>Occupational Therapy</td>
<td>Contact school for details</td>
<td>Dalhousie</td>
<td></td>
</tr>
<tr>
<td>Department</td>
<td>Country</td>
<td>Name of University</td>
<td>Type/Status</td>
<td>Eligible Students</td>
<td>Duration</td>
<td>Fees paid to</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>------------------</td>
<td>-------------------------------------------------------------------------------------</td>
<td>-----------------------</td>
<td>---------------------------------------------------------</td>
<td>----------</td>
<td>---------------------------------------</td>
</tr>
<tr>
<td>Faculty of Management</td>
<td>Sweden</td>
<td>Stockholm School of Business and Economics</td>
<td>Student Exchange</td>
<td>Tim Richard</td>
<td>1 Term</td>
<td>Dalhousie</td>
</tr>
<tr>
<td></td>
<td>United States</td>
<td>Florida State University (College of Business)</td>
<td>Student Exchange</td>
<td>Tim Richard</td>
<td>1 Term</td>
<td>Dalhousie</td>
</tr>
<tr>
<td></td>
<td>Sweden, United</td>
<td>University of Uppsala, Umeå</td>
<td>Student Exchange</td>
<td>Linus Finkvist</td>
<td>1 Term</td>
<td>Dalhousie</td>
</tr>
<tr>
<td></td>
<td>States</td>
<td>University of Gothenburg, Sweden</td>
<td>Student Exchange</td>
<td>Linus Finkvist</td>
<td>1 Term</td>
<td>Dalhousie</td>
</tr>
<tr>
<td>School of Public Affairs</td>
<td>Sweden, United</td>
<td>Student Exchange</td>
<td>Student Exchange</td>
<td>Linus Finkvist</td>
<td>1 Term</td>
<td>Dalhousie</td>
</tr>
<tr>
<td></td>
<td>States</td>
<td>Student Exchange</td>
<td>Student Exchange</td>
<td>Linus Finkvist</td>
<td>1 Term</td>
<td>Dalhousie</td>
</tr>
<tr>
<td>Neuroscience &amp; Psychology</td>
<td>The Netherlands</td>
<td>Maastricht University</td>
<td>Student Exchange</td>
<td>Richard Williamson</td>
<td>Up to 1 Year</td>
<td>Dalhousie</td>
</tr>
<tr>
<td>Faculty of Science</td>
<td>Canada (H)</td>
<td>Carleton University, Ottawa University</td>
<td>Student Exchange</td>
<td>Richard Williamson</td>
<td>Up to 1 Year</td>
<td>Dalhousie</td>
</tr>
<tr>
<td></td>
<td>Australia</td>
<td>Australian National University</td>
<td>Student Exchange</td>
<td>Michael Thompson</td>
<td>Up to 1 Year</td>
<td>Dalhousie</td>
</tr>
<tr>
<td></td>
<td>Argentina</td>
<td>National University of Engineering</td>
<td>Student Exchange</td>
<td>Michael Thompson</td>
<td>Up to 1 Year</td>
<td>Dalhousie</td>
</tr>
<tr>
<td></td>
<td>Denmark</td>
<td>University of Aarhus</td>
<td>Student Exchange</td>
<td>Michael Thompson</td>
<td>Up to 1 Year</td>
<td>Dalhousie</td>
</tr>
<tr>
<td></td>
<td>England</td>
<td>Oxford University</td>
<td>Student Exchange</td>
<td>Michael Thompson</td>
<td>Up to 1 Year</td>
<td>Dalhousie</td>
</tr>
<tr>
<td></td>
<td>England</td>
<td>University of Birmingham</td>
<td>Student Exchange</td>
<td>Michael Thompson</td>
<td>Up to 1 Year</td>
<td>Dalhousie</td>
</tr>
<tr>
<td></td>
<td>England</td>
<td>University of Birmingham, Queen's University</td>
<td>Student Exchange</td>
<td>Michael Thompson</td>
<td>Up to 1 Year</td>
<td>Dalhousie</td>
</tr>
<tr>
<td></td>
<td>Colombia</td>
<td>Universidad del Rosario</td>
<td>Student Exchange</td>
<td>Michael Thompson</td>
<td>Up to 1 Year</td>
<td>Dalhousie</td>
</tr>
<tr>
<td></td>
<td>Colombia</td>
<td>Universidad de los Andes</td>
<td>Student Exchange</td>
<td>Michael Thompson</td>
<td>Up to 1 Year</td>
<td>Dalhousie</td>
</tr>
<tr>
<td>Mathematics</td>
<td>Malaysia</td>
<td>Universiti Tenaga Tunas Tunas University</td>
<td>Student Exchange</td>
<td>Michael Thompson</td>
<td>Up to 1 Year</td>
<td>Dalhousie</td>
</tr>
<tr>
<td></td>
<td>Malaysia</td>
<td>Universiti Tenaga Tunas Tunas University</td>
<td>Student Exchange</td>
<td>Michael Thompson</td>
<td>Up to 1 Year</td>
<td>Dalhousie</td>
</tr>
<tr>
<td></td>
<td>Malaysia</td>
<td>Universiti Tenaga Tunas Tunas University</td>
<td>Student Exchange</td>
<td>Michael Thompson</td>
<td>Up to 1 Year</td>
<td>Dalhousie</td>
</tr>
<tr>
<td></td>
<td>Mexico RAMP</td>
<td>Instituto Tecnológico Autónomo de México (ITAM)</td>
<td>Student Exchange</td>
<td>Michael Thompson</td>
<td>Up to 1 Year</td>
<td>Dalhousie</td>
</tr>
<tr>
<td></td>
<td>Mexico RAMP</td>
<td>Universidad de los Andes</td>
<td>Student Exchange</td>
<td>Michael Thompson</td>
<td>Up to 1 Year</td>
<td>Dalhousie</td>
</tr>
<tr>
<td></td>
<td>Mexico RAMP</td>
<td>Instituto Tecnológico Autónomo de México (ITAM)</td>
<td>Student Exchange</td>
<td>Michael Thompson</td>
<td>Up to 1 Year</td>
<td>Dalhousie</td>
</tr>
<tr>
<td></td>
<td>Mexico RAMP</td>
<td>Universidad de los Andes</td>
<td>Student Exchange</td>
<td>Michael Thompson</td>
<td>Up to 1 Year</td>
<td>Dalhousie</td>
</tr>
<tr>
<td>Biology</td>
<td>Mexico RAMP</td>
<td>Universidad de los Andes</td>
<td>Student Exchange</td>
<td>Michael Thompson</td>
<td>Up to 1 Year</td>
<td>Dalhousie</td>
</tr>
<tr>
<td>Biology</td>
<td>Mexico RAMP</td>
<td>Instituto Tecnológico Autónomo de México (ITAM)</td>
<td>Student Exchange</td>
<td>Michael Thompson</td>
<td>Up to 1 Year</td>
<td>Dalhousie</td>
</tr>
<tr>
<td>Biology</td>
<td>Mexico RAMP</td>
<td>Universidad de los Andes</td>
<td>Student Exchange</td>
<td>Michael Thompson</td>
<td>Up to 1 Year</td>
<td>Dalhousie</td>
</tr>
<tr>
<td></td>
<td>Mexico RAMP</td>
<td>Universidad de los Andes</td>
<td>Student Exchange</td>
<td>Michael Thompson</td>
<td>Up to 1 Year</td>
<td>Dalhousie</td>
</tr>
<tr>
<td>Biology</td>
<td>Mexico RAMP</td>
<td>Instituto Tecnológico Autónomo de México (ITAM)</td>
<td>Student Exchange</td>
<td>Michael Thompson</td>
<td>Up to 1 Year</td>
<td>Dalhousie</td>
</tr>
<tr>
<td>Biology</td>
<td>Mexico RAMP</td>
<td>Universidad de los Andes</td>
<td>Student Exchange</td>
<td>Michael Thompson</td>
<td>Up to 1 Year</td>
<td>Dalhousie</td>
</tr>
</tbody>
</table>

36 Academic Regulations
15.4 Faculty of Computer Science

Students in the BSc degree program are normally required to complete their degree within 8 years.

15.5 Faculty of Engineering

15.5.1 Diploma of Engineering

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

15.5.2 Bachelor of Engineering (Upper Division)

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

15.5.3 Food Science

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

16. Assessment

16.1 Method

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

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

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

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

16.1.1 Academic Accommodation for Students with Learning Disabilities

See University Regulations, Procedures for Students with Learning Disabilities.

16.2 Examinations and Tests

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

Periods of approximately three weeks in the spring and one and one-half weeks in December are set aside for the scheduling of formal written examinations by the Registrar. Instructors wishing to have examinations scheduled by the Registrar for their classes must so inform the Registrar at the beginning of the first week of classes in the fall and winter terms.

Examinations by the Registrar. Instructors wishing to have examinations scheduled by the Registrar for their classes must so inform the Registrar at the beginning of the first week of classes in the fall and winter terms.

Instructors may also arrange their own examinations at times and places of their choosing during the formal examination periods, with the understanding that in cases of conflict of examinations for an individual student, the Registrar’s examination schedule takes priority.

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

Examinations may be held in the last two weeks of a term, without the explicit approval of the appropriate faculty, school or college. Written tests or examinations, with the exception of project presentations and major papers worth more than 25% of the final grade, may be held in the last two weeks of a term, without the explicit approval of the appropriate faculty, school or college. No tests may be held between the end of classes and the beginning of the official examination period with the exception of those activity modules and laboratory classes in the Faculty of Health Professions in which special facilities are required. Instructors may also arrange their own examinations at times and places of their choosing during the formal examination periods, with the understanding that in cases of conflict of examinations for an individual student, the Registrar’s examination schedule takes priority.

16.2.2 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. 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.

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 within seven (7) calendar days after an exam 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.

No tests may be held between the end of classes and the beginning of the official examination period with the exception of those activity modules and laboratory classes in the Faculty of Health Professions in which special facilities are required. Instructors may also arrange their own examinations at times and places of their choosing during the formal examination periods, with the understanding that in cases of conflict of examinations for an individual student, the Registrar’s examination schedule takes priority.
16.4 Incomplete
Students are expected to complete class work by the prescribed deadlines. Only in special circumstances (e.g., the death of a close relative) may an instructor extend such deadlines. Incomplete work in a class must be completed by:

- Fall term classes ............................................................. Feb 1
- Winter and regular session (Sept. - Apr.) classes........... June 1
- May-June classes .............................................................. Aug 1
- May–August classes .......................................................... Oct 1
- July–August classes ............................................................. Oct 1

Exceptions to this rule will normally be extended only to classes which require field work during the summer months. At present the list of these classes consists of:
- BCK 2411, 3615, 3620, 3622, 3624, 3626, 3630, 3632, 3664, 3680;
- ENV 3001, 3001, 3615, 3632, 4901, 4902;
- LIDS 4086;
- MNS 2220, 3290 and 4240;
- PHAR 3000;
- SLWK 2001, 3020, 4202, and 4303

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 Supplements

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 awarding of FM grades and eligibility for supplemental examinations.

School of Business

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

a. The class must offer a final exam 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 Commerce Program Manager.
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 final mark be raised higher than a D.
d. There is a $25.00 non-refundable fee for each exam.
e. There is no limit on the number of classes a student may write a supplementary exam.
f. If you have questions about supplementary exams, please contact the Commerce Program Manager.

16.6 Correction of Errors in Recorded Grades

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

- Fall term classes ............................................................. Feb 1
- Winter and regular session (Sept. - Apr.) classes........... June 1
- May-June classes .............................................................. Aug 1
- May–August classes .......................................................... Oct 1
- July–August classes ............................................................. Oct 1

16.7 Reassessment of a Final Grade

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

Once a final class grade has been submitted to the Registrar, a student who wishes to have a final grade re-assessed should make a written request to the Registrar and pay the requisition 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 reassessment will be conducted according to procedures developed for the purpose by the faculty/school/college. These should reflect the nature of the academic disciplines and assessment involved, and should provide for a review of the assessment by a qualified person or persons not responsible for the original evaluation.

The student will be notified, by the Office of the Registrar, of the outcome of the re-assessment. If the re-assessment results in the assignment of a grade that is different (higher or lower) from the original one, the new grade will replace the original one and the $50.00 will be refunded.

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

16.8 Special Arrangements for Examinations, Tests and Assignments

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

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

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

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

- Fall term classes ............................................................. Feb 1
- Winter and regular session (Sept. - Apr.) classes........... June 1
- May-June classes .............................................................. Aug 1
- May–August classes .......................................................... Oct 1
- July–August classes ............................................................. Oct 1
Requests to change grades after these deadlines must be submitted in writing to the appeals committee of the appropriate school, college or faculty. 

**NOTE:** Any student whose request for special arrangements has been denied and wishes to appeal, should refer to Appeals, page 41.

17. Academic Standing

Students' academic standing is normally assessed at the end of each term. Students entering the College of Pharmacy in 1997 or later are on a pass/fail grading system and should consult the College of Pharmacy for information on academic standing, probation and dismissal.

17.1 Grade Scale and Definitions

<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>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>B-</td>
<td>2.30</td>
<td>Neutral Pass</td>
</tr>
<tr>
<td>C+</td>
<td>2.00</td>
<td>Marginal</td>
</tr>
<tr>
<td>C</td>
<td>1.70</td>
<td>Neutral Transfer credit</td>
</tr>
<tr>
<td>C-</td>
<td>1.30</td>
<td>Marginal Fail</td>
</tr>
<tr>
<td>D+</td>
<td>1.00</td>
<td>Inadequate</td>
</tr>
<tr>
<td>F</td>
<td>0.00</td>
<td>Fail</td>
</tr>
<tr>
<td>INC</td>
<td>0.00</td>
<td>Incomplete</td>
</tr>
</tbody>
</table>

Grade Scale: letter grade system.

17.1.1 Grade Point Average (GPA)
The Grade Point Average is calculated by summing the values obtained by dividing the grade points obtained in each term 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., no credit, no grade point.

17.3 Grade Points on Letter of Permission

Effective May 2003, for classes taken on a Letter of Permission at a Canadian university, where a letter grade system is used, the appropriate Dalhousie letter grade and corresponding grade points will be assigned. For institutions not using letter grades, the grade will be translated into a Dalhousie grade and corresponding grade points assigned. For institutions outside of Canada, a grade of P (pass) or F (fail), as appropriate, will be recorded.

17.4 Repeating Classes for which a Passing Grade has been Awarded

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

18. Good Standing

Students who meet the required GPA are considered to be in good academic standing. In the Faculties of Architecture and Planning, Arts and Social Sciences, Computer Science, 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 they achieve a cumulative GPA of 2.00. Students on probation who do not achieve a cumulative 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 of less than 2.00 and greater than or equal to 1.70 who have completed at least two full credits will be placed on academic probation.

19.2.2 - Students on probation may continue to register on probation provided they achieve a cumulative GPA of 2.00. Students on probation whose term GPA is less than 1.70 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.

Academic Regulations 39
20.A Policy on Academic Forgiveness

20.A.1 Policy
The Academic Forgiveness policy allows a returning student to apply to the Registrar's Office for academic forgiveness of his/her prior cumulative grade point average. The policy is designed for undergraduate students who have had a period of absence from their academic program and have demonstrated acceptable academic performance following their return. The Academic Forgiveness policy is subject to the following regulations.

20.A.2 Regulations

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

20.A.2.2 A minimum of four full credits of coursework with a grade point average of at least 2.0 must be completed after returning before a written request for Academic Forgiveness may be submitted to the Registrar's Office.

20.A.2.3 Academic Forgiveness will affect the student's cumulative grade point average in all courses taken prior to the minimum three-year absence. Academic Forgiveness applies to all courses taken at all colleges/universities during the forgiveness period, not only selected courses or terms.

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

20.A.2.5 A student can have the Academic Forgiveness policy applied to his/her academic record only one time. With the approval of the Registrar or designate, in consultation with the Dean, the student will be granted Academic Forgiveness. The student's transcript will remain a record of all coursework completed and original grades obtained. Courses taken prior to the three or more year absence will not be used in computing cumulative grade point average, with the exception of punitive grades awarded as the result of an Academic Discipline hearing. Students will be eligible to retain credit for courses in which they received a passing grade, however they will be required to complete at least 60 credit hours (10 full credits) following Academic Forgiveness before they will be eligible to graduate.

The transcript will have "Academic Forgiveness" noted on it at the end of the last term for which the student received 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 2.0 is required for the awarding of an undergraduate degree in the Faculties of Architecture and Planning, Arts and Social Sciences, Computer Science, Engineering, Health Professions, Management and Science.

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

21.2 Graduation with Distinction

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

A cumulative GPA of at least 3.50 is required to graduate with distinction. For the purpose of determining whether a student will graduate with distinction, all courses taken while registered in a level of study at Dalhousie, including classes taken on letter of permission, repeated
classes, and classes for which non-passing grades were obtained, are included. At least half of the classes must be completed at Dalhousie. The notation “Distinction” will appear on the transcript.

Faculty of Health Professions
A cumulative GPA of at least 3.70 is required to graduate with Distinction from the Faculty of Health Professions programs. For the purpose of determining whether a student will graduate with distinction credits that are transferred into a degree program from other Dalhousie programs are included in final GPA calculations, credits from programs outside Dalhousie taken prior to program entry are not used in final GPA calculations. Credits taken on Letters of Permission while in the program are used towards Distinction calculations. At least half of the classes must be completed at Dalhousie. The notation “Distinction” will appear on the transcript.

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

Scholarship Standing
Please see Awards Section, Scholarship GPA, page 537, for information on the GPA required for scholarship purposes.

22. Graduation
In order to graduate students must submit an Intention to Graduate Form to the Office of the Registrar by the deadlines indicated:
Graduation Month  Deadline  
November 15  May  
July 1
In cases where requests can be accommodated after the deadline, a $50 fee will be charged.

23. Dean’s List
23.1 Eligibility
Full-time students will be assessed for eligibility for the Dean’s list at the end of each academic term. Students who take a minimum of 9 credit hours in a term and achieve a term GPA of 3.70 will be placed on the Dean’s list. Part-time students will be considered once at the end of each academic year. For this purpose, a part-time student is one who takes at least 9 credit hours during the academic year but less than 9 credit hours in any one term in the academic year. The student must achieve a GPA of 3.70 in every term in the academic year.

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

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

24. Appeals
24.1 Appeals for Students with Learning Disabilities
Appeals by students with learning disabilities will follow the usual procedures of the relevant faculty at Dalhousie University. See University Regulations, Procedures for Students with Learning Disabilities, page 22.

24.2 College of Arts and Science/Faculty of Management
Any students who believe they will suffer undue hardship from the application of any of the academic regulations may appeal for relief to the academic appeals committee of the applicable faculty or school. Students wishing to appeal a decision based on faculty/school regulations must complete an “Application for a Waiver of an Academic Regulation” form, available online at www.registrar.dal.ca/forms/ or in the Registrar’s Office. The arguments and expectations of the petitioner must be clearly stated.

An appeal from a student, arising from a required withdrawal from the faculty should be addressed to the Assistant Dean in the Faculty of Arts and Social Sciences, the Committee on Studies and Appeals in the Faculty of Science or the Director of Academic Programs in the School of Business or to the Director, Bachelor of Management, as appropriate.

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

The document “Academic Appeals at Dalhousie University” is available in the Registrar’s Office.

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

24.4 Faculty of Computer Science
Appeals should be directed to the Appeals Coordinator.

24.5 Faculty of Engineering
Appeals should be directed to the Academic Appeals Committee.

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

Faculty Committee on Undergraduate Studies
The Faculty Committee on Undergraduate Studies is concerned with the interpretation and application of the academic regulations of the Faculty of Health Professions. The jurisdiction of the Faculty Committee on Undergraduate Studies is to hear academic appeals beyond the school/college level when the approved appeal regulations and procedures of the respective school/college have been fully exhausted by the student.

Decisions of the Faculty Committee may be appealed to the Senate Academic Appeals Committee.

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

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

1. Bachelor of Science in Agriculture
The BSc (Agr) is a four-year program, designed to provide a sound education in the science of agriculture. Students select one of seven majors within this program. Graduates of this program meet the formal educational requirements for Professional Agrologists in the provincial Institutes of Agrologists in the Atlantic provinces. This degree is awarded by Dalhousie University in association with the Nova Scotia Agricultural College (NSAC). Please refer to the NSAC calendar for details or consult their website: http:\nsac.ca.

2. Bachelor of Technology
This program allows students with a two year technical diploma from a community college to earn a degree in selected subject areas. Suitable two year technical diploma programs are available at the Nova Scotia Agricultural College (NSAC). This degree is awarded by Dalhousie University in association with NSAC. Please refer to the NSAC calendar for details or consult their website: http:\nsac.ca.

3. Bachelor of Technology with a Major in Applied Science
The NSAC also offers a four-year Bachelor of Technology with a major in Applied Science program that results in the awarding of an Engineering Technology Diploma after successful completion of year 2, and a Bachelor of Technology in Applied Science after successful completion of year 4. Graduates are eligible for direct admission into the B.Ed at Acadia University. This degree is awarded by Dalhousie University in association with NSAC. Please refer to the NSAC calendar for details or consult their website: http:\nsac.ca.

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

College of Continuing Education

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

Professors
Bennett, J., BA, MA (Guelph), PhD (Johns Hopkins) (retired)
Fraser, L., BA (Mia), BEd, MEd (Dal), EdD (Toronto)
Navick, J., BComm, MPA (Dal)

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

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

For detailed information, please contact the program area directly.

I. Introduction
Dalhousie University College of Continuing Education was created in July 2003 in response to growing needs nationally to retool personal and organizational skill sets. The College represents a fusion of talents, expertise, heritage and experience of two long standing successful Continuing Education units at Dalhousie. From its beginning, the College has had the legacies of Henson College and Continuing Technical Education on which to grow.

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

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 Laurelhead St., 2nd Floor
Halifax, NS B3H 3J5
Phone: (902) 494-2275
Fax: (902) 494-6875
Website: http://collegeofcontinuinged.dal.ca

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

University Preparation Courses Offered
The Writing Skills for Academic Study class prepares students for the writing demands in all university level classes and is accepted by Dalhousie in place of NS English 12. University Prep Chemistry is accepted in place of NS Chemistry 12 and may be used as the prerequisite for all Dalhousie first-year chemistry classes. Math 0010: Pre-Calculus and Math 0011: Pre-Calculus Plus are accepted in place of NS Math 12 Pre-Calculus and enable students to pursue university math and science courses. Math 0099: Academic Math is accepted in place of NS Math 12 for entrance to the Faculty of Arts, Bachelor of Commerce, Management and Nursing programs. PHYC 0010: University Prep Physics is accepted by Dalhousie in place of NS Physics 12 and enables students to enter Physics 1101.00 and Physics 1300.00.

2. Programs and Services for Full and Part-Time Mature Students
Address: 1220 Laurelhead St., 2nd Floor
Halifax, NS B3H 3J5
Phone: (902) 494-2275
Fax: (902) 494-6875
Website: http://collegeofcontinuinged.dal.ca

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

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

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

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

3. Continuing Management Development and Education
Address: 1535 Dresden Row, Ste. 201
Halifax, NS B3J 3T1
Phone: (902) 494-2275
Fax: (902) 494-3662
Website: http://collegeofcontinuinged.dal.ca

In an era of decreasing resources and increasing demand, effective management development and training is crucial in every sector and organization. The College has long provided programs designed to meet the needs of the business, governmental and voluntary sectors. More recently, the College has developed a range of programs related to public safety in terms of the provision of fire and police services, emergency measures planning and delivery and front line emergency medical training.

The following are available by distance education:
• Certificate in Business Management
• Certificate in Financial Management
• Certificate in Human Resource Management
• Certificate in Local Government Supervisory Development
• National Advanced Certificate in Local Authority Administration
• Certificate in Fire Service Leadership
• Certificate in Fire Service Administration
• Certificate in Police Leadership

4. Continuing Technical Education
Address: 529 Marine Street
Halifax, NS B3J 1B6
Phone: (902) 494-6079; 1-800-565-1179
Fax: (902) 494-3662
Website: www.cte.dal.ca

For over 25 years Dalhousie University Continuing Technical Education (CTE) has been a leading Canadian provider of professional development in Engineering, Management and Technology. Our programs are offered in Halifax and major centres across Canada in a variety of formats including seminars, short courses, and certificate programs. Programs are facilitated by instructors from both industry and academia, many of whom have international consulting and lecturing experience.

We offer unique certificate programs that enable participants to consolidate their knowledge and enhance their experience in specific technical areas. Programs are multiple courses assembled to deliver a comprehensive understanding of the critical topic issues.

Those who do not wish to complete a full certificate program are welcome to register for individual courses. Conversely, those who have taken component courses of a certificate program can submit their application for admission to complete the full certificate.

Certificates:
• Certificate in Computer Science
• Certificate in Software Management and Development
• Certificate in Information Systems Management
• Certificate in Information Design & Management for the Web
• Certificate in Quality Management
• Certificate in Project Management
• Certificate in Environmental Management
• Certificate in Water Treatment Operations
• Certificate in Occupational Health & Safety Management
• Certificate in Ergonomic Program Management

5. Specialized Professional Development
Address: 1535 Dresden Row, Ste. 201
Halifax, NS B3J 3T1
Phone: (902) 494-2275
Fax: (902) 494-3662
Website: http://collegeofcontinuinged.dal.ca

The College also works with Dalhousie and external partners to offer specialized programs. Each of these programs incorporates distance education in their delivery.

The Certified Employee Benefit Specialist (CEBS) Program is offered in partnership with the International Foundation of Employee Benefit Plans in Brookfield, Wisconsin. This professional designation program is aimed at benefit managers, consultants, human resource administrators, investment specialists, professionals, insurance company representatives, trust officers and others interested in employee benefits.
The Credit Union Institute of Canada (CUIC) Management Studies and General Studies Programs are offered in cooperation with CUSource and designed for credit union employees across Canada. The Credit Union Director Achievement (CUDA) Program is offered by CUSource and jointly certified by Dalhousie University.

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

6. Transition Year Program
Address: 1055 Dresden Row, Ste. 201
Halifax, NS B3J 3T1
Phone: (902) 494-2526
Fax: (902) 494-6875
Website: http://collegeofcontinuinged.dal.ca

The Transition Year Program (TYP) offers a one-year program to qualified youth to gain an academic standing and progress toward a first degree.

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

7. Entrepreneurship and Labour Market Development
Address: 1055 Dresden Row, Ste. 201
Halifax, NS B3J 3T1
Phone: (902) 494-2526
Fax: (902) 494-6875
Website: http://collegeofcontinuinged.dal.ca

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

8. Dalhousie Negotiation and Conflict Management Program
Address: 1055 Dresden Row, Ste. 201
Halifax, NS B3J 3T1
Phone: (902) 494-7317
Fax: (902) 494-3662
Website: http://collegeofcontinuinged.dal.ca

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

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

- NEGOTIATING AGREEMENT AND MANAGING CONFLICT: AN INTEREST-BASED APPROACH
- OVERCOMING RESISTANCE: GETTING FAST NO
- MANAGING DIFFICULT CONVERSATIONS
- FACILITATING COLLABORATIVE PROBLEM SOLVING
- RESOLVING COMPLEX ORGANIZATIONAL AND COMMUNITY PROBLEMS
- MEDIATING DISPUTES: FROM CONFLICT TO CREATIVE SOLUTIONS
- INDIVIDUAL SKILLS ASSESSMENT AND FEEDBACK

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

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

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

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

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

- Canadian Studies, see page 76
- Community Design, see page 86
- Contemporary Studies, see page 97
- Early Modern Studies, see page 95
- Earth Systems Studies, see page 111
- Film Studies, see page 114
- Gender and Women's Studies, see page 124
- Health Studies, see page 136
- History of Science and Technology, see page 155
- International Development Studies, see page 161
- Law and Society, see page 172
- Linguistics, see page 173

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

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

Entrepreneurial Skills Program

Location: Kenneth C. Rowe Management Building
Dalhousie University
6200 University Ave
Halifax, Nova Scotia
B3H 3J5

Telephone: (902) 494-6975
Email: Entrepreneurship@dal.ca
Website: http://entrepreneurship.dal.ca

Director
David C. Roach, MBA, P.Eng.

Program Co-ordinator
Leach, C.E., (Ed), School of Business
Telephone: (902) 494-1816
Fax: (902) 494-1107
Email: eleach@mgmt.dal.ca

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

ESP facilitates the development, growth and success of student-run business ventures. Through extracurricular, individualized, experiential learning, you will apply skills learned in the classroom to your own ventures. Students participating in the program develop personal portfolios that illustrate their entrepreneurial capabilities.

The program is designed to be taken over the length of your time as a student at Dalhousie and therefore shouldn't extend time to degree completion. Successful students will earn a certificate in entrepreneurship in addition to their associated Dalhousie University academic degree in their field of study.

What is the Entrepreneurial Skills Program (ESP)?
ESP is a post-secondary certificate program that facilitates the development, growth and success of student-run business ventures. ESP is designed to add to skills learned in the classroom through extracurricular, individualized, experiential learning. The program culminates in the development of a personal portfolio that illustrates a student’s entrepreneurial capabilities. Upon successful completion of ESP, students are accredited and receive a certificate indicating venture readiness.

What’s the cost of participating in ESP?
There is currently no fee for enrolling in ESP. In the past, students have been charged a nominal fee for access to the program and its resources. Due to the generosity of our funders, student fees are not being charged in 2005-2006.

How do I know if ESP is for me?
Like most things, you probably won’t know till you try. What we can say is that ESP typically appeals to those students who have an interest in being the masters of their own destiny. If you’ve got an idea for a business that you want to start, either during University or after graduation, then you owe it to yourself to get involved with ESP.
What’s in it for me? Why would I want to be part of ESP?

Being part of ESP introduces you to a network of like-minded individuals. It’s no surprise that successful people surround themselves with talented, energetic and visionary people. If you want to learn more about being in business for yourself, or if you want to get better at being an entrepreneur, then ESP is a good start.

By enrolling in ESP, you become part of a growing cohort of students that are interested in small business. Aside from networking and peer-to-peer learning opportunities, you will also have access to training subsidies, business coaching, and skills development opportunities that you can leverage to make yourself a better business owner (or make yourself more marketable as an employee).

If I sign up, how big a commitment are we talking about?

Students enrolled in ESP are free to choose their degree of involvement. Many students become heavily involved, attending most, if not all, ESP-sponsored events. Others attend a limited number of events. ESP is flexible enough to accommodate you and your personal, academic and professional schedules.

Is Dalhousie the only University that offers ESP?

No. Mount Saint Vincent University also has an active ESP program. On occasion, Dalhousie and MSVU partner to run ESP-sponsored events that are attended by students from both Universities.

ESP sounds like a lot of work – what if it gets too much for me?

Involvement in ESP is entirely optional. You are free to leave the program at any point. Unlike most academic programs, there’s no downside risks (mark-related/academic) associated with dropping ESP.
Faculty of Architecture and Planning

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

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

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

Dean
Wanzel, J.G., BArch, MArch (Toronto), MRAIC
Telephone: (902) 494-3972
Email: grant.wanzel@dal.ca

Administrative Secretary to the Dean
Barnstead, M., BSc (Dal), BEd (MSVU)
Telephone: (902) 494-3210
Email: martha.barnstead@dal.ca

Assistant Dean
Parcell, S., BArch (Toronto), MArch (Cranbrook), PhD (McGill)
Telephone: (902) 494-3908
Email: stephen.parcell@dal.ca

Director of Career and Community Services
Costello, P., BEd, BArch (TUNS), MRAIC
Telephone: (902) 494-6201
Email: grad.arch@dal.ca

Administrative Assistant (Finance)
Guile, E., BCom, CHSA (Dal)
Telephone: (902) 494-6230
Email: eric.guile@dal.ca

I. Introduction
The Faculty of Architecture and Planning includes the School of Architecture and the School of Planning. The Faculty’s degree programs are primarily for individuals who intend to become a professional architect or planner. The Faculty also offers several classes that are open to all students in the university, as well as undergraduate and graduate classes that may be taken with permission from the instructor. The professional Architecture program (BEDS/MArch) is described in the Architecture section of this calendar. The Bachelor of Community Design program is described in the Planning section of this calendar. Please see the Graduate Studies calendar for a description of all graduate Architecture and Planning programs.

School of Architecture

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

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

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

Director, School of Architecture
Galvin, T., BEd, MArch (FP) (TUNS), MArch (McGill), PhD (Penn)
Telephone: (902) 494-3971
Email: t.m.galvin@dal.ca

Undergraduate Secretary, School of Architecture
Monaro-Kirk, S., BA, BEd, MEd (SMU)
Telephone: (902) 494-3971
Email: arch.office@dal.ca

Graduate Secretary, School of Architecture
Nightingdale, B., Sec.Dip. (CTT)
Telephone: (902) 494-3973
Email: t.m.galvin@dal.ca

Director of Career and Community Services,
Architecture and Planning
Costello, P., BEd, BArch (TUNS), NSAA
Telephone: (902) 494-3210
Email: paula.costello@dal.ca

Undergraduate Coordinator, School of Architecture
Kreuker, R., BES (Manitoba), AADipl, ARUK
Telephone: (902) 494-3277
Email: richard.kreuker@dal.ca

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

Professors
Cavanagh, E., BSc, BArch (McGill), PhD (UBC).
Kreuker, R., BES (Manitoba), AADipl, ARUK.
MacKay-Lyons, B., BEDS, BArch (TUNS), MArchUD (UCLA), FRAIC, (Hon.) FAIA, NSAA, AAP/EA, OAA.
Macy, C., BArch (Calif at Berkeley), MArch (Mt. Sinai), Reg-Arch.WA.
Mannell, S., BES, BArch (Waterloo), NSAA, OAA, OAA.
Wanzel, J.G., BArch, MArch (Toronto), MRAIC.

Associate Professors
Bonnemaison, S., BSc (Concordia), BArch (Pratt), MSc(Arch) (MIT), PhD (UIC).
Galvin, T., BEd, MArch (FP) (TUNS), MArch (McGill), PhD (Penn).
Lilley, B., BEd (Manitoba), AADipl.
Molony, S., BArch (Cal. Poly.), MArch (Cranbrook).
Parcell, S., BArch (Toronto), MArch (Cranbrook), PhD (McGill).
Sassenroth, P., Dipl. Ing. (TU Berlin) Reg-Architekt NRW, Professor in Germany.
Faculty of Architecture and Planning
School of Architecture

Recent years, Architecture students have been employed in every province operating since 1970, and the Faculty of Architecture and Planning’s Co-responsible professional practice. The School’s Co-op Program has been

Co-op Work Terms

Library’s architecture collection is located nearby.

Facilities

The central activity of the professional degree program is architectural design - the creative study of buildings and cities. In the School’s design studios, students examine historical and contemporary buildings in Canada and abroad, and respond through the design of new architectural prototypes. From these studio studies of the undergraduate program to the elective studies and design thesis of the graduate program, students learn to rely on their artistic skill, their knowledge of history and technology, their social and cultural awareness, and their critical imagination. Architecture is a multi-disciplinary profession, with alliances to the fine arts, the humanities and technologies, and many undergraduate disciplines provide an effective entry into architecture. Conversely, architectural studies provide an excellent foundation for careers in a variety of design-related fields.

Design

The central activity of the professional degree program is architectural design - the creative study of buildings and cities. In the School’s design studios, students examine historical and contemporary buildings in Canada and abroad, and respond through the design of new architectural prototypes. From these studio studies of the undergraduate program to the elective studies and design thesis of the graduate program, students learn to rely on their artistic skill, their knowledge of history and technology, their social and cultural awareness, and their critical imagination. Architecture is a multi-disciplinary profession, with alliances to the fine arts, the humanities and technologies, and many undergraduate disciplines provide an effective entry into architecture. Conversely, architectural studies provide an excellent foundation for careers in a variety of design-related fields.

Co-op Work Terms

The School’s professional degree program includes two work terms that provide students with practical experience in building design and responsible professional practice. The School’s Co-op Program has been operating since 1970, and the Faculty of Architecture and Planning’s Co-op Office assists students in finding suitable work term placements. In recent years, Architecture students have been employed in every province and territory in Canada, and approximately one-third have chosen to work abroad - in Antigua, Australia, Barbados, Botswana, China, Czech Republic, Egypt, England, France, The Gambia, Guatemala, Germany, Hong Kong, India, Iran, Italy, Kuwait, Morocco, Netherlands, New Zealand, Nicaragua, Norway, Peru, Portugal, Scotland, Sierra Leone, Singapore, South Africa, South Korea, Switzerland, Taiwan, Trinidad and Tobago, Turkey, Turks and Caicos, and the United States.

Accreditation

The School’s professional degree program is fully accredited by the Canadian Architectural Certification Board. The entire six-year program consists of two years of general studies at a 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).

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 a professional architect. The School’s professional degree program includes the two-year Bachelor of Environmental Design Studies degree and the two-year Master of Architecture degree. Most of the program is conducted within the School of Architecture by full-time faculty members. It also includes co-op work terms in which students gain practical experience in an architectural office.

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: Business Environment
- ARCH 2001.03: Visual Thinking A
- ARCH 2002.03: Visual Thinking B
- ARCH 2003.03: Design Drawing

Please consult the university’s academic timetable for available classes. Individuals who are not currently registered at Dalhousie University should refer to the university’s regulations in this calendar for details on Special Student status.

III. Undergraduate Degree Program

Bachelor of Environmental Design Studies

BEDS is a two-year, full-time, pre-professional program for a student who has already completed at least two years of general studies in subjects other than architecture. It consists of four academic terms in residence and a four-month work term. The BEDS degree recognizes a student’s successful completion of a minimum of four years of university study, including two at the School of Architecture.

The BEDS program consists primarily of required classes in Design, Humanities, Technology, Representation and Professional Practice. These classes provide a base of academic knowledge and design skill from which a student may proceed to a graduate program. The BEDS program leads to the MArch program, as well as to the Faculty’s other graduate programs in...
Environmental Design Studies and Planning. A BEDS graduate may also choose to continue into another related field in design, environmental studies, management, etc., at Dalhousie or elsewhere.

IV. Undergraduate Regulations

For academic regulations that apply to undergraduate students in the School of Architecture (including workload, class changes, withdrawal, transfer credits, part-time studies, duration of undergraduate studies, minimum degree requirements, assessment, incomplete class work, reassessment of a grade, and academic standing), please refer to the undergraduate calendar and the Current Students section of the School of Architecture Website. Please note that some undergraduate regulations differ from their graduate counterparts.

V. Undergraduate Classes Offered

A. Professional Degree Program

The following chart illustrates the distribution of terms throughout the four years of the professional degree program in the School of Architecture. Following the two-year general studies prerequisite, the next two years are Bachelor of Environmental Design Studies and the final two years are Master of Architecture.

<table>
<thead>
<tr>
<th>Year</th>
<th>BEDS</th>
<th>Winter</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ARCH 3001.03</td>
<td>M1 (accredited term)</td>
<td>M2 (academic term)</td>
</tr>
<tr>
<td></td>
<td>ARCH 3002.03</td>
<td>M3 (work term)</td>
<td>M4 (academic term)</td>
</tr>
<tr>
<td></td>
<td>ARCH 3001.03</td>
<td>M5 (academic term)</td>
<td>M6 (academic term)</td>
</tr>
<tr>
<td>Year</td>
<td>BEDS</td>
<td>M1 (academic term)</td>
<td>m2 (academic term)</td>
</tr>
<tr>
<td>2</td>
<td>ARCH 3001.03</td>
<td>M5 (academic term)</td>
<td>M6 (academic term)</td>
</tr>
<tr>
<td>Year</td>
<td>BEDS</td>
<td>M1 (academic term)</td>
<td>M2 (academic term)</td>
</tr>
<tr>
<td>3</td>
<td>ARCH 3001.03</td>
<td>M5 (academic term)</td>
<td>M6 (academic term)</td>
</tr>
<tr>
<td></td>
<td>ARCH 3002.03</td>
<td>M1 (academic term)</td>
<td>M2 (academic term)</td>
</tr>
<tr>
<td></td>
<td>ARCH 3001.03</td>
<td>M5 (academic term)</td>
<td>M6 (academic term)</td>
</tr>
<tr>
<td>Year</td>
<td>BEDS</td>
<td>M1 (academic term)</td>
<td>M2 (academic term)</td>
</tr>
<tr>
<td>4</td>
<td>ARCH 3001.03</td>
<td>M5 (academic term)</td>
<td>M6 (academic term)</td>
</tr>
<tr>
<td></td>
<td>ARCH 3002.03</td>
<td>M1 (academic term)</td>
<td>M2 (academic term)</td>
</tr>
<tr>
<td></td>
<td>ARCH 3001.03</td>
<td>M5 (academic term)</td>
<td>M6 (academic term)</td>
</tr>
</tbody>
</table>

B. Bachelor of Environmental Design Studies

Year 3 - Term B1 (Fall)

- ARCH 3001.03: Design
- ARCH 3100.03: Foundations in Architectural History and Theory
- ARCH 3207.03: Building Technology
- ARCH 3301.03: Professional Practice
- ARCH 3502.03: Representation

Year 3 - Term B2 (Winter)

- ARCH 3002.03: Design
- ARCH 3105.03: Architectural History and Theory - 20th Century
- ARCH 3208.03: Building Technology
- ARCH 3302.03: Professional Practice
- ARCH 3502.03: Representation

Year 4 - Term B3 (Summer)

- ARCH 4001.03: Design
- ARCH 4100.03: Foundations in Architectural History and Theory
- ARCH 4201.03: Building Systems Integration
- ARCH 4301.03: Professional Practice
- ARCH 4501.03: Representation

Year 4 - Term B4 (Fall)

- ARCH 4001.03: Design
- ARCH 4111.03: Architectural History and Theory - 19th Century
- ARCH 4122.03: Building Systems Integration
- ARCH 4204.03: Professional Practice
- ARCH 4502.03: Representation

Year 4 - Term B5 (Winter)

- ARCH 4001.03: Design
- ARCH 4111.03: Architectural History and Theory - 19th Century
- ARCH 4122.03: Building Systems Integration
- ARCH 4204.03: Professional Practice
- ARCH 4502.03: Representation

VI. Undergraduate Class Descriptions

Class Numbers

The first digit of an ARCH class number indicates its level: introductory classes open to all university students (1 and 2); Year 3 - BEDS (3); Year 4 - BEDS (4); or Undergraduate Co-op Work Term (8). The second digit indicates the area of study: Design (0), Humanities (1), Technology (2), Professional Practice (3), or Representation (5). Classes in the BEDS program have various credit-hour extensions (01-06) that indicate the approximate class hours each week and the appropriate balance of academic terms, depending on the availability of instructors.

ARCH 1000X.Y: 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 "common-sense" approach involving graphic images, practical understanding, and problem-solving; a background in science or mathematics is not required.

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

INSTRUCTOR(S): D. Pitcan
FORMAT: Lecture

ARCH 2000.03: Visual Thinking A.

Architects, scientists, political activists, manufacturers, and others employ a variety of visual tools to study and engage with the world. Students in this course learn to evoke 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. Janosch
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. Janosch
FORMAT: Lecture/seminar
PREREQUISITE: Completion of ARCH 2000.03 or permission of instructor

ARCH 2025.03: Design Drawing.

This class enables students to enhance their design literacy skills through attention to graphic design, layout, composition, and typography. Students will gain experience in a range of techniques in design drawing and portfolio presentation.

INSTRUCTOR(S): Staff
PREREQUISITE: ARCH 1000, PLAN 1002 or permission of instructor
CR/NC: LISTING: PLAN 2025.03
ARCH 3001.06: Design.
This class studies basic principles of architecture through studio projects using drawings and models. Students design elementary building forms beginning with the room and the pavilion, on various sites. Working with basic building elements of floor, wall and roof, students consider architectural composition and materials at the three scales of detail, building, and site. The class includes historical design studies to understand how other architects have responded to similar problems.
INSTRUCTOR(S): N. Savage
FORMAT: Lecture/studio
RESTRICTION: Year 3 BEDS students
ARCH 3002.06: Design.
This class studies principles of architecture by focusing on the design of the house. Building on topics from ARCH 3001, it considers issues of composition (structural, volumetric, and spatial), building program, interior environment, and relations to community context and ecological surroundings. The class includes historical design studies to understand how other architects have responded to these issues.
INSTRUCTOR(S): Staff
FORMAT: Lecture/studio
RESTRICTION: Year 3 BEDS students
ARCH 3104.03: Foundations in Architectural History and Theory.
This class introduces basic topics in architecture and interpretive methods in architectural research. It focuses on selected buildings and the role of the architect in the ancient and medieval eras. To develop research skills and architectural awareness, students interpret local buildings through direct experience and study distant and historical buildings through publications.
INSTRUCTOR(S): S. Parcell
FORMAT: Lecture/seminar
RESTRICTION: Year 3 BEDS students
ARCH 3105.03: Architectural History and Theory - 20th Century.
This class is a survey of late modern architecture, focusing on Europe and North America. Buildings and urban projects are situated in their social and political contexts and the theoretical constructs that influenced their development. Students are exposed to experimental archives and research to research modern buildings building on topics from ARCH 3001, it considers issues of composition (structural, volumetric, and spatial), building program, interior environment, and relations to community context and ecological surroundings. The class includes historical design studies to understand how other architects have responded to these issues.
INSTRUCTOR(S): S. Parcell
FORMAT: Lecture/seminar
RESTRICTION: Year 3 BEDS students
ARCH 3207.03: Building Technology.
This class studies aspects of building technology that act as primary generators of architectural form: structure, material, light and sound. Construction process is examined in terms of materials, methods and sequences. Principles of building structure and methods of structural analysis are introduced. The physics and perception of light and sound in built environments are studied. Quizzes and tests are complemented by studio exercises.
INSTRUCTOR(S): C. Macy
FORMAT: Lecture/studio
RESTRICTION: Year 3 BEDS students
ARCH 3208.03: Building Technology.
This class studies aspects of building technology that mediate the relationship between interior and exterior environments. Building materials studies include structural and environmental properties, constructional implications, and principles of assembly and joining. The principles of heat flow, air flow and moisture flow in building enclosures are presented. Students undertake a series of design exercises applying knowledge of topics studied in the class.
INSTRUCTOR(S): P. Sassenroth
FORMAT: Lecture/studio
RESTRICTION: Year 3 BEDS students
ARCH 3301.01: Professional Practice.
This class introduces the role and place of the architect in society with an emphasis on the development of the profession through history. The class includes a parallel study of the development of methods of representation employed in architectural practice, from stone tablets to digital modeling.
INSTRUCTOR(S): N. Savage
FORMAT: Lecture/seminar
RESTRICTION: Year 3 BEDS students
ARCH 3302.01: Professional Practice.
In this week-long module students learn about the architect in society, the political, social, economic and ethical environments in which architects practice, and an introduction to office organization and project management.
INSTRUCTOR(S): Staff
FORMAT: Lecture/seminar
RESTRICTION: Year 3 BEDS students
ARCH 3501.03: Representation.
This class studies basic principles of drawing, modeling, imaging, and composition. Students use manual media and photography to describe sites and designs. Topics include sketching, measurement and scale, orthographic and axonometric drafting, and image framing. Drafting and modeling equipment is required.
INSTRUCTOR(S): C. Vernet
FORMAT: Lecture/studio
RESTRICTION: Year 3 BEDS students
ARCH 3502.03: Representation.
This class builds on the principles of drawing, modeling, imaging, and composition studied in ARCH 3501. It emphasizes manual skills and concepts of 2D and 3D interplay in drawing, imaging, and materials. Topics include constructingness, sketching, phenomenology, and tactility.
INSTRUCTOR(S): S. Molesky
FORMAT: Lecture/studio
RESTRICTION: Year 3 BEDS students
ARCH 4003.03: Design.
This class studies principles of architecture through the design of a public building. Building on previous courses, it includes the organization of a public program and issues of context and interpretation. As an intensive studio it encourages students to focus on design intentions and to develop an awareness of design process.
INSTRUCTOR(S): Staff
FORMAT: Lecture/studio
RESTRICTION: Year 4 BEDS students
ARCH 4004.03: Free Lab.
To complement studio-based learning, this class is an experimental hands-on workshop in design led by an instructor. Investigations of a particular architectural topic may include design-and-build, documentary work, landscape installations, community design projects and interdisciplinary work. Projects may be done locally or involve travel to a distant site.
INSTRUCTOR(S): Staff
FORMAT: Lecture/studio
RESTRICTION: Year 4 BEDS students
ARCH 4005.06: Design.
This class studies advanced principles of architectural design through the design of a medium-sized institutional building. Elaborating on topics from the previous design courses, students organize a complex program on an urban site and develop a project that uses building technology strategically and engages relevant issues in architectural history and theory. Emphasis is also placed on fluency in architectural representation.
INSTRUCTOR(S): Staff
FORMAT: Lecture/studio
RESTRICTION: Year 4 BEDS students
ARCH 4110.03: Architectural History and Theory - 14th-18th Century.
This class studies significant buildings and the role of architecture from the Renaissance to the Enlightenment, mainly in Europe. It follows the transition from master builder to architect, and the humanist search for order and its manifestation in built form. Students analyze the design of significant buildings in relation to their historical, religious, and political context, and to the development of architectural style. They also study the integration of structure and enclosure in buildings.

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 curation, students examine primary and secondary sources, including articles, photographs, and drawings.

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.

ARCH 4212.03: Building Systems Integration.
This class focuses on 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.

ARCH 4301.03: 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 the role of the student in a professional office.

ARCH 4304.01: Professional Practice.
In this week-long module students learn about the architect in society: professional ethics, models of practice, legal aspects of practice; authorities having jurisdiction over building; finance and costing techniques; and internship.

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.

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.

VII. Graduate Degree Program
The Master of Architecture program description is included here in the undergraduate calendar to provide an overview of the entire professional degree program, which includes both the BEDS and MArch degrees.

Master of Architecture
Master of Architecture is a two-year, full-time program consisting of four academic terms in residence and an eight-month work term. It includes required classes that complete the core requirements for the School's professional degree program. Elective classes also enable a student to focus on a particular area of study such as housing, urban design, history and theory, and technology.

VIII. Graduate Classes Offered
A. Master of Architecture

Year 5 - Terms M1 and M2 (Summer and Fall)
- two core classes in Design (ARCH 5xx.x)
- two core classes in Humanities (ARCH 5xx.x)
- two core classes in Technology (ARCH 5xx.x)
- two graduate electives (from 'Core Classes' or 'Electives' indicated below)

Year 5 - Terms M3 and M4 (Winter and Summer)
- ARCH 5500.03: Professional Practice (Co-op Work-term)
- ARCH 5509.03: Professional Practice (Co-op Work-term)

Year 6 - Term M5 (Fall or Winter)
- ARCH 5417.06: MArch Thesis Preparation
- three graduate electives (ARCH 5xx.x or ARCH 6xx.x)

Year 6 - Term M6 (Winter or Summer)
- ARCH 5511.03: Professional Practice [winter term only]
- ARCH 5510.06: MArch Thesis
- one graduate elective (ARCH 5xx.x or ARCH 6xx.x)
B. Graduate Classes

Core Classes - Design
- ARCH 5202.03: Urban Housing Studio
- ARCH 5201.03: Free Lab
- ARCH 6122.03: Humanities Seminar
- ARCH 6201.03: Material Investigation
- ARCH 5004.06: Light Frame Building Studio
- ARCH 5005.06: Light Frame Building Studio
- ARCH 5003.06: Adaptive Reuse Studio
- ARCH 5002.06: From Timber to Lumber
- ARCH 5001.06: Ephemeral Architecture Seminar

Core Classes - Technology
- ARCH 5102.03: Housing Theory
- ARCH 5101.03: Resilient Real Estate Development
- ARCH 5104.03: Urban Systems
- ARCH 5103.03: History and Theory of Cities
- ARCH 5102.03: Theory and the Built Environment
- ARCH 5101.03: Architectural Theory of the Enlightenment
- ARCH 5100.03: Ephemeral Architecture
- ARCH 5109.03: Architectural Exhibitions
- ARCH 5110.03: Integrated Coastal and Ocean Planning
- ARCH 5111.03: Documentation and Conservation of the Modern Movement in Architecture
- ARCH 5108.03: Humanities Seminar

Core Classes - Humanities
- ARCH 5202.03: Housing Theory
- ARCH 5201.03: Resilient Real Estate Development
- ARCH 5204.03: Natural Finishes
- ARCH 5205.03: Natural Materials
- ARCH 5206.03: Natural Materials
- ARCH 5207.03: Light and Material
- ARCH 5208.03: Actinesthetics
- 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: Tamele Architecture
- ARCH 5215.03: Fabrication
- ARCH 5206.03: Technology Seminar

Electives
- ARCH 6001.03: Design Seminar
- ARCH 6002.03: Free Lab
- ARCH 6121.03: Architecture and Archaeoastronomy
- ARCH 6122.03: Humanities Seminar
- ARCH 6209.03: Material Investigation
- ARCH 6210.03: Material Investigation in Wood
- ARCH 6211.03: Technology Seminar
- ARCH 6204.05: Entrepreneurship
- ARCH 6205.03: Permission to Build
- ARCH 6206.03: Professional Practice Seminar
- ARCH 6201.03: Graphical Design in Architecture
- ARCH 6202.03: Painting in Architecture
- ARCH 6203.03: Photography in Architecture
- ARCH 6204.03: Montage in Architecture
- ARCH 6205.03: Multimedia to Architecture
- ARCH 6206.03: Spatial Constructions in Digital Video
- ARCH 6207.03: Language as Representation
- ARCH 6208.03: Alternatives to Perspective
- ARCH 6209.03: Digital Formalism
- ARCH 6210.03: Architectural Documentation and Analysis
- ARCH 6211.03: Documentation of Historic Buildings
- ARCH 6212.03: Development in Architectural Representation
- ARCH 6213.03: Representation Seminar

IX. Graduate Class Descriptions

ARCH 5002.06: Urban Housing Studio.
This class explores the aesthetic, historic, social, cultural and economic challenges presented by contemporary high-density, mixed-use development. The relationships of architecture to urbanism, and building to city, will be explored through exemplary precedents and the design of housing and its associated commercial, institutional, and recreational components.
INSTRUCTOR(S): J. G. Wamzel
FORMAT: Studio
RESTRICTION: Graduate Students - Architecture

ARCH 5003.06: Adaptive Reuse Studio.
This class studies architectural design through the adaptation of an existing building. It examines tensions between existing built facts (structure, enclosure, and circulation) and new ambitions (habitation, construction, and cultural representation). It also considers historical and urban contexts and the heritage value of existing buildings.
INSTRUCTOR(S): S. Mannell
FORMAT: Studio
RESTRICTION: Graduate Students - Architecture

ARCH 5004.06: Urban Systems Studio.
This studio examines the infrastructure of the metropolis and its influence on urban form and development. Topics include systems for transportation, energy use, water distribution, civic institutions, spaces of social exchange, and ecology. Students develop urban infrastructure propositions with reference to innovative urban projects worldwide.
INSTRUCTOR(S): C. Macy
FORMAT: Studio
CO-REQUISITE: ARCH 5104.03
RESTRICTION: Graduate Students - Architecture

ARCH 5005.06: Material Detail Studio.
This studio uses bricolage as a method to represent architectural ideas, observations, and intentions in a built artifact. Students interpret, modify, and project material details in architecture. The conceptual development of the work informs strategies for the development of an architectural design.
INSTRUCTOR(S): R. Mullin
FORMAT: Studio
RESTRICTION: Graduate Students - Architecture

ARCH 5006.06: Light Frame Building Studio.
This class studies the material and constructional orders of light-weight framing and cladding systems. Through drawing, model, and full-scale construction, case studies of buildings by modern and contemporary designers inform design projects for a multiple residential or small institutional building.
INSTRUCTOR(S): S. Mannell
FORMAT: Studio
RESTRICTION: Graduate Students - Architecture

ARCH 5007.06: Landscape Studio.
This studio investigates architectural responses to landscape. It regards the land as a physical and cultural context requiring appropriate methods of visualization and representation. Referring to recent projects in land art, it considers how to engage local materials and interests while promoting the sustainable occupation of a particular site.
INSTRUCTOR(S): B. Lilley, N. Savage
FORMAT: Studio
RESTRICTION: Graduate Students - Architecture

ARCH 5008.06: Transhistorical Studio.
This studio incorporates architectural design and architectural history - not for direct practical applications such as conservation, but for considering more basic definitions of architecture, roles of the architect, and elements of practice. Historical and/or cultural differences provide the framework for a speculative design project. The studio also involves
strategies for defining a project and mapping characteristics of program and site.

ARCH 5009:06, ARCH 5109:03: 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 5010:03: International Sustainable Development.
This class examines sustainable development in developed and developing countries. Local building practices and cultural appropriateness are studied through case studies. It considers how architects have handled materials and technology to engender patterns of living in a reflective and symbiotic manner.

ARCH 5010:06: Public Architecture Studio.
This studio examines the role of public architecture in manifesting cultural values through the design of a civic institution. It also considers public architecture as an expression of material culture that mediates between the scales of artifact and landscape.

ARCH 5102:03: Housing Theory.
This class introduces the history and theory of contemporary practice in housing design and production. The focus is on the quality of housing and the residential environment. A comparative analysis of significant past and current examples is used to provide insight into the way homes and neighborhoods change. This understanding is placed in the context of differing economic, political and housing market situations.

ARCH 5103:03: Residential Real Estate Development.
This seminar explores the interaction of the residential construction industry's constituent parts: real estate, finance, government policy and programs, development interests, etc., and addresses questions of housing quality and distribution, employment, industrialization, urbanization, regional and rural under-development, foreign ownership, and the role of the industry in the Canadian political economy.

ARCH 5104:03: Urban Systems.
This seminar examines the infrastructure of the metropolis and its influence on urban form and development. It considers transportation, energy use, water distribution, civic institutions, spaces of social exchange, and ecological systems. Emphasis is on new conceptions 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 5106:06: 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. The primary aim is to examine the role of public architecture in manifesting cultural values through the design of a civic institution. It also considers public architecture as an expression of material culture that mediates between the scales of artifact and landscape.

ARCH 5107:03: Theory and the Built Environment.
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, "inferior" and inversion are used to interpret spaces and activities in the city that are marginal, liminal, repressed, neglected, or abandoned.

ARCH 5109:03: Ephemer al Architecture.
This seminar explores ideas of "otherwise" in the city, manifested as ephemeral or temporary constructions and as critical responses to established norms. Theories of alterity, the carnivalesque, "inferior" 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...
ARCH 5112.03: Documentation and Conservation of the Modern Movement.
This class studies the documentation and conservation of buildings, sites and neighbourhoods of the Modern Movement. It examines international charters, protocols, and issues of identifications, evaluation and public awareness. Students undertake fieldwork and research on specific projects and contribute to a general register of modern works.
INSTRUCTOR(S): S. Mannell
FORMAT: Lecture/seminar
RESTRICTION: Graduate students - Architecture and Planning or permission of instructor
ARCH 5198.03: Humanities Seminar.
This class focuses on an advanced topic in architectural humanities. The topic changes from year to year. It may emphasize history, theory, criticism, urban studies, or architecture in development.
INSTRUCTOR(S): Staff
FORMAT: Seminar
RESTRICTION: Graduate students - Architecture and Planning or permission of instructor
ARCH 5202.03: From Timber to Lumber.
This class examines the manufacturing process that converts a tree into dimensional lumber. Topics include tree growth, wood structure, woodlot management, sustainable forest management and certification, sawmill operations, grading, the physical properties and moisture relations of wood, and the design of air drying sheds and kilns.
INSTRUCTOR(S): A. Parsons
FORMAT: Lecture/seminar
RESTRICTION: Graduate students - Architecture
ARCH 5203.03: From Lumber to Structure.
This class studies how dimensional lumber is used in current North American building construction. It considers the structural and mechanical properties of wood, structural engineering principles for dealing with gravity and lateral loads, and building details that are used in platform frame and timber frame construction.
INSTRUCTOR(S): A. Parsons
FORMAT: Lecture/seminar
RESTRICTION: Graduate students - Architecture
ARCH 5204.03: Composite Materials.
This class surveys the history of materials, focusing on natural and synthetic polymers, resins, and composite materials. 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.
INSTRUCTOR(S): R. Mullin
FORMAT: Seminar
RESTRICTION: Graduate students - Architecture
ARCH 5205.03: Earth Construction.
This class studies traditional and contemporary methods of earth construction (cob, rammed earth, wattle and daub, earth bag, and adobe) as sustainable, low-impact building systems. Based on the science of soils, it considers appropriate uses of earth technology in the construction of houses.
INSTRUCTOR(S): Staff
FORMAT: Lecture/seminar
RESTRICTION: Graduate students - Architecture and Planning or permission of instructor
ARCH 5206.03: Natural Finishes.
This class examines the use of natural finishes (earth and lime plasters, paint, stone, and wood) for walls, floors, and ceilings in contemporary buildings. Natural, local, and reused materials are assessed in terms of installation, cost, durability, aesthetic characteristics, and environmental impact in comparison with industrialized products.
INSTRUCTOR(S): Staff
FORMAT: Lecture/seminar
RESTRICTION: Graduate students - Architecture and Planning or permission of instructor
ARCH 5207.03: Light and Material.
This class examines characteristics of daylight and artificial light. It analyzes and experiments with how light is produced, transmitted, and interacts with various materials. By considering lighting options for a particular use, it regards light as an integral element in the design of interior and/or exterior space.
INSTRUCTOR(S): Staff
FORMAT: Lecture/seminar
RESTRICTION: Graduate students - Architecture
ARCH 5208.03: Acoustics.
This seminar studies principles of interior room acoustics and audio-visual design. To address acoustical requirements in various types of spaces, it considers sound projection and isolation, and the control of mechanical and environmental noise through building design and acoustical materials.
INSTRUCTOR(S): Staff
FORMAT: Seminar
RESTRICTION: Graduate students - Architecture
ARCH 5209.03: Energy Efficient Design.
This class focuses on sustainable building services. It studies building energy codes and rating systems—specifically LEED—in the Atlantic region. It also examines international strategies for low-energy building, passive systems in ventilation, heating, and cooling; renewable energy systems; and the integration of engineering systems into architectural design.
INSTRUCTOR(S): Staff
FORMAT: Seminar
RESTRICTION: Graduate students - Architecture
ARCH 5210.03: Life Cycle Analysis.
This class studies how to assess the full range of costs and environmental impacts of building materials and assemblies, from their initial raw material to the end of their useful life, including recycling. A focus on building envelopes shows how life cycle analysis can influence decisions on materials and assemblies.
INSTRUCTOR(S): Staff
FORMAT: Lecture/seminar
RESTRICTION: Graduate students - Architecture
ARCH 5211.03: The Construction Detail.
This class examines the construction detail and its dialectical relationship to the architectural whole. Case studies of details in major twentieth-century buildings inform detail practice, in which students investigate material options and construction details for a project of their own design.
INSTRUCTOR(S): S. Mannell
FORMAT: Seminar
RESTRICTION: Graduate students - Architecture
ARCH 5212.03: From Principle to Detail.
This class advances the technological content of a concurrent design project or thesis. It focuses on the integration of building systems (e.g., structure, construction, environmental technology), beginning with an overview of principles, followed by a self-directed material exploration, and culminating in the production of a relevant building detail.
INSTRUCTOR(S): B. Liley
FORMAT: Studio/seminar
RESTRICTION: Graduate students - Architecture
ARCH 5213.03: Facades.
This class examines the various functions of a building facade: protection from weather, interior comfort, urban sign, and potential energy producer. It considers how a facade designed for a particular program can achieve high performance through attention to detail: building materials, manufacturing processes, and construction techniques.
INSTRUCTOR(S): B. Lilley
FORMAT: Seminar
RESTRICTION: Graduate students - Architecture

ARCH 5214.03: Tensile Architecture.
This class studies the design and behaviour of tensile structures by building and testing models and mock-ups. It also explores the theoretical potential of tensile structures by integrating technologies such as video, sound, light, sensors, and smart fabrics.
INSTRUCTOR(S): S. Bormeron
FORMAT: Lecture/seminar
RESTRICTION: Graduate students - Architecture

ARCH 5215.03: Fabrication.
This class studies the sequence of trades involved in building construction. It examines the material processes of various construction industries and considers their implications for design, with an emphasis on relations between convention and innovation.
INSTRUCTOR(S): T. Sweetapple
FORMAT: Seminar
RESTRICTION: Graduate students - Architecture

ARCH 5298.03: Technology Seminar.
This class focuses on an advanced topic in architectural technology. The topic changes from year to year. It may emphasize materials, environmental strategies, or building details.
INSTRUCTOR(S): Staff
FORMAT: Seminar
RESTRICTION: Graduate students - Architecture

ARCH 5308.03 and 5309.03: Professional Practice (Co-op Work Term).
A student works in the architectural profession for 1000 hours in no less than 24 weeks and completes a research report or assignment. Work placements must be approved by the School of Architecture. A student may apply to satisfy up to 500 hours through supervised research related to Professional Practice.
INSTRUCTOR(S): Staff
FORMAT: Work term
RESTRICTION: MArch students

ARCH 5310.00: Co-op Work Term Continuation.
A student who has already registered for ARCH 5308 and ARCH 5309 may continue the co-op work term for up to four additional terms. While registered in ARCH 5310, a student's university status changes to part-time.
INSTRUCTOR(S): Staff
FORMAT: Work term
PREREQUISITE: ARCH 5308.03, ARCH 5309.03
RESTRICTION: MArch students

ARCH 5311.03: Professional Practice.
This class studies principles of professional ethics, partnerships, corporate practice, professional responsibility, and legal aspects of architectural practice. It also considers issues in practice management: contracts, codes, reference documents, finance, costing techniques, and contract administration.
INSTRUCTOR(S): N. Savage
FORMAT: Lecture/seminar
RESTRICTION: Graduate students - Architecture

ARCH 6001.03: Design Seminar.
This seminar focuses on an advanced topic in architectural design. The topic changes from year to year. It may emphasize urbanism, landscape, building, 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, documentation, landscape installations, community design projects, and interdisciplinary work. Projects may be local or involve travel to a distant site.
INSTRUCTOR(S): Staff
FORMAT: Workshop/lab
RESTRICTION: Graduate students - Architecture

ARCH 6121.03: Architecture and Archaeoastronomy.
This course studies the significance of the night sky to various ancient and non-Western cultures, including the Egyptian, Celtic, Mesoamerican, Anasazi, and First Nations. It examines how celestial features and motions guided the design of buildings and influenced cultural practices, including the measurement of time.
INSTRUCTOR(S): P. Kelly
FORMAT: Lecture/seminar
RESTRICTION: Graduate students - Architecture and Planning or permission of instructor

ARCH 6122.03: Humanities Seminar.
This class focuses on an advanced topic in architectural humanities. The topic changes from year to year. It may emphasize history, theory, criticism, urban studies, or architecture in development.
INSTRUCTOR(S): Staff
FORMAT: Seminar
RESTRICTION: Graduate students - Architecture and Planning or permission of instructor

ARCH 6209.03: Material Investigation.
This class uses a controlled workshop environment to examine characteristics of a material (e.g., metal, ceramic, glass) and methods for forming and finishing. Using principles of material science, it considers the harvesting or processing of raw material, the testing of structural capacity and environmental behaviour, and applications in design.
INSTRUCTOR(S): Staff
FORMAT: Workshop/seminar
RESTRICTION: Graduate students - Architecture

ARCH 6210.03: Material Investigation in Wood.
This class uses a controlled workshop environment to examine characteristics of wood and methods for forming and finishing. Using principles of material science, it considers the harvesting of raw material, the testing of structural capacity and environmental behaviour, and applications in design.
INSTRUCTOR(S): Staff
FORMAT: Workshop/seminar
RESTRICTION: Graduate students - Architecture

ARCH 6211.03: Technology Seminar.
This class focuses on an advanced topic in architectural technology. The topic changes from year to year. It may emphasize materials, environmental strategies, or building details.
INSTRUCTOR(S): Staff
FORMAT: Seminar
RESTRICTION: Graduate students - Architecture

ARCH 6304.03: Entrepreneurship.
Successful entrepreneurship requires an ability to identify opportunities, skill to calculate risks, and the knowledge and determination to promote, develop, and implement a project. This class uses a case-study approach to examine entrepreneurship in the public, private, and not-for-profit sectors and to assess potential applications to architectural practice.
INSTRUCTOR(S): J. G. Wanzel
FORMAT: Lecture/seminar
RESTRICTION: Graduate students - Architecture and Planning or permission of instructor
ARCH 6005.03: 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: Lectures/seminar
RESTRICTION: Graduate students - Architecture

ARCH 6502.03: Painting in Architecture.
This class examines how some architects have used painting in design development. Through studio work, students learn about painting media (e.g., watercolour, gouache, acrylic, oil) as a design tool.

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 techniques and styles, students learn about photographic representation in architecture.

INSTRUCTOR(S): Staff
FORMAT: Lecture/seminar
RESTRICTION: Graduate students - Architecture

ARCH 6504.03: Montage in Architecture.
This class examines the history, concepts, and use of montage in architectural representation. It also considers how digital photography and computer technology can generate various forms of montage for analyzing and developing architectural designs.

INSTRUCTOR(S): Staff
FORMAT: Seminar/studio
RESTRICTION: Graduate students - Architecture

ARCH 6505.03: Multimedia in Architecture.
This class examines the use of multimedia technology in designing and presenting architectural ideas. It considers how the use of multimedia can be applied to projects in urban planning.

INSTRUCTOR(S): F. Kelly
FORMAT: Lectures/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.

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): N. Savage
FORMAT: Lecture/studio
PREREQUISITE: ARCH 6505.03
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 conditions. It also studies drawings as a means of projecting and examining the role of documents in reconstituting past built works and projects.

INSTRUCTOR(S): S. Mannell
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): N. Savage
FORMAT: Lecture/studio
PREREQUISITE: Graduate students - Architecture

ARCH 6512.03: Developments in Architectural Representation.
This class studies historical developments in the graphic language of architecture and its various modes of representation. By examining works by selected architects, students consider relationships between what is drawn and what is built.

INSTRUCTOR(S): N. Savage
FORMAT: Lecture/studio
RESTRICTION: Graduate students - Architecture

ARCH 6513.03: Representation Seminar.
This class focuses on an advanced topic in architectural representation. The topic changes from year to year. It may emphasize medium, relation to design, or history and theory.

INSTRUCTOR(S): Staff
FORMAT: Seminar/studio
RESTRICTION: Graduate students - Architecture

56 School of Architecture
ARCH 9007.06: MArch Thesis Preparation.
Within a seminar group, each student formulates a thesis question and pursues it through a preliminary design for a building of some kind. The student is expected to become fluent in the history and theory of the topic. ARCH 9007 and ARCH 9008 must be completed in consecutive terms.
INSTRUCTOR(S): Staff
FORMAT: Seminar/studio
PREREQUISITE: Completion of Year 5 MArch
RESTRICTION: MArch students

ARCH 9008.06: MArch Thesis.
Following a term of thesis preparation, each student completes an architectural design project. The thesis concludes with a graphic/model presentation, an oral examination, and a formal thesis document that is submitted to the university. The entire thesis requires a minimum of two consecutive terms of residence.
INSTRUCTOR(S): Staff
FORMAT: Studio
PREREQUISITE: ARCH 9007
RESTRICTION: MArch students

ARCH 9009.00: MArch Thesis Continuation.
This continuation of ARCH 9008: MArch Thesis is for students who have not completed the thesis in the minimum two terms. The maximum duration of a thesis is five terms.
INSTRUCTOR(S): Staff
FORMAT: Studio
PREREQUISITE: ARCH 9008
RESTRICTION: MArch students

School of Planning

Community Design
Location: 5410 Spring Garden Road
Halifax, NS, B3J 2X4
Canada
Telephone: (902)-494-3260
Fax: (902)-423-6672

Director, School of Planning
Grant, J.

Professors
Grant, J., BA (UWO), MA (McMaster), MA, PhD (Waterloo), MCIP
Palermo, F., BArch (Toronto), MArchUD (Harvard) FCIP, FRAIC
Poulton, M., BSc, MPhil (London), MS, PhD (Calif. at Berkeley), MCIP, MRTPI

Associate Professors
Guppy, S., BSc (Nottingham), MSc, PhD (Wales), MArch (Columbia), MCIP
Manuel, P., BA (Carleton), MSc (McGill), PhD (Dal), MCIP
Zuck, J., BA (Hiram), BDEP (NSCAD), MLArch (Pennsylvania), MCIP

Adjunct Faculty
Boxall, J. BA, BEd (SMU), MA (Dalhousie)
Epstein, H., BA (Carleton), LLB (Dal)
Finzer, P., BComm (Dal), MBA (St. Mary’s), MURP (TUNS), MCIP
Garret, M, BComm (Queen’s), MURP (Dal), MCIP
Spencer, V., BES (Waterloo), MCIP
Wunder, B., BA (St Thomas), BEd (Lakehead), MURP (Queen’s), MPA (Dal), MCIP
Zwickler, B., BA (Dal), MURP (Toronto), MCIP

Cross-Appointed Faculty
Beazley, K., School of Resource and Environmental Studies
Buszard, D., Biology Department
Cote, R., School of Resource and Environmental Studies
Daintar, P., School of Resource and Environmental Studies
Wright, T., Environmental Programs Coordinator, Faculty of Science

I. Community Design
The School of Planning offers a Bachelor of Community Design (3 year program), and a Bachelor of Community Design (Honours), with Majors in either Environmental Planning or Urban Design Studies (4 year programs).
Community design studies the shapes, patterns, processes, and issues in human and natural communities. It explores the world as a system of interconnected and embedded communities linked by cultural and natural processes. Courses examine interventions by which people can work towards creating and maintaining healthy and sustainable communities. The study of community design at Dalhousie is distinguished by

- an emphasis on design. The School recognizes the importance of visual and spatial information and analysis, and introduces design as a method of learning, analysing, and addressing problems. Design is comprehensive, integrative, context-sensitive, and synthetic.
- a focus on reasoned, creative, and practical outcomes. Courses will attract students eager to make changes in the world they inhabit. They will develop the knowledge and skills to allow them to analyze community issues, and to propose and implement appropriate courses of action to achieve desired outcomes.

School of Planning
57
The Bachelor of Community Design is a three-year general program for students interested in understanding how communities work and the principles that designers use in creating communities. Students who meet the requirements for admission to the honours program may study an extra year to earn a major in either environmental planning or urban design studies. See below.

Students wishing to enter the program must have completed grade 12 with a 70% or greater average in five grade 12 subjects including English, Math and one Science. Other recommended grade 12 courses include Biology and/or Geography. A background in art or design is an asset.

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

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

Bachelor of Community Design

The Bachelor of Community Design normally takes three years of full time study. It includes 15 full course equivalents, or 90 credit hours of course work. Core required courses for the program include PLAN 1001.03, 1002.03, 2001.03, 2002.03, 3005.03, 3004.03, 3002.03, 3005.03, 3006.03. In year one, students take PLAN 1001.03/1002.03, also select either ARCH 1000.06 or ENVS 1000.06 Environmental Studies, and take GEOG/ERTH 1030.

Program requirements are as follows:

Year 1
- PLAN 1001.03: Introduction to Community Design 1
- PLAN 1002.03: Introduction to Community Design 2
- ERTH/GEOG 1030: Physical Geography
- Select from among: ARCH 1000.06 or ENVS 1000.06
- Plan 2.5 more full courses (15 credit hours)

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

The School of Planning recommends that students also consider taking at least one of ERTH 1080.03 or 1090.03, or GEOG 1035.03 in their first year.

The Bachelor of Community Design (Honours) The Bachelor of Community Design (honours) normally takes four years of full-time study. Students complete the requirements for the general community design program and then complete a fourth year of specialized study. The program requires 20 full course equivalents, or 120 credit hours of course work.

Honours programs provide opportunities for students who do well in their studies to deepen their understanding through additional course work, an internship work placement, and community-based research projects. Students participate in community design studios where learning occurs while working on community-centred projects. Thus students gain practical experience to bring to bear on their academic studies.

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

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

Major in Urban Design Studies
- PLAN 4002.06: Urban Design Studio
- PLAN 4101.03: Community Design Internship
- PLAN 4500.06: Thesis Project
- Courses selected from “urban design studies” or “electives for either option” core elective list (total 15 credit hours) at the 2000 level or above

Major in Environmental Planning
- PLAN 4001.06: Environmental Planning Studio
- PLAN 4101.03: Community Design Internship
- PLAN 4500.06: Thesis Project
- Courses selected from “environmental planning” or “electives for either option” core elective list (total 15 credit hours) at the 2000 level or above

Conversion Year requirements for the Major in Environmental Planning
- PLAN 4001.06: Environmental planning studio
- PLAN 4101.03: Community design internship
- PLAN 4500.06: Thesis project
- PLAN 3053.03: Application of planning law
- 12 credit hours from core elective list A (environmental planning electives) or electives for either major at the 2000 level or above.

Conversion Year requirements for the Major in Urban Design Studies
- PLAN 4002.06: Urban design studio
- PLAN 4101.03: Community design internship
- PLAN 4500.06: Thesis project
- PLAN 3053.03: Application of planning law
- 12 credit hours from core elective list B (urban design electives) or electives for either major at the 2000 level or above

Students who may have completed any required courses from the honours year as part of the 90 credit hours of the general BCD program will select alternative core elective credits from the lists to make up the credit hours to a total of 30.
Program core electives for Bachelor of Community Design and Bachelor of Community Design (Honours)

In addition to PLAN 1001.03 and 1002.03 and EIRTE/GEOG 1035.03, 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 3081.03, or GEOL 1055.03) 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 first year, 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.)

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

Note: Students must check to ensure they meet the prerequisites for any classes they select. In some cases, classes may be full or unavailable. Some courses may require the instructor's or department's consent. Not all courses are offered every year.

Environmental planning option core electives (A)

- ENVS 1000.06: Introduction to Environmental Studies
- ENVS 3200.09: Environmental Law
- ENVS 3210.05: Administrative Law for Environmental Scientists
- ENVS 3300.05: Environmental Site Investigation
- ENVS 3400.05: Environmental and Ecosystem Health
- ENVS 3500.05: Environmental Problem Solving 1
- ENVS 3501.09: Environmental Problem Solving 2
- ENVS 4001.05: Environmental Impact Assessment
- BIK 1011.03: Principles of Biology Part I
- BIK 1011.03: Principles of Biology Part II
- BIK 2060.03: Introduction to Ecology
- BIK 2080.03: Diversity of Plants and Animals
- BIK 2401.03: The flora of Nova Scotia
- BIK 3061.03: Communities and Ecosystems
- BIK 3066.03: Plant Ecology
- BIK 3401.03: Nature Conservation
- BIK 3623.05: Applied Coastal Ecology
- EIRTH 1080.03: Geology I
- EIRTH 1090.03: Geology II
- EIRTH 2401.03: Environmental and Resource Geology
- EIRTH/GEOC 2400.03: Introduction to Geomorphology
- PHL 2401.03: Environmental Ethics
- HST 3702.03: North American Landscapes
- HST 4275.03: The Fisheries of Atlantic Canada
- PRC 3050.05: Politics of the Environment
- ENVE 3412.03: Energy and Environment
- ENVE 3452.03: Waste Management
- ECON 3352.03: Resource Economics
- ECON 3353: Environmental Economics
- PLAN 4108.03: History and Theory of Landscape Architecture

Urban design studies core electives (B)

- ARCH 1000.05: Introduction to Architecture
- ARCH 2001.05: 2001.05: Visual Thinking
- HST 1040.04: Introduction to European History
- HST 1501.03: Comparative Global History
- HST 1502.03: Origins of Modern Global Society
- HST 2038.03: The Atlantic world 1450-1650: Colonization
- HST 2057.03: The Atlantic world 1650-1800: European Empires in the Americas
- HST 2125.03: Social History of Canada since 1870
- ECON 2200.03: 2200.03: Intermediate Micro/Macro
- ECON 2228.03: The Canadian Economy in the New Millennium
- ECON 3217.03: Economic policy debates for the next decade
- SLNK 3103.03/3102.03: Perspectives on Social Welfare Policy
- SOSA 2400.06: Social Inequality
- SOSA 3200.06: Introduction to Social Problems
- SOSA 3301.03: Social Problems and Social Policy
- PLAN 4102.03: Urban Economics
- PLAN 4101.03: History and Theory of Urban Design

Core electives that may count for either Major (C)

- ARCH 1200.06: Science of the Built Environment
- GEGO 4000.03: Introduction to Human Geography
- POLI 1020.03: Governments and Democracy
- POLI 1105.03: The Political Process in Canada
- POLI 1106.03: Introduction to Government and Politics [wt]
- POLI 2204.03: Local Government
- POLI 3200.03: Intergovernmental Relations
- POLI 3215.03: The Politics of Regionalism
- POLI 4228.03: Interest Groups
- POLI 4260.03: Policy Formulation in Canada
- POLI 4241.03: Introduction to Policy Analysis
- ECON 1401.03: Principles Macro
- ECON 1402.03: Principles Micro
- ECON 2225.03: An Applied Class in Economic Development and the Environment
- ECON 2225.05: An Applied Class in Economic Development of Communities and the Environment
- ECON 2350.05: Globalization and Economic Development
- ECON 3350.03: Regional Development
- HSTC 1200.06: Introduction to the History of Science
- HSTC 4000.06: Science and Nature in the Modern Period
- INTD 2001.03/3002.03: Seminar in Development
- INTD 3001.03/3002.03: Seminar in Development
- INTD 3014.03: Community Development in Comparative Practice
- PLAP 3422.03: Public Policy
- SOSA 2300.03: Environmental and Cultural Communities in the North Atlantic
- PHL 2489.03: Technology and the Environment
- OCUL 3000.03: Occupation and Daily Life
- ENVS/ERTH/GEOC 3X00.03/3480.03: Exploring Geographic Information Systems
- PLAP 2005.03: Design Drawing
- PLAP 3015.03: Urban Ecology
- PLAP 3015.03: Site Infrastructure
- PLAN 3203.03: Landscape Design
- PLAN 3223.03: Representation in Design
- PLAN 3408.03: Reading the Suburbs
- PLAN 3600.03: Community Design Practice
- PLAN 3915.03: Topics in Community Design (Other topics included under 3011, 3052, 3053)
- PLAN 3950.03: Computers in Community Design and Planning
- PLAN 3225.03: Plants in the Human Landscape
- PLAN 4015.03: Land Development Economics
- PLAN 4106.03: Transportation Planning
- PLAN 4107.03: Regional Planning
- PLAN 4111.03: Housing Theory
- PLAN 4119.03: Topics in Planning
- PLAP 4207.03: Independent Study
- ARCH and PLAN (any course for which the School and the course instructor has given permission for the BCD student to enroll)
Bachelor of Community Design with a Minor in Environmental Studies

The Minor in Environmental Studies is a five credit (30 credit hour) Minor taken in conjunction with the Bachelor of Community Design Honours/ Major Program in the Faculty of Architecture and Planning. The minor in Environmental Studies provides a student with an appreciation of the scientific, cultural, economic, historic, legal and social aspects of environmental issues. The student will have the opportunity to earn an additional credential on the degree to recognize the special concentration of courses in environmental studies. Approval for the program is required from the School of Planning and from the Coordinator of Environmental Programs.

Required Classes
To earn the minor, students must complete:

- ENVS 3000.06: Introduction to Environmental Studies (or DISP)
- PLAN 2001.03: Landscape Analysis
- PLAN 2002.03: Community Design 1
- PLAN 2003.03: Community Design 2
- PLAN 2005.03: Design Drawing

Elective Requirements
Two full credits (12 credits hours) of classes from the following list:

- BIOE 3401.03: Nature Conservation
- CHEM 2403.03: Environmental Chemistry I
- CHEM 4203.03: Environmental Chemistry
- ECON 3356.03: Economic Geography
- ECON 3363.03: Regional Development
- ENVS 3302.03: Environmental Site Investigation
- ENVS 4000.03: Environmental Health
- ENVS 4001.03: Geographic Information Systems
- EMSP 2003.05: Nature Imagined: Literature and Science in Early Modern Europe
- EMSP 3001.05: The Study of Nature in Early Modern Europe
- ERTH 3302.03: Quaternary Sedimentary Environments
- HIST 1502.03: Origins of Modern Global Society
- HIST 3305.03: Environments in North America
- HIST 3306.03: American Landscapes
- HIST 4203.03: Fisheries of Atlantic Canada
- HLTH 1010.03: Women’s Health and the Environment
- INTD 2001.03: Introduction to Development I
- INTD 2002.03: Introduction to Development II
- OCEA 2850X/Y.06: Introduction to Oceanography
- OCEA 3170.03: Oceanography
- POLI 3537.06: Management and Conservation of Marine Resources
- POLI 3589.06: Politics of the Sea I
- POLI 3585.03: Politics of the Environment
- POLI 3589.03: Politics of the Sea II
- POLI 4152.03: Environment and Culture
- POLI 4153.03: Continuity and Change in Rural Society
- POLI 4154.03: Coastal Communities in the North Atlantic
- POLI 4155.03: Environmental Risk Assessment
- STAT 3363.05: Environmental Risk Assessment

At least one half credit (3 credit hours) of elective classes must be at the 3000 level or above. Students have the option of taking ENVS 3002.03 Environmental Science Internship class, but are not required to do so.

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

- PLAN 1001.03: Introduction to Community Design 1
- PLAN 1002.03: Introduction to Community Design 2
- PLAN 2001.03: Landscape Analysis
- PLAN 2002.03: Community Design Methods
- PLAN 2005.03: Community Design Context
- PLAN 2025.03: Design Drawing
- PLAN 3001.03: Landscape Ecology
- PLAN 3002.03: Reading the City
- PLAN 3003.03: Cities and the Environment in History
- PLAN 3006.03: Reading the Landscape
- PLAN 3001.03: Urban Ecology
- PLAN 3015.03: Site Infrastructure
- PLAN 3023.03: Landscape Design
- PLAN 3025.03: Representation in Design
- PLAN 3026.03: Application of Planning Law
- PLAN 3040.03: Reading the Suburbs
- PLAN 3046.03: Community Design Practice
- PLAN 3050.03: Topics in Community Design
- PLAN 3055.03: Computers in Community Design and Planning
- PLAN 3205.03: Plants in the Human Landscape
- PLAN 4001.06: Environmental Planning Studio
- PLAN 4002.06: Urban Design Studio
- PLAN 4108.03: History and Theory of Landscape Architecture
- PLAN 4109.03: 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 4201.03: Independent Study
- PLAN 4306.06: Thesis Project

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

PLAN 1001.03: Introduction to Community Design 1
This course introduces community design by exploring the characteristics of human and natural communities, the connections between them, and the types of interventions designers and planners can make to help people create good living environments. Community design involves applying scientific and creative approaches to helping communities accommodate human needs while respecting the environment.

INSTRUCTOR(S): J. Grant

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.

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

PLAN 2001.03: Landscape Analysis
Designers and planners need to understand the influence of physical, biological, and cultural systems in landscape evolution, and the relevance of that information in analyzing land capability. Students develop inventory and analysis tools for understanding environmental processes and their implications for design and planning. There will be field trips and a lab component.

INSTRUCTOR(S): P. Manuel or K. Thompson

PLAN 2001.03: Landscape Analysis
FREQUENTLY: Taught in rotation GEOG/ERTH 1030.3
CROSS-LISTING: GEOG 2020.03
PLAN 3002.03: Community Design Methods.
This course explores the design theory, processes, principles, and methods that inform community design. Students will develop design literacy and skills, and engage in problem-solving exercises and projects.

INSTRUCTOR(S): J. Zuck

PREREQUISITE: PLAN 1002.03 or concurrent

PLAN 2005.03: Community Design Context.
Our communities are shaped by a wide range of factors as varied as the way we organize power within our government system, the significance of the profit motive in our economy, and our cultural desire to separate work and home. This course considers various governance, economic, social, demographic, and service issues that influence the shape and regulation of communities and landscapes in the contemporary context. It examines a range of scales, from international through national, provincial and local.

INSTRUCTOR(S): M. Podoluk or R. Zwickler

FORMAT: Lecture / seminar 3 hours
PREREQUISITE: PLAN 1801.03 or permission of instructor

PLAN 2025.03: Design Drawing.
This course allows students to enhance their design literacy skills through attention to graphic design, layout, composition, and typography. Students will become familiar with and gain experience in a range of drawing techniques to enhance their skills in design drawing and portfolio presentation.

INSTRUCTOR(S): Staff

FORMAT: Lecture / lab 3 or 4 hours
PREREQUISITE: ARCH 1800.03 or PLAN 1802.03 or permission of instructor

CROSS-LISTING: ARCH 2025.03

PLAN 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 environmental components in the landscape to inform community design and land use planning applications.

INSTRUCTOR(S): P. Manuel

FORMAT: Lecture / lab 3 or 4 hours (plus field trips)
PREREQUISITE: PLAN 2001.03

CROSS-LISTING: ARCH 3001.03

PLAN 3002.03: Reading the City.
Any city reflects the history of its topography, cultural traditions, and design interventions. This course introduces the principles, theories, and methods of urban form analysis in the local urban context. Students explore the local urban environment to interpret what the city means, and how it comes to take the shape it does.

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

FORMAT: Lecture / lab 3 or 4 hours

CROSS-LISTING: PLAN 3012.03

PLAN 3005.03: Cities and the Environment in History.
The contemporary landscape reflects a long history of human activities on the land and design and planning interventions through time. Civilizations rise and fall, often because of their degradation of the ecosystems that support them. This course examines the relationship of cities with the environment to enhance our understanding of landscape change, urban form and patterns in human settlements through the ages.

INSTRUCTOR(S): J. Grant

FORMAT: Lecture / seminar 3 hours

CROSS-LISTING: PLAN 3005.03, GEOG 3005.03

PLAN 3006.03: Reading the Landscape.
Any landscape reflects its natural and cultural history. This course explores principles, theories, and methods of landscape interpretation. These approaches will be applied to community design problems in local landscapes.

INSTRUCTOR(S): S. Guppy

FORMAT: Lecture / lab 3 or 4 hours
PREREQUISITE: PLAN 3001.03, 3002.03

CROSS-LISTING: GEOG 3006.03

PLAN 3010.03: Urban Ecology.
More than three-quarters of Canadians, and more than half the world’s population, now live in urban settings. This course treats the urban system as habitat made by and for people, and takes an ecological approach to the flows of energy and materials which make urban life possible. Students study their own behaviour and surroundings, comparing their observations with data from Canada, North America, and the rest of the world. This leads to discussions about the health and sustainability of urban communities.

INSTRUCTOR(S): S. Guppy

FORMAT: Lecture / lab 3 hours

CROSS-LISTING: PLAN 6103.03

PLAN 3015.03: Site Infrastructure.
The course examines the role of infrastructure in community design and site planning. Students are introduced to principles of grading, access, service provisions, and cost estimating. Key exercises allow students to apply theory to practical projects.

INSTRUCTOR(S): J. Zuck

FORMAT: Lecture / lab 3 hours
PREREQUISITE: PLAN 3001.03 or permission of the instructor

CROSS-LISTING: PLAN 3015.03

PLAN 3020.03: Landscape Design.
The course introduces principles and methods of site design. It pays special attention to social, natural, and technical components as factors in adapting sites for human use. Practical projects allow students to develop deeper insight into the challenges and opportunities of landscape design.

INSTRUCTOR(S): J. Zuck

FORMAT: Lecture / lab 3 hours
PREREQUISITE: 3 credit hours of ENVS or PLAN

CROSS-LISTING: PLAN 3020.03

PLAN 3025.03: Representation in Design.
The course explores techniques of representation in community design work. It examines design drawing conventions such as orthography, parallel, and perspective projections. It helps students develop their awareness of design approaches and their skills in design presentation.

INSTRUCTOR(S): A. Fillmore

FORMAT: Lecture / lab 3 hours

CROSS-LISTING: PLAN 5025.03

PLAN 3035.03: Application of Planning Law.
The course explores the application of planning law to the field of community design. The course introduces students to the legal processes and statutory requirements for land use planning in Canada, with particular reference to Nova Scotia.

INSTRUCTOR(S): B. Allan

FORMAT: Lecture / seminar 3 hours
PREREQUISITE: PLAN 2005.03 or permission of instructor

PLAN 3040.03: Reading the Suburbs.
An increasing proportion of Canadians live in the suburbs. This course explores issues related to planning and designing the suburbs, and develops techniques for analyzing and developing community form in the suburban environment.

INSTRUCTOR(S): J. Grant

FORMAT: Lecture / lab 3 hours
PREREQUISITE: PLAN 2005.03

CROSS-LISTING: PLAN 5040.03

PLAN 3045.03: Community Design Practice.
Community building constitutes an important component of the Canadian economy. This course explores the financial, regulatory, social, and ethical issues of development practice. Using a case study approach, it examines examples of community design projects and initiatives in Canadian communities. Students gain insight into the financing, planning, and building of projects from the perspective of the development industry.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours
PREREQUISITE: PLAN 3001.03 or concurrent
PLAN 3050.03: Topics in Community Design. This course provides opportunities to examine selected topical issues in community design.

INSTRUCTOR(S): Faculty

FORMAT: Lecture / seminar 3 hours

CROSS-LISTING: PLAN 5050.03

PLAN 3051.03: Topics in Community Design 2. This course provides opportunities to examine selected topical issues in community design.

FORMAT: Lecture / seminar 3 hours

CROSS-LISTING: PLAN 5051.03

PLAN 3052.03: Topics in Community Design 3. This course provides opportunities to examine selected topical issues in community design.

FORMAT: Lecture / seminar 3 hours

CROSS-LISTING: PLAN 5052.03

PLAN 3053.03: Topics in Community Design 4. This course provides opportunities to examine selected topical issues in community design.

FORMAT: Lecture / seminar 3 hours

CROSS-LISTING: PLAN 5053.03

PLAN 3055.03: Computers in Community Design and Planning. This course explores the opportunities for using computers in community design. Topics may include business applications, computer assisted design, and geographic information systems.

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

FORMAT: Lecture / tutorial 3 hours

PREREQUISITE: PLAN 2001.03

PLAN 3225.03: Plants in the Human Landscape. This course covers uses 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. Busand

FORMAT: Lecture / tutorial

PREREQUISITE: BIOC 1010.03 or BOL 1010.03 (C- or better) and BIOC 1010.03 or BOL 1010.03 (C- or better) and BOL 1020.03 (C- or better) or BOL 1020.03 (C- or better) or BIOL 1020.03 (C- or better) or ENVS 4220.03

PLAN 4001.06: Environmental Planning Studio. This class provides an applied context for analysing landscape issues and exploring environmental planning options. Students provide a service to the community by working through projects where local community groups or agencies have identified real needs for information and advice.

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

FORMAT: Studio 6 hours (one term)

PREREQUISITE: admission to Honours or graduate program

PLAN 4002.06: Urban Design Studio. This studio provides an applied project context for looking at issues related to the design of cities, especially their core areas. Students explore various urban design and planning options. Students provide a service to the local community by working through projects where local community groups or agencies have identified real needs for information and advice.

INSTRUCTOR(S): F. Palermo

FORMAT: Studio 6 hours (one term)

PREREQUISITE: admission to Honours or graduate program

PLAN 4100.03: Community Design Internship. Students locate a company or organization involved in some element of community design or planning and volunteer for eight hours a week in the office. An internship in a relevant workplace allows students to reflect on the knowledge they can bring to practice. Students will keep a work journal, prepare an internship report, and make a brief presentation on the placement at the end of term. Students will meet with the course coordinator for occasional seminars.

INSTRUCTOR(S): Faculty

FORMAT: Independent study / seminar

PREREQUISITE: PLAN 4001.06 or 4002.06 (limited to Honours BCD students)

PLAN 4101.03: History and Theory of Urban Design. The course introduces the history and theory of urban design as a distinct area of professional knowledge and skill within the spectrum of planning and design coursework and specialities.

INSTRUCTOR(S): F. Palermo

FORMAT: Lecture / seminar

CROSS-LISTING: PLAN 6101.03

RESTRICTION: Honours or graduate students in the Faculty of Architecture and Planning, or permission of instructor

PLAN 4102.03: Urban Economics. This 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 behavior.

INSTRUCTOR(S): M. Psalm

FORMAT: Lecture / seminar

CROSS-LISTING: PLAN 6102.03

RESTRICTION: Honours or graduate students in the Faculty of Architecture and Planning, or permission of instructor

PLAN 4103.03: Land Development Economics. This course applies basic techniques for analyzing the financial feasibility of land development projects. Case studies focus particular attention on methods of financing and organizing real estate development within the planning framework.

INSTRUCTOR(S): Faculty

FORMAT: Lecture / seminar

CROSS-LISTING: PLAN 6103.03

RESTRICTION: Honours or graduate students in the Faculty of Architecture and Planning, or permission of instructor

PLAN 4104.03: Transportation Planning. The class considers transportation trends, the transport needs associated with different activities, and the impact of transport facilities on land development to offer a critical analysis of the interplay between land uses and transportation. Technology, the costs of supplying transport facilities and the demand outlook for different modes are examined. The emphasis is on urban transportation, mobility demands and the supply of efficient and environmentally sound transport facilities.

INSTRUCTOR(S): M. Psalm

FORMAT: Lecture / seminar

CROSS-LISTING: PLAN 6104.03

RESTRICTION: Honours or graduate students in the Faculty of Architecture and Planning, or permission of instructor

PLAN 4107.03: Regional Planning. The class critically examines policies, theories, aims and achievements of regional planning. The course discusses: (i) economics, development theories, and regional development policies; (ii) international comparisons of regional development policies and experience; and (iii) Canadian regional development experience with particular reference to government initiatives in the Atlantic region.

INSTRUCTOR(S): M. Psalm

FORMAT: Lecture / seminar

CROSS-LISTING: PLAN 6107.03

RESTRICTION: Honours or graduate students in the Faculty of Architecture and Planning, or permission of instructor
PLAN 4108.03: History and Theory of Landscape Architecture.
This lecture and seminar class deals with changing landscapes and perceptions of the natural world during the past 250 years. It discusses the effects of technology and resource use on the design of landscapes as small as a private garden and as large as a bio-region, and examines the changing role of landscape architects, their writings and their collaboration with architects.
INSTRUCTOR(S): S. Guppy
FORMAT: Lecture/seminar
CROSS-LISTING: PLAN 6108.03
RESTRICTION: Honours or graduate students in the Faculty of Architecture and Planning, or permission of instructor

PLAN 4111.03: Housing Theory.
An introduction to the history and theory of contemporary practice in housing design and production. The focus is on the quality of housing and the residential environment. A comparative analysis of significant past and current examples is used to provide insight into the way houses and neighbourhoods are designed. This understanding is placed in the context of differing economic, political and housing market situations.
INSTRUCTOR(S): J.G. Wanzel
FORMAT: Lecture/seminar
CROSS-LISTING: PLAN 6111.03, ARCH 5102.03
RESTRICTION: Honours students in the Faculty of Architecture and Planning, with permission of instructor

PLAN 4150.03: Topics in Planning.
This class provides opportunities to examine selected topical issues in planning in a seminar discussion.
FORMAT: Seminar
PREREQUISITE: Restricted to honours or graduate students in the Faculty of Architecture and Planning, or permission of instructor.
CROSS-LISTING: PLAN 6150.03

PLAN 4151.03: Topics in Planning II.
This class provides opportunities to examine selected topical issues in planning in a seminar discussion.
FORMAT: Seminar
PREREQUISITE: Restricted to honours or graduate students in the Faculty of Architecture and Planning, or permission of instructor.
CROSS-LISTING: PLAN 6151.03

PLAN 4152.03: Topics in Planning III.
This class provides opportunities to examine selected topical issues in planning in a seminar discussion.
FORMAT: Seminar
PREREQUISITE: Restricted to honours or graduate students in the Faculty of Architecture and Planning, or permission of instructor.
CROSS-LISTING: PLAN 6152.03

PLAN 4153.03: Topics in Planning IV.
This class provides opportunities to examine selected topical issues in planning in a seminar discussion.
FORMAT: Seminar
PREREQUISITE: Restricted to honours or graduate students in the Faculty of Architecture and Planning, or permission of instructor.
CROSS-LISTING: PLAN 6153.03

PLAN 4200.03: Independent Study.
A student in the honours major may undertake an independent reading or research project under faculty supervision. The student will prepare a proposal that must be signed by the project supervisor and the Director of the School. The proposal will set out a work plan and projected outcomes.
INSTRUCTOR(S): Planning faculty
FORMAT: Directed study
PREREQUISITE: Permission of instructor and School
The College of Arts and Science, established in 1988, consists of the Faculty of Arts and Social Sciences and the Faculty of Science. The College of Arts and Science meets to discuss matters of concern common to its units, in particular those relating to academic programs and regulations. The Dean of Arts and Social Sciences and the Dean of Science alternate, year by year, as Provost of the College. The Provost chairs College meetings and prepares the agenda for those meetings. Administrative responsibility for what is decided in College meetings remains in the two Faculties. There are fourteen Departments in the Faculty of Arts and Social Sciences, and ten Departments and two Programs in the Faculty of Science. There are several interdisciplinary programs of instruction in the College, the responsibility for which is shared among members from different Departments.

The College of Arts and Science is responsible for the curriculum of Bachelor of Arts, Bachelor of Science, and Bachelor of Music degree programs, and for diploma programs in Meteorology and Costume Studies. The College is also responsible for the establishment of academic regulations governing students registered in its programs.

The College of Arts and Science consists of several groups: some 7,000 undergraduate students who typically spend three or four years in the College, nearly 450 full-time teaching and research faculty and staff as well as a number of part-time teachers and teaching assistants, and a support staff of secretaries and technicians. The student's academic role is to learn from teachers, from laboratory experience, from books, from other students, and from solitary contemplation. Students learn not only facts but concepts, and what is most important, they learn how to learn. Through intellectual interaction with other members of the academic community, undergraduate students should gain the background knowledge, the ability and the appetite for independent discovery. Their acquisition of these components of liberal education is marked formally by the award of a Bachelor's degree. The academic faculty has two equally important roles: to teach the facts, concepts, and methods that the student must learn; and to contribute to the advancement of human knowledge through research and through scholarly or artistic activity.

The goal of the Bachelor's degree is to produce educated persons with competence in one or more subjects. Such competence includes not only factual knowledge but, more importantly, the ability to think critically, to interpret evidence, to raise significant questions, and to solve problems. A BA or a BSc degree often plays a second role as a prerequisite to a professional program of study.

BA and BSc degree programs in the College are of three types: the four year or twenty credit degree with Honours; the four year or twenty credit degree with a Major; and the three year or fifteen credit degree with an area of concentration.

The College is particularly proud of the Honours programs that it offers in most subjects to able and ambitious students. The BA or BSc with Honours is distinguished from the BA or BSc Major (20-credit) or the BA or BSc (15-credit) in that a higher standard of performance is expected, a greater degree of concentration of credits in one or two subjects is required, and at the conclusion of the program each student must receive a grade which is additional to those for the required twenty credits. Frequently Honours students obtain this grade by successfully completing an original research project under the supervision of a faculty member. Completion of a BA or BSc with Honours is an excellent preparation for graduate study at major universities throughout the world. Dalhousie is distinguished among Canadian universities in offering BA programs with Honours in most subjects in which it also provides BSc Honours programs and in providing...
College of Arts and Science

Degree Requirements

Following is a list of the faculty requirements needed to satisfy degree programs in the College of Arts and Science. Details of these requirements can be found on the pages following these lists. Departmental requirements can be found in the appropriate department/faculty listing in this calendar. Please note that students must satisfy both department and faculty requirements. Before registering for the second year, each student in the College of Arts and Science must declare a subject of concentration and obtain program advice from a faculty advisor in the appropriate department.

Requirements for degree programs other than College of Arts and Science can be found in the appropriate department/school/college/faculty listing.

I. General

The following information applies generally to all of the programs offered within the College of Arts and Science.

A. Subject Groupings

The various subjects in which instruction is offered are placed in one or more of the groups below. In the BA degree, each program must include a full-credit in a single subject chosen from each of the three subject groups (1, 2, or 3 below), normally within the first ten credits of any BA degree. In the BSc degree, each program must include a credit in subjects chosen from each of two subject groups (1 and 2).

1. Languages and Humanities

Arabic, Canadian studies, Chinese (Mandarin), classics, comparative literature, comparative religion, contemporary studies, creative writing, early modern studies, English, French, gender and women’s studies, German, Greek, history, history of science and technology, Italian studies, King’s Foundation Year, Latin, music, philosophy, Russian, Spanish and theatre.

2. Social Sciences

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

3. Life Sciences and Physical Sciences

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

PLEASE NOTE: 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 Program and King’s Foundation Year Program. King’s Foundation Year Program (KING 1000.06, 1100.18) satisfies the humanities-language and social science groupings and students must take one credit in a single life/physical sciences subject to complete the subject grouping requirements. All options of the Dalhousie Integrated Science Program (DISP) satisfy the life sciences and physical sciences subject grouping requirement. All DISP options except DISP 1502 (environmental) satisfy the social sciences subject grouping. DISP students are required to take another half-credit in addition to DISP 1502 to satisfy the Languages 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:

• ENGL 1000X/Y.06
• ENGL 1010X/Y.06
• ENGL 1020X/Y.06
• ENGL 1030X/Y.06
• ENGL 1040X/Y.06
• PHIL 1000X/Y.06
• PHIL 1050X/Y.06
• PHIL 1060X/Y.06
• RUSN 1020X/1070X.06 (both must be successfully completed in order to satisfy the Writing Requirement)
• RUSN 1030X/1080X.06 (both must be successfully completed in order to satisfy the Writing Requirement)
• RUSN 1040X/1090X.06 (both must be successfully completed in order to satisfy the Writing Requirement)
• NCE 1110.03 (satisfies the requirement for RBSc students in the Faculty of Science only)
• NCEA 1050X/Y.06
• NCEA 1060X/Y.06
• THEA 1000X/Y.06
• THEA 1010X/Y.06
• THEA 1020X/Y.06
• THEA 1030X/Y.06
• THEA 1040X/Y.06

The Writing Class may also be used to satisfy one of the subject groupings.

Classes which satisfy the Writing Requirement are identified by the following symbol and notation in their formal description:

• Writing Requirement

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

• Writing Intensive

C. Mathematics Requirement (Bachelor of Science)

In order to qualify for a BSc degree candidates are required to complete successfully at least one full university credit in mathematics or statistics other than MATH 1001.03, MATH 1022.03, MATH 1023.03, MATH 1024.03, or MATH 1115.03. A class taken to satisfy this requirement cannot also satisfy the requirement of a class from section 3, page 65.

Students may also satisfy this requirement by completing the Dalhousie Integrated Science Program year or passing the test which is administered by the Department of Mathematics and Statistics. Such students must nevertheless complete 15 or 20 credits in order to graduate.

D. Language Class (Bachelor of Arts)

Students should consider becoming fluent in French. BA students are required to obtain one credit from the following language classes:

• ARRB 1020X/Y.06 (Arabic)
• ARRB 1030X/Y.06 (Mandarin)
• CLAS 1700X/Y.06 (Greek), 1800X/Y.06 (Latin), 1900X/Y.06 (Hebrew), 2700X/Y.06 (Greek) (both CLAS 1900.03 and 1902.03 must be successfully completed in order to satisfy the Language Requirement)
• FREN (language instruction class)
• GERM 1000X/Y.06, 1010X/Y.06, 1060X/Y.06
• ITAL 1010X/Y.06, 1020X/Y.06
• RUSN 1080X/Y.06
• SPAN 1020X/1070X.06 (both must be successfully completed in order to satisfy the Language Requirement)

For students with advanced language skills, upper-level language classes may be substituted. Consult the Office of the Registrar if you require further information. A class taken to satisfy this requirement cannot also satisfy the requirement of a class from section 1.

Degree Requirements 65
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, 1005.03, 1101.03, 1120.03, or 1115.03, to meet this requirement; or they may meet it by passing the test administered by the Department of Mathematics & Statistics. A class taken to satisfy this requirement cannot also satisfy the requirement of a class from section 3 page 65.

E. Electives

Students may choose electives from any of the classes offered by teaching units within the College of Arts and Science and the Faculty of Computer Science. In addition, without prior permission, electives are permitted as follows provided prerequisites are met and the consent of the instructor(s) is obtained when necessary:

- Bachelor of Arts
  - Two full credits from classes offered in other faculties OR
  - Two full credits from classes offered in other faculties and two full credits in Commerce OR
  - Four full credits in Commerce

Please note that BA students registered for minors in Business, Law and Society, Health Studies, Community Design or Journalism are permitted to take the classes necessary to satisfy the requirements for the minor. In addition, two credits from classes offered in other faculties are permitted.

- Bachelor of Science
  - Two full credits from classes offered in other faculties OR
  - Two full credits from classes offered in other faculties and two full credits in Commerce OR
  - Four full credits in Commerce OR
  - Five full credits in Engineering or Food Science classes and two full credits from classes offered in other faculties

Please note that BSc students registered for minors in Business or Community Design are permitted to take the classes necessary to satisfy the requirements for the minor. In addition, two credits from classes offered in other faculties are permitted.

- 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 OR
  - Five full credits in Engineering or Food Science classes and two full credits from classes offered in other faculties

Any additional elective credits outside the College of Arts and Science will be given approval to do so by the appropriate dean’s office if admission to the classes has been granted by the instructor(s) concerned. In such cases, however, it will be explicitly stated that the classes will not count for credit towards a BA or BSc degree.

Students seeking to enroll in classes beyond the above provisions as a means of preparing to transfer to a program of study outside the College of Arts and Science will be given approval to do so by the appropriate dean’s office if admission to the classes has been granted by the instructor(s) concerned. In such cases, however, it will be explicitly stated that the classes will not count for credit towards a BA or BSc degree.

F. Cross-listed Classes

Please note that cross-listed classes will count as one subject only for the purpose of satisfying degree requirements, e.g., ECON 2260.03 cross-listed with MATH 2000.03 may count either as a mathematics class or economics class but not both.

II. Programs

A. BA/BSc 20-credit Programs

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

1. Major Programs

   A major program focuses a student’s studies, but not to the extent that an honours program does. Unlike the honours degree, the major degree may not be adequate for admission to graduate programs. Students interested in a major program are advised to seek detailed information from the department in which they wish to concentrate their studies.

   1a. 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 6)
     - One credit in a single language/humanities subject (see 1, page 65)
     - One credit in a single social science subject (see 2, page 65)
     - One credit in a single life or physical science subject (see 3, page 65)
     - One credit in a single language subject (see page 65)

   - A minimum of six (6), maximum of nine (9) credits in the major subject beyond the 1000 level, including three (3) credits beyond the 2000 level

   - Within the last fifteen (15) credits, complete one credit in each of two subjects other than the major

   - Total credits required above 1000 level - 12

   - Total credits required for degree - 20

   - Required GPA for graduation - 2.00

   - Graduation with distinction - 3.70

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

   1b. BSc (20-credit)

   - One writing class (see page 6)
   - One credit in one or more language/humanities subjects (see 1, page 65)
   - One credit in one or more social science subjects (see 2, page 65)
   - One credit in math (see page 65)
   - One credit in a single life or physical science subject (see 3, page 65)
   - A minimum of seven (7), maximum of ten (10) credits in the major subject beyond the 1000 level, including four (4) credits beyond the 2000 level.

   - Total credits required above 1000 level - 12

   - Total credits required for degree - 20

   - Required GPA for graduation - 2.00

   - Graduation with distinction - 3.70

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

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

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

   - Four (4) co-op work terms

   Co-operative Education in Science Programs

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

   The following departments currently offer co-op programs: Biochemistry and Molecular Biology, Chemistry, Earth Sciences, Economics, Marine Biology, Mathematics and Statistics, Microbiology and Immunology, and...
Physics and Atmospheric Science. For details on these programs, consult the calendar entries for the departments and the Cooperative Education in Science section, page 422.

1.d BA (15 or 20-credit) Emphasis in Canadian Studies

The BA may be completed with an emphasis in Canadian Studies. See the Canadian studies entry in this calendar for requirements.

2. Double Major programs

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

2.a BA Double Major (20 credit)

- First Year
  - No more than three (3) full credit equivalents of the first five credits taken may be in a single subject
  - One credit in a writing class (see page 65)
  - One credit in a single language/humanities subject (see 1, page 65)
  - One credit in a single social science subject (see 2, page 65)
  - One credit in a single life or physical science subject (see 3, page 65)
  - One credit in a single language (see 4, page 65)
  - Minimum of ten (10) and a maximum of thirteen (13) credits in the major subjects beyond the 1000 level are to be in the two allied subjects, with no more than nine (9) credits and no fewer than four (4) credits in either, including at least 2 credits beyond the 2000 level in each of the two major subjects. The major subject with the most advanced credits appears first on the record.
  - Within the last fifteen (15) credits, complete one (1) credit in a single subject other than the two major subjects.
  - Total credits required above 1000 level - 12
  - Total credits required for degree - 20
  - Required GPA for graduation - 2.00
  - Graduation with distinction - 3.70

Bachelor of Arts double major subjects: Choose both subjects from the Bachelor of Arts major subjects or combine one of the BA major subjects with one of the BSc major subjects (except Environmental Science) or computer science. In addition to the BA major subjects listed above, Canadian studies, Italian studies, music and creative writing are also available as one of the subjects in a double major. European studies is not available in the double major program.

2.b BSc, Double Major (20-credit)

- First Year
  - No more than three (3) full credit equivalents of the first five credits taken may be in a single subject
  - One credit in a writing class (see page 65)
  - One credit in a language/humanities subject (see 1, page 65)
  - One credit in a language/humanities subject (see 1, page 65)
  - One credit in a single social science subject (see 2, page 65)
  - One credit in a single social science subject (see 2, page 65)
  - One credit in a single life or physical science subject (see 3, page 65)
  - One credit in a single language (see 4, page 65)
  - Minimum of ten (10) and a maximum of thirteen (13) credits in the major subjects beyond the 1000 level are to be in the two subjects, with no more than nine (9) credits and no fewer than four (4) credits in each, including at least 2 credits beyond the 2000 level in each of the two major subjects. The major subject with the most advanced credits appears first on the record.
  - Total credits required above 1000 level - 12
  - Total credits required for degree - 20
  - Required GPA for graduation - 2.00
  - Graduation with distinction - 3.70

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

2.c BSc Double Major (20-credit) with Environmental Science

The Faculty of Science offers a BSc Double Major in Environmental Science and one of the BA Major subjects. Degree requirements are the same as those listed in the BSc Double Major program noted above with the exception that students cannot combine a Double major in Environmental Science with any other BSc Major subject.

2.d BSc Double Major (20-credit) in Environmental Science & Community Design

Consult the Environmental Programs section of this Calendar for details.

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

Consult the Environmental Programs section of this Calendar for details.

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

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

- CSCI 1100.03
- CSCI 1101.03
- CSCI 2110.03
- CSCI 2112.03
- CSCI 2121.03
- CSCI 2132.03
- CSCI 2410.03
- CSCI 3110.03 or 3111.03**
- CSCI 3120.03
- CSCI 3130.03
- CSCI 3171.03
- MATH 1010.03
- MATH 1010.03
- MATH 2010.03

*CSCI 2112.03 is cross-listed as MATH 2112.03
** CSCI 3111.03 is cross-listed as MATH 3170.03

3. Honours Programs

Honours programs require a higher quality of work than is required by the other undergraduate programs of the college (such as the 15-credit degree and 20-credit major). Able and ambitious students are urged to enter these programs. There are two types of honours programs in the BA (concentrated and combined) and three types in the BSc (concentrated, combined, and multidisciplinary). Applications for admission to honours programs must be made to the departments concerns on forms available in departments, at the Office of the Registrar or online at www.registrar.dal.ca/forms/. The Registrar may be consulted by those considering multidisciplinary honours.

Students should apply before registering for the second year. If application is made later, it may be necessary to make up some work not previously taken.

For each individual student the entire honours program, including elective credits, is subject to supervision and approval by the department or departments concerned, or in the case of multidisciplinary honours, by an interdisciplinary committee.

NOTE: The last day to apply to an honours program is September 22.

3.a BA Concentrated Honours (20-credit)

- First Year
  - No more than three (3) full credit equivalents of the first five credits taken may be in a single subject
  - One credit in a writing class (see page 65)
  - One credit in a single language/humanities subject (see 1, page 65)
  - One credit in a single social science subject (see 2, page 65)
  - One credit in a single social science subject (see 2, page 65)
  - One credit in a single life or physical science subject (see 3, page 65)
  - One credit in a single language (see 4, page 65)
  - Minimum of nine (9) credits, maximum of eleven (11) credits beyond the 1000 level in the honours subject - grade must be "C" or better
  - Minimum of nine (9) credits, maximum of eleven (11) credits beyond the 1000 level in the honours subject - grade must be "C" or better, otherwise class will not count towards degree.
  - Within the last fifteen credits, two (2) to four (4) - depending on the number selected in the honours subject - elective credits, at least one credit of which must be in a single subject other than the honours subject and the subject chosen for the two credits outside the honours subject.
• Total credits required for degree - 20

Honours Qualifying Examination: At the conclusion of an honours program a student’s record must show a grade which is additional to the grades for the classes taken to obtain the required twenty credits. This grade may be obtained through a comprehensive examination, the presentation of a research paper (which may be an extension of one of the classes), or such other method as may be determined by the committee or department supervising the student’s program. The method by which this additional grade is obtained is referred to as the Honours Qualifying Examination. Departments may elect to use a pass-fail grading system for this examination. Unless pass/fail grading is employed, the grade must be “B-” or better for honours, and “A-” or better for first class honours.

Required standing for graduation

Arts and Social Sciences subjects require a GPA of 2.70 (3.70 for first class) on classes in the honours subject and the single subject chosen for the two credits outside the honours subject.

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

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

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

3.b BSc Concentrated Honours (20-credit)

One writing class (see page 65)

One credit in one or more language/humanities subjects (see 1, page 65)

One credit in one or more social science subjects (see 2, page 65)

One credit in a math (see page 65)

Minimum of nine (9) credits with a grade of C or better, maximum of eleven (11) credits beyond the 1000-level in the honours subject.

Total credits required for degree - 20

Honours Qualifying Examination: At the conclusion of an honours program a student’s record must show a grade which is additional to the grades for the classes taken to obtain the required twenty credits. This grade may be obtained through a comprehensive examination, the presentation of a research paper (which may be an extension of one of the classes), or such other method as may be determined by the committee or department supervising the student’s program. The method by which this additional grade is obtained is referred to as the Honours Qualifying Examination. Departments may elect to use a pass-fail grading system for this examination. Unless pass/fail grading is employed, the grade must be “B-” or better for honours, and “A-” or better for first class honours.

Required standing for graduation

GPA of 3.00 (3.70 for first class) on classes in the honours subject.

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

3.c BA Combined Honours (20-credit)

First Year

No more than three (3) full credit equivalents of the first five credits taken may be in a single subject

One credit in a writing class (see page 65)

One credit in a single language/humanities subject (see 1, page 65)

One credit in a single social science subject (see 2, page 65)

One credit in a single life or physical science subject (see 3, page 65)

One credit in a single language (see page 65)

Total credits required for degree - 20

Minimum of eleven (11) credits beyond the 1000-level in two allied subjects, not more than seven (7) credits nor fewer than four (4) credits being in either of them. Students may, with the approval of the departments concerned, elect a maximum of thirteen (13) credits in two subjects with no more than nine (9) credits and no fewer than four (4) credits being in either of them.

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

Bachelor of Science combined honours subjects: biochemistry and molecular biology, biology, chemistry, earth sciences, economics, marine biology, mathematics, microbiology & immunology, neuroscience, oceanography*, physics, psychology and statistics. Choose both subjects from the BSc honours subjects listed above or combine one of the BSc honours subjects with one of the BA honours subjects or Canadian studies or computer science, provided the larger number of honours credits is in a science subject.

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

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

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

3.f BSc Multidisciplinary Honours (20-credit)

One credit in a writing class (see page 65)

One credit in one or more language/humanities subjects (see 1, page 65)

One credit in one or more social science subjects (see 2, page 65)

One credit in math (see page 65)

Twelve (12) credits beyond the 1000-level in three or more subjects. No more than five (5) credits of these may be in a single subject; no less
than six (6) credits nor more than nine (9) credits may be in two subjects. Grade must be "C" or better.

• Total credits required for degree - 20
• Three (3) elective credits.
• Honours Qualifying Examination: See Concentrated Honours program above for details.
• Required standing for graduation:
  GPA of 3.00 (3.70 for First Class) on classes in the honours subjects.
Bachelor of Science multidisciplinary honours subjects - at least eight (8) credits of the twenty selected must be from the following subjects:

• Economics, environmental science, mathematics, microbiology & immunology, neuroscience, physics, psychology and statistics.

3. Honours Programs in Science Co-operative Education

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

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

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

• Four (4) co-op work terms

3.i Joint Honours: Dalhousie-Mount Saint Vincent

Special arrangements exist under which students may be permitted to pursue an honours program jointly at Dalhousie and Mount Saint Vincent universities. Interested applicants should consult the appropriate department of their own university at the beginning of the second year. Prospective joint honours students must be accepted by the honours departments concerned at both institutions. These departments supervise the entire program of study of accepted applicants. Students should be aware that not all classes available for credit at Mount Saint Vincent can be given credit at Dalhousie and vice versa. In order for students to obtain a joint honours degree they must satisfy all requirements of both institutions.

4. Minor Programs

Minor programs allow students to develop subject specialties, especially ones taught outside their main faculty, that complement their major or honours subjects. Minors are normally added to a four year major or concentrated honours program. If a minor is added to a double major or a combined honours program, students may find that they need to take more than 20 credits to complete all of their degree requirements.

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

4.a Minor in Business

The minor in business is available to students registered in the BA, BSc 20-credit major and honours programs. The requirements are as for the appropriate degree program with completion of the following credits:

• COMM 3103.03
• ECON 1011, 1022
• One credit in mathematics is required for the BSc. The mathematics credit must be other than MATH 1001/1002, 1005, 1110/1120 or 1115.
• COMM 2001, 2202, 2305, 2401, 3911
• 1.0 full credit above the 1000 level in commerce
• Please note that at least half of the credits required for the minor must be completed at Dalhousie.

4.b Minor in Canadian Studies

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

4.c Minor in Community Design

The minor in community design is available to students registered in the BA, BSc 20-credit major and honours programs. The requirements are as for the appropriate degree program with completion of the following classes:

• PLAN 1001.03 and PLAN 1002.03
• Either PLAN 2001.03 or PLAN 2002.03
• Seven additional half-classes (14 credit hours) in PLAN classes. See page 86 for further details.

4.d Minor in Computer Science

The minor in computer science is available to students registered in the BSc 20-credit major and honours programs. The requirements are as for the appropriate degree program with the completion of the following classes:

• CSCI 1000.03
• CSCI 1101.03
• CSCI 2110.03
• CSCI 2315.03
• Two of CSCI 3110.03, CSCI 3120.03, CSCI 3140.03, CSCI 316.03 and CSCI 3717.03
• One additional CSCI half-credit at or above the 3000 level

4.e Minor in Environmental Studies

The minor in environmental studies is available to students registered in the BA, BSc 20-credit major and honours programs. The requirements are as for the appropriate degree program with five of the electives being replaced by ENVS 1000 and four credits in environmental studies classes. See page 441 for further details.

4.f Minor in Film Studies

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

4.g Minor in Health Studies

The minor in health studies is available to students registered in the BA, BSc 20-credit major and honours programs. The requirements are as for the appropriate degree program including four full credits as described on page 13. To count towards the minor, a minimum grade of B- is required.

4.h Minor in Journalism Studies

The minor in journalism studies is available to students registered in the BA, BSc 20-credit major and honours programs. The requirements are as for the appropriate program, with completion of the following classes:

• JOUR 1001.06
• JOUR 2000.03
• 1.5 full journalism electives above the 2000 level.
• See page 170 for further details.

4.i Minor in Law & Society

The minor in law and society is available to students registered in the BA, BSc 20-credit major and honours programs. The requirements are as for the appropriate degree program with completion of the following classes:

• LAWS 2500.0X, C/6 (with a minimum grade of B+)
• The equivalent of three full classes from the list of approved classes. See page 872 for further details. To count towards the minor, a minimum grade of B- is required.

B. BA (15-credit) Programs

1. With Concentration

• First Year
• No more than three (3) full credit equivalents of the first five credits taken may be in a single subject
• One credit in a writing class (see page 65)
• One credit in a single language/humanities subject (see 1, page 65)
• One credit in a single social science subject (see 2, page 67)
• One credit in a single life or physical science subject (see 3, page 65)
• One credit in a single language for (see page 65)
1. That the equivalent of five credits constitutes a normal year, coordinated programs may structure them as it wishes, consistent with committee of the faculty. A department or group of departments offering coordinated programs must be explicitly approved by the curriculum programs are chosen, they may be in different departments. All such programs, or two one-year integrated programs, of study. If two one-year Students may in their second and third years follow a two-year integrated Science, subjects of concentration: classics, English, French, gender and women’s studies, German, history, international development studies, Italian studies, linguistics, philosophy, political science, religious studies, Russian studies, sociology and social anthropology, Spanish, theatre, or any of the BSc subjects of concentration.

C. BSc (15-credit) Programs

1. With Concentration
   • One writing class (see page 64)
   • One credit in one or more language/humanities subjects (see 1, page 65)
   • One credit in one or more social science subjects (see 2, page 68)
   • One credit in math (see page 65)
   • Minimum of four (4), maximum of eight (8) credits in the subject of concentration beyond the 1000 level, including two (2) credits beyond the 2000 level. Students choosing chemistry for the subject of concentration need take only one credit beyond the 2000 level.
   • Total credits required above 1000 level - 7
   • Total credits required for degree - 15
   • Required GPA for graduation - 2.00
   • Graduation with distinction – 3.70

Bachelor of Arts, subjects of concentration; classics, English, French, gender and women’s studies, German, history, international development studies, Italian studies, linguistics, philosophy, political science, religious studies, Russian studies, sociology and social anthropology, Spanish, theatre, or any of the BSc subjects of concentration.

2. Upgrading of a BA or BSc (15-credit) to a BA or BSc Major (20-credit)

A person who holds a Dalhousie BA or BSc (15-credit) degree may apply through the Registrar’s Office for admission to a major program. On completion of the required work, with proper standing, a certificate will be awarded which has the effect of upgrading the degree to major status.

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

A person who holds a Dalhousie BA or BSc (15 or 20-credit) degree may apply through his/her department advisor or, for multidisciplinary Honours (BSc only) Programs, the Registrar may be consulted, for admission to an Honours program. On completion of the required work, with proper standing, a certificate will be awarded which has the effect of upgrading the degree to honours status.

D. Coordinated Programs—College of Arts and Science

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

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

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

E. Concurrent Programs

1. BSc/BEng

Students who meet the admission requirements for the Bachelor of Science program and the Bachelor of Engineering program are eligible to select this concurrent degree option. Students wishing specific advice should consult the Associate Dean, Faculty of Science and the Associate Dean, Faculty of Engineering: Students accepted will normally complete the 15-credit BSc and the first two years of engineering studies leading to the Diploma in Engineering (DipEng) concurrently in a period of three calendar years. At the end of the three year period, both the degree and the diploma will be awarded to successful candidates. This opportunity should appeal to students with career objectives in multi-disciplinary fields such as biomedical engineering, environmental science, or materials science (among others). It is thus possible to complete the requirements for the Bachelor of Science and Bachelor of Engineering degrees concurrently in a time period of five years in total (or up to six years for co-op programs).

2. BA/BEng

Students wishing to do so may complete the 15-credit BA degree program and the first two years of engineering studies leading to the Diploma in Engineering (DipEng) concurrently in a period of three calendar years. At the end of the three year period, both the degree and the diploma will be awarded to successful candidates. It is thus possible to complete the requirements for the Bachelor of Engineering, and the Bachelor of Arts degrees concurrently in a time period of five years in total (or up to six years for co-op programs).

Students who meet the admission requirements for the Bachelor of Arts and Bachelor of Engineering programs are eligible to select this concurrent degree option. Students wishing specific advice should consult the Associate Dean, Faculty of Engineering and the department for the BA subject of concentration.

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

<table>
<thead>
<tr>
<th>Term</th>
<th>Fall</th>
<th>Winter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>CHEM 1021.03</td>
<td>CHEM 1021.03</td>
</tr>
<tr>
<td></td>
<td>MATH 1000.03</td>
<td>MATH 1000.03</td>
</tr>
<tr>
<td></td>
<td>ENGI 1100.03</td>
<td>ENGI 1100.03</td>
</tr>
<tr>
<td></td>
<td>ENGI 1100 3/2/6</td>
<td>ENGI 1100 3/2/6</td>
</tr>
<tr>
<td></td>
<td>Writing Class X/Y.06 (see page 262)</td>
<td></td>
</tr>
<tr>
<td>Year 2</td>
<td>Two 3000-level classes in the subject of concentration</td>
<td>Three engineering classes</td>
</tr>
<tr>
<td></td>
<td>Two 3000-level classes in the subject of concentration</td>
<td></td>
</tr>
<tr>
<td>Year 3</td>
<td>Two 3000-level classes in the subject of concentration</td>
<td>Two 3000-level classes in the subject of concentration</td>
</tr>
<tr>
<td></td>
<td>Two 3000-level classes in the subject of concentration</td>
<td>Two 3000-level classes in the subject of concentration</td>
</tr>
<tr>
<td></td>
<td>Language/Humanities or social science elective 3/3/6</td>
<td>Language/Humanities or social science elective 3/3/6</td>
</tr>
</tbody>
</table>

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

F. Individual Programs

In cases where students feel their academic needs are not satisfied under the above requirements, individual programs may be submitted to the Student Affairs Committee of the Faculty of Arts and Social Sciences or to the curriculum committee of the Faculty of Science prior to or during the student’s second academic year. The Dean shall act as advisor for such students.
G. Other Degree and Diploma Programs

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

2. Diploma and Advanced Diploma in Costume Studies
   Study for these credentials is entirely within the Department of Theatre. See the entry for that department for detailed information.

3. Diploma in Meteorology
   Details of the requirements for this diploma may be found in the entry of the Department of Physics and Atmospheric Science.

H. Certificate Programs

1. Certificate of Proficiency in French
   For the requirements for this certificate, see the French Department entry, page 115.

2. Certificate of Proficiency in Spanish
   For the requirements for this certificate, see the Spanish Department entry, page 228.

3. Certificate of Proficiency in Russian
   For the requirements for this certificate, see the Russian Studies Department entry, page 211.

4. Certificate in Forensic Psychology
   For the requirements for this certification, see the Psychology Department entry, page 498.

5. Certificate in Information Technology
   All BSc students will be provided with a basic level of competency in the use of current IT tools. Finding, retrieving, and preparing electronic documents and communicating electronically become second nature to all science students. In many programs students work frequently with symbolic calculation packages such as mathematics and MAPLE, statistical packages such as S-Plus, and numerical packages. Others develop proficiency in a scientific type-setting environment such as LATEX or produce Web documents in HTML format. Databases, CAD, GIS, and spreadsheets; a variety of hardware and operating systems experience further round out the set of skills of many science graduates.

   The Faculty of Science Certificate in IT provides a discipline-based program to students entering first or second year in September 2000 majoring in chemistry, earth sciences, mathematics, physics or statistics. Certificate in IT will be awarded if you complete:
   1. The (20-credit) major or honours program in one of the following: chemistry, earth sciences, mathematics, physics, statistics;
   2. The classes identified by the major department which cover the following categories of IT.

   **Presentations**
   - Proficiency in developing online presentations, including object linking.
   - Ability to produce documents in HTML and/or XML format
   - Creation of a personal website
   - Data Collection
   - Construct a relational database using multiple tables and data entry forms for textual, numeric, and graphical data
   - Do the above with a spreadsheet
   - Collect and process multivariate data sets, e.g., spatial coordinate data using GIS, and incorporate it into a database, CAD or GIS

   **Data Manipulation**
   - Editing, transformation, import-export to different data formats within and between spreadsheets, databases, and support programs

   **Data Processing**
   - Basic manipulation of multivariate data and analysis, e.g., GIS manipulation of special data sets

   - Statistical evaluation of data sets using spreadsheet functions, stats programs, e.g., SYSTAT, S-Plus
   - Numeric modeling using spreadsheets, GIS etc.

   **Data Visualization**
   - Graphing in 2D and 3D, time series etc.
   - Surface modeling
   - Fundamentals of animation

   **General Issues**
   - Intellectual property in the digital world
   - Ethics and privacy
   - Security (viruses, firewalls, data encryption)

   The IT skills will be covered within the regular discipline-based classes of the major. They are presently available for students registered in the major or honours programs of chemistry, earth sciences, mathematics, physics or statistics. Consult each department’s Web page for a listing of the appropriate classes which will meet the requirement of the IT Certificate.

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

7. Certification in Applied and Computational Mathematics
   For the requirements for this certification, see the Mathematics and Statistics departmental entry.
Faculty of Arts and Social Sciences

Location: 6135 University Ave.
Third Floor
Halifax, NS B3H 4P9
Telephone: (902) 494-1440
Fax: (902) 494-3641
Website: www.dal.ca/FASS

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

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

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

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

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

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

Administrator
Nielsen, S., BBA (MSVU), MBA (Dal)
Telephone: (902) 494-1441

I. Introduction

The Faculty of Arts and Social Sciences includes humanities, social sciences, languages, and performing arts. Within the Faculty’s departments and interdisciplinary programs, you can get involved in music and theatre at a professional level. Or you can find out how to do social surveys or archival research. Try out your language-learning abilities in French, German, Spanish, Italian, Arabic, Mandarin, or maybe Hebrew, Latin, or Greek. Study abroad for a term or a year, and you will develop your skills in cross-cultural interaction. Sharpen your reasoning powers and writing skills by taking literature and philosophy classes that teach advanced levels of reading and analysis.

By exploring various academic disciplines, you’ll find that your curiosity about the world and your hopes of a career can be fulfilled in many different ways. You may find that a particular discipline exactly suits your needs. Or you may want to design a course of studies that engages you in a wider variety of departments and programs. You may find everything you need within the disciplines grouped in this Faculty. Or perhaps you will seek out the programs that combine this Faculty’s offerings with ones from other Faculties. Professors and administrators, advisors and instructors, will all help to guide you as you choose classes and programs. Our goal is to help you to see differently, and to see your way to a bright future!

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

Canadian Studies
Chinese (Mandarin)
Classics
Community Design
Contemporary Studies
Costume Studies (Theatre)
Creative Writing
Early Modern Studies
English
Environmental Studies
European Studies
Film Studies
French
Gender and Women’s Studies
German
Health Studies
History
History of Science and Technology
International Development Studies
Italian Studies
Journalism Studies
Law and Society
Linguistics
Music
Philosophy
Political Science
Religious Studies
Russian Studies
Sociology and Social Anthropology
Spanish
Theatre
Dalhousie University offers a set of classes in different disciplines which focus on Africa. NOTE: This is not a program leading to a degree in African Studies.

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

Students interested in Africa are encouraged to select classes from these several disciplines which concentrate on the continent. These could be included in single or combined major or honours programs in Economics, History, International Development Studies, Political Science and/or Sociology and Social Anthropology.

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

ARBC 1020X/Y.06: Introduction to Arabic.
Introduction to Arabic is a course which focuses on the acquisition of the elementary foundation in Arabic language. It also offers basic information regarding the Arab world: ancient and modern culture and civilization, daily life, religions, literature, etc. The variety of Arabic offered by this class is Modern Standard Arabic, which represents the Arabic language nowadays used in all Arab countries in the formal and cultural communication. Modern Standard Arabic is used in writing, but it is also a spoken language used in many formal situations.

This class aims to cover: writing with Arabic characters, reading simple original texts in Arabic, the basic components of Arabic grammar and basic daily vocabulary. Some elements of spoken Arabic varieties (dialects) may be offered as well in the second term.

NOTE: This class fulfills the BA language requirement.

INSTRUCTOR(S): D.R. Firanescu
FORMAT: Lecture
EXCLUSION: ASSC 1020X/Y.06

ARBC 2020X/Y.06: Intermediate Arabic.
This class aims to consolidate the grammar and vocabulary acquired at the first level (Introduction to Arabic), and to improve reading and correct use of the syntactical structures in both oral and written communication. The course will also provide the student with the foundation necessary for reading standard forms of Arabic prose (especially newspapers) and for using Modern Standard Arabic in conversation. Written and oral translations from Arabic into English and vice-versa will be frequently proposed to the students in order to attain this purpose.

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

INSTRUCTOR(S): D.R. Firanescu
FORMAT: Lecture
PREREQUISITE: ARBC 1020.06, or permission of the instructor
EXCLUSION: ASC 2020X/Y.06

ARBC 3030.03: Advanced Arabic I.
This class is a continuation of Intermediate Arabic (ARBC 2020). The course is designed to (1) consolidate the knowledge acquired in Modern Standard Arabic at the previous level (2) to curiously reading tests 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
Arts and Social Sciences

ASSC 1000.03: Introduction to Computing for Non-Majors.
This course is primarily designed for incoming international students. It aims to provide an overview of the basic elements of computing and how computers are used in various fields. Students will learn about the components of a computer system, the history of computing, and how computers are used in modern society. This course is open to all students, but it is especially recommended for non-computer science majors. It is not offered for credit in the Arts and Social Sciences or Health Education programs.

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.

ASSC 1100.03: Interdisciplinary Issues in Career Development.
This class examines theoretical and practical issues in career development. Participating in the portfolio process, students will apply theoretical understandings to experientially based activities. Through assessing personal environmental factors that impact decision-making, students will create a purposeful context for viewing their careers. Class content will include principles, theories and practices relating to the meaning and nature of work, self and identity, career choice and decision-making, issues and strategies in self-assessment, occupational research and the future of work. Special issues will also be considered, such as gender, culture, job loss and the management of a career portfolio. This is a half credit class that is taken as part of a regular degree program.
ASSC 3100X/Y.06: Communication and Mentoring.
This class examines the fundamental principles of human communication, leadership, mentoring and group dynamics. Through the application of theory to practice, students will experientially reflect on their own communication, facilitation, leadership, coaching and mentoring skills. Opportunities for skill applications will occur in class as well as through a practicum component. This is a full credit class that is taken as part of a regular degree program.
NOTE: This is a limited enrolment class for which a signature is required. If you are interested in taking this class, please contact Learning Connections, Killam Library, 6225 University Avenue, Halifax, Nova Scotia B3H 4H8. Phone: (902) 494-3077.
INSTRUCTOR(S): Staff
FORMAT: Lecture/discussion/tutorial
EXCLUSION: MGMT 1000.03 plus ASSC 3100.06 are taken.
ASSC 3110X/Y.06: Practicum for Writing Tutors.
This class combines the theory and practice of good writing for university students. Those enrolled will address theories of composition as they apply to basic research papers and reports. In conjunction with writing theory and practice, in relation to their own writing, members of the class will also serve as tutors in another class in which formal written work is part of the curriculum. They will serve as tutors under the supervision of the Practicum instructor, and in cooperation with the instructor of the target class.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
INSTRUCTOR(S): L. Bennett
CROSS-LISTING: ENGL 3111X/Y.06
ASSC 3112.03: Writing Theory.
This class puts writing theory into practice. As part of their course work, students gain valuable experience working as writing tutors and/or assistant editors for an academic journal. The class is ideal preparation for careers in teaching or publishing, as well as for students going on to do graduate work.
INSTRUCTOR(S): Lyn Bennett
FORMAT: Writing Intensive, Lecture/Discussion
PREREQUISITE: ASSC 3111.03X/ENGL 3111.03X, Instructor’s permission required.
CROSS-LISTING: ENGL 3112.03Y
EXCLUSION: ASSC 3110.06X/ENGL 3111.06X
ASSC 3113.03: Writing Practice.
INSTRUCTOR(S): Lyn Bennett
CROSS-LISTING: ENGL 3113.03Y
ASSC 4010X/Y.06: Teaching English as a Second Language.
Students must obtain a Letter of Permission from Dalhousie University to take this class. Students must then apply, register and pay fees for this class at the International Language Institute. In cooperation with the Royal Society of Arts (RSA), the University of Cambridge Local Examinations Syndicate (CLES) and the International Language Institute (ILI), Dalhousie offers an intensive class leading to a Certificate of English Teaching to Adults (CELTA). The syllabus covers six major areas: (1) language awareness, (2) the learner, the teacher, and the teaching/learning context, (3) planning, (4) classroom management and teaching skills, (5) resources and materials, (6) professional development. The teacher-in-training conducts classes with actual adult learners. Critical feedback is provided on teaching practice, written assignments and evidence of professional development through the class.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively. A certificate (CELTA) will be awarded when both terms are completed successfully.
INSTRUCTOR(S): UCLES-approved staff of the International Language Institute
FORMAT: Lab/tutorial/teaching practice
PREREQUISITE: Must be in good standing as third or fourth year university student
ASSC 4020X/Y.06: Editing and Publishing.
This seminar will introduce students to theories and practices of editing and publishing in both print and digital media. As participants in this experiential learning seminar, students will accumulate specific skills and develop a portfolio relevant to working in the field of academic publishing. By providing practical experience with print and web-based publishing projects, the seminar will allow students to work in collaboration with the professor on the production of edited texts. NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
PREREQUISITE: Seminar participants must have already completed 60 university credits or the equivalent of 10 full courses.
Canadian Studies

Location: Marion McCain Arts and Social Sciences Building
6135 University Avenue, Room 2301
Halifax, Nova Scotia B3H 4P9

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

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

Coordinator
Dawson, Carrie (494-2980/3488)

Faculty
Apostle, R. (Sociology and Social Anthropology)
Bannister, J. (History)
Barber, R. (Theatre)
Bednarski, B. (French)
Bliss, J. (Music)
Brotz, S.A.M. (Philosophy)
Butler, P. (Sociology and Social Anthropology)
Campbell, C. (History)
Carbet, L. (Political Science)
Dawson, C. (English)
Ehren, C. (French)
Finney, R. (Political Science)
Girard, P. (Law)
Irvine, D. (English)
Lesser, B. (Economics)
MacCallum, T. (History)
Noble, B. (Sociology and Social Anthropology)
O'Grady, I. (French)
O'Byrne, D. (Theatre)
Smith, J. (Political Science)
Threlfell, E. (Law)
Tillotson, S. (History)

The Canadian Studies Program

I. Introduction
Why Canadian Studies at Dalhousie? In this era of globalized economies and a growing sense of international citizenship and responsibilities, Canadian Studies programs are enjoying something of a renaissance. Knowing ourselves and understanding our place in the world as Canadians remains an urgent task for students and scholars alike.

Canadian Studies at Dalhousie University has always been based upon a very strong tradition of research and teaching in a wide range of Faculty of Arts and Social Science and Faculty of Science departments and in other associated faculties and professional schools such as Health Professions, Law, and the King's School of Journalism. The new Dalhousie Canadian Studies Program, with its various options, allows students to deepen their understanding of Canada in an exciting and coherent interdisciplinary context. As a second field of study leading to an Emphasis or a Minor, a Double Major or a Combined Honours B.A. or B.Sc., it provides the opportunity to enrich and enhance a student's work on Canadian topics beyond his or her primary departmental home. To this end, Canadian Studies provides both a group of core classes taught by our cross-appointed faculty and a long list of offerings "approved with Canadian Studies" from the various contributing departments throughout the University.

Former students of Canadian Studies have found that this interdisciplinary study has been of benefit to them in a wide range of activities and careers including journalism, teaching at all levels, and graduate and professional studies.

II. Requirements

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

1. BA and BSc with an Emphasis in Canadian Studies
Two-and-one-half credits:
- One-and-one half credits from among the list of Canadian-content classes "approved with Canadian Studies" (see below). Students taking CANA 3010.03, CANA 3020.03, and/or CANA 4000.03 may count each class as fulfilling one-half credit towards this requirement.

2. BSc with a Minor in Canadian Studies
1000-level
One full-credit class in French (a class in an aboriginal language may be substituted, as a transfer credit).

2000-4000-level
A total of four full-credits of classes above the 1000-level, two of them to be above the 2000-level:
- CANA 3010.03: Interdisciplinary Approaches to Current Canadian Themes or CANA 3020.03: Canadian Cultural Landscapes
- CANA 4000.03: Canadian Studies Senior Seminar
- Two Canadian-content classes "approved with Canadian Studies"

3. BA or BSc with a Double Major in Canadian Studies
1000-level
One full-credit class in French (a class in an aboriginal language may be substituted, as a transfer credit).

2000-4000-level
A minimum of four full-credits of classes above the 1000-level, two of them to be above the 2000-level:
- CANA 3010.03: Interdisciplinary Approaches to Current Canadian Themes or CANA 3020.03: Canadian Cultural Landscapes
- CANA 4000.03: Canadian Studies Senior Seminar
- CANA 4001.03: Research Topics in Canadian Studies OR one half-credit Canadian-content class "approved with Canadian Studies"
- Further Canadian-content classes "approved with Canadian Studies," as required.

4. BA or BSc with a Combined Honours in Canadian Studies
1000-level
One full-credit class in French (a class in an aboriginal language may be substituted, as a transfer credit).

2000-4000-level
A minimum of four full-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 or CANA 3020.03: Canadian Cultural Landscapes
- CANA 4000.03: Canadian Studies Senior Seminar
- CANA 4001.03: Research Topics in Canadian Studies
- A minimum of one-and-one half Canadian-content classes "approved with Canadian Studies," as required.

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.

CANA 2000X/Y.06: The Idea of Canada: An Introduction
This course employs an interdisciplinary approach to focus on selected themes in Canadian history and society. Beginning with the premise that a nation is fundamentally a “narration,” it asks: “What sorts of stories do Canadians tell about themselves? Hence the course is centered on important texts - novels, poems, films, songs, and documentaries - that relate formative events in Canadian history and that point to new, contested, directions for the future. Themes may include, but are not restricted to: aboriginal peoples, ethnicity, race, and multiculturalism; national identity and regional conflict; World Wars I and II; and the emergence of a globalized and urbanized Canada.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
INSTRUCTOR(S): Team-taught by two cross-appointed faculty. Please consult the Canadian Studies website for a current list of instructors.
FORMAT: Lecture
PREREQUISITE: CANA 2000 or other class approved with Canadian Studies, or Instructor/Coordinator approval

CANA 3020.03: Canadian Cultural Landscapes.
This class explores the stories behind Canada’s distinct regional landscapes. It begins with the idea that each province has a certain identity within the national framework - a “signature” landscape - and this identity can be traced to a particular historical relationship with a particular place or environment. By examining the origins of these different landscapes, we can better understand how different geographical features shaped both local and national histories, and also the regional tensions and differences with national borders. At the same time, we can appreciate how nature has been understood, used and transformed since the fifteenth century.
INSTRUCTOR(S): Staff
FORMAT: Lecture/discussion
PREREQUISITE: CANA 2000 or other class approved with Canadian Studies, or Instructor/Coordinator approval

CANA 4000.03: Seminar in Canadian Studies.
This interdisciplinary seminar will be taught by a number of professors in various disciplines. In addition to weekly seminars, students will consider essays and other short readings in a number of the following: Economics, English, French (in translation), History, Music, Philosophy, Political Science, Sociology and Social Anthropology, Theatre and Law. The class is designed to provide students with the opportunity to consider the structure and content of Canadian society from a variety of academic viewpoints - philosophical, historical, political, sociological, geographical, legal and literary.
NOTE: CANA 4000.03 is also open, as an elective class, to Faculty of Arts and Social Sciences students with an interest in Canadian Studies who may not complete the Canadian-content requirements for the Emphasis, Minor or Joint Degrees.
INSTRUCTOR(S): Drawn from the list of cross-appointed faculty. Please consult the Canadian Studies website for a current list of instructors.
FORMAT: Seminar/Tutorial
PREREQUISITE: CANA 2000 or other class approved with Canadian Studies, or Instructor/Coordinator approval

CANA 4001.03: Research Topics in Canadian Studies.
Replace 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-on-one meetings with the chosen faculty member and regular meetings of the whole group. The class is open to all students who have completed CANA 4000.03, and it is highly recommended for those seeking the Emphasis in Canadian Studies. NOTE: CANA 4001.03 is also open, as an elective class, to Faculty of Arts and Social Sciences students with an interest in Canadian Studies who may not complete the Canadian-content requirements for the Emphasis, Minor or Joint Degrees.
INSTRUCTOR(S): Drawn from the list of cross-appointed faculty. Please consult the Canadian Studies website for a current list of instructors.
FORMAT: Seminar/Tutorial
PREREQUISITE: CANA 4000.03

IV. Classes Approved with Canadian Studies

1. Comparative Religion Classes Approved with Canadian Studies
   • COME 3000.06: Religion in Canada

2. Earth Sciences Classes Approved with Canadian Studies
   • ERTH 2410.03: Environmental and Resource Geology I

3. Economics Classes Approved with Canadian Studies
   • ECON 2217.05: Women and the Economy
   • ECON 2218.05: The Canadian Economy in the New Millennium
   • ECON 2223.05: Canadian Economic History I
   • ECON 2224.05: Canadian Economic History II
   • ECON 3337.05: Poverty and Inequality
   • ECON 3339.03: Industrial Organization - Market Conduct and Market Performance
   • ECON 3350.03: Money and Banking
   • ECON 3352.05: Resource Economics
   • ECON 3356.05: Regional Development
   • ECON 3354.05: Public Finance I
   • ECON 3355.05: Public Finance II
   • ECON 4443.03: Canadian Competition Policy
   • ECON 4446.03: 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 2200.06: Canadian Literature
   • ENGL 4401-4499: Studies in National Literatures
   • ENGL 3201.03: Modern Canadian Literature
   • ENGL 3204.03: Canadian Themes

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 2203.03: Introduction à la langue française
   • FREN 2204.03/2205.03: Language of Culture/Linguistique et Culture
   • FREN 3202.03: Approches du texte littéraire/Approaches to Literary Texts
   • FREN 3205.03: Les Parlers acadiens: Introduction linguistique/ Linguistic Introduction to Acadian Dialectology
• FREN 3026.03: Le français québécois / Québécois French
• FREN 3900.03/FREN 3901.03: La littérature canadienne-française / French Canadian Literature
• FREN 3910.03: Études québécoises / Acadian Studies
• FREN 4002.03: Écrivains québécois contemporains / Contemporary Quebec Writers
• FREN 4004.03: Écrivaines québécoises / Quebec Women Writers

7. Health Services Administration Classes Approved with Canadian Studies
• HESA 4000.03: Canadian Health Care Delivery System
• HESA 4002.03: Health Human Resource Management
• HESA 4003.03: Quality Management
• HESA 4400.03: Introduction to Health Care Economics

8. History Classes Approved with Canadian Studies
• HIST 2211.03: Social History of Canada Before 1870
• HIST 2212.03: Social History of Canada Since 1870
• HIST 2221.03: Rough Justice: Order, Disorder and Canadian Popular Culture, to the 1860’s
• HIST 2222.03: Rough Justice: Order Disorder and Canadian Popular Culture, 1860 to Present
• HIST 2229/2230.06: Canada in the Twentieth Century
• HIST 2223.03: The Canadian West
• HIST 2241.03: 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 3221.03: Youth Culture in Canada, 1950’s to 1970’s
• HIST 3222.3: Topics in Canadian Social History, 19th and 20th Centuries
• HIST 3223.03: The Caring Society, Welfare in Canada Since 1900
• HIST 3224.03: Law and Justice, Crime and Punishment in Canadian Society, 1800 to the Present
• HIST 3228/3229.06: Religion in Canada

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

9. Journalism Classes Approved with Canadian Studies
• JOUR 3333.03: News Media and the Courts in Canada

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

11. Music Classes Approved with Canadian Studies
• MUSC 3362.03: Music in Canada to 1950
• MUSC 3363.03: Music in Canada since 1950
• MUSC 3043.03: Women in Canadian Music

12. Political Science Classes Approved with Canadian Studies
• POLI 3205.03: Canadian Political Thought
• POLI 3206.03: Intergovernmental Relationships in Canada
• POLI 3207.03: Canadian Political Parties
• POLI 3208.03: Canadian Political Economy
• POLI 3209.03: Regional Political Economy in Canada
• POLI 3210/3211.06: Canadian Public Administration
• POLI 3571X/3571Y.06: Canadian Foreign Policy
• POLI 3572X/3572Y.06: The Politics of Contemporary Canadian Defence Policy
• POLI 4340.03: Policy Formulation in Canada
• POLI 4410.03: Introduction to Policy Analysis

13. Sociology and Social Anthropology Classes Approved with Canadian Studies
• SOSA 3000.03: Canadian Society and Politics
• SOSA 3009.03: Public Opinion in Canada
• SOSA 3020.03: Native Peoples of Canada
• SOSA 3185.03: Issues in the Study of Native People

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

14. Theatre Classes Approved with Canadian Studies
• THEA 4500.03: Canadian Colonial Theatre
• THEA 4501.03: Canadian Post-Colonial Theatre

15. Mount Saint-Vincent Class Approved with Canadian Studies (with Letter of Permission)
• MSVU CANA 1100X/Y.06: Canadian Culture and Society
Chinese (Mandarin)

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

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

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

Class Descriptions

CHIN 1030XY.06: Introduction to Chinese (Mandarin).
This course aims to provide basic competence in understanding and speaking Mandarin and reading Chinese characters. It is for students who have had no exposure to Mandarin or Cantonese. This class fulfills the BA language requirement.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
EXCLUSION: ASSC 2035.06X/Y

CHIN 2030XY.06: Intermediate Chinese (Mandarin).
For students with some background in Mandarin Chinese (placement test required), this course is a continuation of CHIN 1030.06 Introduction to Mandarin. All four language skills—listening and speaking, reading and writing—will be further developed; as well a broader range of Chinese cultural elements will be introduced.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

EXCLUSION: Native speakers of Chinese (any dialect)

Classics

Location: 6135 University Ave., Room 1372
Halifax, NS B3H 4P9
Telephone: (902) 494-3468
Fax: (902) 494-2467
Email: claswww@dal.ca
Website: www.dal.ca/FASS

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

Chair
Hankey, W.J. (494-3468)

Undergraduate Advisor
MacLeod, L.M. (494-3468)

Professors Emeriti
Crouse, R.D., BA (Vind), STB (Harv), MT (Trin), PhD (Harv), DD (Trin)
Friedrich, B., Dr. Phil. (Gottingen)
Starnes, C.J., BA (Bishop’s), STB (Harv), MA (McGill), PhD (Dal)

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

Associate Professor
O’Brien, P.H., BA (Vind), MA (Dal), MA, PhD (BU)

Assistant Professors
Cohen, S.T., MA (Toronto), DPhil (Liverpool)

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

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

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

Classics is thus more than the study of ancient languages. Languages are not learned for themselves, but because they are necessary for the scientific study of ancient history, literature, religion, mythology and philosophy. The Classics Department at Dalhousie provides instruction both in these subjects and in ancient languages. While previous preparation in one or more ancient languages is desirable, it is nevertheless quite feasible for students who discover an interest in classics to begin their language studies at university.
Students of classics must learn Greek and Latin if they wish to take an honours degree or to go on to graduate studies in the field, but the Department offers a variety of classes in Greek and Roman Literature, Ancient and Medieval Philosophy, Ancient and Christian Religions, and general Classical Culture, which do not require a foreign language.

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

II. Degree Programs

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

A. BA Honours in Classics (20 credits)

The candidate may choose between three programs: BA with Honours in Classics (Ancient Literature), BA with Honours in Classics (Ancient History), or BA with Honours in Classics (Ancient Philosophy). In each case, it is highly desirable, but not essential, that the student begin the study of at least one of the classical languages during the first year of study. For purposes of meeting grouping requirements, some Ancient and Medieval Philosophy classes may be counted either as Classics credits, or Philosophy credits.

Students must complete between 9-11 credits in Classics at the 2000 level or above. From these credits, students must take the following:

- 5 credits in Greek and Latin (2 in one; 3 in the other). Students may choose from Greek: 1700/2710; 2700; 3700 or any other upper level course offered in Greek. Latin: 1800/2810; 2800; 3810 or any other upper level course offered in Latin.
- 3 credits at the 3000 level or higher.
- completion of the Honours Examination (Classics 4840.00)

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 continuing their studies at the Graduate level in Classics. The Department is glad to assist students in working out programs according to their interests.

B. BA Combined Honours in Classics (20 credits)

Classics may be taken as part of a combined honours program with other disciplines. Students interested in such programs should consult with the undergraduate advisors of the respective departments. Students must complete between 5-7 courses in Classics at the 2000 level or higher. From these credits, students must take the following:

- 3 credits in Greek and/or Latin. Students may choose from Greek: 1700/2710; 2700; 3700 or any other upper level course offered in Greek. Latin: 1800/2810; 2800; 3810 or any other upper level course offered in Latin.
- 2 credits at the 3000 level or higher.
- completion of the Honours Examination (Classics 4840.00) if the major work is done in Classics.

NOTE: Students are urged to apply for Honours as early as possible in their program (applications may be submitted after completion of one year of university). Please consult undergraduate advisor.

C. BA with Major in Classics (20 credits)

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

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

Students must complete the faculty requirements for a double major. These include 10-15 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 4-6 credits in Classics at or above the 2000 level, and 2 credits at the 3000 level or higher.

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

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

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

III. Class Descriptions

NOTE:

1. Not all classes are offered every year. Please consult the current timetable or the Classics Department (494-5460) to determine this year's offerings.

2. The Introductory classes, and the more elementary classes in Ancient History and Religions, and Classical Philosophy listed below do not require knowledge of the ancient languages. However, students who plan to do advanced work in any of these areas are advised to begin study of the appropriate languages as early as possible.

3. The Department of Classics offers classes at three levels in Arabic. Descriptions for these classes can be found on page 73 of the calendar.

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

CLAS 0400.00: Honours Examination.

Details available from the department.

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.

INSTRUCTORS: P. O'Brien

FORMAT: a Writing Requirement, Lecture

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

An introduction to the pre-classical Near Eastern civilizations (Mesopotamian, Egyptian, Hebrews) 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: a Writing Requirement, Lecture plus tutorials
An introductory survey of the traditional religious narratives of ancient civilizations including Mesopotamia, Egypt, Israel, Greece, and Rome. Of special interest: the function of myth in shaping and expressing a culture’s understanding of the divine, the institutions of human community (religion, the family, government), and the natural world; the interrelationships of the myths of those civilizations; the reception of those traditions in the origins of Christian and Islamic culture. The traditional narratives and their broader cultural contexts will be approached through study of primary sources including epic, tragic, and didactic poetry, hymnography, historiography, philosophy, the visual arts, and architecture. This class fulfills the first year writing requirement. NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

INSTRUCTOR(S): Staff
FORMAT: Lecture
CROSS-LISTING: RELS 1100X/Y.06

CLAS 1100X/Y.06: Classical Mythology.
An introductory survey of the traditional religious narratives of ancient civilizations including Mesopotamia, Egypt, Israel, Greece, and Rome. Of special interest: the function of myth in shaping and expressing a culture’s understanding of the divine, the institutions of human community (religion, the family, government), and the natural world; the interrelationships of the myths of those civilizations; the reception of those traditions in the origins of Christian and Islamic culture. The traditional narratives and their broader cultural contexts will be approached through study of primary sources including epic, tragic, and didactic poetry, hymnography, historiography, philosophy, the visual arts, and architecture. This class fulfills the first year writing requirement. NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

INSTRUCTOR(S): Staff
FORMAT: Lecture
CROSS-LISTING: RELS 1100X/Y.06

CLAS 1700X/Y.06: Introductory Ancient Greek.
An introduction to Ancient Greek through the study of its basic grammar. The class introduces the student in a systematic way to the most common and important elements of Classical Greek grammar. The aim of the class is to bring the student by the end of the year to read connected passages from Xenophon and other Greek prose writers.

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

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

FORMAT: Lecture
CROSS-LISTING: RELS 1100X/Y.06

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

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

FORMAT: Lecture
CROSS-LISTING: RELS 1100X/Y.06

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 teach students to read Hebrew. Students contemplating honours or combined honours should register in 2710X/Y.06, not 1900X/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
CROSS-LISTING: RELS 1100X/Y.06

An introduction to classical literature read in English translation. Authors studied are Homer, Hesiod, the Greek Tragedians, Plato, Virgil and St. Augustine. This class is the same as CLAS 1000X.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.

FORMAT: Lecture
CROSS-LISTING: RELS 1100X/Y.06

CLAS 2200.03: Ancient Israel in her Near Eastern Context.
Students will become familiar with the broad outlines of ancient Near Eastern history with specific attention to Israel's relationship to her immediate neighbors and the major imperial powers from the 2nd millennium BCE to first century CE. This will entail an initial survey of biblical texts in order to lay an adequate understanding of ancient Israel's self-conception, followed by a detailed survey of Israel's interaction with other nations, including early Mesopotamia, Egypt, Assyria, Babylonia, Persia, the Seleucid empire, and Rome.

FORMAT: Lecture and seminar presentations
CROSS-LISTING: HIST 2809.03, COME 2204.03

In the period of Israel's history from the 13th century BCE to the first century CE, Israelite society was transformed by the forces of the Assyrian, Babylonian, Persian, and Hellenistic empires. The course examines the forces that shaped and undetermined Hebrew culture during the period from the Persian Wars through the execution of Alexander the Great. The class is open to first-year students. There is no foreign language requirement.

FORMAT: Lecture/discussion
CROSS-LISTING: HIST 2184.03

CLAS 2214.03: Greek Culture from Palace to Polis.
A history of Archaic Greek culture from the Bronze Age palaces of Crete and Mycenae through the Persian Wars. Topics to be discussed will include the development of the distinctive Greek polis, oral poetry, religion, philosophy, colonization, and cultural interrelationships between the Greek world, the Near East, and Egypt. No knowledge of Greek is expected.

INSTRUCTOR(S): G. McGregor
FORMAT: Lecture/discussion
PREREQUISITE: Students must be beyond the first year and have completed the writing requirement.
CROSS-LISTING: HIST 2017.03

CLAS 2215.03: Greece in the 5th Century B.C.
This course examines the forces that shaped and undetermined Athenian culture during the period from the Persian Wars through the execution of Socrates. No knowledge of Greek is expected.

FORMAT: Lecture/discussion
PREREQUISITE: Students must be beyond the first year and have completed the writing requirement.
CROSS-LISTING: HIST 2084.03

CLAS 2216.03: Greek Culture from Polis to Cosmopolis.
A history of Hellenistic culture from the end of the Peloponnesian Wars through the empire of Alexander the Great. Topics to be discussed include relations between and among the Greek city-states and the Persian Empire, developments in art, religion, literature, and philosophy, and the career, both in his life and after it, of Alexander the Great.

FORMAT: Lecture/discussion
PREREQUISITE: Students must be beyond the first year and have completed the writing requirement.
CROSS-LISTING: HIST 2184.03

CLAS 2220.03: Ancient Israel in her Near Eastern Context.
Students will become familiar with the broad outlines of ancient Near Eastern history with specific attention to Israel's relationship to her immediate neighbors and the major imperial powers from the 2nd millennium BCE to first century CE. This will entail an initial survey of biblical texts in order to lay an adequate understanding of ancient Israel's self-conception, followed by a detailed survey of Israel's interaction with other nations, including early Mesopotamia, Egypt, Assyria, Babylonia, Persia, the Seleucid empire, and Rome.

FORMAT: Lecture and seminar presentations
CROSS-LISTING: HIST 2809.03, COME 2204.03
CLAS 2331.02: The Rise of Rome: 1000-31 BCE.
This course will trace the history of Rome from its origins as a mere Latin town to its dominance over the entire Mediterranean basin. We will consider the causes for this success as well as the strains this expansion placed on the political structure of the city itself, and the inevitability of both Empire and the Republic's fall will be called into question. Students will become familiar with both primary materials (the art, artifacts, literature and history of the Romans themselves) and with later scholarly interpretations of this material. No knowledge of Latin is required.
INSTRUCTOR(S): S. Cohen
FORMAT: Lecture
PREREQUISITE: Course completion of CLAS 1010.03, CLAS 2231.03/HIST 2090.03 or permission of Instructor.
CROSS-LISTING: HIST 2091.03
ENROLMENT: Maximum of 20

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. Prior to Socrates, Sophists, and the whole Protagorean, Pythagorean, and Eleatic schools, there was no genuine philosophy. The work of the class is divided equally between reading original philosophical texts and understanding the context in which they were written. Students will become familiar with both primary and secondary materials. No knowledge of Latin is required.
INSTRUCTOR(S): W.J. Hankey
FORMAT: Lecture
PREREQUISITE: Course completion of CLAS 1010.03, CLAS 2231.03/HIST 2090.03 or permission of Instructor.
CROSS-LISTING: HIST 2091.03
ENROLMENT: Maximum of 20

CLAS 2362.03: Ancient Philosophy from its Beginning to the Sixth Century AD.
This class covers the period in Ancient Philosophy from Aristotle to Plotinus. Selected texts of Aristotle, Stoicism, Epicureanism, Pyrrhonism, and Academic Skepticism, and selected Platonic dialogues. The period from Aristotle to Plotinus is covered in CLAS 2362.03.
FORMAT: Lecture
CROSS-LISTING: PHIL 2641.03

CLAS 2700X/Y.06: Intermediate Greek.
A continuation of CLAS 1700.06 and the normal second-year class in Greek. The work of the class is divided equally between formal grammar sessions and readings of Greek texts from Xenophon, Lyssias and Plato. In the grammar sessions a complete and systematic review of all Greek grammar is undertaken during which the student meets the most difficult forms and constructions which are omitted in CLAS 1700X/Y.06. The aim of the class is to prepare the student to read the philosophical and dramatic texts of the 5th century BC.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Seminar
CROSS-LISTING: HIST 3015X/Y.06
EXCLUSION: CLAS 1700X/Y.06

CLAS 2710X/Y.06: Greek Prose.
See description under CLAS 1710X/Y.06. Students contemplating honours or combined honours should register in 2710X/Y, not 1710X/Y. For additional information, please consult the Classics undergraduate advisor.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Seminar
PREREQUISITE: CLAS 2362.03/HIST 3024.03 or permission of Instructor.
CROSS-LISTING: HIST 3025.03

CLAS 2800X/Y.06 is a continuation of CLAS 1800X/Y.06 or CLAS 2810X/Y.06. A study of the poetry and prose literature of Rome through a selection of texts. Particular attention is paid to improving the students' command of the grammar and syntax of the Latin language.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Seminar
PREREQUISITE: CLAS 1800X/Y.06 or 2810X/Y.06
ENROLMENT: Maximum of 20

CLAS 2810X/Y.06: Latin Prose.
See description under CLAS 1800X/Y.06. Students contemplating honours or combined honours should register in 2810X/Y, not 1800X/Y. For additional information, please consult the Classics undergraduate advisor.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Seminar
PREREQUISITE: CLAS 1800X/Y.06 or 2810X/Y.06
ENROLMENT: Maximum of 20

CLAS 2900X/Y.06: Intermediate Hebrew.
This course is a continuation of grammar study and translation of selected texts from the Hebrew scriptures.
PREREQUISITE: CLAS 1800X/Y.06 or CLAS 2810X/Y.06
FORMAT: Lecture
CROSS-LISTING: HIST 3015, RELS 2004

EXCLUSION: CLAS 1010.03, CLAS 2231.03/HIST 2090.03 or permission of Instructor.
CROSS-LISTING: HIST 3015X/Y.06
ENROLMENT: Maximum of 20

CLAS 3015X/Y.06: Meetings between Hellenism, Judaism, Christianity, and Islam from Philo Judaeus to Dante.
The course 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 course will proceed by way of Rome, Constantinople, Hippo in North Africa, Athens, Ravenna, Pavia, Baghdad, Toledo, Avila-Chapel, Cordoba and Granada, Naples, Monreale, Palermo, Paris, Burgos, and Florence. Texts from which selections may be chosen will include: Syrtaugastic Philo, Commentary on Genesis (Lucy) Novatahment; Plotinus, Enneads; Augustine, City of God and Confessions; Proclus, The Platonic Theology; Dionysius, The Mystical Theology; Boethius, The Consolatio of Philosophy; The Liber de causis; Averroes, The Avicene crab; Moses Maimonides, The Guide of the Perplexed; Aquinas, On the Latin of the Holy Land; 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.
FORMAT: Lecture
PREREQUISITE: CLAS 2810X/Y.06 or 2800X/Y.06 or equivalent

CLAS 3205.03: Fall of the Roman Republic.
This course covers the periods of Republican Rome and its metempsychosis into the Augustan Principate. Literary texts, read in English translation, as well as art and architecture, are considered as elements of a study of Roman political, cultural, and religious history. This class is open to first-year students. There is no foreign language requirement.
FORMAT: Lecture and discussion
PREREQUISITE: CLAS 3205.03
CROSS-LISTING: HIST 2091.03
ENROLMENT: Maximum of 20

CLAS 3206.03: Fall of the Roman Republic.
This course covers the period of republican Rome and its metempsychosis into the Augustan Principate. Literary texts, read in English translation, as well as art and architecture, are considered as elements of a study of Roman political, cultural, and religious history. This class is open to first-year students. There is no foreign language requirement.
FORMAT: Lecture and discussion
PREREQUISITE: CLAS 3205.03
CROSS-LISTING: HIST 2091.03
ENROLMENT: Maximum of 20

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

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

INSTRUCTOR(S): W.J. Hankey

FORMAT: Lecture

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

The class considers the effect of Augustine on the philosophical and theological thought of late Antiquity and the Middle Ages. Selections from other works will normally include Augustine, De Quantitate Animae, Enarrationes, 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): W.J. Hankey

FORMAT: Lecture

CLAS 3380X/Y.06: Medieval Philosophy.

A study of texts written in the Middle Ages of Latin Europe selected to illustrate the development of philosophy in the period. Three texts will normally be read in their entirety: Boethius, Consolatio Philosophiae; Aquinas, Summa Theologiae; and Boethius, Consolatio Philosophy. Selections from other works will normally include Augustine, De Trinitate, De Anima, Periphyseon, or Secretum Secretorum, Alfarabi, Maimonides, Averroes, and Jewish thinkers to Aquinas.

NOTE: 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 3381.03: Medieval Philosophy from Augustine to Anselm.

A study of texts, primarily within the Latin tradition from Augustine to Anselm, but including selected writings of the Pseudo-Dionysius. There are works normally will be read in their entirety: Boethius, Consolatio Philosophiae; Dionysius, Mystical Theology; Anselm, Proslogion. The main interest is the use and transformation of the philosophy of Plato, Aristotle, the Stoics and the Neoplatonists in this development.

NOTE: 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-LISTED: PHIL 2380X/Y.06

CLAS 3382.03: Medieval Philosophy from Arabic and Jewish thinkers to Aquinas.

A study of texts which reflect the transformation of the ancient philosophical tradition within the works of medieval Arabic and Jewish thinkers and of the Latin Christians to whom they mediated ancient philosophy. Selections from al-Farabi, Moses Maimonides, Avempace, and Aquinas, among others will be read. Bonaventure The Mind’s Journey into God will be read in its entirety.

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

INSTRUCTOR(S): L.M. MacLeod

FORMAT: Lecture/seminar

PREREQUISITE: Knowledge of the history of Ancient Philosophy and Latin.

CLAS 3380X/Y.06: Aristotle.

This seminar involves the detailed study of other Aristotle's Metaphysics or De Anima or Physics or ethical and political treatises. The choice of texts varies from year to year.

RECOMMENDED: CLAS 2361.03/2362.03

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

FORMAT: Lecture/seminar

CLAS 3315.03: 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 content. Topics to be studied include the conventions of the genre; the nature of tragic heroism; aspects of staging and performance; ancient and modern theories of tragedy.

INSTRUCTOR(S): L.M. MacLeod

FORMAT: Lecture/discussion

PREREQUISITE: Students must be beyond first year.

EXCLUSION: CLAS 3310X/Y.06
CLAS 3516.02: Ancient Comedy.
Ancient Comedy ranges from the bawdy and bawdy plays of Old Comedy through the domestic and romantic "tragico-comedies" of Euripides to the boisterous, rollicking plays of 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 humor; the relationship between actor & spectator.

INSTRUCTORS: L. M. MacLeod
FORMAT: Lecture/seminar
PREREQUISITE: Students must be beyond first year.
EXCLUSION: CLAS 3510X/Y.06

CLAS 3525.03: Ancient Greek Epic.
This course is designed to introduce students to the heroic epic of the Ancient Greek world. Texts are read in translation and will be selected from the works of Homer, Hesiod, 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.

INSTRUCTORS: L. M. MacLeod
FORMAT: Lecture/seminar
PREREQUISITE: Students must be beyond first year.

CLAS 3601.03: Caliphs and Khans: Islamic Civilization in the 'Abbasid and Mongol Age (750-1400).
Please see description for HIST 3516 in the History section of this calendar.

INSTRUCTORS: C. Mitchell
FORMAT: Lecture/discussion
PREREQUISITE: HIST 2502 or 2503 or permission of instructor
CROSS-LISTING: HIST 3516.03

CLAS 3602.03: Ancient and Medieval History of the Persianate World.
Please see description for HIST 3516 in the History section of this calendar.

INSTRUCTORS: C. Mitchell
FORMAT: Lecture/discussion
PREREQUISITE: HIST 2502 or 2503 or permission of instructor
CROSS-LISTING: HIST 3516.03

CLAS 3700X/Y.06: Greek Epic.
A study of the Greek heroic 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 3700X/Y.06: Greek Lyric.
A study of lyric poetry such as Sappho, Anacreon, 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 3700X/Y.06: Augustan Poetry and Prose.
A study of selected texts of poetry and prose with an emphasis on the Augustan period. Authors studied may include Virgil, Ovid, 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.

INSTRUCTORS: L. M. MacLeod
FORMAT: Lecture/seminar
PREREQUISITE: CLAS 3700X/Y.06

CLAS 3710X/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 3710X/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 3750X/Y.06
CROSS-LISTING: PHIL 3750X/Y.06

CLAS 3760X/Y.06: Reading and Research of Greek Texts.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

FORMAT: Seminar
PREREQUISITE: CLAS 3760X/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 3780X/Y.06

CLAS 3800X/Y.06: Roman Satire.
This course covers the origins and development of Latin satire, the only literary genre native to the Romans. Authors to be studied will typically include Horace, Juvenal, Lucilius and Ennius.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

FORMAT: Seminar
PREREQUISITE: CLAS 3800X/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 own beliefs and institutions.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

INSTRUCTORS: P. O'Brien
FORMAT: Seminar
PREREQUISITE: CLAS 3810X/Y.06
CROSS-LISTING: CLAS 5040X/Y.06

A study of selected texts of poetry and prose with an emphasis on the Augustan period. Authors studied may include Vergil, 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.

INSTRUCTORS: P. O'Brien
FORMAT: Seminar
PREREQUISITE: CLAS 3820X/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. 

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

FORMAT: 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.

INSTRUCTOR(S): W.J. Hankey

CROSS-LISTING: CLAS 5530X/Y.06

CLAS 3841.03: Latin Philosophical Texts: Aquinas. The purpose of this class is to give students experience in reading philosophical Latin. The texts will be chosen from the works of Aquinas.

PREREQUISITE: First-year Latin or its equivalent

EXCLUSION: CLAS 3560X/Y.06

CLAS 3842.03: Latin Philosophical Texts: Anselm and Bonaventure. The purpose of this class is to give students experience in reading philosophical Latin. The texts will be chosen from the works of Anselm and Bonaventure.

PREREQUISITE: First-year Latin or its equivalent.

EXCLUSION: CLAS 3560X/Y.06

CLAS 3850X/Y.06: Reading and Research of Latin Texts. 

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

FORMAT: Seminar

PREREQUISITE: CLAS 2800.06

CLAS 3900X/Y.06: Philosophy of Aristotle. The general scope of the Aristotelian Philosophy – the understanding of nature, the City, the aesthetic experience of humanity – is considered in relation to the argument of the Metaphysics or ‘First Philosophy’. Given alternately with CLAS 3900X/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

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.

NOTE: 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

CLAS 4040X/Y.06: Classical Antiquity to the Rise of Christianity. This class will concentrate on the transition from Classical to Christian culture 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.

INSTRUCTOR(S): W.J. Hankey

Prerequisite: Any Greek class at the 3rd year level or permission of the instructor.

FORMAT: Seminar

CROSS-LISTING: HIST 4525X/Y.06

CLAS 4045X/Y.06: Seminar on Ancient Religion: Classical Antiquity to the Rise of Christianity. This class will concentrate on the transition from Classical to Christian culture 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.

INSTRUCTOR(S): W.J. Hankey

FORMAT: Seminar

CLAS 4050X/Y.06: Seminar on Neoplatonism. The class considers the origin and nature of Greek Neoplatonism. Given alternately with CLAS 4450X/Y.06.

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

INSTRUCTOR(S): W.J. Hankey

FORMAT: Seminar

CLAS 4060.03: Boethius and Prosimetrum: Poetry and Prose in the Consolation of Philosophy. Boethius’s Consolation is a strange example of Middle Latin satire, which is itself a strange genre. This class will consider the poetry, the prose and, most significantly, how these elements are combined in order to achieve the goal of the work, which is to offer consolation to the reader.

FORMAT: Seminar

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

CLAS 4070.03: A Study of the Latin text of Augustine’s Confessions. Approaches the thought of St. Augustine through a study of various literary, philosophical and spiritual aspects of the Latin text of his Confessions.

INSTRUCTOR(S): M. Fournier

FORMAT: Seminar

PREREQUISITE: CLAS 3810 or the permission of the instructor

CLAS 4100.03: Reading and Research in Latin Texts. Advanced reading of a Latin author or genre with attention to secondary literature and the critical reception of the works in question.

FORMAT: Seminar

CLAS 4400X/Y.06: Philosophy of the Church Fathers. This seminar involves the detailed study of a text, or group of texts, from one or more of the Greek or Latin Church Fathers. The choice of text varies from year to year, in relation to the needs and interests of students.

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

INSTRUCTOR(S): W.J. Hankey

FORMAT: Seminar

CLAS 4450X/Y.06: Medieval Interpreters of Aristotle. The class considers Latin philosophical texts of the Middle Ages. Given alternately with CLAS 4525X/Y.06.

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

INSTRUCTOR(S): W.J. Hankey

FORMAT: Seminar

CLAS 4500X/Y.06: Seminar on Neoplatonism. The class considers the origin and nature of Greek Neoplatonism. Given alternately with CLAS 4450X/Y.06.

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

INSTRUCTOR(S): W.J. Hankey

FORMAT: Seminar

CLAS 4525X/Y.06: The World of Herodotus. This class will concentrate on Herodotus’ Histories and examine the work from both a historical and a historiographical perspective. Consideration will therefore be given not only to sixth and fifth century B.C. Greece, but also to the wider world in which Herodotus travelled, as well as to other contemporary writers (such as Aeschylus and Thucydides).

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

FORMAT: Seminar

PREREQUISITE: Any Greek class at the 3rd year level or permission of the instructor.

CROSS-LISTING: HIST 4525X/Y.06

CLAS 4530X/Y.06: Seminar on Ancient Religion: Classical Antiquity to the Rise of Christianity. This class will concentrate on the transition from Classical to Christian culture 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

CROSS-LISTING: CLAS 5300X/Y.06
CLAS 4535X/Y.06: Rome and the East.

This class will consider relations between Rome and her eastern neighbors—the Parthians and the Sassanians—from 53 B.C. to A.D. 628. It will examine the development of Roman policy in the region from the establishment of imperial control in the Near East to the crucial years 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: HIST 4535X/Y.06, HIST 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.

INSTRUCTORS: F. O’Brien
FORMAT: Seminar
PREREQUISITE: CLAS 3580X/Y.06 or permission of instructor.
CROSS-LISTING: CLAS 5540.03

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

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

INSTRUCTORS: S. Cohen
FORMAT: Seminar
PREREQUISITE: CLAS 2205, 2231, 2232 or permission of instructor.
CROSS-LISTING: CLAS 5545

CLAS 4548X/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.

FORMAT: Seminar
CROSS-LISTING: CLAS 5548X/Y.06

CLAS 4680.03/4690.03: Reading and Research.

CLAS 4710.03/4720.03: Special Topics.

CLAS 4800X/Y.06: Reading and Research.

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

CLAS 4810.03/4820.03: Special Topics.

CLAS 4850.06: Reading and Research.

CLAS 4900X/Y.06: Departmental Seminar.

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

FORMAT: Seminar

CLAS 4910X/Y.06: Departmental Seminar.

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

FORMAT: Seminar
Contemporary Studies

Location: University of King's College
Halifax, NS B3H 1A1

Telephone: (902) 422-1271
Fax: (902) 423-3357

Website: www.dal.ca/FASS

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

Director: Bingham, J., BA (UNB), MA (Toronto), PhD (York)

Teaching Staff at the University of King's College
Bishop, M., BA, MEd (Manchester), MA (Manitoba), PhD (Kont, Canterbury)
Bosu, S., BA (Queen's), MA, PhD (York)
Bregoli, D., BA (Toronto), MA, PhD (Northwestern)
Burns, S., BA (Accademia, MA (Ala), PhD (London)
Edwards, E., BA, MA (Dal), PhD (Cambridge)
Elsin, C., BA (Vindi), MA (Dal), DEA, Doctoral (Paris-IV)
Glowacka, D., MA (Wroclaw), MA, PhD (UNI)
Heller, M., BA (UI & Dal), MA (Dal), PhD (Ul & U)
Kawam, K., BA (McGill), DPhil (Oxon)
McOuat, G., BA, MA, PhD (Toronto)
Robertson, N., BA (Vindi), MA (Dal), PhD (Perth)
Thibodeau, M., BA, MA, PhD (Universite de Montreal)

Teaching Staff at Dalhousie University
Bingham, J., BA (UNB), MA, PhD (Toronto)
Haslam, J., BA, MA, PhD (Waterloo)

I. The Contemporary Studies Program

Our assumptions about the contemporary world are not only changing but becoming increasingly diverse and complex. One way in which we can reasonably try to make sense of our world as a whole is to combine into a single course of study several different disciplines and traditions of enquiry. To this end, Dalhousie University and the University of King’s College jointly offer an interdisciplinary program in Contemporary Studies (CSP). This combined-honours BA program brings together departmental offerings in arts and social sciences at Dalhousie and joins them with Contemporary Studies courses—which include a required “core” class for each upper year of study—at King’s. The King’s portion of this interdisciplinary program consists of interdisciplinary classes taught by specialists from a number of academic fields. The intention is to provide students with a many-sided yet unified introduction to the study of the contemporary world.

The interdisciplinary offerings within the Contemporary Studies Program at King’s计 as one of two honours subjects. Contemporary Studies classes are designed so that important writers and artists of the twentieth century may be considered both on their own terms and in relation to some of the fundamental themes of our time. This often involves a consideration of the differences between these writers and artists and those of the nineteenth century. The three “core” classes give students a framework for understanding political, scientific, and aesthetic phenomena in the twentieth century. The non-required classes focus on diverse aspects of those often contradictory contemporary phenomena.

Aside from preparing undergraduates for more specialized future training at the graduate or professional level, the Contemporary Studies Program is intended to provide them with a broad overview of twentieth-century culture, especially the European and North American manifestations of it. Students are encouraged to relate the various aspects of contemporary thought to one another and to develop independent insights into the nature of the world in which they live. It is also hoped that Contemporary Studies Program students will take an active role in organizing certain events each year, including lectures, debates, and exhibitions.

II. Degree Programs

The departmental offerings at Dalhousie, within the Contemporary Studies Program, include the following list of Dalhousie departments and programs: Classics, English, French, Gender and Women’s Studies, Carman, History, International Development Studies, Music, Philosophy, Political Science, Russian, Sociology and Social Anthropology, Spanish, Theatre and any of the BSc Honours subjects. Electives may be taken in any of the above-mentioned departments and programs as well as Canadian Studies, Comparative Religion, Early Modern Studies, History of Science and Technology and Linguistics. In addition, some professors in the Dalhousie Faculty of Arts and Social Sciences are members of the Contemporary Studies teaching staff and offer classes at King’s.

Combined Honours

All students must meet the distribution requirements of the Faculty of Arts and Social Sciences as detailed in the Degree Requirements section of this calendar. Students who are eligible to take an honours degree are urged to apply to the Contemporary Studies Program. Because it is an honours program, the quality of work required is higher than that required in a 15-credit concentration or 20-credit major program. Applications for admission must be made to the Dalhousie department concerned and to the Contemporary Studies Office at King’s on forms normally enrolled in CTPM 200X/0Y (the first “core” class) in their second year, and register for the Combined Honours program in either second or third year. For each individual student the entire degree program, including elective classes, is subject to supervision and approval by the Dalhousie department concerned and by the Director of Contemporary Studies.

All Contemporary Studies Program students are encouraged to acquire competence in languages (beyond the “Degree Requirements” above) through appropriate classes which are relevant to their degree, interests, and future plans.

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

1. Completion of either the King’s Foundation Year Program (either the three- or the four-class version) or at least two appropriate first-year full classes at Dalhousie:
   - Classics: CLAS 1000X/Y.06, CLAS 1010X/Y.06, CLAS 1020X/Y.06
   - Comparative Religion: COMR 100X/Y.06, 200X/Y.06
   - English: ENGL 1000X/Y.06
   - History: HIST 1004X/Y.06, HIST 1501.03, HIST 1502.03
   - Music: MUSC 1000X/Y.06, MUSC 1300.06, MUSC 1350.06
   - Philosophy: PHIL 1000X/Y.06, PHIL 1010X/Y.06
   - Political Science: POLI 1010.03, POLI 1015.03, POLI 1100X/Y.06
   - Sociology and Social Anthropology: SOSA 1000X/Y.06, SOSA 1005X/Y.06, SOSA 1100X/Y.06
   - Mathematics: MATH 1010.03 and MATH 1020.03

2. A normal requirement of eleven full classes beyond the 1000 level in the two honours subjects, but not more than seven full classes being in either of them. Students may, with the approval of both the Dalhousie department concerned and the Contemporary Studies teaching staff, elect a maximum of thirteen full classes in the two principal subjects, not more than nine full classes being in either of them. In this case, the requirement in (3) below is reduced to two or three full classes.

3. Four full elective classes at King’s totaling at least seven full classes, the two offered to satisfy the general requirement that students complete fifteen full classes beyond the first year of study.

4. The three “core” classes are offered at Dalhousie University with the following code numbers:
   - CTMP 2000X/0Y
   - CTMP 3000X/Y
   - CTMP 4000X/0Y

Contemporary Studies 87
5. An honours qualifying examination. At the conclusion of an honours program a student’s record must show a grade which is additional to the grades taken to complete the required 20 full classes. In a combined honours program, students may obtain this grade in either of the honours subjects. Students fulfilling this requirement in Contemporary Studies submit a research paper and defend it at an oral examination.

Please Note:
Students may take an Independent Readings class only when they reach their third or fourth year. There are three options for this class, but only one full class or the equivalent may be taken in a year.

II. Classes offered at the University of King’s College

All classes offered in Contemporary Studies require that students have completed at least one year of university study (minimum 5 full credits) prior to enrolment.

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

CTMP 0455.00: Honours Thesis Seminar in Contemporary Studies.

Students intending to complete an honours thesis are required to register in the Honours Thesis Seminar. Seminars will be held four times during the year. Students will meet with the Director to discuss the expectations and requirements of the honours thesis in preparation for a thesis defence that takes place in March.

Specific topics include select topics and seminar format, discussion of thesis proposals, application to graduate school and scholarships.

PREREQUISITE: Approval of Director required.

CTMP 200X/Y.06: Modern Social and Political Thought.

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

NOTE: Students taking this class must register in both X and Y in order to take these classes consecutively.

INSTRUCTOR(S): K. Kierans

FORMAT: Lecture/tutorial

CTMP 210X/Y.06: CTMP 301X/Y.06/CTMP 4010X/ Y.06: The Lecture Series.

Each year a lecture series class is offered. Students are allowed to take up to three such classes, one for each year of upper-level study. Each class will consist of thirteen bi-weekly evening lectures given by specialists from Atlantic Canada and beyond. The 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.

The French Revolution transformed the whole range of political institutions as well as the whole vocabulary of political relations in the West. This class explores some of the most important themes of moral and political life in the period of the French Revolution, with emphasis not only on the origin of revolutionary thought, but on its continuing influence in our own time. The class considers a number of writers including Rousseau, Kant, Fichte, and Condorcet. We examine these writers both on their own terms and in relation to prescriptive debatists, to compare the tendency and result of revolutionary political thought. 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 Fourier and others of his generation rejected - or reworked - Hegel’s concept of modernity, and continue with an assessment of Marx and Karl Marx. 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 2121.03: Structuralism and Poststructuralism I.

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

INSTRUCTOR(S): M. Thibodeau

CTMP 2122.03: Structuralism and Poststructuralism II.

Designed as a continuation of Structuralism and Poststructuralism I, this course will focus primarily on developments in poststructuralism that have worked within the work of Derrida, Kristeva, Igeray, Lyotard, Derrida, and the early Foucault.

INSTRUCTOR(S): M. Thibodeau

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

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

INSTRUCTOR(S): J. Bingham

FORMAT: Lecture/Seminar

CTMP 2150.03: Society, Politics, and Literature.

The contemporary era has been one wholesale transformation in all aspects of existence, including politics, economics, social relations, gender roles and definitions of the self. During the nineteenth and twentieth centuries, the possibility of individual autonomy and freedom in the face of unexplained social upheaval has been brought into question through the novel, a literary form which came to maturity in this time. The novels read in this class have been selected for their insights into the dilemma of
an age formed by political and economic revolutions where new collective forces have been brought into play.

**CTMP 2190.03: The Thought of Ludwig Wittgenstein.**

Ludwig Wittgenstein (1889–1951) is one of the most influential philosophers of the twentieth century. His extraordinary influence is the result of his teaching small groups of dedicated students. Published for the most part posthumously, his writings, too, have made him a philosopher's philosopher. Nevertheless, his influence has extended well beyond the questions of the foundations of logic and language which preoccupied him. This class will explore some of the broader implications of his work, touching on music, art and architecture, on anthropology and psychology, and on ethics and religion, as well as on his central contributions to the philosophy of language and mind. INSTRUCTOR(S): S. Burns. FORMAT: Seminar/tutorial. EXCLUSION: CTMP 2111.03.

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

This class will be an introduction to the history of modern science, from its beginnings in the Scientific Revolution up to the institutions and professions of twentieth-century “Big Science”. Going beyond a straight history of scientific “ideas”, we shall examine the social and cultural place of science and its claim to overarching truths in each historical period. Students will be required to research an historical paper and participate in small tutorials. NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively. INSTRUCTOR(S): G. McQuat. FORMAT: Lecture/tutorial.

**CTMP 2203.03: Bio-Politics: Human Nature in Contemporary Thought.**

To what extent and in what culture do human nature and culture determine what it is to be human? Drawing on theorists ranging from Foucault and Ian Hacking to Chomsky and Steven Pinker, this course will examine the recent political, moral and existential issues raised by attempts to answer that question. Topics will include feral children, evolutionary psychology, the construction of biological kinds, hypnosis, the placebo effect, genetic engineering, animal minds, the commodification of life, and the spectre of engineering. INSTRUCTOR(S): Staff. FORMAT: Lectures and student workshops. CROSS-LISTING: HSC 2206.05.

**CTMP 2301.03: Pain.**

What does pain mean? This class will investigate the uses of pain in the contemporary world, and in doing so, will approach various sites where pain matters, examining different discursive practices which attempt to speak of pain - or alternatively, claim that pain is what cannot be spoken. We will discuss the experience of the body in pain and the relation of pain to knowledge. In the interest of interdisciplinarity, it is anticipated that guest lecturers in neuropsychology will participate, as well as those from, for example, Amnesty International. Topics to be addressed will include pain in a medical context; torture and the political uses of pain; the relation between pain and privation; the expensibility 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, Tranström, Milosz, Célan, Bonyebey, Elyhis, Senghor, Soyinka; Mahapatra, Ting, Paz, Isamar, and Couste. Written texts will provide the principal basis for debate, but artwork and film will be used to render more immediate and concrete the appreciation of divergent cultural, aesthetic and ethical models (North American and British work will not be directly considered). INSTRUCTOR(S): M. Bishop. FORMAT: Seminar.

**CTMP 2304.03: Semiotics.**

Semiotics is a methodological discipline that studies signs, significations, and signifying systems. Because of its interest in the production of meaning, semiotics is widely applicable and has exercised a major influence on virtually every epistemological development in the second half of the twentieth century, from Lacanian psychoanalysis to deconstruction. Some of its fields of investigation include linguistics, culture, literature, mass media, theatre, and film. Through the reading of works by de Saussure, Peirce, Morris, Jakobson, Levi-Strauss, Barthes, Eco, and other scholars, this course will introduce students to the essential terminology and typology of semiotics. Special attention will be paid to the practical use of semiotics as a critical and analytical tool, as well as to the variety of historical and cultural contexts in which semiotics appears. INSTRUCTOR(S): J. Gantar. FORMAT: Lecture/Seminar.

**CTMP 2310.03: From the Postmodern to the Extreme Contempory: 25 years of French Culture in the World.**

This class considers the negotiation with post-modernity occurring in French culture and seeks to define what some new call the Extreme-Contemporary. A range of texts in English translation will be considered, from philosophy to the novel, from film to poetry, from the visual arts to theatre and the chanson française. INSTRUCTOR(S): C. Eaton. FORMAT: Lecture/Seminar.

**CTMP 2311.03: From Symbolism and Surrealism to the New Novels and Beyond.**

This class will address questions of perception, image, and presence. We will analyze the interlocking perceptions of self and world, word and image, in the literature and art of modernity, from Rimbaud and Mallarmé, Guaguin and Van Gogh, through Surrealism and Cubism, to Camus and Sartre and beyond to the new novel and new wave film, Barthes, Bonyebey, and contemporary French women writers. INSTRUCTOR(S): M. Bishop. FORMAT: Seminar/lecture/tutorial. EXCLUSION: Former CTMP 4310.06 and former CTMPP 2310.06.

**CTMP 2321.03: The Question of the Other I.**

The dominant politics of representing otherness have been recently re-evaluated by philosophers, cultural critics, and writers of fiction. This class traces the development of that re-evaluation, beginning with Hegel’s famous “Master and Slave” dialectic through essentialist and psychanalytic theories. Particular attention will be paid to articulations of alterity by women and black writers. INSTRUCTOR(S): P. Heller. FORMAT: Seminar.

**CTMP 2322.03: The Question of the Other II.**

“The Question of the Other” is not required. This class examines some of the contemporary theories that have addressed the issue of alterity and focuses on non-appropriative ways of approaching the other in discourse. We will raise questions such as what it means to live with others and to act responsibly in relations with others. The readings include theoretical material (Heidegger, Levinas, Rorty, Habermas,
Faculty of Arts and Social Science

CTMP 2330.03: The Artist and Society.
A preoccupation of 20th century cultural life has been the relation between the creative artist and society. To what extent should the artist engage in the social and political currents of her/his time, or retreat into solitude? What responsibility does the artist have to society, or society to the artist? This class will examine various philosophical and artistic treatments of these themes in various social contexts. First, we shall consider the question of the artist and society in terms of 18th and 19th century aesthetic ideas. We then turn our attention to a number of 20th century reflections on this theme in such milieus as post-war Europe, the Weimar Republic, Nazi Germany, post-war Japan, contemporary Canada, and 1970s Britain. The work of such thinkers and artists as Kant, Wilde, Mann, Nietzsche, Nineteen Eighty-Four, and the Sex Pistols will be considered mainly through written texts, but also in art forms such as music and film.

INSTRUCTOR(S): S. Kow
FORMAT: Lecture/tutorial

CTMP 2340.03: Theories of the Avant-Garde.
This course investigates concepts of the Avant-Garde in early 20th century futurism, expressionism, dadaism, and surrealism. We will read representative texts, including poetry, drama, and manifestos as well as examine selected works from the visual arts and film. Topics for discussion include the historical Avant-Garde, the reintegration of art and life, the relations of the Avant-Garde to romanticism and modernism, the invented or real art, and the relation of art to political ideologies. 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 Lukács, Brecht, Benjamin, Kracauer, Poggioli, Adorno, Bataille, Habermas, Lyotard, and Agamben.

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

CTMP 3000X/Y.06: Science and Culture.
In the twentieth century, "Science" and "Culture" are often presented as a dichotomy. In this class we shall be examining that dichotomy, attempting to expand 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 method, debates around the public role of science, and the recent critiques 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.

INSTRUCTOR(S): C. McO
FORMAT: Lecture/tutorial
PREREQUISITE: CTMP 2300X/06 or permission of instructor

CTMP 3110.03: The Dialectic of Enlightenment I.
In the course of criticizing tradition and integrating the experience of the Renaissance and the Reformation, in responding to the beginnings of modern natural science and modern political institutions, early modern Europeans sought in diverse - and often conflicting - ways to express the self-understanding of Enlightenment. By the end of the eighteenth century, science, morality and art were seen as different realms of activity in which questions of truth, justice and taste could be separately determined, that is, evaluated according to their own specific criteria of validity. This class will consider how these differences compelled European philosophers and theologians, artists and social theorists, to develop and expand their self-understanding to the point where enlightened reason could properly reflect the formal divisions of culture and make critical judgements in relation to them. Special attention will be paid to the relationship between faith and knowledge and the growing sense of conflict between religion and secular freedom.

INSTRUCTOR(S): K. Kierans
FORMAT: Seminar
CROSS-LISTING: EMSP 3210.03

CTMP 3115.03: The Dialectic of Enlightenment II.
In enlightened European culture, religion, state and society as well as science, morality and art were gradually separated from one another under exclusively formal points of view, and subordinated to a critical reason that took on the role of a supreme judge. By the beginning of the nineteenth century, many Europeans began to question the self-understanding evoked by the principle of critical reason. This class will consider how enlightened reason and reason moved European philosophers and theologians, artists and social theorists, to conceive of themselves historically, that is, to become conscious of the dissolution of tradition, and of the need to ground the divisions of culture in ideal forms of unity derived from the tradition. The class will pay particular attention to the relationship between religion and the demand that the unifying force in culture come from a dialectic residing in the principle of enlightened reason itself.

INSTRUCTOR(S): K. Kierans
FORMAT: Seminar
CROSS-LISTING: EMSP 3215.03

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 cornerstone for an interdisciplinary investigation of music, theatre, literature, politics, history, philosophy and art in the German 19th century to the present. A weekly "listening lab" is required part of the experience.

INSTRUCTOR(S): S. Burns
FORMAT: Lecture/tutorial/"listening laboratory"
EXCLUSION: CTMP 3201X/03, 3301X/Y.03, 4010X/Y.06; The Lecture Series for 1997/1998 only

CTMP 3130.03: The Thought of Michel Foucault.
Historian and philosopher Michel Foucault (1926-1984) was one of the most important and controversial thinkers of the twentieth century. He developed an anti-Hegelian historical method that was indebted both to Nietzsche's "genealogical" conception of history and to structuralist accounts of language and culture. With major works on madness, the human sciences, crime and punishment, and sexuality, Foucault has influenced a wide range of discipline from history, philosophy, and literature, to sociology, political science, and law. His work has also profoundly shaped the fields of gender studies and queer theory. This class will examine the evolution of Foucault's approach to history, as well as how his controversial ideas about the relationship between knowledge, power, and the constitution of subjectivity. Considerable attention will be devoted to his work on the history of sexuality. While our focus will be on Foucault's own writings we will also read tests by some of his interlocutors, both critical and sympathetic.

INSTRUCTOR(S): M. Thibodeau
CTMP 3135.03: Reconstructing Political Modernity.
This class will examine several interpretations of early modern 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 on the thinkers being interpreted. Thus, we shall critically analyze the radical transformations of early modern texts that were undertaken in order to make these works relevant to social and political questions centuries later.

INSTRUCTOR(S): M. Thibodeau
FORMAT: Seminar

PREREQUISITE: One of: CTMP 2001.00, CTMP 2010.00, CTMP 2101.00, CTMP 2105.03, EMSP 3210.03, EMSP 3310.03, EMSP 3410.03, EMSP 3411.03, EMSP 3412.03, EMSP 3413.03, EMSP 4001.00, PHIL 2210.00, PHIL 2220.00, PHIL 2225.00, POLI 2400.00, POLI 2410.00, POLI 2430.00 or instructor's permission.
CROSS-LISTING: EMSP 3410.00

CTMP 3145.03: Leo Strauss and his Intellectual Context.
Leo Strauss was during his own lifetime a figure of controversy and has grown more so in the forty years since his death. In recent newspaper and academic articles, Strauss has been through the influence of his students ("Straussians") to be the secret intellectual source of much of the Neo-Conservative movement and in particular the policies and doctrines of the Bush White House. This class will endeavor to understand Strauss's thought in terms of his own intellectual development and in the context of the issues that were particularly formative for his thinking. The course will include the influence of Husserl upon his thought, his reflections on Zionism and the Jewish intellectual tradition during the 1920s and 30s when he was still living in Germany, his critique of Carl Schmitt, his response to the thought of Martin Heidegger, his debate with Alexandre Kojève. In short, the purpose of this course is to locate Strauss's thought in its intellectual context and thereby gain distance on the demonizing and sanctifying rhetoric that characterizes the contemporary debate about "Straussian.

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 evolutionary, and how this connection is rejected by Nietzsche, Feudal and Foucault.

INSTRUCTOR(S): G. McQueen
FORMAT: Seminar

CTMP 3190.03: The Thought of Simone Weil.
Simone Weil (1903-1943), 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 include work by Donna Haraway, Sandra Harding, Evelyn Fox Keller, Helen Longino, and Hilary Rose.

INSTRUCTOR(S): S. Boos
FORMAT: Seminar

CTMP 3210.03: Intersecting Bodies, Selves and Environments.
The traditional view of the relation between humans and nonhuman nature is regarded by many as drastically flawed as it posits not only a distinction and separation between humans and nonhuman nature but regards humans as superior to nonhuman nature, on either religious, metaphysical, moral, or even evolutionary, grounds. In this course, we examine three different strategies for overcoming this view. We begin by examining phenomenological attempts to overcome dualistic accounts of the relations between person and perceived, mind and body, and mind and world. In the next section, we discuss attempts by radical ecologists to establish a non-dualist view of the relation between humans and nature. In the concluding section of the course, we examine some postmodern strategies for overcoming dualistic thinking about culture and nature.

INSTRUCTOR(S): S. Ross
FORMAT: Lecture/seminar
EXCLUSION: CTMP 3411.03 for the 2005/06, 2003/04, 2001/02 academic years only

CTMP 3215.03: Feminism and Science.
Science has been the subject of intense scrutiny by contemporary feminist theorists. The course will examine the various feminist critiques of natural science, as well as the positive proposals that feminism has brought to bear on scientific culture. Questions that will be addressed include: Is the style of science gendered? Has feminism influenced the content of various sciences? How has feminism contributed to gendered constructions of nature? Is there such a thing as value-free scientific research? How do feminist theories of knowledge differ from traditional understandings of scientific knowledge and scientific objectivity? The readings for this course will include work by Donna Haraway, Sandra Harding, Evelyn Fox Keller, Helen Longino, and Hilary Rose.

INSTRUCTOR(S): K. Morris
FORMAT: Seminar
CROSS-LISTING: HSTC 3411.00, GWST 3215.00
RESTRICTION: Second year and above

CTMP 3220.03: The Aesthetics of Nature.
In the 18th century, aesthetics was considered to have two branches, the aesthetics of nature and the aesthetics of art. Following its peak at the end of the 18th century, the aesthetics of nature went into a gradual decline and, by the middle of the 20th century, was almost totally eclipsed by the aesthetics of art. With the emergence of environmental philosophy during the latter decades of the 20th century, aesthetics revived as the central focus of environmental aesthetics. Environmental aesthetics extends beyond the narrow confines of the art world and beyond the appreciation of works of art to the aesthetic appreciation of the world at large. At large at not large 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 paradigms of detached contemplation of sensory 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 beauty, imagination and ethics in the aesthetic appreciation of natural environments.

INSTRUCTORS: S. Bos

FORMAT: Lecture/semi

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

At the time when the Holocaust recedes into history, the imperative to "never forget" acquires new urgency. In this class, we will focus on various, often disparate, modes of talking about the unspeakable and explore the ethical implications of the writer's effort to convert it into a story. Can horror be accommodated in discourse? Is there a privileged genre that would do justice to suffering? These and other questions will arise from the examination of eye-witness accounts by camps survivors and excerpts from Holocaust diaries written in the ghetto. In addition, we will consider the attempts of prominent contemporary thinkers to account for the genesis of the Holocaust and to prompt philosophy to confront the Holocaust. The class includes excerpts from films, documentaries, and other video-taped material. Guest speakers will be invited for lectures, recollection, and discussion.

INSTRUCTORS: D. Glowacka

FORMAT: Seminar

CTMP 3322.03: Representations of the Holocaust II: Remembrance.

"Representations of the Holocaust I:" is not required. Basic knowledge of Holocaust facts and some familiarity with Holocaust literature is required.

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

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

INSTRUCTORS: D. Glowacka

FORMAT: Seminar

CTMP 3340.03: Home and Homelessness.

This class takes the current social problem of homelessness as a starting point for an inquiry into the significance of figurations of home and homelessness in the contemporary world. Home is a place of comfort and belonging; it is a domestic setting, a language, a nationality and a series of identifications which 'place' and maintain individuals. Where I am at home, I feel coincident with myself. The notion of home is opposed to key identifications which 'place' and maintain individuals. Where I am at home, I feel coincident with myself. The notion of home is opposed to key

INSTRUCTORS: E. Edwards

FORMAT: Seminar

EXCLUSION: CTMP 3415/03 for the 2004/2005 academic year only

CTMP 3345.03: The Theory of the Gift. Is it possible to give, freely, without expectation of return? That is, can generosity ever really exist? Or are we trapped in restricted economies of exchange which find us always calculating some profit to ourselves, whether in this world or the next? The problem of the possibility of generosity and altruism is of central importance to current deliberations about ethics and economics. This seminar will read its way through the modern genealogy of the thinking of the gift, beginning with its foundation in anthropological studies of so-called 'primitive' economies. It is of some interest that the modern concern with the gift appears in the guise of anthropology rather than in 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.

INSTRUCTORS: É. Edwards

FORMAT: Seminar

CTMP 3350.03: Postmodern Strategies in Literature by Women.

Against a widespread view that postmodernism is anti-feminism, the readings in this class demonstrate that recent literature by women, both fiction and critical theory, has widely adopted postmodern strategies in order to advance feminist views. The postmodern canon has allowed female authors to question the way in which women's subjectivity has always been constructed through male-oriented processes of signification. The works of fiction covered in this class, by Angela Carter, Daphne Marlatt, Diane Brand, Ntozake Shange, and Marjane Satrapi and others, exemplify aesthetic subversions of phallocentric discourses. Literary texts will be supplemented with theoretical works by leading feminist/post-structuralist thinkers such as Judith Butler, Drucilla Cornell, bell hooks and Gayatri Spivak. The class includes video-taped material and slide-shows of postmodern feminist art.

INSTRUCTORS: D. Glowacka

FORMAT: Seminar

CTMP 3401.03: Studies in Contemporary Science and Technology.

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

NOTE: No more than two studies classes (one full credit) can be taken for credit towards the Contemporary Studies Program. Students can enrol only once in CTMP 3410/03.

FORMAT: Seminar

PREREQUISITE: Students must complete at least two years of university study (minimum 10 full credits) prior to enrolment.

CTMP 3411.03: Studies in Contemporary Science and Technology.

Topics vary each year. Some of the topics are "Environmentalism," "Time," and "Feminism and Nature."

NOTE: No more than two studies classes (one full credit) can be taken for credit towards the Contemporary Studies Program. Students can enrol only once in CTMP 3411/03.

FORMAT: Seminar

PREREQUISITE: Students must complete at least two years of university study (minimum 10 full credits) prior to enrolment.

CTMP 3415.03: Studies in Contemporary Aesthetic and Critical Theories.

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

NOTE: No more than two studies classes (one full credit) can be taken for credit towards the Contemporary Studies Program. Students can enrol only once in CTMP 3415/03.

FORMAT: Seminar

PREREQUISITE: Students must complete at least two years of university study (minimum 10 full credits) prior to enrolment.
CTMP 4003.X/Y.06: The Deconstruction of the Tradition in the Twentieth Century.

This class focuses on twentieth-century thinkers and writers who have questioned the fundamental concepts of Western philosophy such as identity, subject, representation, truth, or origin. What they all have in common is abandoning dialectical, totalizing models of thinking in favour of pluralistic discourses that can accommodate radical heterogeneity. The recurrent themes of the class are: relations between philosophy and literature; intersections between the philosophical notions of ethics and aesthetics; and the viability of deconstruction for political and cultural praxis. The readings include theoretical texts (Benjamin, Heidegger, Derrida, Ingarden, bell hooks, Lyotard, Levinas, Agamben, Nancy) and some works of fiction (Kafka, Borges, Camus). The class provides students with excellent opportunities to study challenging texts and strengthen their skills as independent 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): D. Glownacka
FORMAT: Lecture/tutorial
PREREQUISITE: CTMP 3003X/Y.06 and CTMP 3004X/Y.06 or permission of the instructor

CTMP 4105.03: European Nihilism.

In the latter half of the nineteenth-century a number of European thinkers and writers came to see a profound loss of meaning and significance in work in their culture. The term that was coined to describe this experience was “nihilism.” The purpose of this course is to explore the thought of those who gave expression to this new phenomenon. We will begin with the literary explorations of Dostoyevsky and Baudelaire, and then turn to the thought of Nietzsche as the most complete exposition 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 1950s 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 we shall see how his involvement with Schain to try to understand the exact nature and impact of his “turn.” In all of this the class will be exploring the connections between a deep cultural experience - that of European nihilism and its social and political implications.

INSTRUCTOR(S): N. Robertson
FORMAT: Seminar
EXCLUSION: CTMP 4410 for the 2004/2005 academic year only

CTMP 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 contemporary 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 class traces the evolution of French thought from the revolutionary humanism of the 1930s to the nihilism and sởhrism of the 1960s. The class will conclude with critical reflections on the philosophy of the early French Hegelians, Sartre, Marcuse/Pindy, the structuralists, Foucault, Derrida, Duras, and Lyotard. Certain literary and artistic works are also considered. The effort throughout is to relate the philosophical history of the period to political and cultural developments which have helped to shape French intellectual life. NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

INSTRUCTOR(S): K. Kiernans
FORMAT: Lecture/tutorial

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

The Frankfurt School refers to the work of the members of the Institut für Sozialforschung, which was founded in Frankfurt, Germany, in 1923, as the first Marxist-oriented research centre affiliated with a major German university. Following Hitler’s rise to power, and the emigration of most of its prominent members to the 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 1933, the Institute referred to its task as the “critical theory of society”. This course will focus on some of the most important and influential aspects of the critique of society developed by critical theorists from the 1930s to the 1960s. Themes and topics will include the task and methods of critical theory, reason and freedom, the role of technology in monopoly capitalism, fascism, the decline of the individual, the critique of the culture industry, and psychoanalysis. We will read selections from the works of Max Horkheimer, Theodor W. Adorno, Erich Fromm, Walter Benjamin, Herbert Marcuse, and Jürgen Habermas.

INSTRUCTOR(S): S. Boss
FORMAT: Lecture/ seminar
EXCLUSION: CTMP 3410 for the 2005/2006 academic year only

CTMP 4140.03: Phenomenology and its legacy: Back to the ‘things themselves’.

This course examines some of the major figures in the phenomenological movement. We begin with an examination of Edmund Husserl’s attempt to establish a ‘radical’ science of phenomenology. The method of phenomenology, the intentionality of consciousness, perception, and the Lebenswelt are among the topics we will consider. We then turn to various reformulations and critiques of Husserl’s conception of Phenomenology in selected works from Heidegger to Derrida. Topics and concepts for discussion will include being-in-the-world, the nature of consciousness, the lived body, temporality, the priority of otherness and hermeneutics.

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

CTMP 4200.03: Philosophies of Technology I: From Tecne to Technology.

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

INSTRUCTOR(S): G. McCouat
FORMAT: Seminar/lecture

CTMP 4201.03: Philosophies of Technology II: Questions Concerning Technology.

This topical seminar class will explore in detail the implications of powerful contemporary debates concerning the meaning and place of technology. What do we mean by technology? Can there be a philosophy of technology? What are the political and cultural ramifications of going technological? Topics will include technological determinism in history,
feminist critiques, technology and development, the meaning of expertise, technology, art and the "lifeworld", social-construction vs. actor-network theory, Donna Haraway's concept of cyborg culture and the "modern technological sublime". The class will be conducted in seminar format with particular emphasis placed on the elucidation of historical and contemporary case-studies. Whenever possible, guest lecturers from the "real world" of technology will be invited to participate in class.

INSTRUCTOR(S): G. McNaull

FORMAT: Seminar/lecture

CTMP 4301.03: Freud, Lacan and the Critique of Psychoanalysis.

Is psychoanalysis a medical practice, a method of interpretation, or an account of the social symbolic? The modern skepticism about consciousness and conscious life is most thoroughly voiced in psychoanalytic thought as first developed by Freud and pursued in the work of Jacques Lacan. This class will consider the question of the modern psyche, the nature of symbolic practices in art and literature, and the construction of libidinal economies in society. The central question of the class will concern the way in which the individual subject is incorporated in symbolic practices. The recent attack on Freud and Freudsian methodologies will also be considered.

INSTRUCTOR(S): E. Edwards

FORMAT: Seminar

CTMP 4302.03: Recent French Feminist Theory.

This class will concentrate on some of feminism's most challenging voices, those that have emerged from France at the end of the last century. Kristeva, Cixous and Irigaray. The class will attempt to illuminate the intellectual background against which these women write, particularly in the areas of linguistic and anthropological structuralism, and in psychoanalytic theory. The course will be organized in part by the historical evolution of feminist thought, in part by the consideration of central feminist concerns.

INSTRUCTOR(S): P. Heller

FORMAT: Lecture/tutorial

EXCLUSION: Former CTMP 2030.06 and 4301.06

CTMP 4315.03: Psychoanalysis and Politics.

Freudian psychoanalysis and the Lacanian successor have added new dimensions to the analysis of contemporary political issues. In the mid-twentieth century, "classical" Freud and Lacan were drawn upon to supplement liberal and Marxist analyses of fascism. Lacanian psychoanalysis has recently been employed in the understanding of nationalism, ethnic conflict and religious fundamentalism through such categories as identification, recognition and trauma. The course will begin with an overview led by Freud and Lacan, and then move to a consideration of recent examples of the conjunction of psychoanalytic and political theory.

INSTRUCTOR(S): P. Heller

FORMAT: Seminar

CTMP 4330.03: Ethics after the Holocaust.

Shortly after World War II ended, thinkers such as Hannah Arendt, Theodor Adorno, and Martin Buber reflected on the causes of the Jewish genocide and its impact on humanity. It has taken decades, however, for thinkers to work their way by Freud and Lacan, and then move to a consideration of recent examples of the conjunction of psychoanalytic and political theory.

INSTRUCTOR(S): D. Chowcacke

FORMAT: Seminar

CTMP 4410.03: Special Topics in Contemporary Social and Political Thought in the 20th Century.

The Special Topics classes focus on one author or one particular school of thought in an interdisciplinary context. Topics vary each year. Some of the topics are "Habermas", "Hannah Arendt", "Contemporary Marxism", and "Arendt." NOTE: No more than two special topics classes (one full credit) can be taken for credit towards the Contemporary Studies Program. Students can enrol only once in CTMP 4410.03.

FORMAT: Seminar

PREREQUISITE: Students must complete at least 2 years of university study (minimum 10 full credits) prior to enrollment.

CTMP 4411.03: Special Topics in Contemporary Science and Technology.

The Special Topics classes focus on one author or one particular school of thought in an interdisciplinary context. Topics vary each year. Some of the topics are "Actor-Network Theory", "Technological Determinism", "Bruno Latour", and "Cyborgs.

NOTE: No more than two special topics classes (one full credit) can be taken for credit towards the Contemporary Studies Program. Students can enrol only once in CTMP 4411.03.

FORMAT: Seminar

PREREQUISITE: Students must complete at least 2 years of university study (minimum 10 full credits) prior to enrollment.

CTMP 4415.03: Special Topics in Contemporary Aesthetic and Critical Theories.

The Special Topics classes focus on one author or one particular school of thought in an interdisciplinary context. Topics vary each year. Some of the topics are "Roland Barthes", "Michel Foucault.

NOTE: No more than two special topics classes (one full credit) can be taken for credit towards the Contemporary Studies Program. Students can enrol only once in CTMP 4415.03.

FORMAT: Seminar

PREREQUISITE: Students must complete at least 2 years of university study (minimum 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 Program

I. Early Modern Studies Program

For centuries the concept of "modernity" has provoked challenging questions and heated controversies. Is modernity to be embraced as a source of freedom or to be rejected as destructive of both nature and humanity? Indeed, many now define themselves as "post-modern," but what is the actual nature of modernity? Why is Western society configured as it is today? One way to gain clarity about the nature of modernity is to study its origins and development in European culture. This search for clarity motivates the Early Modern Studies Program.

The Early Modern Studies Program (EMSP) is a Combined Honours BA program offered jointly by Dalhousie University and the University of King's College. This program brings together established departmental offerings in the arts and social sciences at Dalhousie and joins these with Early Modern Studies classes - including a required 'core' class for each upper year of study - at King's. The King's portion of this intercampus degree program consists of interdisciplinary classes taught by specialists from a number of academic fields. The intention is to provide students with a many-sided yet unified introduction to the study of European culture from the 16th to the early 19th century.

The interdisciplinary offerings within the EMSP at King's count as one of two honours subjects. EMSP classes are designed so that important figures and developments of the period may be considered on their own terms and in relation to other important aspects of the period. This will often involve consideration of the differences between the Early Modern and other historical periods of the West, and the contrasts with non-European cultures in the Early Modern Period. The 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.

Costume Studies
Aside from preparing undergraduates for future more specialized training at the graduate or professional level, the EMSP is intended to provide them with a broad overview of the Early Modern Period. Students are encouraged to relate the various aspects of Early Modern thought and culture to one another and to develop independent insights into the nature of contemporary thought and practice. It is also meant that EMSP students will take an active role in organizing certain events each year, including lectures, debates, and exhibitions.

II. Degree Program

The departmental offerings within EMSP at Dalhousie include the other honours subject and a number of possible electives. The other honours subject must be selected from the following list of Dalhousie departments and programs: Canadian Studies, Classics, English, French, Gender and Women's Studies, German, History, International Development Studies, Music, Philosophy, Political Science, Russian Studies, Sociology and Social Anthropology, Spanish, Theatre or any of the BSc Honours subjects. Electives may be taken in any of the above-mentioned departments and programs as well as in the following: Comparative Religion, Contemporary Studies and History of Science and Technology. In addition, a number of classes in the Dalhousie Faculty of Arts and Social Sciences have been cross-listed with Early Modern Studies, and some Dalhousie faculty members participate in Early Modern Studies classes at King's.

A. Combined Honours

Students who are eligible to take an honours degree should apply to the EMSP and the other department or program concerned as early as possible. All students must meet the requirements of the Faculty of Arts and Social Sciences as detailed in the Degree Requirements section of this calendar, page 65. Because it is an honours Program, the quality of work required in it is higher than that required in a 15-credit concentration or 20-credit major Program.

Applications for admission must be made to the Dalhousie department concerned and to the Early Modern Studies Office at King's on forms available from the Registrar at either Dalhousie or King's. Students should concern and to the Early Modern Studies Office at King's on forms.

Applications for admission must be made to the Dalhousie department concerned and to the Early Modern Studies Office at King's.


Central to what distinguishes modernity from the ages preceding it was the development of a new conception of the self. This class traces the history of the modern self in its cultural expressions from its beginnings in Renaissance scepticism. The developing and often diverse explorations of the self in the Early Modern period will be considered through an examination of the philosophic and literary texts as well as other aesthetic phenomena. To help provoke a sense of what the modern self implies, continual reference will be made to the 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 given only if both are completed consecutively.

INSTRUCTOR(s): N. Robertson
FORMAT: Lectures and tutorials
PREREQUISITE: Either King's Foundation Year Program or two first-year credits at Dalhousie which involve the study of pre-19th century history of the modern self in its cultural expressions from its beginnings in Renaissance scepticism.

EMSP 2230.03: Picture and Poetry in Early Modern Culture.

Early modern artists and thinkers were fond of the Latin phrase, ut pictura poesis, which means, “as in painting, so in poetry.” Ben Jonson for example argued that “poetry and picture are arts of a like nature, and both are busy about imitation.” The objective here will be to test the validity of such claims with reference to early modern visual art and literature. Are poets and painters engaged in the same field of representation? Do they adopt parallel strategies of representation? Do they interpret and organize social energies in similar ways?

INSTRUCTOR(s): R. Haubert
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 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 one 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 interspersed. We shall look at some parts of the epistemologies that resulted, especially in the area of cognitive science, especially in Descartes, but also including physics and metaphysics, and the contributions of other philosophers of the period. The course starts from the premise that the ideas of these philosophers are to be taken seriously as contenders for philosophical truth. Accordingly, we will use the methods of analytic philosophy, both conceptual analysis and argument reconstruction, to bring these theories into the most favorable light, then use whatever methods are available to us to critically assess them. The amount of reading material will not be large but what there is will be the subject of close study. Written assignments, papers, class participation and term tests will be the method of evaluation.

INSTRUCTOR(S): T. Vinci
FORMAT: Seminar

EMSP 2250.03: Goethe’s Faust.

The Faust myth can be described as the myth of modernity itself. The ideas of human self-realization and progress are under debate in the story of the German scholar Dr. Faustus who in his pact with the devil transgresses the boundaries that nature, religion and society imposed on mankind. Unquestionably the most famous representation of this modern myth is Goethe’s Faust. Written over a period of sixty years (1773-1832), Goethe’s opus magnum broadens the focus of the original myth to portray the central ambitions and controversies presented by the modern age. His Faust is the story of modern man at large: successful, egotistical, tormented, alienated, driven, in search of truth and totality, a man who in the course of his life becomes spectacularly guilty and in the end is spectacularly (and controversially) redeemed. Faust’s journey through the world traces major developments of the Western world from the 16th to the early 19th century, developments that still shape today’s world.

INSTRUCTOR(S): J. Curran
FORMAT: Seminar

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

This course explores the range, depth and commitment of the work of several leading figures of the eighteenth-century intellectual movement who contributed directly to the Encyclopédie and to the movement in these other European countries. Course readings will include a nucleus of articles from the Encyclopédie, as well as other works by these philosophers. The period of European history from 1500 to 1800 saw the rise of modern science and philosophy. It was also a period in which thousands of witch trials and executions were carried out. This class will seek to understand how these seemingly contradictory developments could have occurred simultaneously. The class will examine changing conceptions of the witch and witchcraft in their historical, intellectual, cultural, religious, and political contexts. Questions that will be addressed include: How did the Renaissance interest in magic influence the early modern understanding of witchcraft? What impact did concerns about popular religion have on the witch trials? What constituted evidence that someone was a witch? What did early modern scientists think about witchcraft? This class will pay special attention to early modern notions of gender and sexuality and their influence on the witch hunts and witch trials.

INSTRUCTOR(S): K. Morris
FORMAT: Lecture/tutorials
CRN: 987, LISTING: CWST 2320.03

EMSP 2280.03: Friedrich Schiller’s Historical Dramas.

Friedrich Schiller’s five historical dramas range over early modern Europe from the hundred years war to the thirty years war, and find settings in medieval Switzerland and France, as well as counter-reformation Spain and Elizabethan England. The plays will be studied according to their historical, dramatic, and aesthetic criteria.

INSTRUCTOR(S): Th. Curran
FORMAT: Seminar

EMSP 2310.03: Women and Gender in Early Modern Science.

This class will explore the roles of women, and questions about women’s nature, in the development of early modern science. The class will consider several interrelated aspects of scientific culture in the sixteenth, seventeenth, and eighteenth centuries: first, we will look at the place of women in the scientific institutions of the time. Although women were, for the most part, excluded from universities and scientific academies, some women were able to do scientific work through their participation in salons and craft guilds. The second part of the class will look at the contributions of some particular woman to the fields of physics, astronomy, botany, and medicine. We will then examine how science interpreted sex and gender. We will pay special attention to the biological sciences and their treatments of sex differences, conception, and generation. We will consider how these biological theories were influenced by, and at the same time used to uphold, various political and social structures. Finally, the class will explore the ways in which gender and nature were portrayed in the context of science, for example, the ways in which women were depicted as scientists and as symbols of science in art and literature.

INSTRUCTOR(S): E. Liddell
FORMAT: Lecture/seminar
CRN: 992, LISTING: CWST 2310.03

EMSP 2320.03: Witchcraft in Early Modern Europe.

The period of European history from 1500 to 1800 saw the rise of modern science and philosophy. It was also a period in which thousands of witch trials and executions were carried out. This class will seek to understand how these seemingly contradictory developments could have occurred simultaneously. The class will examine changing conceptions of the witch and witchcraft in their historical, intellectual, cultural, religious, and political contexts. Questions that will be addressed include: How did the Renaissance interest in magic influence the early modern understanding of witchcraft? What impact did concerns about popular religion have on the witch trials? What constituted evidence that someone was a witch? What did early modern scientists think about witchcraft? This 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/hourlies
CRN: 986, LISTING: CWST 2320.03

EMSP 2330.03: Nature Imagined: Literature and Science in Early Modern Europe.

The Scientific Revolution of the sixteenth, seventeenth, and eighteenth centuries brought about massive changes in the scientific world view. These changes also had a great influence on the literature of the period. Some writers were influenced by the new natural science, and sought to disseminate its principles and rationally its most significant figures. Other writers were hardly critical of the emerging notions of scientific progress and domination of nature. This class will examine the ways in which science was portrayed in early modern poetry, prose, and drama, in an attempt to understand how the new science, and new conceptions of
nurture, were understood and received in the broader philosophical and cultural context.

INSTRUCTOR(S): K. Morris
FORMAT: Lecture/seminar
EXCLUSION: EMSP 2340.03 and HSTC 2340.03

EMSP 2430.03: The Pursuit of Happiness in Early Modern Culture.
A central preoccupation in early modern European culture, particularly in the 18th century, was the attainment of happiness in one’s private life and in society in general. Happiness was seen as the highest good by some thinkers, as arguably reflected on a political level, in the American constitution - while others argued against the identification of happiness with goodness. This class will examine various literary and philosophical texts in which the pursuit of happiness appears in diverse forms as an important theme. Depictions of the happy life as well as philosophical and literary critiques of the primacy given to happiness will be discussed.

INSTRUCTOR(S): S. Kow
FORMAT: Lecture/tutorial

EMSP 2430.03: The Pursuit of Happiness in Early Modern Culture.
A central preoccupation in early modern European culture, particularly in the 18th century, was the attainment of happiness in one’s private life and in society in general. Happiness was seen as the highest good by some thinkers, as arguably reflected on a political level, in the American constitution - while others argued against the identification of happiness with goodness. This class will examine various literary and philosophical texts in which the pursuit of happiness appears in diverse forms as an important theme. Depictions of the happy life as well as philosophical and literary critiques of the primacy given to happiness will be discussed.

INSTRUCTOR(S): S. Kow
FORMAT: Lecture/tutorial

EMSP 2440.03: Providence, Progress, Degeneration: Early Modern Ideas of Historical Transformation.
Against the background of works of both renaissance historians and seventeenth century state-of-nature theorists, eighteenth century authors developed new theories of multi-staged historical existence. Readings may include selections from authors such as Vico, Rousseau, Voltaire, Smith, Gibbon, Lessing, Kant, and Herder.

INSTRUCTOR(S): P. Heller

EMSP 2450.03: The East is Read: Early Modern Conceptions of Asian Thought.
This class will consider 18th and early 19th century European interpretations of key Asian texts. The reactions of early modern thinkers to the "Oriental World," as it was known, reflect the philosophical concerns of Europeans at different times in the early modern period. For example, Enlightenment thinkers sometimes used Asian ideas to 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 2460.03: Images of Modernity in Cinema: Early Modern Stories on Film.
This class is intended to introduce students to the history and culture of European and Asian societies from the 16th to late 18th centuries through the study of film. The motion pictures to be screened dramatize such events, themes, and/or stories as the Protestant Reformation, Shakespearean drama, the decline of chivalry in France and Japan, French Absolutism, the wild-child phenomenon, and cross-cultural encounters in the Americas and South Pacific. Each week will include both a film screening and relevant lecture and discussion. The films may include such titles as Luther (2003), A Man for All Seasons (1966), The Chimes at Midnight (1966), Elizabeth (1998), The Seven Samurai (1954), Cyrano de Bergerac (1990), Aguirre: The Wrath of God (1972), Black Robe (1991), The Butterfly (1970), and Ridicule (1996). Selected primary and secondary documents will be assigned to supplement the films. No prior knowledge of early modern history and culture is assumed.

INSTRUCTOR(S): S. Kow
FORMAT: Lecture/discussion/film screening

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 inextricable from isolation from new techniques and technologies and from the philosophical and artistic disciplines. Because developments in the study of nature in this period are relative to institutional place and national location, the principal elements of the social, economic, political and cultural contexts within which scientists and philosophers of nature...
worked will be considered. As well, the aesthetic representations of nature and its study will be a theme throughout the class.

NOTE: Students taking this class must register in both 1 and 2. In consecutive terms, credit will be given only if both are completed consecutively.

INSTRUCTOR(S): K. Morris
FORMAT: Lectures and tutorials

EMSP 3210.03: The Dialectic of Enlightenment I.
In the course of criticizing tradition and integrating the experience of Renaissance and the Reformation, in responding to the beginnings of modern natural science and modern political institutions, early modern Europeans sought in diverse—and often conflicting—ways to express the self-understanding of Enlightenment. By the end of the eighteenth century, science, morality and art were seen as different modes 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 enlightenment 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 secular and sacred freedom.

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

EMSP 3220.03: The Dialectic of Enlightenment II.
In enlightened European culture, religion, state and society as well as science, morality and art were gradually separated from one another under exclusively formal points of view, and subordinated to a critical reason that took on the role of a supreme judge. By the beginning of the nineteenth century, many Europeans began to question the self-understanding evoked by the principle of critical reason. This class will consider how enlightened freedom and reason moved European philosophers and theologians, artists and social theorists, to conceive of themselves historically, that is, to become conscious of the dissolution of tradition, and of the need to ground the divisions of culture in ideal forms of unity derived from the tradition. The class will pay particular attention to the relationship between religion and the demand that the unifying force in culture come from a dialectic resulting in the principle of enlightened reason itself.

INSTRUCTOR(S): K. Kierans
FORMAT: Seminar
CROSS-LISTING: CTMP 3115.03

EMSP 3230.03: Impersonations: Theatre, Performance and Identity in Early Modern England.
In his celebrated “Oration on the Dignity of Man,” Ficino della Mirandola grappled with man’s ability to “transform himself into what he most wills, taking like a chameleon the color of all those things to which he is most righ.” For Ficino as for many early modern thinkers, human subjects were distinguished less by preordained identities than by an actor-like ability to fashion and perform new selves. In early modern England, the burgeoning commercial theatre became a focal point for cultural debates about the social and ethical ramifications of this performative construction of the self. This course will explore these debates both as they relate to the growth of the professional theatre and in terms of their wider implications for early modern English society. We will begin by looking at the roles traditionally played by performance in the affirmation of identities both aristocratic and plebian. We will then go on to examine a number of plays from the main genres performed in English public theatres between 1590 and 1660. By reading these plays alongside primary sources from conduct manuals to statutes for theatre governance, and from playwrights’ celebrations of their art to Puritans’ attacks on the theatre’s degeneracy, we will consider the huge range of cultural responses to the relationship between performance and identity in a rapidly shifting social order. Special attention will be paid to the interrogations of class, gender, sexuality and morality implied in these works, and to their far-reaching effect on English society before and after the closure of the public theatres in 1642.

INSTRUCTOR(S): R. Barker
FORMAT: Seminar

EMSP 3310.03: Hidden Worlds: Microscopy in Early Modern Europe.
Microscopes were introduced into Europe at the beginning of the seventeenth century. In the words of Robert Hooke, the microscope opened up a “new 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 microscopy technology and its evolution in the seventeenth, eighteenth, and early nineteenth centuries. The second part of the class will explore the role of the microscope in the evolution of early modern science. We will, for example, consider the role of microscopy in the emergence of the new mechanical philosophy and the new experimental science. We will also discuss the histories of some scientific theories (for example, of contagion and generation) that made particular use of observations made with microscopes. Finally, the microscope’s revelation of “new worlds” raised conceptual difficulties that puzzled scientists and philosophers alike. In the final part of the class we will consider the challenges that new kinds of experience raised for early modern philosophy, as well as the possible influence of philosophical debates on the acceptance of the new technology.

INSTRUCTOR(S): K. Morris
FORMAT: Seminar
CROSS-LISTING: HSTC 3310.03

EMSP 3330.03: Science and Religion: Historical Perspectives.
Beginning with an overview of the history and methodology of the study of science and religion, encounters between science and religion are traced from the dawn of civilization to the end of the eighteenth century, with a special focus on the early modern period. From an examination of the biblical view of nature and ancient Egyptian astrology and divination, this course moves through a treatment of the centrality of theology to Medieval science on to natural theology and the “Watchmaker” Design Argument of the seventeenth and eighteenth centuries. Models of conflict, harmony and complementarity offered to characterize relations between science and religion are explored through case studies such as Galileo’s controversy with the Church and instances where religious belief inspired scientific experimentation. Claims that certain confessional traditions (notably Protestantism and its dissenting offshoots) facilitated the rise of modern science are also appraised. Science-religion controversies are examined both from the standpoint of mainstream religion and with respect to religious heterodoxy, prophecy, alchemy, magic and witchcraft. This course employs examples from eastern and Islamic cultures in addition to the Judeo-Christian tradition. Special features include a focus on primary texts and guest lectures by scientists.

INSTRUCTOR(S): S. Slobodin
FORMAT: Seminar
CROSS-LISTING: HSTC 3320.03, HST 3075.03

Modern western culture draws close connections between three facets of human experience: a) our knowledge of nature; b) our vision 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 1460-1650) was highly influential in laying the foundations for such modern connections, even as it seems to us to be a period rather different from our own. We will examine these connections in an exploration primarily of the work of Francis Bacon (1561 - 1626).

INSTRUCTOR(S): I. Stewart
FORMAT: Seminar/lecture
CROSS-LISTING: HSTC 3325.03
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 theology”, i.e., interpretations of religious teachings especially as contained in scripture with a view to assessing the political consequences of religion and to harmonizing religious interpretations with a particular conception of political life. We shall examine various Continental European and British texts of the early modern period which are both timely and thoughtful reflections on Christian teachings as they relate to and sometimes conflict with the philosophical underpinnings of the modern state and religious freedom.

INSTRUCTOR(S): S. Kow
FORMAT: Seminar
PREREQUISITE: CTMP 2000.06, CTMP 2100.03, CTMP 2101.03, EMSP 3420.03, EMSP 3430.03, EMSP 4000.06, PHIL 2211.03, PHIL 2225.03, POLI 2410.03, POLI 2411.03, or instructor’s permission.
CROSS-LISTING: CTMP 3510.03
NOTE: Not more than one of each course number can be taken for credit towards the Early Modern Studies Program.

EMSP 3430.03: Theories of Punishment: Retribution and Social Control in Early Modern Thought. Among the distinctive characteristics of early modern thought are new conceptions of retribution and social control. In this class, we shall examine a number of texts which reflect the diversity of philosophical and theological approaches to law and punishment, both human and divine. We begin with a consideration of pre-modern and, or neo-Platonic 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 philosophers before, during, and after the period called the enlightenment. Finally, we shall consider Foucault’s “normalization thesis” to see if it illuminates our understanding of early modern thought on punishment.

INSTRUCTOR(S): S. Kow
FORMAT: Seminar
PREREQUISITE: One of: CTMP 2000.06, CTMP 2100.03, CTMP 2101.03, CTMP 3510.03, EMSP 3410.03, EMSP 3420.03, EMSP 3430.03, EMSP 4000.06, PHIL 2211.03, PHIL 2225.03, POLI 2410.03, POLI 2411.03, or instructor’s permission.
CROSS-LISTING: CTMP 3510.03
NOTE: Not more than one of each course number can be taken for credit towards the Early Modern Studies Program.

EMSP 3440.03: Reconstructing Political Modernity. This class will examine several interpretations of early modern philosophers by 20th century authors who are original political thinkers in their own right. These interpretations have involved as much reconstruction of early modern thought as faithful scholarly commentary. Indeed, they sometimes shed more light on the interpreter than on the thinkers being interpreted. Thus, we shall critically analyze the radical transformations of early modern texts that were undertaken in order to make these works relevant to social and political questions centuries later.

INSTRUCTOR(S): M. Thibodeau
FORMAT: Seminar
PREREQUISITE: EMSP 3410.03, EMSP 3420.03, EMSP 3430.03, EMSP 3440.06, EMSP 3450.03, EMSP 3460.03, EMSP 4000.06, PHIL 2211.03, PHIL 2225.03, POLI 2410.03, POLI 2411.03, or instructor’s permission.
CROSS-LISTING: CTMP 3510.03
NOTE: Not more than one of each course number can be taken for credit towards the Early Modern Studies Program.

EMSP 3450.03: Common Tragedy: Catastrophe, Loss and Ambition in Early Modern Europe. Modern consciousness can be defined by new visions of death, loss and ambition. As modernity emerges and "matures", so do writings on catastrophe. Writings from the catastrophic 14th Century, the 17th Century plague, and the 1755 Lisbon earthquake provide insight into shifts and continuities between late medieval and modern senses of the word.

INSTRUCTOR(S): S. Dodd
FORMAT: Lecture
EXCLUSION: EMSP 3660.03 for the 2006-07 academic year only
EMSP 3510X/Y.03/3511X/Y.03/3515X/Y.06/4510.03/4511.03/4515X/Y.06: Independent Readings in Early Modern Studies.

In a reading class the content is assigned to a member of staff for regular meetings to discuss readings in a selected area. Papers and research projects are expected. Only one full credit or the equivalent may be taken in a year. No more than two full credits of this type may be taken during the course of study.

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

FORMAT: Individual instruction
PREREQUISITE: Honours registration in Early Modern Studies, permission of the instructor and the Director of the Program. Restricted to students in 3rd year and above.

EMSP 3610.03: Studies in Early Modern Subjectivities. In this class, students will explore a 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 Enlightenments Debates about the Self", "Self Portrait in Literature and the Visual Arts" and "Renaissance and Subjectivity in Early Modern Thought.

INSTRUCTOR(S): Staff
FORMAT: Lecture/discussion
NOTE: Not more than one of each course number can be taken for credit towards the Early Modern Studies Program.

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 Program.

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 Program.

INSTRUCTOR(S): Staff
FORMAT: Lecture/discussion
NOTE: Not more than one of each course number can be taken for credit towards the Early Modern Studies Program.

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 Art of the Arist in Society", and "Sturm and Drang".

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

INSTRUCTOR(S): Staff
FORMAT: Lecture/discussion
NOTE: Not more than one of each course number can be taken for credit towards the Early Modern Studies Program.

EMSP 4000X/Y.06: Conceptions of State, Society, and Revolution in the Early Modern Period. This class involves close examination of works by important Enlightenment thinkers from the 16th to early 19th centuries. These thinkers reflected on historical changes and events in their day - including the dissents of Italy, the Protestant Reformation, the English civil war, the Glorious Revolution, the rise of British society, the French Revolution, and the Napoleonic wars-and formulated complex and sophisticated accounts of human society, sometimes to provide for social and political stability, sometimes to promote freedom and justice. We shall trace the development of their ideas, from investigation into human nature and contractual theories of society to considerations on political life in relation to philosophy of history. Assigned texts will include works by such authors as Machiavelli, Hobbes, Milton, Locke, Montesquieu, Rousseau, Kant, Burke, and Hegel. In addition, a history of early modern Europe will be assigned in order to provide historical context to the primary texts.
EMSP 4310.03: Newton and Newtonianism.
This seminar involves a close study of the work of Isaac Newton, along with that of his supporters and detractors. Beginning with an overview of pre-Newtonian science, topics range from Newton's rejection of Cartesianism through his contributions to mathematics, physics, astronomy and optics, along with his inductive scientific method, laws of motion and calculus, priority dispute with Leibniz. Also considered are lesser-known aspects of his career, such as his secretive pursuit of alchemy and his theological 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 Britain and France. This seminar concentrates on primary readings, including Newton's Principia (1687), Opticks (1704), alchemical treatises and unpublished theological papers, as well as the Leibniz-Clarke correspondence (1717-1718), anti-Newtonian and eighteenth-century popularizations of Newtonianism such as Voltaire's Philosophical Letters (1733) and Macaulay's Account of Newton's discoveries (1748). Attention is paid to the social, cultural and political aspects of Newtonianism and no prior knowledge of science is required.
INSTRUCTOR(S): S. Kow.
FORMAT: Seminar
NOTE: Not more than one of each course number can be taken for credit towards the Early Modern Studies Program.

EMSP 4620.03: Special Topics in Early Modern Subjectivitites.
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", "Intertextuality in Shakespeare", and "Experientialism".
INSTRUCTOR(S): Staff
FORMAT: Seminar
NOTE: Not more than one of each course number can be taken for credit towards the Early Modern Studies Program.

EMSP 4630.03: Special Topics in Early Modern Social and Political Thought.
This Special Topics classes focus on one author or one particular school of thought in an interdisciplinary context. Topics vary each year. Some of the topics are "Hobbes", "Machiavelli and Reason of State Theories", and "Milton and Early Modern Political Theory."
INSTRUCTOR(S): Staff
FORMAT: Seminar
NOTE: Not more than one of each course number can be taken for credit towards the Early Modern Studies Program.

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".
INSTRUCTOR(S): Staff
FORMAT: Seminar
NOTE: Not more than one of each course number can be taken for credit towards the Early Modern Studies Program.

EMSP 4650X/Y.06: Honours Thesis in Early Modern Studies: Reading and Research.
In this class the student is assigned to a member of staff for regular meetings to discuss readings and present research for the purpose of completing an honours thesis in Early Modern Studies. No prior knowledge of science 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.
FORMAT: Individual instruction
PREREQUISITE: Honours registration in Early Modern Studies, permission of the instructor and the Director of the Program

EMSP 4610.03: Special Topics in Early Modern 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 "Experientialism".
INSTRUCTOR(S): Staff
FORMAT: Seminar
NOTE: Not more than one of each course number can be taken for credit towards the Early Modern Studies Program.

EMSP 4630.03: Special Topics in Early Modern Social and Political Thought.
This Special Topics classes focus on one author or one particular school of thought in an interdisciplinary context. Topics vary each year. Some of the topics are "Hobbes", "Machiavelli and Reason of State Theories", and "Milton and Early Modern Political Theory."
INSTRUCTOR(S): Staff
FORMAT: Seminar
NOTE: Not more than one of each course number can be taken for credit towards the Early Modern Studies Program.

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".
INSTRUCTOR(S): Staff
FORMAT: Seminar
NOTE: Not more than one of each course number can be taken for credit towards the Early Modern Studies Program.
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 Chimamanda Ngozi Adichie. By the same token, the discipline of English fosters the development of various human skills: it requires the student to think, to use language with clarity, judgment, and imagination. But individual works of literature are also related in various ways to their social, cultural, and political contexts. For this reason, curiosity about a particular text often leads to enquiries that touch upon history, philosophy, politics, religion, biography, and the fine arts as well. The written text turns out to be a link between an individual’s sensibility and the rest of the world. The value of English studies therefore, though difficult to measure, can be discovered both in the large sociologies of the cultures to which we belong, and in the smallest nuances of the language we use.

II. Degree Programs

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 63 of this calendar.

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

A. BA with Honours in English

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

1. at least one of ENGL 3008.03, 3009.03, or 3010.03
2. at least one full credit in each of the following two groups:
   a) Old English, Middle English, Renaissance (ENGL 2018.03, 2020.03, 2214.06, 3005.03, 3007.03, 3008.03, 3010.03, 3011.03, 3013.03)
   b) Restoration, Eighteenth-Century, Romantic, Victorian, American (ENGL 3015.03, 3015.03, 3013.03, 3002.03, 3002.05, 3022.03, 3022.05, 3025.03, 3025.05, 3029.03, 3031.03, 3032.03, 3061.03, 3062.03)
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 1 in both subjects, or 15 with departmental approval). Among the English classes, students must take:

1. at least one of ENGL 3008.03, 3009.03 or 3010.03
2. at least three credit hours (or one half credit) in each of the following two groups:
   a) Old English, Middle English, Renaissance (ENGL 2018.03, 2020.03, 2214.06, 3005.03, 3007.03, 3008.03, 3010.03, 3011.03, 3013.03)
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, 3001.05 or 3022.03
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, 3010.05, 3011.03, 3013.03)
   b) Restoration, Eighteenth-Century, Romantic, Victorian, American (pre 1914) (ENGL 3017.03, 3019.03, 3020.03, 3022.03, 3025.06, 3029.03, 3031.03, 3032.03, 3061.03, 3062.03)
3. two half credits at the 4000 level

D. Double Major

Students must meet the requirements for the double major, which include 10-13 credits in the Major subjects above the 1000-level (no more than 9 and no fewer than 4 in either). Students must take at least 2 credits above the 2000-level in each subject. Among their English classes, students must take:
1. at least one of 3000.01, 3001.05 or 3022.03
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, 3010.05, 3011.03, 3013.03)
   b) Restoration, Eighteenth-Century, Romantic, Victorian, American (pre 1914) (ENGL 3017.03, 3019.03, 3020.03, 3022.03, 3025.06, 3029.03, 3031.03, 3032.03, 3061.03, 3062.03)
3. six credit hours (or two half credits) at the 4000 level

E. 15-Credit BA with Concentration in English

Students must meet the faculty requirements, which include 4-6 credits in English above the 1000-level, including 2 credits above the 2000-level; within these 4 to 6 credits, they must take the following:
1. one of 3000.01, 3001.05 or 3022.03
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, 3010.05, 3011.03, 3013.03)
   b) Restoration, Eighteenth-Century, Romantic, Victorian, American (pre 1914) (ENGL 3017.03, 3019.03, 3020.03, 3022.03, 3025.06, 3029.03, 3031.03, 3032.03, 3061.03, 3062.03)

Students who began a 15-credit concentration program prior to the 2007- 2008 academic year have the choice of doing ENGL 2225.06 rather than number 2 above; however, they must also take at least 1 credit in literature before 1800 (not including 2225.06).

Emphasis in Canadian Studies

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

Creative Writing Program

The new Creative Writing program in the Faculty of Arts and Social Sciences is not restricted to FASS students, and allows any Dalhousie student interested in writing fiction, poetry, dramatic narrative (playwriting), and narrative non-fiction to take four full credits in creative writing above the first-year level, thus combining these classes with their major or honours area of study. Therefore, the program would fulfill a BA (20-credit) Double Major program with creative writing as the secondary area, or a BA (20-credit) Combined Honours program with creative writing as a secondary area.

Program Prerequisite

• CRWR 2000.06 (The Creative Process)
• Equivalent of two full credits from:
  • CRWR 3001.03 (Poetry)—20 students (cap)
  • CRWR 3003.01 (Fiction)—20 students (cap)
  • Theatre 3009.06 (Playwriting)—15 students (cap)
  • Journalism 3400X/3441.03 (Narrative Non-Fiction at University of King’s College)-25 students (cap)
• One full credit from:
  • CRWR 4000.06 (Advanced Poetry)—20 students (cap)
  • CRWR 4001.06 (Advanced Fiction)—20 students (cap)
  • CRWR 4002.06 (Advanced Playwriting)—15 students (cap)
  • CRWR 4003.06 (Advanced Narrative Non-Fiction)—25 students (cap)

Note: The prerequisites for the 3-year seminars that are included in the class descriptions (for example: English 3089.03 is a required prerequisite for CRWR 3001.03, and English 3089.03 is a required prerequisite for CRWR 3003.01 if you are taking the program).

Writing portfolio are required for consideration of entry into English 3089 and 3099. Submission date is July 15 preceding the beginning of the academic year.

Students interested in Creative Writing but not completing the program may enter individual 3-year CRWR seminars with the instructor’s permission.

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.

NOTE: 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: Winnington, A.

CRWR 3000.03: Creative Writing: Poetry.

Building on the work done in English 3099, this seminar will involve students in the writing and assessment of poetry, their own as well as that of their peers. The process of writing poetry from the first draft to the final version will be stressed, with attention given to the developing relationship between form and content.

FORMAT: Seminar

PREREQUISITE: ENGL 3099.03

CRWR 3001.03: Creative Writing: Fiction.

Following the emphasis on short story writing in English 3099, this class will deal with novel writing, with attention to such matters as dramatic elements, story/plot, character development, setting, point of view, revision, and publishing.

FORMAT: Seminar

PREREQUISITE: ENGL 3099.03

JOUR 3440.03: Introduction to Narrative Nonfiction.

Narrative nonfiction writing includes literary journalism, memoir and essay. In this introductory class, students will learn about the historic development of this genre as well as read and discuss some of the best examples of historical and contemporary narrative nonfiction. The goal is to make students better informed readers as well as to provide them with the tools to produce this kind of writing themselves.

PREREQUISITE: JOUR 1001.06 or permission of the instructor.

JOUR 3441.03: Advanced Narrative Nonfiction.

This is a course that focuses on writing, and rewriting — a major piece of narrative nonfiction.

PREREQUISITE: JOUR 3440.03

RESTRICTION: This class is not available to BJ(H) students
II. English Class Descriptions

ENGL 1000X/Y.06: Introduction to Literature.
This class studies literature as a language of our culture, as a way of understanding our world.

PREREQUISITE: ENGL 1000X/Y.06 or permission of the instructor. 
FORMAT: Lecture, first term only

ENGL 1000X/Y.06: Introduction to Literature.
Since ENGL 1000X/Y consists of sections taught by many different instructors, statements about its objectives and approach must be confined to generalizations. All instructors of ENGL 1000X/Y have these two broad objectives in common: (a) to involve students in the serious study of literature; (b) to involve them in the discipline of words so that they will be more critical and responsive readers and more exact and imaginative writers. The subject matter is confined to examples of poetry and of drama. A detailed syllabus is available on the department’s Web site.
NOTE: Students must obtain credit for both ENGL 1010.03 and ENGL 1020.03 to take further classes in English. The classes need not be taken sequentially.

EXCLUSION: ENGL 1000X/Y.06

ENGL 2018.03: Arthur.
This class will explore the many stories of King Arthur and his Round Table including some of Sir Thomas Malory’s Morte Darthur; earlier texts will be read in translation.

EXCLUSION: ENGL 1000X/Y.06

ENGL 2020.03: Sampling Medieval Literature.
A properly medieval title for this class would be “Kollektions.” It considers works important to the medieval literary scene in England, whether written initially in Old English, Middle English, Anglo-Norman French, Welsh, Norse, or Latin; almost all will be read in translation. The works read may include sagas, riddles, lyrics, the Breton lais of Marie de France; romances, chronicles, plays, saints’ lives, comic tales, beast fables.

FORMAT: Lecture/discussion
PREREQUISITE: ENGL 1000X/Y.06 or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King’s Foundation Year Program
EXCLUSION: ENGL 3018.03

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 and the sestina; other forms and subjects frequently used by students of English. These will include printed materials such as bibliographies, indices, and journals as well as electronic resources such as online catalogues, databases, listservs, and the World Wide Web.

FORMAT: Lecture/discussion

ENGL 2034.03: The Short Story.
This class will examine the form and evolution of the short story.

FORMAT: Lecture/discussion
PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King’s Foundation Year Program

Other classes may not be offered every year. Please consult the department’s supplement and/or the department’s website to determine this year’s class offerings.

The Faculty of Arts and Social Sciences
ENGL 2040.03: Mystery and Detective Fiction. In this course, we will study the development of mystery and detective fiction, from Victorian classics by Charles Dickens, Wilkie Collins, and Arthur Conan Doyle to contemporary classics by Agatha Christie and Raymond Chandler, and recent works by authors such as Sue Grafton, Sara Paretsky, and Ian Rankin. FORMAT: Lecture/discussion. PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program.

ENGL 2050.03: Literature and Propaganda. This class explores the relationship of literature to propaganda through the study of selected writings in different genres. Among the terms and concepts that may be considered are didacticism, rhetoric, ideology, pornography, and censorship. INSTRUCTORS: T. Ross. FORMAT: Lecture/discussion. PREREQUISITE: ENGL 1800X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program.

ENGL 2060.03: Sports Literature. While material may range from Homer and Pindar to contemporary works, this class will typically focus on a specific sport, period, or subject (e.g., race, the lesbian/gay athlete) or genre. Students will explore the unique features of writing that deals with athletic or sporting activities and recognize how the literature of sport is connected to the broader literary canon. Commercialism, nationalism, authenticity, and aesthetics are possible topics. Consult the current class description. INSTRUCTORS: D. McNeail. FORMAT: Lecture/Discussion. PREREQUISITE: ENGL 1800X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program.

ENGL 2070.03: African American Literature. An introduction to some major modes of writing in the African American community. Subjects of enquiry may include the "escaped-slave" narratives of the nineteenth century, or works produced by members of the Harlem Renaissance, or poetry and fiction by contemporary African American women writers. FORMAT: Lecture/discussion. PREREQUISITE: ENGL 1800X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program.

ENGL 2095.03: Narrative in the Cinema. This class will provide a brief introduction to the study of film narrative. Through an examination of select films from throughout the history of the medium, this class will consider various forms and conventions of cinematic representation. Although social, political, psychological and other non-visual 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 1800X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program.

ENGL 2100.03: Communication Skills: Oral and Written. This class is designed to help students become more successful communicators by examining the communications process from both the theoretical and practical viewpoint. Students learn to formulate communications goals, to examine their audience and to deliver accurate, effective messages. Written assignments and oral presentations allow for the development of these skills through practice. Students ultimately learn to communicate effectively and with confidence in a variety of settings. FORMAT: Writing Intensive, Lecture. CRB055-LIV/LING, CSE 2100.03 EXCLUSIONS: COMM 2701.03.

ENGL 2110.03: Introduction to Professional Writing. An introduction to professional writing. Students learn to analyze rhetorical situations, adapt to generic conventions, and adopt the languages of distinct discourse communities. They learn how to determine what constitutes “good writing” and to improve the structure and style of their prose to fit a given professional context. This course gives students the opportunity to research and produce specialized forms of writing. Examples might include case studies, while papers, press releases, business plans, web sites, and user manuals. FORMAT: Writing Intensive, Lecture/discussion. PREREQUISITE: Any faculty-approved Writing Class.

ENGL 2210X/Y.06: The English Language. This class, concerning the English language of today, begins with some general questions about the nature of language, and goes on to investigate the syntax, semantics, phonology, and dialects of modern English, with an ultimate interest in the stylistic analysis and comparison of short literary texts. NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively. FORMAT: Writing Intensive, Lecture/discussion. PREREQUISITE: ENGL 1800X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program.

ENGL 2205X/Y.06: Literary Landmarks. This class studies many of the most influential texts from the beginnings of English literature to the present. These landmarks provide some historical orientation in the literary landscape and help to make students aware of the diversity available in literary studies. NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively. FORMAT: Writing Intensive, lecture/discussion. PREREQUISITE: ENGL 1800X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program.

ENGL 2207X/Y.06: Canadian Literature. This class offers an introduction to Canadian poetry and prose written in English. The aim will be to trace the development of Canadian fiction and poetry from the nineteenth century to the present through discussion of selected texts. Approved with Canadian Studies. NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively. FORMAT: Writing Intensive, Lecture/discussion. PREREQUISITE: ENGL 1800X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program.

ENGL 2212.03: World Literature. This class introduces students to works of literature from around the world, with particular attention to writing from the former British colonies. Although the thematic focus will depend on the instructor, the class will explore the challenges and imperatives of writing in the wake of colonial history and in the face of what is often called globalization. Students are encouraged to consult the English Department website for a more specific course description. FORMAT: Lecture/discussion. PREREQUISITE: ENGL 1800X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program. EXCLUSION: ENGL 2212.06, ENGL 3070.03.

ENGL 2213.03: World Literature in English: Poetry. This class studies poems in English from a wide variety of countries. These poems explore the social and political nature of poetic expression in familiar and often surprising ways that cross borders between language and experience, the individual and the group, the writer and the reader. The class addresses race, ethnicity and gender, as well as how a poem says what it says. FORMAT: Lecture/discussion. PREREQUISITE: ENGL 1800X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program. EXCLUSION: ENGL 2213.06, ENGL 3070.03.

ENGL 2214X/Y.06: Shakespeare. An introduction to Shakespeare's career as a playwright through discussion and interpretation of a dozen or more of his plays.
PREREQUISITE: ENGL 2240X/Y.06, or both ENGL 2201.03 and ENGL 2202.03. Traditional definitions will be considered as well as the rise of a new and controversial postmodern economic and political climate. This class will challenge the old ideal of stable and developmental history and will explore the ways in which consumption, industry, and the mass media have changed the very notion of what used to be considered as middle-class. The class will focus on selected literary texts that reflect the new conditions of contemporary culture. This class is Writing Intensive.

ENGL 2241X/Y.06: The American Novel since 1945. This class will explore the development of the American novel since World War II. The novel has become one of the most compelling and influential forms of modern writing, and American writers have been at the forefront of many of its developments. We will look at the work of such authors as John Updike, John Steinbeck, and Philip Roth, as well as novelists from other countries who have contributed to the American novel. This class is Writing Intensive.

ENGL 2242X/Y.06: The American Novel since 1945. This class will explore the development of the American novel since World War II. The novel has become one of the most compelling and influential forms of modern writing, and American writers have been at the forefront of many of its developments. We will look at the work of such authors as John Updike, John Steinbeck, and Philip Roth, as well as novelists from other countries who have contributed to the American novel. This class is Writing Intensive.

ENGL 2243X/Y.06: The American Novel since 1945. This class will explore the development of the American novel since World War II. The novel has become one of the most compelling and influential forms of modern writing, and American writers have been at the forefront of many of its developments. We will look at the work of such authors as John Updike, John Steinbeck, and Philip Roth, as well as novelists from other countries who have contributed to the American novel. This class is Writing Intensive.

ENGL 2244X/Y.06: The American Novel since 1945. This class will explore the development of the American novel since World War II. The novel has become one of the most compelling and influential forms of modern writing, and American writers have been at the forefront of many of its developments. We will look at the work of such authors as John Updike, John Steinbeck, and Philip Roth, as well as novelists from other countries who have contributed to the American novel. This class is Writing Intensive.

ENGL 2245X/Y.06: The American Novel since 1945. This class will explore the development of the American novel since World War II. The novel has become one of the most compelling and influential forms of modern writing, and American writers have been at the forefront of many of its developments. We will look at the work of such authors as John Updike, John Steinbeck, and Philip Roth, as well as novelists from other countries who have contributed to the American novel. This class is Writing Intensive.

ENGL 2246X/Y.06: The American Novel since 1945. This class will explore the development of the American novel since World War II. The novel has become one of the most compelling and influential forms of modern writing, and American writers have been at the forefront of many of its developments. We will look at the work of such authors as John Updike, John Steinbeck, and Philip Roth, as well as novelists from other countries who have contributed to the American novel. This class is Writing Intensive.

ENGL 2247X/Y.06: The American Novel since 1945. This class will explore the development of the American novel since World War II. The novel has become one of the most compelling and influential forms of modern writing, and American writers have been at the forefront of many of its developments. We will look at the work of such authors as John Updike, John Steinbeck, and Philip Roth, as well as novelists from other countries who have contributed to the American novel. This class is Writing Intensive.

ENGL 2248X/Y.06: The American Novel since 1945. This class will explore the development of the American novel since World War II. The novel has become one of the most compelling and influential forms of modern writing, and American writers have been at the forefront of many of its developments. We will look at the work of such authors as John Updike, John Steinbeck, and Philip Roth, as well as novelists from other countries who have contributed to the American novel. This class is Writing Intensive.

ENGL 2249X/Y.06: The American Novel since 1945. This class will explore the development of the American novel since World War II. The novel has become one of the most compelling and influential forms of modern writing, and American writers have been at the forefront of many of its developments. We will look at the work of such authors as John Updike, John Steinbeck, and Philip Roth, as well as novelists from other countries who have contributed to the American novel. This class is Writing Intensive.

ENGL 2250X/Y.06: Bob Dylan and the Literature of the Sixties. This class will examine the work of Bob Dylan and its influence on the development of literature and music in the sixties. We will explore how Dylan's songs and lyrics were used to express the political and social concerns of the time. This class is Writing Intensive.

ENGL 2251X/Y.06: Bob Dylan and the Literature of the Sixties. This class will examine the work of Bob Dylan and its influence on the development of literature and music in the sixties. We will explore how Dylan's songs and lyrics were used to express the political and social concerns of the time. This class is Writing Intensive.

ENGL 2252X/Y.06: Bob Dylan and the Literature of the Sixties. This class will examine the work of Bob Dylan and its influence on the development of literature and music in the sixties. We will explore how Dylan's songs and lyrics were used to express the political and social concerns of the time. This class is Writing Intensive.

ENGL 2253X/Y.06: Bob Dylan and the Literature of the Sixties. This class will examine the work of Bob Dylan and its influence on the development of literature and music in the sixties. We will explore how Dylan's songs and lyrics were used to express the political and social concerns of the time. This class is Writing Intensive.

ENGL 2254X/Y.06: Bob Dylan and the Literature of the Sixties. This class will examine the work of Bob Dylan and its influence on the development of literature and music in the sixties. We will explore how Dylan's songs and lyrics were used to express the political and social concerns of the time. This class is Writing Intensive.

ENGL 2255X/Y.06: Bob Dylan and the Literature of the Sixties. This class will examine the work of Bob Dylan and its influence on the development of literature and music in the sixties. We will explore how Dylan's songs and lyrics were used to express the political and social concerns of the time. This class is Writing Intensive.

ENGL 2256X/Y.06: Popular Culture and Modernity. In this course we will explore the emergence and transformation of what has been called "popular" culture and consider the main arguments that have been put forth around it. We will study how modern popular culture emerges from the creativity of and in response to the desires of ordinary people, or is it designed to co-opt those desires? A variety of theoretical perspectives will be considered as we explore the ways in which popular culture circulates globally in a contemporary media environment that does not require intensive capitalization for success. How does the production and dissemination of contemporary cultural material affect the way people in the world as a whole imagine their own lives? This class is Writing Intensive.

ENGL 2257X/Y.06: Popular Culture and Modernity. In this course we will explore the emergence and transformation of what has been called "popular" culture and consider the main arguments that have been put forth around it. We will study how modern popular culture emerges from the creativity of and in response to the desires of ordinary people, or is it designed to co-opt those desires? A variety of theoretical perspectives will be considered as we explore the ways in which popular culture circulates globally in a contemporary media environment that does not require intensive capitalization for success. How does the production and dissemination of contemporary cultural material affect the way people in the world as a whole imagine their own lives? This class is Writing Intensive.

ENGL 2258X/Y.06: Popular Culture and Modernity. In this course we will explore the emergence and transformation of what has been called "popular" culture and consider the main arguments that have been put forth around it. We will study how modern popular culture emerges from the creativity of and in response to the desires of ordinary people, or is it designed to co-opt those desires? A variety of theoretical perspectives will be considered as we explore the ways in which popular culture circulates globally in a contemporary media environment that does not require intensive capitalization for success. How does the production and dissemination of contemporary cultural material affect the way people in the world as a whole imagine their own lives? This class is Writing Intensive.
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 worldly, and the historical; the question of who got to enjoy this literature will lead to such topics as orality and literacy, manuscript production and circulation, palaeography, and multilingual culture.

NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Lecture/discussion
PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King’s Foundation Year Program
EXCLUSION: ENGL 4523.06

ENGL 3008.03: Introduction to Nordic Saga.
Students in this class will study classic Icelandic sagas in modern English translation. They will also explore the mythology, fantasy, and history which inform these heroic medieval tales.
FORMAT: Lecture/discussion
PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King’s Foundation Year Program
EXCLUSION: ENGL 4600.03

ENGL 3010.03: Renaissance Poetry and Culture I: More to Jonson.
This class explores the flourishing of English literary culture from the Tudor humanists (such as Sir Thomas More) and courtly makers (Sir Thomas Wyatt) to the Elizabethan sonnet writers (Sir Philip Sidney) and plain style poets (Ben Jonson). Shakespeare’s poetry, Spenser’s Faerie Queene, and selected works by women authors (including Queen Elizabeth herself) will be represented in the syllabus.
FORMAT: Lecture/discussion
PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King’s Foundation Year Program
EXCLUSION: ENGL 3244.06

ENGL 3011.03: Renaissance Poetry and Culture II: Donne to Milton.
This class offers students the chance to interpret poems by one of the most enigmatic English writers (John Donne) and to argue about the view of humanity encoded in one of the most contested English texts (Paradise Lost). In addition, there will be opportunities to study devotional poetry (George Herbert), life-writing (Sir Thomas Browne), women’s writing (Andrew Marvell), or even prison writing (by Suckling or Rymer, for example).
FORMAT: Lecture/discussion
PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King’s Foundation Year Program
EXCLUSION: ENGL 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 or the King’s Foundation Year Program
EXCLUSION: ENGL 3016.03

ENGL 3017.03: English Poetry and Prose, 1660-1740.
The poetry and prose from the Restoration and early eighteenth-century contain much in the way of sex and jokes. The class studies works by authors such as Dryden, Rochester, John, Finch, Swift, and Pope. Students are introduced to popular forms (heroic couplet, sonnet, conversational poems, essay, epistle, political allegory) and to the many changes that shaped the literature of the period, notably the decline of the court, the emergence of modern capitalism, and the rise of professional authorship.
FORMAT: Lecture/discussion
PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King’s Foundation Year Program
EXCLUSION: ENGL 3016.03

ENGL 3019.03: Poetry and Prose, 1740-1789.
A survey of poetry and prose from the mid- to late-eighteenth-century. This class studies the works of Samuel Johnson and his circle, the poets of sensibility, the Bluestockings, and Sunday other authors. It covers a wide range of genres and movements (odes, imitation, poems, aesthetic treatises, tales) in light of contemporary social and political events, from the growth of democracy at home to historic revolutions abroad.
FORMAT: Lecture/discussion
PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King’s Foundation Year Program
EXCLUSION: ENGL 3252.06

ENGL 3020.03: English Drama, 1660-1800.
A survey of plays produced during the Restoration and eighteenth century. Concentrating on the London scene from the first appearance of actresses on the stage to the burning of the Haymarket theatre in 1789, this class introduces students to the period’s various dramatic forms, the literary influences and controversies, and the many women and men who penned for the stage.
FORMAT: Lecture/discussion
PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King’s Foundation Year Program
EXCLUSION: ENGL 3252.06

ENGL 3022.03: English Fiction to 1820.
A survey of the rise of the English novel from Behn to Austen. This class will consider works by several early novelists, some well-known and some not so well-known, and introduce students to a wide range of early prose narratives, including amatory fiction, the fictional memoir, the roman à clef, the epistolary novel, and various comic and sentimental works.
FORMAT: Lecture/discussion
PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King’s Foundation Year Program
EXCLUSION: ENGL 3252.06

ENGL 3025X/Y.06: Literature of the Romantic Era 1789-1832.
This course focuses on a selection of writings by men and women from this Age of Revolutions. Students will get a sense of the spirit of the age through reading poetry, novels, and the prose of political controversy. The creative development of canonical writers like Blake, Wordsworth, Keats, and Shelley will be studied in the context of works by female authors and other representative but neglected writers.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Lecture/discussion
PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King’s Foundation Year Program
EXCLUSION: ENGL 3252.06

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 1890. Authors studied will include Tennyson, Robert and Elizabeth Barrett Browning, Matthew Arnold, Emily Brontë, and the Pre-Raphaelite poets. Specific emphasis will vary, but recurrent themes will include the poet’s role in an increasingly technological and scientific culture, the challenges faced by women poets, experimentation with new poetic forms like the dramatic monologue, and the crisis of faith caused by new modes of intellectual inquiry.
FORMAT: Lecture/discussion
PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King’s Foundation Year Program
EXCLUSION: ENGL 3252.06

English 107
ENGL 3031.02: 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 authors’ experimentation and innovation with both the form and the subject matter of fiction as they transformed the novel from a generic upstart into the century’s dominant literary form.
FORMAT: Lecture/discussion
PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King’s Foundation Year Program EXCLUSION: ENGL 2208.06
ENGL 3032.03: The 19th Century British Novel from Dickens to Hardy.
In this course we will study British novels of the second half of the 19th century. Specific reading will vary from year to year but will usually include works by Charles Dickens, George Eliot, Anthony Trollope, Wilkie Collins, and Thomas Hardy, all writers who drew on the now-established tradition and prominence of the British novel and found their own ways to extend and transform its conventions.
FORMAT: Lecture/discussion
PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King’s Foundation Year Program EXCLUSION: ENGL 2208.06
ENGL 3051.03: 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 innovative poets, early “nature writers,” experimental novelists, and various forms of autobiography.
FORMAT: Lecture/discussion
PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King’s Foundation Year Program
ENGL 3062.03: American Literature, 1865-1914.
A survey of the major writers of the United States from the Civil War to the beginning of the First World War, with an emphasis on the realist novel. Major figures include Mark Twain, Henry James, Edith Wharton, Stephen Crane.
FORMAT: Lecture/discussion
PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King’s Foundation Year Program
ENGL 3070.03: Twentieth-Century African American Novel.
While it is obvious that several of the novelists on this reading list might well appear in other classes, it is a worthwhile-exercise for students to engage in a conversation about these and other texts by African American novelists in the context of African American novelists. That context will be the focus of this class. Such a comparatively restricted focus brings with it such questions as: does it matter that these novels were written by African Americans? What do we gain/lose by considering these texts in this specific national and 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 or the King’s Foundation Year Program
ENGL 3086.03: Post-Colonial Literatures.
This class will allow you to read literature from the former British colonies, as well as some of the influential theorists who are helping to shape the evolving field of postcolonial studies. Our purpose will be to gain familiarity with a selection of the seminal texts, arguments, and debates that characterize this diverse and vibrant area of research and study.
FORMAT: Lecture
PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King’s Foundation Year Program EXCLUSION: ENGL 3085.06
ENGL 3098.03: Creative Writing: Poetry.
This course is for students interested in writing poetry. Various skills will be developed through the sharing of individual and collaborative expression and the understanding of the movement from first draft to finished version of the poem.
FORMAT: Lecture/discussion
PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King’s Foundation Year Program and by permission of the instructor, on the basis of submission and assessment of a portfolio of work.
ENGL 3099.03: Creative Writing: Fiction.
This course is for students interested in writing short fiction and novels. It will include the study of literature as a basis for learning skills necessary for the craft. Some aspects of the course will involve theory but the primary focus will be on the process of writing—everything from the basics of getting started to the process of publishing. Students will be expected to participate fully in the course through reading, writing, and discussing.
FORMAT: Lecture/discussion
PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or CRWR 2000 or the King’s Foundation Year Program and by permission of the instructor, on the basis of submission and assessment of a portfolio of work.
ENGL 3111X/Y.06: Practicum for Writing Tutors.
This class combines the theory and practice of good writing for university students. These skills 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 course must register in both X and Y in consecutive terms; credit will be given only if both are completed concurrently.
FORMAT: Writing Intensive, Lecture/discussion CROSS-LISTING: ASSS 3111X/Y.06
ENGL 3112.03: Writing Theory.
This class puts writing practice into context. As part of their course work, students gain valuable experience working as writing tutors and/or assistant editors for an academic journal. The class is ideal preparation for careers in teaching or publishing, as well as for students going on to do graduate work.
INSTRUCTOR(S): Lyn Bennett
FORMAT: Writing Intensive, Lecture/Discussion PREREQUISITE: ASSS 3111X/Y.06, INSTRUCTOR’S PERMISSION required CROSS-LISTING: ASSS 3112.03 EXCLUSION: ASSS 3111X/Y.06
ENGL 3113.03: Writing Practice.
INSTRUCTOR(S): Lyn Bennett
INSTRUCTOR(S): Lyn Bennett
CROSS-LISTING: ASSS 3113.03
ENGL 3220.03: American Literature of the Earlier Twentieth Century.
An introduction to American literature from the beginning of the twentieth century until the end of the world wars.
FORMAT: Lecture/discussion
PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King’s Foundation Year Program EXCLUSION: ENGL 3231.06
ENGL 3221.03: American Literature of the Later Twentieth Century.
An introduction to American literature from the middle of the twentieth century until the end.
FORMAT: Lecture/discussion
PREREQUISITE: ENGL 1000/1010/1020 or THEA 1000/1020 or the King's Foundation Year Program
EXCLUSION: ENGL 2130

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. Various aesthetic responses to ideas of the modern, the processes and technologies of modernization, and the conditions of social, cultural, economic, and political modernity will be addressed.
FORMAT: Lecture/discussion
PREREQUISITE: ENGL 1000/1010/1020 or THEA 1000/1020 or the King's Foundation Year Program

ENGL 3234.03: British Literature of the Earlier Twentieth Century.
An introduction to British literature from the beginning of the twentieth century roughly to the end of the second world war.
FORMAT: Lecture/discussion
PREREQUISITE: ENGL 1000/1010/1020 or THEA 1000/1020 or the King's Foundation Year Program
EXCLUSION: ENGL 3232

ENGL 3235.03: British Literature of the Later Twentieth Century.
An introduction to British literature from the middle of the twentieth century until the end.
FORMAT: Lecture/discussion
PREREQUISITE: ENGL 1000/1010/1020 or THEA 1000/1020 or the King's Foundation Year Program
EXCLUSION: ENGL 3232

ENGL 3238.03: Fiction of the Earlier Twentieth Century.
A selection of fiction from the beginning of the twentieth century to approximately the end of the second world war. Texts will be subject to the instructor’s preferences.
FORMAT: Lecture/discussion
PREREQUISITE: ENGL 1000/1010/1020 or THEA 1000/1020 or the King's Foundation Year Program
EXCLUSION: ENGL 3239

ENGL 3239.03: Fiction of the Later Twentieth Century.
An introduction to fiction in English from the middle of the twentieth century to the end. Texts will be subject to the instructor’s preferences.
FORMAT: Lecture/discussion
PREREQUISITE: ENGL 1000/1010/1020 or THEA 1000/1020 or the King's Foundation Year Program
EXCLUSION: ENGL 3238

ENGL 3240.03: Modern Drama.
An introduction to major developments in drama from Ibsen to Brecht. The course will explore the diversity of dramatic styles and theatrical movements, as playwrights respond to and react against the nineteenth century’s traditions and their own changing times. In addition to Ibsen and Brecht, authors may include Strindberg, Chekhov, Shaw, Synge, Pirandello, and O’Neill.
FORMAT: Lecture/discussion
PREREQUISITE: ENGL 1000/1010/1020 or THEA 1000/1020 or the King's Foundation Year Program

ENGL 3241.03: Contemporary Drama.
This class focuses on a selection of plays ranging from Absurdist works to present-day texts, including scripts by Canadian dramatists. The focus will be the growth of contemporary theatrical movements, such as the kitchen-sink drama of the 1950s and the “In-Yer-Face” theatre of the 1990s. Playwrights may include Beckett, Ionesco, Osborne, Albee, Steppard, Churchill, Kane, and Tremblay.
FORMAT: Lecture/discussion
PREREQUISITE: ENGL 1000/1010/1020 or THEA 1000/1020 or the King's Foundation Year Program

ENGL 3242.03: Poetry of the Earlier Twentieth Century.
An introduction to poetry in English from the beginning to the middle of the twentieth century.
FORMAT: Lecture/discussion
PREREQUISITE: ENGL 1000/1010/1020 or THEA 1000/1020 or the King's Foundation Year Program
EXCLUSION: ENGL 3233

ENGL 3243.03: Poetry of the Later Twentieth Century.
An introduction to poetry in English from the middle of the twentieth century to the end.
FORMAT: Lecture/discussion
PREREQUISITE: ENGL 1000/1010/1020 or THEA 1000/1020 or the King’s Foundation Year Program

ENGL 3250.03: Contemporary Women Poets.
During the last few decades, an extraordinary number of powerful new women poets have appeared on the literary scene. This class focuses on selected works written by these poets, and explores the ways in which monolithic ideas of “woman” have been challenged by individual poets who are positioned differently by race, sexual orientation, and national identity.
FORMAT: Lecture/discussion
PREREQUISITE: ENGL 1000/1010/1020 or THEA 1000/1020 or the King’s Foundation Year Program
EXCLUSION: ENGL 3233

ENGL 3270.03: Contemporary Canadian Literature.
In this class, a variety of late 20th-century and recent Canadian fiction and poetry texts will be studied from such perspectives as the following: postcolonial, postmodern, multicultural. The politics of cultural expression will be emphasized, as well as the relationship between ethics and aesthetic approaches to literature. Approved with Canadian Studies.
PREREQUISITE: ENGL 1000/1010/1020 or THEA 1000/1020 or the King’s Foundation Year Program
EXCLUSION: ENGL 3233

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 1000/1010/1020 or THEA 1000/1020 or the King's Foundation Year Program

ENGL 3310.03: Writing in a Digital Age.
ENGL 3310 focuses on the analysis and production of electronic texts. Students publish their work electronically and explore emerging theories about hypertext writing and the role of visual rhetoric. Objects of study will encompass a variety of electronic genres, but will focus mainly on sites on the World Wide Web.
INSTRUCTOR(S): L. Bennett
FORMAT: Writing Intensive, Lecture/Discussion
PREREQUISITE: ENGL 2110 or ENGL 2110 recommended

4000-level seminars

Studies in Major Authors—4011—4099

Studies in Genre—4200—4299

Studies in National Literatures—4400—4499

Studies in Literary History—4600—4699

Studies in Culture and Theory—4800—4899

Students should consult the department supplement or website for a complete list of seminar offerings.
Environmental Studies

Faculty of Arts and Social Sciences

Environmental Studies

Contact Person: Dr. David Black
Location: Department of International Development Studies
Faculty of Arts and Social Sciences
Telephone: 494-3814

BA with Minor in Environmental Studies

BA students must take two full credits of required classes and three full elective credits from the list of approved classes below. Note: In planning their programs students must take into account the prerequisites which apply to many of the elective classes listed below. The following rules apply to the selection of classes for the Minor:

- A minimum of one full credit class in the Major subject (i.e., a class beyond those required for the Major) can count toward the Minor.
- At least one full credit from the Approved Electives list must be in FASS classes and at least one credit must be from Science Approved Electives classes.
- In addition to ENVS 3200.03, at least 1.5 full credits must be at the 3000 level or above.

Required Classes:
- ENVS 1000X/Y.06: Introduction to Environmental Studies
- ENVS 2001.03: Analytical Environmental Science and Social Responsibility

BA Approved Electives in Environmental Studies:
Additions to the following lists will be made, as relevant classes become available.

Faculty of Science:
- BIOC 2004.03: Introductory Ecology
- BIOC 2645.03: The Flora of Nova Scotia
- BIOC 2665.03: Introduction to Marine Life in Nova Scotia
- BIOC 3040.03: Environmental Ecology
- BIOC 3061.03: Communities and Ecosystems
- BIOC 3225.03: Plants in the human landscape
- BIOC 3226.03: Economic Botany, Plants and Civilization
- BIOC 3461.03: Nature Conservation
- BIOC 3645.03: Methods in Ecology
- BIOC 4005.03: Sustainability and Global Change
- CHEM 3050.03: Environmental Chemistry
- ECON 2336.03: Regional Development
- ECON 3322.03: Resource Economics
- ECON 3335.03: Environmental Economics
- ERTH 2410.03: Environmental and Resource Geology I
- ERTH 3910.03: Causation Information Management
- GEOG 2000.03: Climate Change
- OCEA 2000.06: The Blue Planet
- OCEA 2090.03: Climate Change
- PHVC 2451.03: Astronomy I: The Sky and Planets
- PHVC 2461.03: Climate Change
- ENVIS 2001.03: Analytical Environmental Science and Social Responsibility
- ENVIS 3040.03: Environmental Science Internship
- ENVIS 3220.03: Environmental Law for Scientists
- ENVIS 3226.03: Economic Botany, Plants and Civilization
- ENVIS 3401.03: Human Health and Sustainability
- ENVIS 3401.03: Environmental Problem Solving I
- ENVIS 3502.03: Environmental Problem Solving II: The Campus as a Living Laboratory

Faculty of Arts and Social Sciences (FASS):
- CTMP 3000.06: Science and Culture
- CTMP 3103.03: Nature and History
- CTMP 3203.03: Interesting Bodies, Selves and Environments
- CTMP 4001.03: Studies in Contemporary Science and Technology
- EMSP 2310.03: Environmental Education in Early Modern Science
- EMSP 2330.03: Nature Imagined
- EMSP 3000.06: The Study of Nature in Early Modern Europe
- ENGL 4005.03: Green Reading: Nature, Culture, Canada
- ENGL 4400.03: Nature of America
- HSTC 3000.03: The Scientific Revolution
- HSTC 4000.03: Science and Nature in the Modern Period
- HSTC 4500.03: Nature and Romanticism
- HIST 3075.03: History of Marine Sciences
- HIST 3100.03: Technology and History in North America
- HIST 3370.03: North American Landscapes
- HIST 3375.03: History of Seafaring
- HIST 4271.03: The Fisheries of Atlantic Canada - Society and Ecology in Historical Perspective
- HIST 4350.03: People and Things - Material Culture
- INTD 2003.03: Introduction to Development I
- INTD 2002.03: Introduction to Development II
- INTD 3002.03: Seminar in Development IV
- INTD 3304.03: Sustainable Development in Cuba
- PHIL 2475.03: Justice in Global Perspective
- PHIL 2485.03: Technology and the Environment
- PHIL 3670.03: Philosophy of Science
- PHIL 4120.03: Theory of Rational Decision-Making
- POLI 3590.03: Politics of the Sea I
- POLI 3590.03: Politics of the Sea II
- POLI 4225.03: Interest Groups
- SOSA 2105.03: Environment and Culture
- SOSA 3105.03: Issues in the Study of Indigenous Peoples of North America
- SOSA 3190.03: Social Movements
- SOSA 3220.03: Coastal Communities
- SOSA 4210.03: Tourism and Development
- PLAN 2070.03: Urban Studies on Mexico and Central America
- GWST 3310.03: Gender and Development in Africa

Other Electives
- PLAN 2001.03: Landscape Analysis
- PLAN 3001.03: Landscape Ecology
- PLAN 3002.03: Reading the City
- PLAN 3005.03: Cities and the Environment in History
- PLAN 3103.03: Urban Ecology
- PLAN 3003.03: Landscape Design
- PLAN 4106.03: Transportation Planning

In any given year, special and variable topic classes may be approved when the content warrants. See the program director for information.
European Studies

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

Coordinator
Robert Boardman, Political Science

Advisors
Julia Wright, English (julia.wright@dal.ca, 494-6802)
Robert Boardman, Political Science (robert.boardman@dal.ca, 494-6602)

Faculty
John Barnstead, Russian Studies
Betty Bednarski, French
Anne Belanger, French
John Bingham, History
Robert Boardman, Political Science
Steven Burns, Philosophy
Francesco Cabitrotto, Italian
Katherine Fierlbeck, Political Science
Valentina Frigon, French
Dorota Głowacka, Contemporary Studies
Finn Laursen, Political Science
Peter O'Brien, Classics
Julia Wright, English

I. Introduction
The European Studies program at Dalhousie is designed to guide students to a multidisciplinary understanding of contemporary Europe. It is not housed in any one department but is a combined effort of most departments in the Faculty of Arts and Social Sciences and the University of King's College. It encourages students to develop a broad perspective on Europe as seen through history and politics, literature and ideas, and the fine arts, with special emphasis placed on acquisition of language skills. There is an Honours program and a 20-credit Major. Because it is a multidisciplinary program, European Studies cannot be combined with other subjects to form a combined honours degree.

II. Degree Programs

A. BA Honours in European Studies
Students must meet the faculty requirements for honours.

Year I
A student would normally take five full-credit classes in the first year, meeting the distribution requirements of the BA. These classes include:

1. a writing requirement class
2. HIST 1004X/Y.06 (European History), or an equivalent class in a later year
3. a language other than English
4. a social sciences class
5. a natural science class

Notes: Completion of the King's College Foundation Year Program satisfies the first-year requirements for European Studies, with the exception of the language class and the natural sciences class.

Some students may wish to take another "second language" class in the first year, and postpone one of the other classes until a later year.

Years II to IV
The program consists of 15 further classes including the 2nd year core class and an Honours project. The general requirements for the program are:

- Classes in two contemporary European languages other than English are required. One of these languages is studied up to 3000/4000 level (normally one full credit each year). The minimum requirement for the other language is a full credit at the first year level, though students are strongly encouraged to take advanced classes in both languages.
- Students take 11 - 13 classes with significant European content. As this is a multidisciplinary program, no more than five classes above the 3000 level may be taken from one department. No fewer than six classes must be taken from two other departments. These may include classes from a language department to fulfill the language requirement, or one of the King's Honours programs. At least three classes must be at the 3000 level or above, taken in at least two different departments. Classes taken during a study abroad year will need to be counted in the above mix.
- Students should seek advice from the European Studies Coordinator, who will strive to ensure that classes are included from each of the following areas:
  1. History and Politics: Approved ES classes in the departments of History, Political Science, Sociology and Social Anthropology, Economics, Commerce
  2. Literature and Ideas: Approved ES classes in the departments of Classics, Comparative Religion, English, French, German, Italian, Philosophy, Russian, Spanish
  3. Fine Arts: Approved ES classes in the departments of Music, Theatre, and the Program in Film Studies

Approved ES classes in Contemporary Studies, Early Modern History, and Gender and Women's Studies may fit one or more of these groupings. Please consult a European Studies advisor.

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

- A term of study in the honours program at a European university, normally in a second-language environment. A summer work term in Europe is encouraged.

B. BA 20-credit Major

Year I
A student would normally take five full-credit classes in the first year, meeting the distribution requirements of the BA. These classes include:

1. a writing requirement class
2. HIST 1004X/Y.06 (European History), or an equivalent class in a later year
3. a language other than English
4. a social sciences class
5. a natural science class

Note: Completion of the King's College Foundation Year Program satisfies the first-year requirements for the European Studies 20-credit Major, with the exception of the language class and the natural sciences class.

Year II to IV
- After the first year, students take a minimum of nine classes from the approved list of classes with significant European content.
- No more than four of these may be taken in any one department, and at least five must be taken in two other departments.
- At least three classes should be at the 3000 level or above, taken from at least two different departments.
- The 4000-level multidisciplinary seminar and the 2nd year core class are also required.

Students should aim, with help from the European Studies Coordinator, for a balance in their classes to reflect the three general areas outlined above.

European Studies 111
III. Class Descriptions

EURO 2100X/Y.06: Europe, Ideas, Culture and Society.
A multidisciplinary introduction to European studies. Classes look at the interconnections among literature, the arts, philosophy and society in Europe. The full term emphasizes the period to 1900, and 20th Century and contemporary European region in consecutive terms, credit will be given only if both are completed consecutively.
FORMAT: Lecture and Discussion
PREREQUISITE: Advancement of at least 2 first-year classes from FASS departments, or the King’s Foundation Year Program

EURO 3999.03: Independent Study.
Individually directed research and writing, supervised by a faculty member. This class is taught only by special arrangement between individual students and individual instructors. Signature required.
INSTRUCTOR(S): Faculty members by arrangement with individual students.
FORMAT: Independent study with a professor
PREREQUISITE: Restricted to 3rd and 4th year European Studies Advanced Majors and Honours students.

EURO 4510.06: European Studies Seminar.
Discussion of readings and presentation on European Studies topics. The topics for the seminar vary each year. The class emphasizes a broad multidisciplinary perspective on European Studies.
INSTRUCTOR(S): Staff
FORMAT: Restricted to 4th year European Studies Honours and Advanced Major students

EURO 4512.03: European Studies Seminar.
Discussion of readings and presentations on European Studies topics. The topics for the seminar vary each year. The class emphasizes a broad multidisciplinary perspective on European Studies.
FORMAT: Seminar
PREREQUISITE: Restricted to 4th year European Studies Honours and Advanced Major students

EXCLUSION: EURO 4510.06X/Y

EURO 4800.06: Honours Essay in European Studies.

European Studies Approved Classes

Note: Students should note that some classes may have prerequisites or other departmental restrictions, and some classes may not be offered in every year.
Other Classes, not on this list, may be appropriate. Please consult an ES Advisor.

Approved Classes

Classics
All classes.
Religious Studies
• REL 1201.03: Christianity
• RELS 4008.03: Medieval Church

Contemporary Studies
• CTMP 2001.03: Wittgenstein
• CTMP 2101.03: Narrative and Meta-Narrative
• CTMP 3212.03: Wagner
• CTMP 3100.03: Weil
• CTMP 3201.03: The Holocaust
• CTMP 4100.03: Deconstruction
• CTMP 4112.03: French Feminist Theory
• CTMP 4141.03: Contemporary Social and Political Thought
• CTMP 4141.03: Freud, Lacan and the Critique of Psychoanalytic Early Modern Studies
All classes.

Economics
• ECON 2219.05: Euros and Cent: From Common Market to European Union
• ECON 2226.05: Industrial Revolution in Europe
• ECON 2259.05: European Economy in Historical Perspective

English
• ENGL 2018.03: Arthurian
• ENGL 2020.03: Sampling Medieval Literature
• ENGL 2100.03: Short Poems in English
• ENGL 2109.03: Frame Narratives
• ENGL 2109.03: Literature, Health and Healing
• ENGL 2104.03: The Short Story
• ENGL 2100.03: Mystery and Detective Fiction
• ENGL 2109.03: Literature and Propaganda
• ENGL 2205.06: Literary Landmarks
• ENGL 2214.06: Shakespeare
• ENGL 2218.03: Gothic
• 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 3002.03: Contemporary Critical Theory
• ENGL 3005.03: Canterbury Tales
• ENGL 3008.03: Introduction to Nordic Saga
• ENGL 3010.03/3011.03: Renaissance Poetry and Culture I/II
• ENGL 3013.03: Renaissance Drama
• ENGL 3017.03: English Poetry and Prose, 1660-1740
• ENGL 3019.03: Poetry and Prose, 1740-1799
• ENGL 3020.03: English Drama, 1660-1800
• ENGL 3022.03: English Fiction to 1820
• ENGL 3025.06: Literature of the Romantic Era 1789-1832
• ENGL 3029.03: Victorian Poetry
• ENGL 3031.03: 19th Century Fiction from Austen to Dickens
• ENGL 3032.03: 19th Century Fiction from Dickens to Hardy
• ENGL 3039.03: Modern Drama
• ENGL 3046.03: British Literature of the Later Twentieth Century
Note: 4th-year seminars in English change from year to year. For classes appropriate for European Studies please consult the European Studies coordinator.

French
FREN all classes except classes on linguistics, and on Quebec, Arabic and other non-European francophone (bureaucratic language and literature)

Gender and Women’s Studies
• GWST 3230.03: Sex and Gender in Reformations Europe
• GWST 3230.03: French Women Writers
• GWST 4412.03: French Feminist Theory
• GWST 4550.03: Literary Women of French Classicism

German
GERM all classes

History
• HIST 1004.06: Introduction to European History
• HIST 2001.03: Early Medieval Europe
• HIST 2002.02: Later Medieval Europe
• HIST 2005.03: Europe 1400-1559
• HIST 2006.03/2007.03: The Atlantic World
• HIST 2015.03: War and Society in Early Modern Europe, 1550-1750
• HIST 2019.06: Early Modern Europe, 1450-1600
• HIST 2021.06: Imperial and Soviet Russia
• HIST 2021.03: Soviet Russia
• HIST 2022.03: Imperial Russia
• HIST 2030.06: Germany in 19th and 20th Centuries
• HIST 2032.03: 20th Century Germany
• HIST 2040.06: Modern France
• HIST 2041.03: France from the Revolution to the Great War
• HIST 2046.06: Origins of Modern Italy
• HIST 2051.03: Civilization of European Italy
• HIST 2081.06: 20th Century Europe in Literature, Art and Film

112 European Studies
• HIST 2100.06: Themes in British History
• HIST 2101.03: Medieval England
• HIST 2103.05: Tudor and Stuart England, 1485-1689
• HIST 2111.03: History of the Scottish People
• HIST 3013.03: Tudor History
• HIST 3016.03: Culture and Behaviour in France 1580-1750
• HIST 3048.05: French Revolution
• HIST 3057.03: European and World War II
• HIST 3062.03: National Socialist and Fascist Movements
• HIST 3096.03: History of Ideas in Russia
• HIST 3105.03: English Civil War
• HIST 3107.03: British, Appropriation and the Origins of World War II

Italian Studies
All classes

Music
• MUSC 1601.03: Listening to Classical Music
• MUSC 1602.03: Listening Beyond the Classics
• MUSC 1603.05: History of Music I (to 1600)
• MUSC 1604.03: History of Music II (Baroque)
• MUSC 1605.03: History of Music III (1750-1830)
• MUSC 1606.03: History of Music IV (1830-1950)
• MUSC 1607.03: Women, Gender and Music
• MUSC 1608.03: History of Opera
• MUSC 3635.03: Music Since 1945
• MUSC 3636.05: Chamber Music Literature
• MUSC 3637.03: Piano Literature

Philosophy
• PHIL 2610.03: History of Philosophy I
• PHIL 2620.03: History of Philosophy II
• PHIL 2630.03: Existentialism
• PHIL 3630.03: Kant
• PHIL 3631.03: Modern Philosophy
• PHIL 3632.03: History of Philosophy

Political Science
• POLI 2420.03: Revolution and Rationality
• POLI 3401.03: Political Philosophy of Plato
• POLI 3450.03: Machiavellianism
• POLI 4479.03: Liberalism

Russian Studies
All classes

Spanish
All classes

Theatre
• THEA 2111.03: Classical Theatres
• THEA 2112.03: Early Modern Theatres

Approved Classes with some European content (please consult European Studies Coordinator)

Commerce
• COMM 3701.03: The Firm in the International Environment

Economics
• ECON 3336.05: Regional Development
• ECON 3347.03: Classical Political Economy
• ECON 3348.05: Modern Economic Thought

Music
• MUSC 2150.06: Music and Cinema

Philosophy
• PHIL 2260.03: Philosophy of Art
• PHIL 3709.03: Philosophy in Literature

Political Science
• POLI 2500.03: Comparative Politics
• POLI 2501.03: Introduction to World Politics
• POLI 3401.03: Contemporary Political Thought
• POLI 3402.03: Democratic Theory
• POLI 3403.03: Politics through Film and Literature
• POLI 3507.03: International Economic Policy

Sociology and Social Anthropology
• SOSA 2200.06: Family in Comparative Perspective
• SOSA 3255.03: Does Industrial Society Have a Future?

Sociology
• SOSA 3401.03: History of Sociological Thought

Theatre
• THEA 2110.03: Film Study
• THEA 2111.03: Film Genres
• THEA 3401.03: History of Musical Theatre
• THEA 3501.03: Modern Theatre
• THEA 3601.03: Playwright in the Theatre
• THEA 4901.03: Contemporary Theatre

European Studies 113
I. Minor in Film Studies

From its inception, cinema has had a significant impact upon the way humans represent and understand the world around them. Whether created within an entertainment, experimental, documentary or scientific framework, moving images have altered modern perceptions of reality. The Film Studies Minor program - offered between Dalhousie, the Nova Scotia College of Art and Design, Mount Saint Vincent University, and St Mary’s University - offers students an opportunity to become familiar with the history of film making, the language employed in the discourses of film, as well as the various methodologies and forms of categorization applied to related fields of study within film culture.

Classes within the core program survey the history of film from the late nineteenth century to the present day and introduce students to various aspects of film theory and criticism. Classes at the intermediate and advanced level provide opportunities to study specific genres, directors, national cinemas as well as interdisciplinary topics: narration and narrative in fiction and film, feminist film practices, music and film.

This is an inter-University program that allows students to obtain credits from any of the participating institutions.

II. Curriculum

A. Core Requirements

Students must complete two full credits of core classes, including:
- DAL THEA 2311.03: Film Analysis 0.5 credits or MSVU CULS 2293 Introduction to Film Language 0.5 credits
- DAL THEA 2312.03: Issues of Film Aesthetics 0.5 credits or MSVU CULS 2295 Film Aesthetics 0.5 credits
- Plus either 1 or 2 below:
  - DAL THEA 2200X/Y: Film Studies 1.0 Credit*
  - NSCAD AHIS 2800 Film History and Criticism 1890-1940 0.5 Credits and NSCAD AHIS 2810 Film History and Criticism 1940- Present 0.5 Credits

*Students taking this course as a core class towards the Minor must register in the class tutorials.

B. Elective Requirements

Students must complete two full credits from the following list of classes, including at least one full credit at the 3000-level or above:
- DAL ENGL 2095.03: Narrative and Cinema 0.5 credits
- DAL MUSC 2016.03: Topics in Music and Cinema 0.5 credits
- DAL MUSC 2017.03: Music and Cinema: Composer/Director Collaborations 0.5 credits
- DAL THEA 2208X/Y: Film Genres
- DAL RUSN 2066.05: Russian Film 1.0 credits
- DAL RUSN 2077.05: Russian Film II 0.5 credits
- DAL FREN 2000.03: Cinema, the French Phenomenon I
- DAL FREN 2001.05: Cinema: The French Phenomenon II
- DAL SPAN 3800.03: Seminar in Spanish Film (taught in Spanish) 0.5 credits
- DAL SPAN 3805.03: Survey in Spanish Film (taught in English) 0.5 credits
- DAL SPAN 3810.05: Seminar in Latin American Film (taught in Spanish) 0.5 credits
- DAL SPAN 3825.05: Survey in Hispanic American Film (taught in English) 0.5 credits
- DAL ITAL 3800.03: Italian Neo-Realist Cinema 0.5 credits
- MSVU ENGL 2213: Contemporary Film 0.5 credits
- NSCAD AHIS 3801: Topics in Film History
- NSCAD AHIS 3800: History and Criticism of Documentary Film 0.5 credits
- NSCAD AHIS 4800: Independent Studies in Film History, Theory and Criticism 0.5 credits
- SMU ENGL: Narrative in Fiction and Film 3170.5
- SMU ENGL: Narrative in Fiction and Film 3180.5
- SMU HIS: Film and History 3450

Students are strongly advised to take the Film Survey courses (DAL THEA 2200X/Y or NSCAD AHIS 2800 and 2810) as soon as they declare their film minor and prior to taking the two core compulsory courses (DAL THEA 2311 and 2312).

Please note: For a full list of classes, with descriptions and instructors, please request a Film Studies brochure from the Dalhousie contact person, or the Chair of the Film Studies Committee.

For a full list of classes offered in a given year, visit our website at http://hfxfilm.textstyle.ca/
French

The Department of French urges students to practise the language as much as possible. The French Club organizes activities including films, French meals, parties and plays in which all students may participate. Exchanges with Quebec and individual student travel and study are encouraged. Please consult the Department for information and see below: Studies in a Francophone Environment.

I. Introduction

The Department of French offers students not only the opportunity to develop fluency in classes backed up by computer-aided language learning facilities, but also the possibility of studying the literature and culture of France, French Canada and the other nations of the French-speaking world, as well as the linguistic structure and development of French.

Classes are available for beginners and for those with a background in the language who wish to improve and maintain any or all of the following skills: speaking, listening, reading, and writing. Other classes are specially designed for students who are interested in translation, or other areas of language study. The role of French in Canada and in the Maritime provinces is stressed in classes in Acadian and Quebec literature and civilization. The literature of France and French-speaking nations is brought to life in classes organized around a theme, a genre, or an historical period.

The language requirement exemption test in French is given in the April examination period. Students should register at the Registrar’s Office before mid-January by completing an Application for Exemption from the Language Requirement. A copy of the form must be provided to the French Department. Please note that passing the language requirement exemption test does not give a class credit.

II. Certificate of Proficiency in French

This certificate is normally awarded to students who are not specializing in French but who, having taken several French classes at Dalhousie, wish to have their proficiency officially acknowledged. Major and Honours students can also be awarded this certificate, provided all the requirements are met. A candidate’s superior performance is reflected by a specific distinction appearing on his/her transcript.

Requirements

• Classes: At least three full credits beyond the 1000 level including FREN 1025.X.03 and 1026/X.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.

• No one may take the Examination without having done the class work.

III. Studies in a Francophone Environment

A. Year-Abroad Program in Dijon, France

Students at all levels of proficiency in French have the opportunity of spending a full regular session at the CIEF (Centre International d’Études Françaises) on the Université de Bourgogne campus in Dijon, which is located about 300 km southeast of Paris.

Upon arrival at the CIEF, students are placed in the appropriate proficiency level, which corresponds to first, second or third-year credits at Dalhousie. Five full credits are awarded for the program, with an optional sixth credit available at higher levels.
In addition to compulsory language classes, the CIEF offers classes in French literature, civilization, history, art history, cinema, music, theatre, philosophy, French for commerce, and more. Students who opt for electives in areas such as history, theatre, philosophy and music may be eligible for transfer credits in the other subject areas.

Students receive a bursary, the amount of which varies, but which is typically around $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 npwood@dal.ca or 494-2430.

B. Winter Semester Program in Dakar, Senegal

Students at all levels of French proficiency have the opportunity of spending the winter semester at the Université Cheikh Anta Diop in Dakar, Senegal. This specially designed program, at an institute for non-native French speakers, includes language and translation classes at all levels, along with classes in francophone African literature and culture.

Students receive 2.5 French credits for the semester abroad; the level depends upon the level at which students are placed following a placement test given after arrival in Dakar.

An initial information session is held in March of each year, with applications due in May.

For more information, consult the departmental website at, www.dal.ca/dijon or contact Natalie Wood, Administrative Secretary at npwood@dal.ca or 494-2430.

C. Chicoutimi, Quebec (see Department for details)

IV. Degree Programs

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

Requirements for the four degree programs are set out in the following sections. Electives from other departments, when chosen with care, can enrich and enhance the major classes. Departmental Advisors can provide information on recommended electives. All Majors and Honours Students must consult with the Majors/Honours Advisor.

Students particularly interested in Linguistics should also consult the list of classes in the Linguistics section of this calendar.

Students interested in a degree in European Studies should consult the European Studies section of this calendar.

Students interested in an emphasis or a combined degree in Canadian Studies should consult the Canadian Studies section of this calendar.

A. BA with Honours in French

This program offers systematic, comprehensive and individualized study of French language, literature, linguistics and other program elements both inside and outside the classroom. It is, therefore, an option which should be considered seriously by any student who, with career or personal objectives in mind, wishes to obtain a strong background in French and by those who plan to teach or earn a graduate degree in French.

Honours students are strongly encouraged to enrich their more traditional learning experience by spending at least one term in a French-speaking area. Please consult the department for information on our Dijon and Senegal programs.

Potential Honours applicants should consult the Department’s Undergraduate Advisor, preferably during their second year of study, regarding the application procedure and relevant deadlines.

1. Concentrated Honours

   Departmental Requirements
   2000 level
   • FREN 2045.06
   • FREN 2201.03
   • FREN 2222.03
   3000 level
   • FREN 3021.03 or 3022.03
   • FREN 3045.06
   • One full credit in literature and/or culture
   4000 level
   • FREN 4017.03 and 4046.03
   • Two 4000 level full credits
   • At least one other full credit, 2000 to 4000 level, for a total of nine French credits.
   • FREN 4953.00 (Honours Seminar)

   Second year: i.e., 2000 level classes taken during the student’s first year at Dalhousie may count towards major or honours, with the approval of the department.

   An additional grade is required: either an Honours Essay or an Oral Presentation (see document entitled “French Honours Qualifying Examination” available from the Honours Advisor or the departmental secretary).

2. Combined Honours

   From 11-13 credits in French and another subject (including Linguistics, see Linguistics section in calendar, page 173; not fewer than 5 nor more than 9 may be chosen in French. Minimum requirements for the Combined Honours program are as follows: 2045.06, 2201.03, 2202.03, 3045.06, 4017.03 and 4046.03 plus a minimum of one full credit in language, literature, culture or linguistics at the 3000 or 4000 level. When French is the primary subject, FREN 4953 (Honours-Seminar) and an additional credit are required: either an Honours Essay or an Oral Presentation (see document entitled “French Honours Qualifying Examination” available from the Honours Advisor or the departmental secretary).

3. Honours Conversion

   The Honours Conversion is an option for continued study open to anyone who has previously completed a 15-credit BA concentration program in French at Dalhousie. Normally, it consists of five full credits of class work plus one additional credit either an honours essay or an oral interview based on class work and/or a specific topic. Requirements for the Honours Conversion are similar to those for the concentrated Honours Program, but will vary according to individual circumstances.

   20-credit degrees may also be converted to Honours degrees; please consult the departmental Undergraduate Advisor.

B. 20-credit BA with Major in French

   Students must take a minimum of seven and a maximum of nine credits in French.

   Departmental requirements
   2000 level
   • FREN 2045.06
   • FREN 2201.03
   • FREN 2222.03
   3000 level
   • FREN 3045.06
   • Two other 3000 level full credits in French
   4000 level
   • FREN 4017.03 and 4046.03
   • One 4000 level full credit in French

   PLEASE NOTE: Students with proper standing wishing to change to an Honours Program may do so. Those who might wish to do so should also
take FREN 2020.03 and FREN 3021.03 or FREN 3022.03 (required for Honours), and consult the Chair or the Honours Advisor.

C. 20-credit BA with Double Major in French
Students must take, in addition to the above requirements or the Faculty Language Requirement,

- FREN 2045.06, 2201.03, 2202.03, 3045.06 plus one full credit at the 3000 level.

D. 15-credit BA with Concentration in French
Students should consult the Chair or a Department Advisor about the choice of courses.

Students are urged to take more than the minimum number of classes required, and, instead, to do a 4-year degree (20-credit Major or 20-credit Honours) if a high level of proficiency in French is sought.

Departmental Requirements

- 2000 level:
  - FREN 2455.06
  - FREN 2201.03
  - FREN 2202.03

- 3000 level:
  - FREN 3403.06
  - One other 300 level full credit in French

Classes other than those required may be chosen freely in consultation with the Major Advisor, according to the student’s desire to obtain a general knowledge of the field, or a greater concentration in specific areas such as Literature, Linguistics, French-Canadian Studies, etc.

Students wishing to change to an Honours Program may do so during the second or third year of studies, given sufficient standing. Those wishing to do so, or to continue in Graduate Studies after obtaining a 15-credit BA or Honours, should consult the Chair or the Honours Advisor.

V. Class Descriptions

PLACEMENT TEST: All students taking their first French course at Dalhousie are required to take the French Placement Test prior to selecting their first French class. The test is available on the World Wide Web at http://www.dal.ca/frenchtest.

Some courses are offered in English, including FREN 1005X/Y.06 which satisfies the Bachelor of Arts Language requirement. Other classes taught in English, that do not satisfy this degree requirement, are FREN 2060.03, 2275.03, 2800.03, 2801.03, 3125.03, 3175.03, 4010X.06.

3000 and 4000 level French classes range over the literature of all periods, civilization and culture, and include several classes in linguistics, which may be taken as part of the Halifax Interuniversity Linguistics Program.

NOTE: Not all classes are offered every year. Please consult the current timetable to determine this year’s class offerings.

FREN 1005X/Y.06: Français fondamental/Basic French.
For students with little or no previous background in French, for example students with grade 6-11 core French (online Placement Test required: www.dal.ca/frenchtest). This class presents the basic components of French grammar with an emphasis on simple sentence types, and develops all four language skills: speaking & writing, and listening & reading comprehension. It also provides an introduction to Francophone culture worldwide. This class is normally followed by FREN 1045X/Y.06 (for students who have achieved a final grade of B or above).

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

FORMAT: Lecture

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

EXCLUSION: FREN 1005X/Y.06, 1045X/Y.06, 1050X/Y.06

For students with some background in French, for example grade 11-12 core French (online Placement Test required: www.dal.ca/frenchtest), or follows FREN 1005 (for students who have achieved a final grade of B or above). All four language skills: speaking & writing, and listening & reading comprehension are further developed, with a focus on more advanced grammatical structures. Aspects of the Francophone world are also further explored. Success in this class (final grade of B or above) leads to all second-year French classes.

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

FORMAT: Lecture/tutorial

PREREQUISITE: FREN 1005X/Y.06 (final grade of B or above), FREN 3010X/Y.06, or equivalent (online Placement Test required: www.dal.ca/frenchtest).

EXCLUSION: FREN 1050X/Y.06

FREN 1050X/Y.06: Français pour Anciens Etudiants des Programmes D’Immersion/French for Former Immersion Students.
For students who have completed French Immersion to grade 12 (online Placement Test required: www.dal.ca/frenchtest). All four language skills: speaking & writing, and listening & reading comprehension are further developed with a focus on more advanced grammatical structures. The analysis of selected texts leads to the application of the structures being studied and to enrichment of vocabulary. This class will enable immersion graduates to build on their strengths while becoming aware of and remedying ingrained errors. Successful completion of this class (final grade of B or above) leads to all second-year French classes.

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

INSTRUCTOR(S): Staff

FORMAT: Lecture

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

EXCLUSION: FREN 1005X/Y.06, 1045X/Y.06

FREN 1060X/Y.06: Pratique de la lecture/French for Reading.
This class develops the ability to read contemporary French prose with ease and accuracy. Emphasis is on the acquisition of skills that facilitate reading. Students are encouraged to become familiar with the best French-English dictionaries and to use them judiciously, to learn large blocks of new vocabulary by recognizing word families, and to grasp the meaning of unknown words from context wherever possible. Classroom work involves a grammar review, study and discussion of a wide variety of readings, reading comprehension, as well as correction of prepared translations and sight translations (from French to English only). FREN 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 prior knowledge of French or as an additional first-year option for those taking FREN 1045Y.06 or FREN 1045X/Y.06. This class also satisfies the Bachelor of Arts Language Requirement.

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

INSTRUCTOR(S): K. Waterson, V. Frigerio, Staff

FORMAT: Lecture

PREREQUISITE: FREN 1005X/Y.06, 1045X/Y.06

FREN 2020.03: Le français oral/Spoken French.
In this class, students will develop, primarily, their ability to express themselves orally in French. The class will emphasis the use of idiomatic and socio-culturally appropriate vocabulary and structures for a variety of communication purposes. It will also offer an introduction to non-verbal communication purposes. It will also offer an introduction to non-verbal...
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 the 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.

FORMAT: Lecture/discussion

INSTRUCTOR(S): K. Waterson

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

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.

FORMAT: Varied participatory activities, short lectures, language lab

INSTRUCTOR(S): K. Waterson

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

FREN 2045X/Y.06: Grammaire intensive/Intensive Grammar.

For students with a more advanced knowledge of French. A detailed study of grammar through an in-depth analysis of all components of simple, complex and marked sentences leading to paragraph and text analysis. Emphasis is placed on the correspondence between grammatical content and meaning. Numerous grammar, writing and translation exercises will aim at developing the ability to communicate in clear, accurate written French.

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

FORMAT: Lecture/tutorial (in computer lab)

PREREQUISITE: FREN 1045X/Y.06 (final grade of B or above), FREN 1050X/Y.06 (final grade of B or above), or 2000-level Placement Test result

EXCLUSION: FREN 1040X/Y.06

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

This class will continue the work of French 1060. By studying and discussing modern Francophone texts, from various fields of knowledge, students will practice the basic reading skills they have already acquired while developing more sophisticated ones, expanding their vocabulary and increasing their understanding of Francophone civilization. Since this class is given in English, it may NOT be used to satisfy the French degree program requirements. It can also be taken as an elective by students in the French Major or Honours programs.

FORMAT: Lecture/discussion

PREREQUISITE: FREN 1045X/Y.06 or 1045X/Y.06 or FREN 1060X/Y.06 or 1060X/Y.06 or 2000-level Placement Test result; or instructor’s permission

FREN 2201.03: FREN 2202.03: Introduction à la littérature/Introduction to French Literature.

A survey of literature in French from the Middle Ages to the 20th Century, presenting selected works of prose, poetry and theatre from France, and possibly also from Quebec, Acadian 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 expressions of ideas. FREN 2201.03 and FREN 2202.03 may be taken consecutively. Classes involve group discussions and lectures.

FORMAT: Lecture

PREREQUISITE: FREN 1045X/Y.06 or FREN 1050X/Y.06 or 2000-level Placement Test result

FREN 2203.03: Approches du texte littéraire/ Approaches to Literary Texts.

An introduction to the critical reading of a selection of literary texts (various genres and periods) with an emphasis on 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 Canadian Studies.

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: Christen de Troyes, Marguerite de Navarre, Madame de Lafayette, Rousseau, Laclos, Balzac, Flaubert, Stendhal; Proust; Gide, De Beauvoir, Sartre. The selection of authors and works may vary from year to year, but the “survey” nature of the class will be maintained. The language of the class will be English. This class does not satisfy the French degree program requirements. French Majors and Honours students may take this class as an elective.

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 well as 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 screenwriters whose work will be discussed include Renoir, Prevert, Breton, Resnais, Duras, Godard, Rohmer-Grillet, Varda, Bresson, Truffaut, Malle, Rohmer, Chabrol. Acts as was attended in technique as Arletty, Gabin, Belmondo, etc. will draw attention.

NOTE: This class may be taken without prerequisite or any capacity in the French language: Film Studies minor specialists should consult program requirements. This class does not satisfy the French degree program requirements. French Majors and Honours students may take this class as an elective. The language of the class will be English.

INSTRUCTOR(S): M. Bishop, C. Eson.

FORMAT: Lecture/discussion/movie-viewing

FREN 2801.03: Cinema: The French Phenomenon II.
From the New Wave to the New Millennium.

Given in English, with no knowledge of French required, this class traces the history of French film from the author-based cinema of the New Wave period (1950’s and 60’s France) right up to contemporary developments in France and the contemporary Francophone world at large: Quebec, the Maghreb, West Africa, Acadia, Belgium, the Antilles, etc. As with FREN 2800.03, this class will consider the social and broad cultural dimensions of the French and Francophone film world and its rich and changing aesthetic and theoretical implications. Lectures will blend with open discussion periods based on selected readings and viewings. Oral presentations will occur during a tutorial hour otherwise available for questioning and further elaboration. Directors and screenwriters whose work will be discussed include Godard, Rohmer-Grillet, Varda, Truffaut, Malle, Rohmer, Chabrol, Resnais, Tarrereth, Jutra, Chassieu, Peronniot, Azulay, etc. Acts as was attended in technique as Deneuve, Depardieu, Dastoul, etc. will draw attention. Consideration will be given to the documentary tradition, particularly its manifestations in French Canada.

NOTE: This class may be taken without prerequisite or any capacity in the French language: Film Studies minor specialists should consult program requirements. This class does not satisfy the French degree program requirements. French Majors and Honours students may take this class as an elective. The language of the class will be English.

INSTRUCTOR(S): M. Bishop, C. Eson.

FORMAT: Lecture/discussion/movie-viewing

FREN 3000.03: Cours supérieur de français oral/Advanced Oral French Workshop.

Class discussions and oral presentations based on themes of contemporary concern. This class may also be offered in the summer in an intensive fashion. This class is intended to build vocabulary, perfect facility of expression (fluency) and style. Reading and research are necessary for the oral presentations.

FORMAT: Lecture/discussion

PREREQUISITE: FREN 2012.03 or instructor's permission

FREN 3020X/Y.06: Linguistique/Linguistics.

This class will interest future linguists, literary specialists and language teachers, as well as translators and public servants concerned with bilingualism. Its main objective is to improve and refine the students' understanding of the French language and to explain the major areas of its study. Culturally interesting literary excerpts will be used to observe and to analyze linguistic problems in texts. Each student will prepare two reports on linguistic topics. Assignments based on practical problems of pronunciation, spelling, grammar, vocabulary and meaning will complement the syllabus. Approved with Linguistics.

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

INSTRUCTOR(S): J. Milicevic, R. Mopoho

FORMAT: Lecture

PREREQUISITE: 2200-level French class

EXCLUSION: FREN 3020.06

FREN 3021.03: Syntaxe / Syntax.

This class builds upon the elements of semantics introduced in FREN 3020.02. It focuses on the acquisition of fundamental semantic concepts (semanteme, semantic predicate/object, semantic decomposition, semantic & lexical relations) and their application to semantic descriptions of fragments of particular languages, in this case of French.

INSTRUCTOR(S): M. Hamel, J. Milicevic, R. Mopoho

FORMAT: Lecture

PREREQUISITE: FREN 2012.03

EXCLUSION: FREN 3020.06

FREN 3022.03: Semantics / Semantique.

This class builds upon the elements of semantics introduced in FREN 3020.02. It focuses on the acquisition of fundamental semantic concepts (semanteme, semantic predicate/object, semantic decomposition, semantic & lexical relations) and their application to semantic descriptions of fragments of particular languages, in this case of French.

INSTRUCTOR(S): J. Milicevic, R. Mopoho

FORMAT: Lecture

PREREQUISITE: FREN 2012.03

EXCLUSION: FREN 3020.06

FREN 3023.03: Les Parlers acadiens: Introduction Linguistique/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. Mopoho

FORMAT: Lecture

PREREQUISITE: FREN 2402X/Y.06 or instructor's permission

FREN 3030X/Y.06: Le français des affaires/French for Business.

This class aims at providing students with a sound knowledge of the French language as used in business. The course will focus on the development skills in the following areas: commercial correspondence...
and writing, management, banking, financial and economic terminologies; specifics of business word processing in French. Classes will meet for two hours per week.

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

INSTRUCTOR(S): R. Mopoho, Staff
FORMAT: Lecture
PREREQUISITE: 6-credit hours at the 2000 level in French, 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 in consecutive terms; credit will be given only if both are completed consecutively.

INSTRUCTOR(S): M. I. Hamel, staff
FORMAT: Lecture/computer lab
PREREQUISITE: FREN 2045X/Y 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 3101X/Y.06

FREN 3125.03: The French-Speaking World/Le Monde francophone.

Given in English, with no prior knowledge of French required, this class provides an introduction to the French-speaking world from a political, cultural, social and economic perspective. Study of the organization known as la Francophonie, with an emphasis on its evolution and mandate, as well as on the bilateral and multilateral cooperation between its member countries. The class is destined for students who are not specializing in French. The class format will consist of lectures and in-class discussion of print and audio-visual materials. Student assessment will be based on oral presentations, assignments, exams and written papers. The language of the class will be English. This class does not satisfy the French Studies class may write their essays and exams in English.

INSTRUCTOR(S): R. Mopoho
FORMAT: Lecture/computer lab
PREREQUISITE: FREN 2125X/Y or INTD 3125X/Y or permission of instructor required

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 in-depth study of a selection of topics that are of relevance to the francophone world, including: the relationship between French and native languages; linguistic and cultural policies; languages in the educational system; economic development issues; North-South relations; etc. Approved with IDS. The class is taught in English and does not satisfy the French degree program requirements. INSTRUCTOR(S): R. Mopoho, Staff
FORMAT: Lecture
PREREQUISITE: FREN/INTD 3125.03 or FREN/INTD 3150.03, or instructor’s permission

FREN 3225.03: L’Epistolaire/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 border 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 life), as well as extracts from 17th and 18th Centuries correspondences.

INSTRUCTOR(S): Staff
FORMAT: Lecture and seminar
PREREQUISITE: FREN 2225.03/FREN 2225.03

FREN 3250.03: Ecritaines françaises/French Women Writers.

This class will explore the condition of women as expressed in a selection of texts from French women writers. The choice of writers may vary from year to year, and the class may be organised around a theme or a particular time period. Students taking the class as a Gender and Women’s Studies class may write their essays and exams in English.

INSTRUCTOR(S): Staff
FORMAT: Lecture/discussion
PREREQUISITE: FREN 2250.03/FREN 2250.03
CROSS-LISTING: GWST 3250.03

FREN 3260.03: Contes et légendes du monde francophone/Tales and Legends of the Francophone World.

Students in this class will become acquainted with a variety of French folk tales, fairy tales, legends, and “literary” short stories. Distinguishing between these sub-genres will be part of the focus of the class. The stories themselves will be drawn from a variety of time periods and areas of the French-speaking world. They may include, among other sources of stories, fairy tales published by Perrault and by women writers of the 18th 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, Dufy, Touraine, to name only a few possibilities. In addition to oral 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 Mers, Staff
FORMAT: Lecture/discussion
PREREQUISITE: FREN 2260.03/FREN 2260.03
CROSS-LISTING: GWST 3260.03

FREN 3300.03: La littérature médiévale/ Mediaeval French Literature.

Textual analyses of selected works representing the major literary genres (epic, romance, theatre, poetry) from the chansons de geste to François Villon (most texts in modern French translations). The discussion of the origins and the development of a national French literature provide a convenient introduction to critical approaches to literary texts.

INSTRUCTOR(S): H. Ronte, Staff
FORMAT: Lecture/discussion
PREREQUISITE: FREN 2201.03/FREN 2201.03
FREN 3400.03: La littérature du seizième siècle/16th Century French Literature. Reliving the awakening, bloom and decline of the Renaissance period in literature and language through the works of Marot, Rabelais, Du Bellay, Ronsard, Montaigne and the poets of the baroque. The century’s concern with the French language provides a convenient introduction to the study of the development of modern French. FORMAT: Lecture/discussion. PREREQUISITE: FREN 2201.03/2202.03.

FREN 3500.03: La littérature du dix-septième siècle/ 17th Century French Literature. This class offers an introduction to seventeenth century French literature with a primary focus on representative works by three major dramatists: Corneille, Molière and Racine. It explores their vision of humanity and the world and assesses their contribution to French literature and the history of ideas. INSTRUCTOR(S): K. Wietenen, 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. du Deffand. 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): V. Fingerito. FORMAT: Lecture/discussion. PREREQUISITE: FREN 2201.03/2202.03.

FREN 3750.03: Littérature industrielle, Roman populaire et Roman de consommation/Popular Literature and the Rise of Mass Culture. The second half of the XIXth century witnesses the development and increasing popularization of the novel as the pre-eminent form of literary expression with dramatic increase and diversification of the reading public. This class will explore the evolution of the novel during this period, with a particular emphasis on the appearance of serialized novels in magazines and newspapers (le feuilleton) and on the development of "genre" fiction and the concept of "popular" literature. Books or excerpts from several representative writers of the time (Alexandre Dumas père, Eugène Sue, Balzac, Frédéric Soulié, Paul Féval) will be analyzed and discussed, in the light of theoretical works on the development of modern mass culture (Umberto Eco, René Guider, Daniel Cohn-Bendit, Jacek Kalfalhce). INSTRUCTOR(S): V. Fingerito. 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 Dufresne and Michel Deguy; and of modern theatre from Jarry to Beckett, Ionesco and beyond. INSTRUCTOR(S): M. Bishop, G. Elson. FORMAT: Lecture/discussion. PREREQUISITE: FREN 2201.03/2202.03.

FREN 3810.03: Prose et théorie littéraire du 20e siècle/ 20th Century Prose and Literary Theory. Analysis of a broad selection of short prose by major novelists of the 20th century from Gide, Proust and Aragon but with emphasis upon the more recent work of Beckett, Sarraute, Simon, Duras, Le Clézio and Cixous. Parallel discussion will be centered upon the literary theory of critics such as Bachelard, Poulet, Starobinski, Barthes and Derrida. INSTRUCTOR(S): M. Bishop, C. Elson. FORMAT: Lecture/discussion. PREREQUISITE: FREN 2201.03/2202.03.

FREN 3811.03: Introduction to African and Caribbean Francophone Literature/ Introduction a la littérature francophone de l’afrique subsaharienne et des caribes. This class focuses on the evolution of African and Caribbean literature from its origins to the present day. It prepares students for upper level classes in African and Caribbean literature, for example FREN 4811 (Francophone Poetry). INSTRUCTOR(S): J.-C. Kasende. FORMAT: Lecture/discussion. PREREQUISITE: FREN 2201.03/2202.03 or permission of instructor.

FREN 3900.03: FREN 3901.03: La littérature canadienne française/French-Canadian Literature. In-depth study of a few major works of French-Canadian literature with emphasis on the period from 1940 to the present day. Approved with Canadian Studies.

INSTRUCTOR(S): B. Bednarski, I. Oore. FORMAT: Lecture/discussion. PREREQUISITE: FREN 2201.03/2202.03.

FREN 3910.03: Études acadiennes/Acadian Studies. Critical investigation into the historical, socio-cultural, linguistic and literary significance of past and present Acadian writing. May follow Acadian Studies (FREN 2201.03/2202.03). Approved with Canadian Studies.

INSTRUCTOR(S): H. Ruente, staff. FORMAT: Lecture. PREREQUISITE: 3000-level French class. 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.


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 grammar, the evolution of vocabulary, epochal phenomena (Biblisation, the Baroque, Préciosité, the Revolution, scientific French, argot), etc. Approved with Linguistics.


FREN 4011.03: La Lexicologie/Lexicology. How does French vocabulary evolve and develop? 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. Maupio, J. Milicovic.
FREN 4016.06: Introduction to Applied Linguistics and Language Teaching. This class provides students with a theoretical and practical introduction to issues in language teaching. It includes a survey of language teaching methods which focuses both on their theoretical underpinnings and their methodology. It will include some classic methods as Grammar-Translation as well as some fascinating but lesser known methods (Audio-lingual method, Silent Way, Suggestopedia, Community Language Learning). Significant class time will be devoted to current trends and conflicting views (for example, various definitions of “communicative” approach, the proficiency movement). Class time will be devoted not only to learning about these approaches, but to experiencing them via peer micro-teaching. N.B.: This class will be taught in English, and is open to senior students (or graduate students) in all language departments. French majors or honours students may not count this class towards the minimum number of credits required for their French degree; but may take it as a supplementary elective class. Approved with Linguistics.


FREN 4019.03: Traduction 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.

FREN 4019.06: 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 writing, translation and editing activities in French. Using simulation, the student will learn how to use these electronic tools and resources, and in particular, some of the techniques associated with them. Tools demonstrated will include grammar checkers, machine (aided) translators, concordancers and speech synthesizers/recognizers. Resources presented will consist of on-line terminology banks, dictionaries, thesauri and grammars, etc.

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.
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 4601.03: 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 4602.03: Écrivains québécois contemporains/Contemporary Quebec 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: Seminar
PREREQUISITE: 3000-level French literature class

FREN 4603.03: Écrivaines québécoises/ Quebec Women Writers.
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 program.

FREN 4700.03: La révolution romantique/The Romantic Revolution.
Romanticism is viewed primarily as a rebellious and creative force which greatly contributed to the reshaping of traditional society. The origins, main themes and trends of the movement are studied with an attempt to show Romanticism as a European movement, the impact of which was felt in fields beyond the boundaries of literature. Classes are conducted as seminars; students are required to do a great deal of personal research, to prepare exposés and to participate in class discussions. The choice of texts depends largely on the students’ previous experience; they include works by Mme de Staël, Chateaubriand, Lamartine, Hugo, Vigny, G. Sand and others.
INSTRUCTOR(S): V. Frigerio
FORMAT: Seminar
PREREQUISITE: 3000-level French literature class

FREN 4701.03: Le roman du dix-neuvième siècle/ The Nineteenth-Century Novel.
Intensive study of the work of a major novelist of the 19th century: e.g. Stendhal, Flaubert, Balzac, Zola, Sand; a study of his/her place in the development of the novel and of his/her contribution to the genre. The class involves a considerable amount of reading, regular reports, and exposés.
INSTRUCTOR(S): V. Frigerio
FORMAT: Seminar
PREREQUISITE: 3000-level French literature class

FREN 4710.03: Du symbolisme au surréalisme/ From Symbolism to Surrealism.
Analysis of the evolution of French literature from the various symbolist manners of Verlaine, Rimbaud, Mallarmé, Lautréamont and Laforgue, through the period of Jarry and Dada, to the aspirations and paradoxes of Surrealism viewed, principally, through the work of Breton, Eluard, Aragon and Devesos.
INSTRUCTOR(S): M. Bishop, C. Elson
FORMAT: Seminar
PREREQUISITE: 3000-level French literature class

FREN 4711.03: La poésie francophone de Perse et Char à Senghor et Césaire/Francophone Poetry from Perse and Char to Senghor and Césaire.
Discussion of the works of five or six major francophone poets of the modern period, chosen from Perse, Reverdy, Claudel, Char, Frénaud, Senghor, Tchicaya, Césaire, Glissant, Miron and others.
INSTRUCTOR(S): M. Bishop, C. Elson, staff
FORMAT: Seminar
PREREQUISITE: 3000-level French literature class

FREN 4902.03: FREN 4903.03: Écrivains québécois contemporains/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: Seminar
PREREQUISITE: 3000-level French literature class

FREN 4932.00: Séminaire “Honneurs”/Honours Seminar, Honours Essay.
In depth study of one or more contemporary Québec writers. Approved with Canadian Studies.

FREN 4933.00: Séminaire “Honneurs”/Honours Seminar, Honours Essay.
In depth study of one or more contemporary Québec writers. Approved with Canadian Studies.

FREN 4994.03: FREN 4995.03B, FREN 4996.03/FREN 4997.03B, FREN 4998.03/FREN 4999.03: Recherches indépendantes/Independent Research.
May only be taken with the approval of the Chair or the Undergraduate Coordinator.
FORMAT: Independent study/seminar
PREREQUISITE: 3000-level French literature or linguistics class

FREN 9977.15: Senegal.
FREN 9998.15: France Semester Abroad.
FREN 9999X/Y.30: France Year Abroad.
Gender and Women's Studies

I. Introduction

Gender and Women's Studies is a dynamic and rapidly expanding interdisciplinary area of study. An alternative to the traditional curriculum, Gender and Women’s Studies provides students with the opportunity to examine history, social structures, the sciences, language, literature, and culture from critical and illuminating perspectives.

At Dalhousie, students can currently enter the following programs in Gender and Women's Studies: a Concentration, a Major, a Double Major, or a Combined Honours program. These programs include classes in the disciplines of English, French, History, Music, Philosophy, Political Science, Sociology, and Social Anthropology, and Theatre, and in interdisciplinary and professional fields, including Contemporary Studies, International Development, Law, and Nursing.

Students in the Dalhousie Gender and Women's Studies programs develop a critical understanding of gender as a category of analysis in scholarly enquiry, social dynamics, cultural expression, and belief systems. They also investigate the ways in which gender intersects with other variables such as race, class, and cultural difference. They study women’s contributions to civilization in many fields of knowledge, and examine the social and ideological forces that have made these contributions “invisible” in the past. Through exposure to a large and growing body of research in a number of disciplines and fields, Gender and Women’s Studies Majors gain a grounding in the methodologies and concepts shaping the organization and dissemination of knowledge.

Our classes also provide students with opportunities of uniting theory with social and cultural practice, addressing contemporary issues that individuals and institutions are grappling within today's changing world order. They provide a context in which women can find strength and insight through exchanging experiences and ideas with other women, and a context in which women and men together can further human understanding and equality through exploring and respecting differences.

Do men take Gender and Women’s Studies classes? Yes. Gender has operated as a fundamental category in the organization of knowledge, social systems, forms of representation and modes of production and consumption. The critical examination of gender is relevant to both men and women.

II. Degree Programs

Gender and Women's Studies programs provide preparation for careers in a variety of fields, as well as for professional schools or graduate programs. For example, graduates can work as consultants, policy analysts, and officers in government and para-governmental organizations, in business and industry, and in educational institutions. The fields they enter include employment equity, public administration, international development, health care, work place conditions, personnel relations, publishing and editorial work, and public relations.

For students interested in a preparatory degree, Gender and Women's Studies programs provide appropriate preparation for professional schools and programs in the fields of education, social work, counselling, journalism, the health professions, and certain areas of law. They also provide suitable preparation for graduate programs in Women’s Studies, Gender Studies, Interdisciplinary Studies, Cultural Studies, and studies in Social Justice. Students interested in proceeding to graduate work should enter a four-year degree program.

Students may enter Gender and Women’s Studies programs in the first, second, or third year of study. In many cases, students in second or third years may already have acquired some Gender and Women's Studies credits through taking classes in the traditional disciplines or in other interdisciplinary programs that are cross-listed with Gender and Women’s Studies core classes.

Students can currently enter four programs in Gender Women’s Studies: a BA with Combined Honours, a 20-credit BA with Major in Gender and Women’s Studies, a 20-credit BA with Double Major in Gender and Women’s Studies with a traditional discipline or with another interdisciplinary program such as International Development Studies, or Canadian Studies or Contemporary Studies; and a 3-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 60 of this calendar.

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

3-year, 15-credit program

This degree is a general liberal arts degree with a concentration in Gender and Women's Studies. It permits a wide range of choice in class selections.
A three-year degree in Gender and Women's Studies can prepare a student for work in the occupational areas described above, or it can be used as a preparatory degree for professional programs such as Law and Social Work.

Departmental Requirements

- At least four and no more than eight credits beyond the 1000 level in Gender and Women's Studies of which two must be beyond the 2000 level
- At least three different disciplines shall be represented in a student's selection of cross-listed Gender and Women's Studies classes

B. 20-credit BA with Major in Gender and Women's Studies

4-year, 20-credit program

This program provides a more comprehensive grounding in Gender and Women's Studies than the 15-credit BA with concentration in Gender and Women's Studies. Students interested in applying to graduate programs should enter a four-year degree program.

Departmental Requirements

- At least six and no more than nine credits beyond the 1000 level in Gender and Women's Studies of which at least three must be beyond the 2000 level
- At least three different disciplines shall be represented in a student's selection of cross-listed Gender and Women's Studies classes

C. 20-credit BA with Double Major

4-year, 20-credit program

Students can combine a concentration of Gender and Women's Studies classes with classes either in a traditional discipline or with another interdisciplinary program such as International Development Studies, Canadian Studies, or Contemporary Studies.

Departmental Requirements

- At least ten and no more than thirteen credits beyond the 1000 level in two allied subjects, one of which is Gender and Women's Studies, with no more than nine and no fewer than four in either
- At least two credits in each of the two subjects chosen shall be beyond the 2000 level
- At least three different disciplines shall be represented in a student’s selection of cross-listed Gender and Women’s Studies classes

D. BA with Combined Honours

4-year, 20-credit program

Students can enter a BA with Combined Honours program in Gender and Women's Studies and a range of other subjects including Biology, Classics, Contemporary Studies, English, French, History, International Development Studies, Philosophy, Political Science, Psychology, Sociology, Social Anthropology, and Theatre. Students interested in any of these combinations or any other that involves Gender and Women's Studies and another subject should consult with the Departments concerned.

General Degree Requirements

Please read the detailed description of B.A. with Combined Honours Program in the Degree Requirements section of this calendar. After meeting the first year requirements, students have two options from which to choose: The First Option, a maximum of seven (7) full credits in the major subject with a minimum of four (4) full credits in the allied subject. In addition, four (4) full elective credits which are not from the major or allied subject group. The Second Option, with departmental approval, a maximum of nine (9) full credits in the major subject with a minimum of four (4) full credits in the allied subject. This particular option can be broken down further into a combination of eight (8) full credits in the major subject and five (5) full credits in the allied subject or seven (7) full credits in the major subject and six (6) full credits in the allied subject. In addition, two full elective credits which are not from the major or allied subject group.

PLEASE NOTE: Where a class selected from the Gender and Women's Studies "list" in the BA with Combined Honours program is cross-listed with a class in the allied subject, the class may not be double counted (i.e., it may be counted on one or other list, but not on both). Where a class selected for the Gender and Women's Studies "list" in the BA with Combined Honours program is cross-listed with a class in the allied subject, this should not result in a student exceeding the maximum allowed in either of the allied subjects.

Departmental Requirements

In addition to meeting the Degree Requirements set out by the Faculty, Gender and Women’s Studies students must meet the following requirements:

1. At least three Gender and Women's Studies classes must be taken beyond the 2000 level.
2. At least three different disciplines must be represented in a student’s selection of Gender and Women's Studies classes (in disciplines other than the allied subject).
3. The following classes are required:
   a) At least one full credit from the following: GWST 2060.03, 2301.03, 2303.03, 2800.06 (Normally, this requirement should be met in the second year of the program.)
   b) At least one full credit from the following: GWST 3060.03, 3500.03, 3600.03, 3601.03, 3690.03, 3800.03, 3911.03, 3912.03.
   c) At least one full credit 4000 level Gender and Women's Studies class, either Directed Readings, Special Topics, or cross-listed classes (Normally this requirement should be met in the fourth year of the program.)
   d) To meet the Honours Examination requirement when Gender and Women's Studies is the major subject, students will prepare a research paper under the supervision of a Gender and Women’s Studies faculty member.

E. Bachelor of Computer Science with a Minor in GWST

Dalhousie University has approved a set of minors for the Bachelor of Computer Science (with/without Honours, with/without co-op). The basic format is that you require 4 full credits at or above the second year level in the minor area that include at least 2 full credits at or above the third year level. You must also take any first year courses that are needed as pre-requisites.

- 2 full credits of GWST electives at or above the 2000 level
- 2 additional full credits of GWST electives at or above the 3000 level
- At least three different disciplines shall be represented in a student’s selection of cross-listed Gender and Women’s Studies classes.

III. Class Descriptions

NOTE: Some classes may not be offered every year. Please consult the current timetable to determine if these classes are offered. More detailed information can be obtained from the Gender and Women’s Studies office.

In addition to the classes listed below, appropriate classes in other departments (for example, Special Topics classes on women and/or gender issues) may be taken as Gender and Women’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 of 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 inquiry and social dynamics. Paying close attention to the experiences and perspectives of women, students have the opportunity to examine history, social structures, the sciences, language, literature, culture from the illuminating perspective of gender. In all these areas, Gender and Women's Studies investigates how gender intersects with other variables such as race, class, and cultural difference. This introductory class provides an overview of some of the central topics of
GWST 1015.03: Gender and Diversity.

This class continues from "Introduction to Gender and Women's Studies" to focus particularly on the many ways that gender as a social system intersects with other systems of power and inequality. We will all make sense of our lives through multiple identities that combine in shifting ways to define our opportunities for action and the limits we face. Identities based on gender, race, ethnicity, age, class, sexuality, disability, nation, or religion are framed in varied ways for individuals, but they are not just individual self-perceptions. They are also elements of larger social systems. Topics may include the multiple identities of the body; race, gender, and violence; diversity and work; contemporary transformations of the family; and gender and globalization.

INSTRUCTOR(S): J. Warwick
FORMAT: Lecture/discussion

GWST 2000.03: Directed Readings in Gender and Women's Studies.

Readings and research in Gender and Women's Studies on selected topics. In exceptional circumstances, and with the permission of both the Gender and Women's Studies Coordinator and the Instructor concerned, students may arrange to take appropriate classes for credit in Gender and Women's Studies that are not otherwise available as one term classes in Gender and Women's Studies.

FORMAT: Variable
PREREQUISITE: Variable

GWST 2053.03: Women and Islam.

An introduction to the various attitudes within the Islamic world concerning women. Topics to be covered include: the status of women in the Koran and the classical commentary traditions, images of the "ideal woman" in literary and popular tradition, and recent debates over the application and modern interpretation of Islamic law as it pertains to women. Regional and dialectical 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
PREREQUISITE: Second year or above

GWST 2066.03: Women, Gender and Music.

This class explores the variety of ways in which gender shapes musical discourse. The role of gender in music will be examined through three broad topics: the history of female contributions to music as musicians, composers, patrons and listeners; musical constructions of gender, race, class and sexuality; and feminist criticism in recent musical discourse. No formal training in music is required.

INSTRUCTOR(S): J. Baut, J. Warwick
FORMAT: Lecture
CROSS-LISTING: MUSC 3096.03

GWST 2200X/Y.06: Fictions of Development.

This course is a study of a variety of literary works (chiefly novels) written in English which portray the crises and the conflicts involved in growing up, finding a vocation, and finding oneself. Special attention is given to the connections between art and autobiography, and between literature and psychology, as well as to the influence of gender and cross-cultural differences in patterns of human development, and ways of writing about them.

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

FORMAT: Lecture/discussion
PREREQUISITE: ENGL 1000X/Y or permission of the instructor
CROSS-LISTING: ENGL 2221.06

RESTRICTION: Preference is given to majors in Gender and Women's Studies and English.

GWST 2217.03: Women and the Economy.

This class will provide a broad and relatively non-technical analysis of women's economic experiences. For example, we will study questions such as: Are there feminists who are economists? Have economic conditions improved for women in Canada over the past 30 years? How do economic outcomes for women in Canada compare with those in other affluent countries? Is there a glass ceiling for women in the workplace? Is there gender discrimination in the Canadian labour market? Who does the unpaid work? What are the economic consequences of divorce? Are women more likely than men to be poor? Are there inequalities within families?

FORMAT: Lecture
PREREQUISITE: ECON 1101.03/1102.03
CROSS-LISTING: ECON 2227.03

GWST 2301.03: Making Gender: Male and Female from the American Revolution to the Present.

This class examines the diverse and fascinating ways Western cultures have shaped the meanings of gender. The history of women informs us about the once little-known history of femininity. And, as a result, historical changes in definitions of masculinity become visible. The meanings of gender are explored in this class through topics such as: the doctrine of separate spheres; respectability; the family wage; the homosexual, imperialist, citizenship, welfare dependency, and infertility.

INSTRUCTOR(S): S.M. Tillotson
FORMAT: Lecture/tutorial
CROSS-LISTING: HIS 2015.03

GWST 2310.03: Women and Gender in Early Modern Science.

This class will explore the roles of women, and questions about women's nature, in the development of early modern sciences. The class will consider several intertwined aspects of scientific culture in the sixteenth, seventeenth, and eighteenth centuries: first, we will look at the place of women in the scientific institutions of the time. Although women were, for the most part, excluded from universities and scientific academies, some women were able to do scientific work through their participation in salons and craft guilds. The second part of the course will look at the contributions of some particular women to the fields of physics, astronomy, botany, and medicine. We will then examine how science interpreted sex and gender. We will pay special attention to the biological sciences and their treatments of sex differences, conception, and generation. We will consider how sex was used to explain scientific theories, their influence, and at the same time used to uphold, various political and social structures. Finally, the course will explore the ways in which gender and science were portrayed in the broader cultural context. We will, for example, discuss the ways in which women were depicted as scientists and as symbols of science in art and literature.

INSTRUCTOR(S): K. Morris
CROSS-LISTING: EMSP 2310.03

GWST 2320.03: Witchcraft in Early Modern Europe.

The period of European history from 1500 to 1800 saw the rise of modern science and philosophy. It was also a period in which thousands of witch trials and executions were carried out. This class will seek to understand how these seemingly contradictory developments could have occurred simultaneously. The class will examine changing conceptions of the witch and witchcraft in their historical, intellectual, cultural, religious and political contexts. The class will pay special attention to early modern notions of gender and sexuality and their influence on the witch hunts and witch trials.

INSTRUCTOR(S): K. Morris
FORMAT: Lecture/seminar
CROSS-LISTING: EMSP 2320.03
This course explores the consequences of several major upheavals in the world of work that are currently underway. These include the relocation of manufacturing from Northern countries to Southern countries, and the expansion of the presence of women in labour forces as workers over much of their adult life cycle. Topics may include: the international division of labour; home-based labour; the impact of work on family life and family life on work; work in contemporary film; managerial and union strategies; and the relationship between education and employment. It is a sound basis for further study in the areas of management, labour relations, gender studies or development studies.

CROSS-LISTING: SOSA 2160.X/Y.06
PREREQUISITE: One of SOSA 1000.X/Y.06, 1050.X/Y.06, 1100.X/Y.06 OR 1200.X/Y.06
EXCLUSION: SOSA 2160.03

GWST 2500.03: Philosophical Issues of Feminism.
An exploration and examination of some of the concepts, issues, and arguments underlying feminist claims and perspectives. Such topics as pornography, rape, mothering, the nature of gender, and feminism’s responses to racism will be considered.

INSTRUCTOR(S): S. Campbell
FORMAT: Lecture/discussion
CROSS-LISTING: PHIL 2160.03

GWST 2800.X/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 differences in society are taken as 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 gendered differences, and violence. Readings are chosen to highlight 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 unstable breadth of gendered experiences and issues therefrom.

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 1000.X/Y.06, 1050.X/Y.06, 1100.X/Y.06 OR 1200.X/Y.06
EXCLUSION: SOSA 2160.03

GWST 3000.03/3001.03/3002.X/Y.06: Directed Readings in Gender and Women’s Studies.
Readings and research in Gender and Women’s Studies on selected topics.
Students may take appropriate classes in other Departments under these numbers, with the permission of the INSTRUCTOR and the Gender and Women’s Studies Coordinator, or they may construct their own reading list and research project in consultation with an appropriate faculty member, and the Coordinator.

NOTE: Students taking GWST 3002.X/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 course will use comparative perspectives to explore a range of topics relating to the gendering of work: wage-work, household-based labour, the informal sector, masculinity and femininity in the work place, occupational segregation, employment policies directed at changing the status-quo (such as affirmative action, pay equity), and unionization. The context will be the changing global political economy and its consequences for the strategies of different groups (such as nation states, but also trade unions, feminist groups and employer groups).

FORMAT: Lecture
PREREQUISITE: One of SOSA 1000.X/Y.06, 1050.X/Y.06, 1100.X/Y.06 OR 1200.X/Y.06
EXCLUSION: SOSA 2160.03

GWST 3013.03: Sex and Gender in Reformation Europe.
This class looks at the historical development of the norms and practices surrounding sexuality and family relations, with special focus on the changes accelerated by the sixteenth-century religious reformations. It historicizes ideas about what is “natural” in regards to such practices. It examines the motives and results of attempts to regulate sexuality and marriage. Topics include: divorce, adultery, marriage, family and gender roles, and prostitution.

INSTRUCTOR(S): Keselring, K. J.
FORMAT: Seminar
PREREQUISITE: One previous history class
CROSS-LISTING: HIST 3013.03

GWST 3016.03: Women and Religion.
This course will study the roles and the understanding of women in both ancient and modern religious traditions, including an investigation of the attitudes towards women in the authoritative writings and practices of various traditions. Special attention will be given to the differing and competing views and interpretations of received doctrines and texts. The specific religious traditions and texts to be studied will vary from year to year.

FORMAT: Seminar
PREREQUISITE: Two RELS 3016.03
CROSS-LISTING: RELS 3016.03

GWST 3050.03: Contemporary Women Poets.
Reading women’s poetry in local and global contexts, this course will historicize ideas about what is “natural” in regards to such practices. It examines the motives and results of attempts to regulate sexuality and marriage. Topics include: divorce, adultery, marriage, family and gender roles, and prostitution.

INSTRUCTOR(S): Kesselring, K. J.
FORMAT: Lecture/discussion
CROSS-LISTING: ENGL 3050.03

GWST 3060.03: Contemporary Women Poets.
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 gendered differences, and violence. Readings are chosen to highlight 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 unstable breadth of gendered experiences and issues therefrom.

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 1000.X/Y.06, 1050.X/Y.06, 1100.X/Y.06 or 1200.X/Y.06
EXCLUSION: SOSA 2160.03

GWST 3100.03: Sociology and Anthropology of the Body.
This class will consist of a micro-sociological examination of the human body as a socio-cultural construction. Topics include: bodily self image, cultural definitions of physical attractiveness, stigmatization, prosaic behaviour, non-verbal communication, pre-natal and neonatal care, biology and environment, 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 1000.X/Y.06, 1050.X/Y.06, 1100.X/Y.06 or 1200.X/Y.06
CROSS-LISTING: SOC 3100.03

Gender and Women's Studies 127
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: SCNA 3680.03

GWST 3215.03: Feminism and Science.
Science has been the subject of intense scrutiny by contemporary feminist theorists. The course will examine 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 conceptions 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.
CROS-LISTING: CTMP 3215.03, HSTC 3411.03

GWST 3250.03: French Women Writers through the Centuries/ Les femmes écrivains: du temps des cathédrales à celui.
A chronological survey based on the study of literary texts by French Women Writers, this class will attempt to analyze the society of the time, the way it portrayed women and their role, and the overall condition of women. Emphasis will be given to 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 is an important aspect of 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 setting.
RECOMMENDED: A class in the Sociology or Social Anthropology of the family.
INSTRUCTOR(S): Staff
FORMAT: Lecture/discussion
CROSS-LISTING: HRT 3350.03

GWST 3310.03: Gender and Development in Africa.
This course 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 in part in their participation in political and economic processes and contends with the definitions of womanhood and maleness in various African societies. The class will examine development and feminist/gender theory in light of recent debate over gender and development issues.
INSTRUCTOR(S): Staff
FORMAT: Seminar
PREREQUISITE: Any 2000-level African History class or permission of the instructor
CROSS-LISTING: HRT 3460.03/5460.03

GWST 3350.03: Postmodern Strategies in Literature by Women.
Against a widespread view that postmodernism is inimical to feminism, this readings in this class demonstrate that recent literature by women, both fiction and critical theory, has widely adopted postmodern strategies in order to advance feminist views. The postmodern canon has allowed female authors to question the way in which woman's subjectivity has always been constructed through male-oriented processes of signification. The works of fiction covered in this class, by Kathy Acker, Angela Carter, Marianne Hauer, Octavia Butler, and others, exemplify aesthetic subversions of phallocentric discourses. Literary texts will be supplemented with theoretical works by leading feminist/postmodernist thinkers such as Judith Butler, Drucilla Cornell, Dan Mclam, and Gayatri Spivak. The class includes video-taped material and slide-shows of postmodern feminist art.
INSTRUCTOR(S): D. Głowacka
FORMAT: Seminar
CROS-LISTING: CTMP 3350.03

GWST 3365.03: Narrative Strategies in the Nineteenth Century Music: Gender, Identity, and Social Politics.
An interdisciplinary survey of nineteenth-century instrumental music, focusing on the narrative potential of nineteenth-century musical conventions and their relationship to other aspects of nineteenth-century Western culture. Representative musical works will be studied within the context of broader social and cultural issues, including gender, race, class, sexuality, nationality, ethnicity, and identity.
INSTRUCTOR(S): S. Bear
FORMAT: Seminar
PREREQUISITE: Permission of the instructor
CROS-LISTING: MUSC 3365.03

GWST 3500.03: Contemporary Feminist Theories.
Contemporary feminism is not a single theory but comprises multiple theoretical perspectives, reflecting both a diversity in women's experience of subordination and a diversity of interests and approaches. This class aims to present some of the richness and variety in feminist theory while offering students the opportunity for sustained critical engagement with influential feminist thinkers.
INSTRUCTOR(S): S. Campbell
FORMAT: Seminar
PREREQUISITE: at least two previous classes in Gender and Women's Studies, or at least two previous classes in Philosophy, or permission of the instructor
CROS-LISTING: PHIL 3500.03, PHIL 5170.03, GWST 5170.03

GWST 3800.03: Gender and Health.
This course aims to reflect upon and challenge our taken-for-granted assumptions about the gendered dimensions of health and health care. Rather than take the categories of 'women's health' and 'men's health' as its foundation, the course revolves around two main questions: (1) how does the field of health and health care define and enforce the very categories of 'women' and 'men'? (2) how does gender, thus defined and enforced, affect the health, health care, and health work of those defined as men, women, or other? We will consider these questions by examining particular health topics that have a strongly gendered component, such as sexual health, reproductive health, and disability. Throughout the course, we will explore the theoretical perspectives used in the field: the two-sex model and challenges to it; the gendering of particular health problems and health professions; the medicalization of womanhood and, more recently, manhood; and the relationships between gender and other forms of social classification (e.g. race, class, sexual orientation).
FORMAT: Lecture
PREREQUISITE: One of SCNA 1000X/Y.006, 1000X/Y.007, 1100X/Y.006 or 2200X/Y.006
CROSS-LISTING: SCNA 3415.03

GWST 3810.03: Women and Aging.
As women grow older the experience of aging is generally more difficult for them than for men. Synchronicity in the forties, Ansynchronicity in the aging process exacerbate the difficulties facing women in modern society. Disempowering older women is usually accomplished in small
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 honors 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 II.
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 honors students in Gender and Women's Studies but will be open to qualified students from other disciplines. 
FORMAT: Seminar
PREREQUISITE: One full credit in Gender and Women's Studies or permission of instructor

GWST 4211.03: Gender and Development: Theory, Concepts and Methods.
The primary aim of this course is to provide a broad foundation to some of the theoretical perspectives which have informed current thinking in gender and development. The course introduces students to key concepts in the analysis. 
FORMAT: Seminar
PREREQUISITE: Approval from Coordinator - Gender & Women's Studies

GWST 4212.03: Canada 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: FRN 2011 (2021) and at least one third-year literature class, preferably French Canadian.
INSTRUCTOR(S): B. Bednarski, I. Oore
FORMAT: Lecture/discussion
CRB95-LISTING: FREN 4041.03

GWST 4300.03: Introduction to Women and the Law.
The class begins with a focus on feminist legal theory, and the integration of feminism with issues of race, class, sexual orientation, and disability. The second major focus is on equality rights in Canada, from the early cases to current concepts of equality under the Charter. The class then considers the impact of feminist legal theories on particular areas of the law. This is followed by student class presentations on major paper topics.
INSTRUCTOR(S): D. Ginn or R. Bankier
FORMAT: Seminar
PREREQUISITE: This class is open to all 2nd and 3rd year Law students and all students eligible to take classes from the classes listed as Gender and Women's Studies core classes. However, this is a seminar class and is limited to a total of 18 students from Law and Gender and Women's Studies combined. Therefore, available spaces may be limited.
CRB95-LISTING: LAW 2512.03

GWST 4320.03: Empowerment, Gender and Development.
Feminist scholarship and activism has spawned a number of theoretical explorations 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 particulars and difference(s).

GWST 4320.03: Empowerment, Gender and Development.
Feminist scholarship and activism has spawned a number of theoretical explorations 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 particulars and difference(s).

GWST 4320.03: Empowerment, Gender and Development.
Feminist scholarship and activism has spawned a number of theoretical explorations 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 particulars 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 postmodern influences, and assess their importance for both the theory and practice of development, especially the development of women.

INSTRUCTOR(S): Staff

CROSS-LISTING: HIST 4320.03, HIST 5320, INTD 4320.03

GWST 4300.03: 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 general focus on comparative, historiographic and theoretical issues relating to the history of sexuality. Topics may include: the rise and fall of schools of sexuality 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. McGillivray, S. Tillotson

FORMAT: Seminar

CROSS-LISTING: HIST 4320.03, HIST 5320

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 Tribunals 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 have arisen 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 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

PREREQUISITE: Permission of the instructor

FORMAT: Seminar

CROSS-LISTING: LAW 5290.03

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 linguistics 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: CTHP 4302.03

EXCLUSION: CTHP 4303.06 and 4300.06

GWST 4500.03: Topics in Feminist Philosophy.

In this class, we shall explore some of the current research in a focused area of feminist philosophy. Previous topics have included feminist ethics, feminist epistemology, postmodern feminism, the feminist sexuality debates, and ecofeminism.

INSTRUCTOR(S): S. Campbell, F. Glazebrook

PREREQUISITE: strong background in philosophy or feminist theory (normally including at least one class in feminist philosophy or permission of the instructor)

CROSS-LISTING: PHIL 4500.03, PHIL 5500.03, GWST 5500.03

GWST 4550.03: Literary Women of French Classicism.

In this class, we will explore aspects of the intellectual and social context particularly relevant to a study of literary women in seventeenth-century France (for example: social structures and norms, la préciosité, the salons, the libertinages of Ninon de Lenclos, women's contributions as patrons of the arts), a representative selection of works, from several literary genres, written by seventeenth-century women (for example: novels by Mme de La Fayette and/or Mlle de Scudéry, Mme de Sévigné’s letters, Mme d’Aulnoy's contes, Mme de Sablé’s maxims); examples of literature written by men which counters the ambient misogyny of the period (for example: Molière’s L’École des femmes and La Bruyère’s Caractères).

INSTRUCTOR(S): K. Watson

FORMAT: Lecture/discussion/group activities

PREREQUISITE: 3000-level French literature class or instructor's consent

CROSS-LISTING: FREN 4550.03

IV. Related Classes

These classes are subject to change; consult the program office for offerings.

Classes Offered at Mount Saint Vincent University and Saint Mary’s University

Classes offered within the Women’s Studies programs at these universities are available to Gender and Women’s Studies majors at Dalhousie. Classes offered are subject to change.

Please consult:
1. Women’s Studies, Mount Saint Vincent, (902) 457-6567
2. Women’s Studies, Saint Mary’s University (902) 423-5842.

These classes must be taken on a letter of permission (see the Dalhousie Gender and Women’s Studies Program Coordinator).
German

Location: 6135 University Ave, Room 305
Halifax, NS B3H 4P
Telephone: (902) 494-2161
Fax: (902) 494-2919
Website: german.dal.ca

Dean
Richard, M.E., MA, MA, PhD (Toronto)

Chair
Curran, J.V. (494-1091)

Undergraduate Advisor
Garvey, B.V. (494-1091)

Honorary Professor
Michelsen, P., PhD (Göttingen), Professor of German, Heidelberg
University

Professor Emeritus
Gastel, F.W., PhD (Freiburg), FRSC

Professors
Curran, J.V., BA (Hons), MA (Dal), PhD (Newcastle upon Tyne)
Schwarz, H-G., MA (Munich), PhD (McGill), McCulloch Chair in German;
also appointed to the at University of Heidelberg

Associate Professor
Stoller, J. MA (Freiburg), MA (Dal), PhD (Queen's)

Assistant Professor
McConaghy, D. MA (Dal), PhD (Harvard)

Adjunct Professors
Aurthammer, A., Dr. phil., habilit, Univ of Freiburg
Curran, T.H. BA (Hons) (Toronto), MA (Dal), PhD (Durham)
Grasberg, K.G., Prof. of Macarata
Husser, F., Dr. phil., Univ. of Heidelberg
Kawas, K., Dr. phil. (Bonn), Dr. habil. (Munich)
Strach, F., Dr. phil. habil., Univ. of Heidelberg

Visiting Professors
Husser, F., Dr. phil., Univ. of Heidelberg
Wassermann, M., Prof. of Heidelberg

Instructor
Garvey, B.V., BA (Hons), MA (Dal)

Lecturers
2 positions

I. Introduction

German, the most widely used language in Europe, is spoken by approximately 150 million people as their native tongue in Austria, Germany, Switzerland, Italy, Belgium, and some parts of Eastern Europe. The cultural, economic, and scientific role of the German-speaking countries makes the knowledge of German indispensable to the study of most academic disciplines. The number of publications in the German language is second only to the number published in English.

The departmental program “German Studies” is the investigation of German culture and its place in the formation of the modern world. The program concentrates on significant aspects of the cultural tradition of the German-speaking countries. From Luther to Nietzsche, Freud, and Marx, German writers have moved people and nations to change the course of the world. The literary and intellectual development of Germany culminated around 1800 in the epoch of Classicism. The authors of this epoch (Lessing, Herder, Hegel, Goethe, Schiller) founded their writings on a thorough knowledge of the cultural tradition of Europe, especially Greek culture. As scientists, historians, and politicians they described problems and questions of a universal nature in their works. They became the first historians of literature and created the discipline of aesthetics. The universality of the authors of German classicism explains their present-day relevance and makes the study of German important and attractive.

Major or honors students may, with the approval of the Department of German, take up to one year (5 full credits) at a university in a German-speaking country and receive credit at Dalhousie. The Department has exchange arrangements with the universities of Heidelberg and Freiburg. In addition there is a “visiting scholars” program which brings distinguished scholars from Germany to Dalhousie.

For students of German for Business, the Department offers access without fees to one of the most prestigious MBA-programs in International Industrial Management in Germany at the FH-Friedingen in co-operation with Daimler-Chrysler and Bosch.

For advanced Engineering students, the Department offers access to the MSc in Automotive Engineering and the MSc in Information Technology and Automation Systems at the same Graduate School.

II. Certificate of Proficiency in German

The certificate is normally awarded to students who are not specializing in German but who, having taken several German courses, wish to have their proficiency officially acknowledged. Major and honors students may also be awarded the certificate, provided they meet the requirements.

Requirements
- At least 3 full credits beyond the 1000 level. Classes not given in German are excluded.
- At least one of the above must be at the 3000 level.
- Examination with both written and oral components. A passing grade of B or above is required.

Students will not be permitted to sit the examination without having completed the course work.

Administration: Please contact the German Department for details.

III. Degree Programs

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

The following programs are normally followed, other possibilities do exist. Students considering a degree in German are advised to consult with the undergraduate advisor of the Department.

Applications for Honours Programs should be discussed with a departmental advisor at an early stage. Later applications can also be accommodated.

A. BA with Honours in German

- 1000 level: German 1001.06 or 1010.06 or 1060X/Y.06
- 2000 level: Seven credits at or above the 2000 level
- 3000 level: Two credits at the 3000 level or higher, in addition to those listed above

Please note that Honours students must have at least two classes in Literature or Thought above the 2000 level.

B. Combined Honours

It is possible for a student to take an honours degree combining German with another subject. Any student intending to take such a combined honours degree should consult with the two respective departments to arrange the details of such a program.
C. 20-credit BA with Major in German
1000 level: German 1010.06 or 1011.06 or 1060X/Y.06
2000 level: Three credits at or above the 2000 level
3000 level: Three credits at the 3000 level or higher, in addition to those listed above

D. 15-credit BA with Concentration in German
1000 level: German 1001.06 or 1010.06 or 1060X/Y.06
2000 level: Two credits at or above the 2000 level
3000 level: Two credits at the 3000 level or higher, in addition to those listed above

IV. Class Descriptions
NOTE: Not all classes are offered every year. Please consult the current timetable to determine this year's class offerings.

PLEASE NOTE:
• GERMAN 1010X/Y.06 is to be taken by students with no previous knowledge of German.
• GERMAN 1011X/Y.06 is to be taken by students with no previous knowledge of German.
• GERMAN 1001X/Y.06 is to be taken by students with no previous knowledge of German.
• Students who have completed high school German will normally take GERMAN 1001X/Y.06.

All students with previous knowledge of German should see the Undergraduate Advisor.

GERM 1001X/Y.06: German: A Practical Course for Beginners.
This class provides the linguistic and cultural background needed to interact successfully with German speakers. The class replaces traditional grammar instruction with practical exercises reflecting the basics of communication in domestic and academic life as well as in business and tourism. This class combines a predominantly oral method based on conversation and discussion with written work. For a more traditional approach, see GERMAN 1010X/Y.06 or GERMAN 1001X/Y.06.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Classroom instruction/language lab and oral classes

GERM 1002X/Y.06: German Reading Class for Beginners.
GERM 1001X/Y.06 is a seminar class for beginners only, and no previous knowledge is required. Its equivalent is two years of German in high school with a final mark of 75% or better. The class emphasizes the spoken language, and provides the student with a thorough knowledge of basic grammar. Conversational tutorials are a required part of the course.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Seminar

GERM 1020X/Y.06: German Fiction in Novel and Film.
This class satisfies the university’s guidelines for the Writing Requirement. It examines the conceptual transition from the printed word to the screen; classic German novels and short stories are to be read and compared with their film versions. Works by Kleist, Fontane, Kafka, Thomas Mann, Heinrich Mann, Bell and Handle will be included in 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 Feuchter, Herzig, Schindelkraut, 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: at Writing Requirement, Seminar

GERM 1021X/Y.06: German Fiction in Novel & Film.
Students enrolled in GERM 1021 attend lectures along with those in GERM 1021. However, as they do not need a writing class, they are not required to complete all 8 assignments. Instead, they attend a separate tutorial and submit fewer, more detailed and fully researched essays. EXCLUSION: GERM 1020X/Y.06

GERM 1060X/Y.06: German Reading Class for Beginners.
Students acquire a knowledge of basic vocabulary and grammatical structures sufficient to understand newspapers and texts in the humanities and sciences. No previous knowledge of German is required. The class is taught in English. For purposes of admission to advanced classes in German it is equivalent to GERM 1010X/Y.06.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
INSTRUCTOR(S): J. Sidler
FORMAT: Seminar

GERM 1080X/Y.06: German Folk and Fairy Tales.
Beginning with the great Germanic epic of the Nibelungen, and finishing with the famous collection of fairy tales by the Brothers Grimm, this class aims to familiarize students with the most significant Germanic myths and tales. Their origins and aspects of their historical, political, social and literary importance will be discussed, through readings presenting a wide variety of critical approaches. The course encourages an interest in narrative style - in the epic, the legend and the fairy tale as literary forms. The history and essential qualities of these forms will be investigated; students will develop a greater awareness of the role and influence which the imagery of these forms has had (and continues to have) in the visual arts and music, in advertising and film, in poetry and theatre. The readings for this class are in English.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Classroom instruction/language lab and oral classes

Intermediate Classes
Intermediate classes are based on GERM 1010X/Y.06, 1060X/Y.06, high school German Grade 10, 11, 12 or an equivalent basic knowledge. A combination of GERM 2000X/Y.06 and GERM 2020X/Y.06 serves as an accelerated Intermediate German class and is designed for students who want to make rapid progress in the language.

Unless noted otherwise, all upper year classes are taught in German with German tests.

GERM 2000X/Y.06: Intermediate German.
The main aim of this course is to develop a certain degree of speaking fluency as well as to improve reading and writing skills. Small conversation classes once a week as an aid to speaking fluency are offered. Instead, they attend a separate tutorial and submit fewer, more detailed and fully researched essays. EXCLUSION: GERM 2011.03

GERM 2010X/Y.06: 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
EXCLUSION: GERM 1080X/Y.06 or equivalent
GERM 2010.03: German Reading I.

This is a seminar specifically intended for students who do not fit into our normal program offerings. Please consult departmental advisor.

GERM 2050.03: German Reading II.

This is a seminar specifically intended for students who do not fit into our normal program offerings. Please consult departmental advisor.

GERM 2060.03: German for Business, Economics and Tourism I.

This class introduces students to the specialized vocabulary used in business and economics. It also aims to familiarize the students with all aspects of the German economy and business world.

FORMAT: Seminar
PREREQUISITE: Any of GERM 1010X/Y.06, 1060X/Y.06 or equivalent

GERM 2061.03: German for Business, Economics and Tourism II.

This class introduces students to the specialized vocabulary used in business and economics. It also aims to familiarize the students with all aspects of the German economy and business world.

FORMAT: Seminar
PREREQUISITE: GERM 2000X/Y.06 or equivalent

GERM 2080.06: German Folk and Fairy Tales.

See description under GERM 1080X/Y.06. This seminar is held with GERM 1080X/Y.06 and shares the same aims, but GERM 2080 students will read most texts in German, and complete some assignments in German. The language of instruction in the seminar is English, but the tutorial is only for GERM 2080 students and is held primarily in German.

INSTRUCTOR(S): B. Carew
FORMAT: Seminar
PREREQUISITE: GERM 1003X/Y.06 or GERM 1010X/Y.06

GERM 2150X/Y.06: Goethe's Faust.

A close reading of Goethe's Faust, comparing the German original and an English translation, will give rise to questions about translation techniques, the theory of drama and the reshaping of a legend. While Goethe's masterpiece stands at the center, 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. Suller
FORMAT: Lecture/discussion
PREREQUISITE: GERM 1010X/Y.06 or a reading knowledge of German

GERM 2200X/Y.06: Introduction to German Literature.

A study of texts representing major periods of German Literature from the 18th to the 20th century. Special emphasis is on the interaction between literature, society and other forms of art. The class also serves as an introduction to literary criticism. The language of instruction is German and English, as needed; the tests are in German.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
INSTRUCTOR(S): J. Curran
FORMAT: Seminar/tutorial
PREREQUISITE: GERM 2000X/Y.06 or equivalent or a reading knowledge of German

GERM 2400X/Y.06: German Art and Literature.

This class gives an introduction to modern German Art and Literature. Special emphasis is on the interaction between art and literature, particularly the themes and styles shared by visual and literary expression during the various epochs of modernity. The language of instruction is German and English, as needed. The tests are in German.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
INSTRUCTOR(S): H.-G. Schwarz
FORMAT: Seminar
PREREQUISITE: GERM 2000X/Y.06 or equivalent

GERM 2450X/Y.06: Kant and the History of German Idealism.

A study of Kant's relation to modern Rationalism and Empiricism, and an inquiry into the principles of idealism. This class is taught in English using English translations.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Seminar
PREREQUISITE: GERM 2000X/Y.06 or GERM 2200X/Y.06 or King's Foundation Year

GERM 2500.03: In Pursuit of Freedom from Luther to Nietzsche I.

This is a study of major thinkers, with emphasis on Luther, Leibniz, Herder, Hamann, Kant and Schiller. This class is taught in English using English translations.
FORMAT: Seminar
PREREQUISITE: A general introduction to literature, culture or philosophy
EXCLUSION: GERM 2600X/Y.06

GERM 2551.03: In Pursuit of Freedom from Luther to Nietzsche II.

This is a study of major thinkers, with emphasis on Hegel, Schopenhauer and Nietzsche. This class is taught in English using English translations.
FORMAT: Seminar
PREREQUISITE: A general introduction to literature, culture or philosophy
EXCLUSION: GERM 2600X/Y.06

GERM 2600X.03: Freiheit, Freedom in German Literature and Thought I.

In contrast to other European literatures of the 18th centuries with their utilitarian and metaphysical aims, the German Sturm and Drang movement puts the individual into the center. 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
German literature class at the 2000-level

This course builds on German 1001. It is designed to promote fluency in the German language through conversational practice. Students will enhance their speaking, listening, and reading skills through a variety of texts and interactive activities. Language of instruction: English.

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

GERM 3000.X/Y.06: Advanced German.
This course builds on German 2000. It aims to develop the oral proficiency and fluency of advanced students. Students will engage in both individual and group activities to improve their language skills. Language of instruction: English.

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

GERM 3001.03: Advanced Spoken German I.
This course focuses on the practical use of German in various contexts. Students will have the opportunity to practice speaking, listening, and conversational skills. Language of instruction: German.

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

GERM 3002.03: Advanced Spoken German II.
This course builds on German 3001. Students will continue to practice conversational skills and develop their proficiency in German. Language of instruction: German.

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

GERM 3010.03: Advanced Translation I: German - English.
This course is designed to prepare students for translating German texts into English. Students will learn translation techniques and strategies for producing accurate and idiomatic translations. Language of instruction: German.

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

GERM 3011.03: Advanced Translation II: English - German.
This course focuses on translating English texts into German. Students will learn translation techniques and strategies for producing accurate and idiomatic translations. Language of instruction: English.

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

GERM 3050.X/Y.06: German Reading.
This is a reading course at the advanced level. German texts of various kinds are used to develop reading skills and critical thinking. Language of instruction: German.

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

GERM 3051.03: German Reading III.
This is a seminar at the advanced level which offers readings outside our normal program offerings. Please consult departmental advisor.

FORMAT: Seminar
INSTRUCTOR(S): H.-G. Schwarz
PREREQUISITE: Any 3000-level class

GERM 3052.03: German Reading IV.
This is a seminar at the advanced level which offers readings outside our normal program offerings. Please consult departmental advisor.

FORMAT: Seminar
INSTRUCTOR(S): H.-G. Schwarz
PREREQUISITE: Any 3000-level class

GERM 3100.X/Y.06: German Literature and Thought from Reformation to Enlightenment.
This course covers German literature and thought from the Reformation to the Enlightenment. It focuses on key authors and themes of the period.

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

FORMAT: Seminar
INSTRUCTOR(S): J. Curran
PREREQUISITE: GERM 3150.X/Y.06

GERM 3150.X/Y.06: Goethe and the Enlightenment.
This course explores the life and works of Johann Wolfgang von Goethe, a key figure in the Enlightenment period.

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

FORMAT: Seminar
INSTRUCTOR(S): J. Curran
PREREQUISITE: GERM 2000.X/Y.06

GERM 3200.X/Y.06: Goethe and Romanticism.
This course examines the life and works of Johann Wolfgang von Goethe, focusing on his contributions to Romanticism.

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

FORMAT: Seminar
INSTRUCTOR(S): J. Curran
PREREQUISITE: GERM 3200.X/Y.06

GERM 3240.X/Y.06: Literature of the 19th Century.
This course covers the literature of the 19th century, focusing on major authors and movements.

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

FORMAT: Seminar
INSTRUCTOR(S): J. Curran
PREREQUISITE: GERM 3200.X/Y.06

GERM 3999.03: Special Topics in German.
This course covers special topics in German literature and thought, depending on student interest and availability.

NOTE: Students must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
GERM 3250X/Y.06: Modern German Literature.
Modern authors as witnesses of the philosophical and social changes of our century: a study of selected prose texts of Hugo von Hofmannsthal, Franz Kafka, Arthur Schnitzler and Thomas Mann. The language of instruction is English and German, as needed; the texts are in German. NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
INSTRUCTOR(S): J. Sidler
FORMAT: Seminar
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 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. The language of instruction is English and German, as needed; the texts are in German. NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Seminar
PREREQUISITE: GERM 2200X/Y.06, 2400X/Y.06 or other German literature class at the 2000-level

GERM 4100X/Y.06: Aesthetic Theory.
An historical study of the development of aesthetic theory. Hegel's "Aesthetik", Fichte's "Über den Ursprung des Kunstwesens" and Gadamer's "Aktualität des Schönen" will be studied. NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Seminar
PREREQUISITE: GERM 2200X/Y.06, 2400X/Y.06 or other German literature class at the 2000-level

GERM 4200X/Y.06: Seminar on Hegel's Phenomenology of Spirit.
The Phenomenology of Spirit, published in 1807, was Hegel's first major work. He intended to write an introduction to philosophy by demonstrating the necessity of the advance from the most immediate form of knowledge to absolute knowledge. To achieve this he had to write the Phenomenology as an introduction to his own philosophy. NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Seminar
PREREQUISITE: GERM 2200X/Y.06, GERM 2400X/Y.06 or other German literature class at the 2000-level

GERM 4250X/Y.06: Studies in German Idealism.
This seminar is specifically intended for students in the 20-credit major and 20-credit honours-degree programs. The specific content of the seminar varies from year to year, but is always related to some aspect of Idealism. NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

GERM 4500.03: Special Topics Class I.
This is an intensive research seminar dealing with selected topics to be announced.

GERM 4501.03: Special Topics Class II.
This is an intensive research seminar dealing with selected topics to be announced.

GERM 4600X/Y.06: Special Topics Class.
This is an intensive research seminar dealing with selected topics to be announced. NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
Health Studies

Contact Person: Dr. Katherine Fierlbeck
Location: Department of Political Sciences
Faculty of Arts and Social Sciences
Telephone: 494-6631

I. Minor in Health Studies
The Minor in Health Studies is a four credit (24 credit hour) Minor taken in conjunction with either a 20-credit (Major/Double) Major BA, or an Honours/Combined Honours BA in one or two of the Faculty of Arts and Social Sciences disciplines. The minor provides choices among a broad set of classes relating to health, covering historical, philosophical, literary, political, social and scientific aspects of health.

II. Curriculum
A. Required Classes
Students must complete 4 classes (24 credit hours) above the 1000 level. A minimum of B- in the approved classes earn credit toward the Minor.

B. Elective Requirements
Four full classes or equivalent from the approved list below, all above the 1000 level and two full classes above the 2000 level. These four classes (or equivalents) must include classes from at least two of the following disciplines: Humanities, Social Sciences, Physical/Life Sciences. Not all of these classes are offered every year. Some classes require prerequisites.

- RELS 3532.03: Science and the Sacred
- ENGL 2030.03: Literature, Health and Healing
- HIST 2995.03: History of Modern Medicine, 1800-1950
- HIST 3108.03: Topics in the Social and Cultural History of England: Madness and Marginality
- HIST 3223.03: The Caring Society? - Welfare in Canada since 1900
- PHIL 2410.03: Philosophy of Psychology
- PHIL 2420.03: Philosophy of Biology
- PHIL 2805.03: Ethics and Health Care: Patient Care
- PHIL 3810.03: Ethics and Health Care: Social Policy
- PSYO 1011.03, 1012.03, 1021.03 or 1022.03: Introduction to Psychology
- PSYO 2080.03: Social Psychology
- PSYO 2203.03: Developmental Psychology
- PSYO 2223.03: Abnormal Psychology
- PSYO 3129.03: Childhood Psychopathology
- PSYO 3260.03: Personality
- PSYO 3224.03: Forensic Psychology
- PSYO 3225.03: Health Psychology
- PSYO 3235.03: Intro to Stats for Science and Health Sciences (cross-listed with MATH 3060.03)

Faculty of Health Professions
- HAHP 1260.03: Communication
- HAHP 2260.03: Human Growth and Development
- HAHP 3260.03: Community Development
- HPRO 1210.03: Health Promotion Theory
- HPRO 2210.03: Health Promotion Policy
- HPRO 2225.03: Human Nutrition
- HPRO 2225.06: Drugs & Drug Education
- HPRO 2231.03: Program Planning
- HPRO 3325.03: Mental Health Promotion
- HPRO 3335.03: Introduction to Disease Prevention
- HPRO 3360.03: Multicultural Health Promotion Research & Policy
- HPRO 3370.03: International Health Promotion Research & Policy
- HPRO 3375.03: Community Health Promotion Strategies
- HPRO 4365.03: Health: A Biopsychosocial Approach
- HPRO 4422.03: Human Sexuality
- HPRO 4422.06: Environmental Health
- OCCU 2000.03: Occupation and Daily Life

Faculty of Engineering
- FOSC 4070.03: Computer Science I for Health Professionals

Faculty of Science
- ANAT 1020.03: Basic Human Anatomy
- ANAT 3050.03: Embryology
- BIOL 3601.03: Introduction to the History of Science
- BIOL 3603.03: Nature Conservation
- CHEM 1000.03: The Chemical World
- CHEM 1410.03: Intro to Chemistry Related to Human Health
- CHEM 2230.03: Health Economics
- ENV 3400.03: Environmental & Ecosystem Health
- PSYO 1011.03, 1012.03, 1021.03 or 1022.03: Introduction to Psychology

University of King's College
- CTMP 2201.03: Pain
- EMSP 3010.03: Hidden Worlds: Microscopy in Early Modern Europe (cross-listed with HSTC 3310.03)
- HSTC 3000.06: History of Biology

Faculty of Computer Science
- CSCI 1204.03: Computer Science I for Health Professionals

* Classes marked with an asterisk are at the 1000 level and will not count towards the Minor. Students may nevertheless wish to consider taking classes from this group because of their health content.
The contemporary world is one of intensive specialization, in which the meaning.

The academic study of history, therefore, is concerned to discover as much possible of the reality of the past and to interpret human behaviour in

I. Introduction

Just as people need to know who they are and how they arrived where they are, groups, classes, states and nations need a sense of their own past as part of their culture.

The academic study of history, therefore, is concerned to discover as much as possible of the reality of the past and to interpret human behaviour in its changes through time. It is a unique subject, scientific in the way it uses evidence, but still an art because the reconstruction of the past requires a disciplined imagination and an effective rhetoric for the communication of meaning.

The contemporary world is one of intensive specialization, in which the varieties of human knowledge have increased well beyond the capacity of any individual to command them all. These developments have reinforced the role of history as the foundation of a person's education, because history can never draw frontiers around itself to exclude any branch of human knowledge, although individual historians will want to select that portion of it especially relevant for them. History's field of study will always be the entirety of the human experience.

The subject of history does not have a monolithic body of knowledge. Historical understanding is a matter of interpretation, of offering explanations for events and movements which are subject to constant revision by scholars. Arguments, scepticism and controversy are thus the very stuff of history. The history student does not merely acquire a particular mass of information, but learns to think independently.

Especially in the 3000- and 4000-level classes, students gain more than sophistication about substantive areas of history. They also develop transferable skills for oral and written communication, for presentations of findings to groups, for group and independent research, for computer literacy in the human sciences, for research skills in primary and secondary materials, and for the application of foreign languages.

A degree in history provides an appropriate background for students planning to enter professional careers in fields such as law, education and journalism, as well as those interested in pursuing graduate study in history or related social science and humanities disciplines.

II. Degree Programs

All BA programs are governed by the general requirements of the College of Arts and Science for degrees, as set out in the University Calendar. See the Degree Requirements section for complete details, particularly with respect to Distribution Requirements, the Writing Class, the Language Sciences, and Arts and Science Electives. Before registering for the second year, each student in the College of Arts and Science must declare a subject of concentration. Once a student has declared History as the subject of concentration, then the following degree programs apply.

Classes in the History Department are grouped numerically in several geographical, chronological, subject and other areas: for example, Canadian, American, British, African, Medieval and Early Modern, European, Modern European, Women, Science and Technology, etc. Students are strongly encouraged to select a distribution of classes from different areas in order to experience the variety and richness of history.

Students who wish to build up a greater specialization in history than the minimum requirements outlined below may do so by taking classes of an historical nature given by the Departments of Classics, Economics, Music, Philosophy, Political Science, Spanish, Theatre, etc.

History students interested in obtaining an Emphasis in Canadian Studies along with their Major or Minor in History should consult the Canadian Studies calendar entry for information on requirements and for a list of History classes approved with Canadian Studies.

Students who wish to concentrate in a particular area of history should consider acquiring the appropriate language skills, especially if they intend to pursue graduate study in it.

The following outline presents the MINIMUM departmental requirements for such program and should be read in conjunction with the general requirements of the Faculty.

A. BA with Honours in History (20-credit)

The Honours degree is intended for students who plan to proceed to graduate work, and for others who wish to enjoy the experience of an intensive research project, the Honours essay. Students must complete the requirements for the BA with major in History and fulfill the following additional requirements:

- Honours students must take at least nine (9) but not more than eleven (11) credits in History beyond the 1000-level.
- Honours students must take HIST 4986.06, The Varieties of History and at least one half-credit 4000-level seminar in History.
- Applicants normally should have achieved an existing Grade Point Average of at least 3.3 to be considered for admission.
A grade of B+ or better is required on 9 full History credits.
A grade of B- or better is required on the honour's paper

NOTE: Applications for Honours in History are not considered by the Department until the winter term of the student's third year. Please enquire at the Department for the relevant deadline.

B. BA with Combined Honours including History (20-credit)

Besides the general requirements for all BA programs, students must meet the Faculty degree requirements for Combined Honours (20-Credit). Students must have at least 13 credits in two subjects beyond the 3000-level, with at least seven (7) credits in each subject and no more than nine (9) nor fewer than four (4) credits in either of them. Within the last fifteen credits, students must take at least one (1) credit in a single subject other than the two honours subjects. Students must complete two (2) full credits at the 3000/4000 level in both honours subjects.

C. BA with Major in History (20-credit)

The 20-credit Major requires more advanced training in History than does the three-year degree. Besides the general degree requirements for all BA degrees, students majoring in History are required to take at least six (6) but not more than nine (9) History credits beyond the 1000-level.

• At least three of these History credits must be above the 3000-level.
• Within the last fifteen (15) credits, students must take at least one credit in each of two subjects other than History.
• MA Majors in History must take at least one half-credit 4000-level seminar in History.

D. BA with Double Major including History (20-credit)

Besides the general requirements for all BA programs, students must meet the Faculty degree requirements for the BA with Double Major, which include 10-13 credits in the major subjects beyond the 3000-level, with no more than 9 nor fewer than 4 in either subject. Students must complete at least 2 credits above the 2000-level in each major subject. Within the last 15 credits, students must complete one (1) credit in a single subject other than the major subject(s). If History is the primary subject for the Double Major, students are required to take at least one half-credit 4000-level seminar in History.

E. BA with Concentration in History (15-credit)

The three year program is a general liberal arts degree with concentration in History. It permits a wide range of choice in the selection of classes.

Besides the general degree requirements for all BA degrees, students are required to take:

• At least four (preferably five) and not more than eight full credits in History beyond the 1000-level.
• At least two of these credits must be above the 2000-level.
• Within the last ten (10) credits, one (1) credit in each of two subjects other than History.

III. Types of Classes

1000/level classes take broad geographic perspectives over long periods of history to provide a background to many subsequent History classes. 2000/level classes typically deal with countries and transnational regions over at least a couple of centuries. 3000/level classes typically use textbooks for readings and assume no prior university-equivalent preparation; second-year classes typically assign academic books and articles and assume that students have the skills typically developed in the first year of university study. At the 1000 and 2000/level, classes are lecture format, three hours per week, with tutorials featured in some classes. 2000/level classes begin more specialized study of an area of History as a major or minor.

3000 and 4000 level classes provide opportunities for the intensive pursuit of interests developed in previous classes. The relatively small size of 3000/level classes (usually 35 students) allows intensive discussion of demanding primary materials and secondary publications, as well as students' presentation of their independent work. 4000-level classes are taught in seminars to cultivate students' independent research skills; undergraduate enrolments are limited to 15; some are cross-listed as graduate classes. These classes are particularly recommended for Honours students and prospective Honours students.

IV. Class Descriptions

NOTE: Not every class is offered every year. Please consult the current timetable to determine which classes are offered this year.

HIST 1004XY.06: Introduction to European History.

This class will introduce students to the major themes and events in European History, from the end of the Roman Empire to the fall of Communism in 1990. Since the class will be taught by two course directors (one in each term), the exact period, topics presented and the approach vary from one year to another.

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

FORMAT: Lecture.
EXCLUSION: HIST 1004.03, 1002.03, 1003.03

HIST 1005XY.06: Introduction to European History.

This class will introduce students to the major themes and events in European History, from the end of the Roman Empire to the fall of Communism in 1990. Since the class will be taught by two course directors (one in each term), the exact period, topics presented and approach will vary from one year to another. History 1055 is formally designated as a writing class. Students complete a writing assignment once per month and also participate in weekly small-group discussion sessions, designed to complement lectures.

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

INSTRUCTOR(S): J. Bingham, K. Kesselring

FORMAT: Writing requirement. Lecture/discussion.
EXCLUSION: HIST 1005XY/Y

HIST 1501.03: Comparative Global History.

Global history — the study of change over long spans of time and large areas — allows us to examine questions not easily recognized in history conducted on smaller scales. The world order familiar to us — dominated by “the West” and organized by capitalist relations — contains elements both ancient and new. By comparing different cultural zones in historical periods before Europe’s global dominance in the nineteenth century, this class will explore the diverse ways different cultures met the challenges of survival, and how patterns of connection and domination were made and unmade. Select themes — including, but not limited to, slavery, migration, colonialism, and state formation — will be used to highlight pre-modern patterns of connection across the globe.

FORMAT: Lecture.
EXCLUSION: HIST 1501.06

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 since the eighteenth century. This class follows some of these explorations, attempting to understand the nature and impact of Europe’s economic expansion, and how diverse cultures around the world experienced modern social and economic forces. Understanding the complex flows of such things as nationalist ideas, labour migrations, disease epidemics, and imperial control help reveal the ties which bind us together.

FORMAT: Lecture/tutorial. 3 hours.
EXCLUSION: HIST 1502.06

HIST 1862XY.06: North American Experiences.

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 since the eighteenth century. This class follows some of these explorations, attempting to understand the nature and impact of Europe’s economic expansion, and how diverse cultures around the world experienced modern social and economic forces. Understanding the complex flows of such things as nationalist ideas, labour migrations, disease epidemics, and imperial control help reveal the ties which bind us together.

FORMAT: Lecture/tutorial. 3 hours.
EXCLUSION: HIST 1862.06

HIST 1862XY.06: North American Experiences.
settlement of the West and encounters between Natives and Newcomers, urban life, path to war and empire, the invention of popular culture, nationalism, and separatism.

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

INSTRUCTOR(S): C. Campbell
FORMAT: Lecture
EXCLUSION: HST 2200X/Y.06, HST 1300X/Y.06, HST 1680X/Y.06
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 the 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 1682X.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 Reforms 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: HST 1980X/Y.06
INSTRUCTOR(S): C. 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: HST 1980X/Y.06 and (or) 2001.03
INSTRUCTOR(S): C. Neville
FORMAT: Lecture/tutorial
HIST 2003.03: The Fall of the Roman Republic.
See class description for CLAS 2205.03 in the Classics section of this calendar.

HIST 2006.03: The Atlantic World, 1450-1650:
European Colonization of the Americas.
The commercial and colonial expansion of Europe into the Americas. Topics of particular interest are the relations of Europeans and indigenous peoples, the ecological consequences of colonization, the use of untamed labour, the role of technology, the establishment of settler colonies, the effects of overseas communication on European culture, and the role of colonial expansion in the development of the world economy.

RECOMMENDED: HST 1980X/Y.06, 1501.03
FORMAT: Lecture/discussion
HIST 2007.03: The Atlantic World, 1650-1800:
European Empires in the Americas.
The development of the European colonial societies after their initial settlement and the establishment of their staple economies in the sixteenth and seventeenth centuries. The topics of chief interest are the predominance of colonial trade in Europe's large-scale commerce, the role of the colonies in European conflicts, the renewal of exploration, the development of the colonies' internal economies, and their revolts against European rule.

RECOMMENDED: HST 1864X/Y.06, HST 1501.03, HST 2006.03
INSTRUCTOR(S): J. Bannister
FORMAT: Lecture/discussion
HIST 2012.03: Absolutism and Revolutionary Europe.
The course will focus on the major political, social, intellectual and artistic developments of eighteenth-century continental Europe. Topic of special interest will include the emergence of the great powers; property, the underprivileged and reform; literacy and education; art and culture; religious observance and beliefs; the Enlightenment; and the crisis of the old order leading to the French Revolution.

INSTRUCTOR(S): J.T. Pinder
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 2211.03 in the Classics section of this calendar.

HIST 2017.03: The Roman World from Constantine to Theodosius (A.D. 313-395).
See class description for CLAS 2209.03 in the Classics section of this calendar.

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 in the mid-seventeenth century. The course will proceed in roughly chronological progression, to examine in turn Italy, Spain and Portugal, France, the Netherlands, Germany and the Empire, the Christian kingdoms of eastern and northern Europe, and the European territories of the Turkish Ottoman Empire.

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

INSTRUCTOR(S): G. Hanlon
FORMAT: Lecture/tutorial
HIST 2020X/Y.06: Imperial and Soviet Russia.
A survey of Russian history from the time of Peter the Great to the present. Emphasis is on themes of continuity in the process of modernization, as well as upon elements of discontinuity such as the Great Reforms of Alexander II, the Revolutions of 1917, the collectivization of the peasantry under Stalin, through to the end of the Gorbachev era.

RECOMMENDED: HST 1011.03 or 1020.03 or 1050.06 or 1400.06
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

FORMAT: Lecture/tutorial
CROSS-LISTING: RUSN 2021X/Y.06
EXCLUSION: HIST 2201X.Y.06
RESTRICTION: Restricted to students in their second year or higher (first year students, with permission of instructor)
HIST 2021.03: Soviet Russia. Survey of Soviet Russia from 1917 to the present. Topics discussed will include the Revolution of 1917, the Civil War and War Communism, NEP, Collectivization, the Great Purges, WWII, and the Post-Stalin era. FORMAT: Lecture/tutorial CROS-LISTING: RUSN 2230.X EXCLUSION: HIST 2020/X/Y.06, RUSN 2230.X/Y.06

HIST 2022.03: Imperial Russia. Equivalent to the first half of HIST 2220.06. Chronologically covers the imperial period of Russian history, from Peter the Great to the Revolution of 1917. FORMAT: Lecture/discussion CROS-LISTING: RUSN 2220.06 EXCLUSION: HIST 2020/X/Y.06, RUSN 2230.X/Y.06

HIST 2030/X/Y.06: Germany in the Nineteenth and Twentieth Centuries. Since unification in 1871, Germans have undergone an extraordinary variety of conditions and experiences, often in dizzying succession. The spectres of Nazism and genocide, in particular, remain matters of fundamental concern even to young Germans today. Less obviously, the tensions and divisions that preceded unification both in 1871 and 1990 did not disappear afterwards. German society continued to show all manner of divisions and fractures of gender, class, region, politics and religion. This class therefore emphasizes not so much the history of a single Germany as it does those of the many Germanies that have coexisted during the last two centuries. In their own work, students will be encouraged to explore the many facets of German social, cultural and political experience. NOTE: Students must register in, and pass, both PHYL 2030X and PHYL 2030Y. Credit will only be given upon the successful completion of both halves.

INSTRUCTOR(S): J. Bingham FORMAT: Lecture/tutorial

HIST 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 agrarian land to an industrial and financial power. Open to first-year students. No French required. 

RECOMMENDED: HIST 1001.03, or 1002.03, or 1003.03, or 1004.X/Y.06 

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

INSTRUCTOR(S): J. Bingham FORMAT: Lecture/tutorial EXCLUSION: HIST 2040/X/Y

HIST 2055.03: War and Society since 1945. This class examines the role of war, the development of military forces, and the changes in the international balance of power since 1945. Topics of discussion will include the Cold War, decolonization, ‘superpowers’, military alliances, and the ‘Third World’, nuclear weapons and deterrence theory; terrorism, guerilla warfare, and counter-insurgency; developments in conventional forces, war in Algeria, Indo-China, Korea and the Middle East. 

INSTRUCTOR(S): Bell, C. FORMAT: Lecture

HIST 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/tutorial CROS-LISTING: ITAL 2100/X/Y.06 EXCLUSION: HIST 2061.03

HIST 2061.03: Civilization of Baroque Italy. This is a scaled-down version of 2060/XY.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 2061.06

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 1001.03, or 1002.03, or 1003.03, or 1004.X/Y.06

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

INSTRUCTOR(S): J. Bingham FORMAT: Lecture/tutorial (audio-visual facilities as needed) EXCLUSION: HSTC 2022.03 RESTRICTION: Restricted to students in their second year or higher.

HIST 2082.03: Twentieth-Century Europe in Literature, Art and Film. A survey of contemporary European history that employs representative works of literature, art, architecture and film as well as traditional published records and monographic accounts to introduce students to major events of the twentieth century: the two world wars, the Russian Revolution, the political systems of Italian Fascism, German Nazism and Soviet Communism, the Holocaust and others.

RECOMMENDED: HIST 1001.03 or 1002.03 or 1003.03 or 1004.06

INSTRUCTOR(S): J. Bingham FORMAT: Lecture/tutorial EXCLUSION: HIST 2083.03, 2083.05 RESTRICTION: Restricted to students in their second year or higher.

HIST 2088.03: Greek Culture from Palace to Polis. See class description for CLAS 2214.03 in the Classics section of this calendar.

HIST 2089.03: Greek Culture from Polis to Cosmopolis. See class description for CLAS 2216.03 in the Classics section of this calendar.

HIST 2090.03: The Rise of Rome: 1000-31 BCE. See class description for CLAS 2221.03 in the Classics section of this calendar.
HIST 2091.03: The Roman Empire: Cycles of Collapse and Rebirth.
See-class description for CLAS 2232.03 in the Classics section of this calendar.

A survey of English history from the Norman Conquest in 1066 to decolonisation in the twentieth century. Topics include the growing authority of the central government, the role of religion and reform in politics, the expansion overseas, industrialisation, and the growth of parliamentary democracy. While the focus is political history, special attention will be given to the themes of gender and the peripheries. NOTE: Students taking this class must register in both X and Y in the same academic year; credit will be given only of both are completed consecutively.

INSTRUCTOR(S): Staff
FORMAT: Lecture
EXCLUSION: HIST 2151.03 and 2152.03
HIST 2101.03: Medieval England.
This course examines some of the major social, political, economic and cultural themes in English history from the reign of Alfred the Great to the Wars of the Roses. Major topics of study include the development and maturation of the English church, the impact of the Norman Conquest on Anglo-Saxon government and society, the development of the common law system, English manorialism, 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 1001/Y.06
INSTRUCTOR(S): C.J. Neville
FORMAT: Lecture/tutorial
EXCLUSION: HIST 2100X/Y.06
HIST 2106.03: Tudor and Stuart England, 1485-1688.
A survey of the major events, personalities, and developments in sixteenth and seventeenth century English history. Topics to be covered include the religious reformation, the achievements of the Elizabethan age, colonial expansion, the civil war, and the “Glorious Revolution.”

INSTRUCTOR(S): K. Kesseeing
FORMAT: Lecture
EXCLUSION: HIST 2110, HIST 2104, HIST 2105
HIST 2111.03: Modern Britain to 1884.
A survey of the development of British society from the reign of George III to the late Victorian era. This class will examine the emergence of class society, movements of popular protest, political reform, the growth of empire, and cultural change.

INSTRUCTOR(S): Staff
FORMAT: Lecture/tutorial
EXCLUSION: HIST 2100/06
HIST 2112.03: Modern Britain from 1880 to 1980.
This class will examine the development of British society from 1884 to the present day, touching upon the experience of Britain in two world wars, the growth of the welfare state, the decline of Britain’s empire and economy, the upheavals of the 1960’s and 1970’s and the emergence of Thatcherism.

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 course examines the factors that contributed to the making of Scotland as a British and European nation, from the departure of the Romans to the sixteenth century Reformation. After a brief introduction to the historical geography of Scotland the lectures examine a series of themes arranged in roughly chronological fashion, including the early peoples of “Dark Age” Scotland, the coming of the Normans, urban life, relations between core and peripheral regions in the kingdom, the Scottish manifestation of the European witch-hunt, the “problem” of the Highlands, and pre-Reformation religious, social and political life. Emphasis is laid on the distinct social and cultural developments of the northern kingdom in contrast to its larger neighbour, England. In an attempt to appreciate more fully the civilisation of this long period the reading of contemporary documents (in translation) constitutes an integral aspect of the class.

INSTRUCTOR(S): Staff
FORMAT: Lecture/tutorial
EXCLUSION: HIST 2151.03 and 2152.03
HIST 2211.03: Social History of Canada before 1870.
This course examines the social history of pre-Confederation Canada through such topics as: the impact of industrialization, social classes, conflict, the role of women, the state and social development, and relationships among the wide variety of social groups in Canada. Approved with Canadian Studies.

INSTRUCTOR(S): Staff
FORMAT: Lecture/tutorial
EXCLUSION: HIST 2210X/Y.06
HIST 2212.03: Social History of Canada since 1870.
This course examines the social history of Canada since Confederation through such topics as: the impact of industrialization, social classes, conflict, the role of women, the state and social development, and relationships among the wide variety of social groups in Canada. Approved with Canadian Studies.

INSTRUCTOR(S): Staff
FORMAT: Lecture/tutorial (evening)
EXCLUSION: HIST 2210X/Y.06
HIST 2221.03: Rough Justice - Order, Disorder and Canadian Popular Culture to the 1890s.
This class investigates the character of popular culture, the diversions, recreations and forms of community control engaged in by Canadians, and the attempts by authorities and the law to bring order to the culture. Topics range widely over the broad scope of popular culture, from sports, drinking and prostitution to religious organization. Study of the mechanisms and institutions for imposing order includes the criminal law, industrial discipline, and more respectable forms of cultural activity.

Approved with Canadian Studies.
INSTRUCTOR(S): Staff
FORMAT: Lecture/tutorial
EXCLUSION: HIST 3242/03, 3280A/3, 3281/3
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 3242/03, 3280A/3, 3281/3
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. English-French relations, federal-provincial relations, and regional disparities are key to this presentation of the development of contemporary Canada. Approved with Canadian Studies.

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

INSTRUCTOR(S): Staff
FORMAT: Lecture/tutorial
HIST 2231.03: The Making of Modern Canada: Canadian Political History, 1895 to the Present.
This course surveys the major political developments in Canadian history since 1895. 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.

HIST 2325.03: History of Canadian Culture.
This course explores the history of Canadian culture since the mid-nineteenth century, including art, architecture, music, literature, sport, and media. The course will examine cultural and religious diversity and the relationship between popular culture (heavily influenced by the United States) and “high” culture cultivated by the state.
FORMAT: Lecture and discussion

HIST 2250.03: History of the Canadian West.
The prairie west is one of the most beautiful places in Canada, but also one of the most overwhelming in its expanse and bewildering in its complexity. Our simple image of the prairie – golden wheatfields and enormous skies – hides a dramatic history of exploration and discovery, war and protest, and struggles to mature as a region within Canada. This course will ask: What makes the prairie west different? How has it shaped modern Canada? Approved with Canadian Studies.
INSTRUCTOR(S): C. Cumpled
FORMAT: Lecture/tutorial

HIST 2201.03: True Believers 1914 to Present - The Left and the Right in Canadian Politics.
The class will study the ideas and practices of Canadian political movements of the Left and the Right. We will attempt to understand why such movements have arisen and declined, and what significance they have had for Canadian politics and society. Topics will include: the Progressive movement; the CCF and NDP; Communism and Fascism; Social Credit; the radical right and the New Left; the Reform Party. Approved with Canadian Studies.
INSTRUCTOR(S): Staff
FORMAT: Lecture/tutorial

HIST 2271.03: Atlantic Canada to Confederation: The Northeast in the Age of Empire, 1450-1867.
A survey of the history of Atlantic Canada (the Maritimes and Newfoundland) from the 15th-18th century. Emphasis is placed on the pattern of change and conflict which, over time, forged a series of “limited identities” that gradually became elements of an emerging regional personality. Approved with Canadian Studies.
INSTRUCTOR(S): J. Bannister
FORMAT: Lecture/tutorial
EXCLUSION: HIST 2270.5/7/9

HIST 2272.03: Atlantic Canada since Confederation: Regionalism, Identity, and Development, 1867-2000.
A survey of the history of Atlantic Canada (the Maritimes and Newfoundland) from the 1860s to the present. Emphasis is placed on how episodes such as the “age of sail”, industrialization, class and gender, conflict, war, the struggle for human rights and a chronic effort to play “catch-up” with the rest of the nation have defined this region’s identity. Approved with Canadian Studies.
INSTRUCTOR(S): J. Bannister
FORMAT: Lecture/tutorial
EXCLUSION: HIST 2270.5/7/9

HIST 2331.03: Creation of an American Republic: The United States, 1580-1865.
This class studies the first example of a major theme of modern history: the nature of 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, thoroughly privatization of economic resources, social slavery, ethnic diversity, popular sovereignty, and religious pluralism. The republican revolution of 1776-1783 institutionalized these features in the new United States of America. But migration and growth, new technologies, ongoing conflict with First Nations and European states, and a new middle class culture of commerce, industry and reform increasingly strained the Union. By the mid-nineteenth century the United States faced the fate of so many post-colonial nations, irreconcilable sectional divisions.
INSTRUCTOR(S): Staff
FORMAT: Lecture
EXCLUSION: HIST 2330X/Y.06

HIST 2332.03: The American Republic from 1865 to 1990.
The United States has been the world’s most powerful nation for much of the 20th century. This class traces American preeminence from the sectional divides of the mid-19th century through the end of the Cold War in the late 20th century. Key themes include: a) continuities of migration and ethnic pluralism; conquest, expansion, and technological change; social and economic values and political culture; discontinuities b) the Civil War; the rise of big business; World War II; the Great Depression; communism and totalitarianism abroad; the civil rights movement; and the current crisis of New Deal liberalism.
INSTRUCTOR(S): S.J. Corke
FORMAT: Lecture
EXCLUSION: HIST 2330X/Y.06

HIST 2333.03: The Politics of Reform in Twentieth-Century America.
This class traces the domestic political history of the United States from the turn of the century to the Reagan era. Particular emphasis is placed on broad trends of change in 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
INSTRUCTOR(S): S.J. Corke
FORMAT: Lecture
EXCLUSION: HIST 2330X/Y.06

HIST 2335.03: Modern American Culture.
American mass culture has become familiar to billions throughout the world in this century. One would be hard pressed to discover in Germany, Japan, Brazil or Canada, college students unfamiliar with Elvis, Hollywood, adolescence, IQ, McDonald’s, the Beatles, 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, theories and gender roles, food and film. Recordings and movies supplement the lectures.
RECOMMENDED: HIST 2330X/Y.06
INSTRUCTOR(S): Staff
FORMAT: Lecture/tutorial
RESTRICTION: Restricted to students in their second year or higher

HIST 2336.03: The American Century: American Foreign Relations in the Twentieth Century.
More than six decades ago Henry Luce the editor of Time Magazine argued that the 20th Century was “the American Century,” and he urged the American people to shoulder the burden of such a destiny required. This course is designed to assess the 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 Cold 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, Detente, and the end of the American-Soviet rivalry.
INSTRUCTOR(S): S.J. Corke
FORMAT: Lecture
HIST 2381.03: Latin America.
This survey course offers an introduction to Latin America’s history, peoples, and politics from pre-colonial times to the present day. The course builds a foundational understanding of Latin America and its past, focusing on a broad range of Latin American countries. We will pay particular attention to issues of race, class, faith, and gender.
INSTRUCTOR(S): J. Heilman
FORMAT: Lecture
EXCLUSION: HIST 2386, HIST 2387
HIST 2382.03: Central America to 1795.
See class description for SPAN 2070.03 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 2100.03 in the Spanish section of this calendar.
HIST 2385.03: The Cuban Cultural Revolution.
See class description for SPAN 2110.03 in the Spanish section of this calendar.
HIST 2386.03: Colonial Latin America.
This lecture course offers an introduction to Latin America’s colonial period. Stretching from pre-colonial times to independence, this course examines the peoples, politics, and cultures that comprised Latin America between the fourteenth and early nineteenth centuries. The course pays particular attention to issues of race, gender, class, and faith.
INSTRUCTOR(S): J. Heilman
FORMAT: Lecture
EXCLUSION: HIST 2386
HIST 2387.03: Latin America Since Independence.
The course will survey Latin America’s post-colonial 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 2386
HIST 2392.03: Introduction to Caribbean History (1450 to the Present).
This course provides a survey introduction to the history of the Caribbean basin with special emphasis on Cuba, Jamaica, and Saint-Domingue/Haiti. It covers the period from the mid-fifteenth century to the present day. Themes covered include: European conquest, the emergence of plantation economies, African slavery, revolutionary movements, abolition and emancipation, multi-ethnic and inter-racial relations, relations with the US, nationalism, race, religions, and music.
FORMAT: Lecture
PREREQUISITE: none but HIST 1901.03 and HIST 1902.03 are recommended
EXCLUSION: HIST 3902.03
HIST 2425.03: Africa Before 1900.
Modern histories 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 Oriental slave trades, Indian Ocean connections, the spread of Islam, and the early stages of colonial rule.
INSTRUCTOR(S): P.S. Zachernuk/G. Kynoch
FORMAT: Lecture/tutorial
EXCLUSION: HIST 2410.03 and 2423.03
HIST 2426.03: Africa Since 1900.
This class examines the nature of African states, societies and economies from the colonial period to the present, seeking the historical context for contemporary African dynamics. Some questions of interest include: How have development projects changed Africa? What are the myths and realities of neo-colonialism? How have Africa’s political traditions supported quests for national stability? How have all these affected men’s and women’s lives?
INSTRUCTOR(S): G. Kynoch/P.S. Zachernuk
FORMAT: Lecture/tutorial
EXCLUSION: HIST 2423.03
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 19th century, and its attempts to maintain territorial and economic integrity against the competing forces of European imperialism, nationalism, and capitalism in the 19th century. The class will end with World War One and the dissolution of the Ottoman sultanate.
INSTRUCTOR(S): A. Ghazal
FORMAT: Lecture/discussion
HIST 2503.03: From Cordoba to Jakarta: Islamic Civilizations in a Global Perspective (Seventh-Eighteenth Centuries).
This course will introduce students to the Islamic 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 displacing of Byzantine control in the Holy Land and the collapse of the Swatian Empire in Persia, the Arab-centric society of Mecca and Medina had become an empire of unprecedented size and ethnic complexity. The class will examine the respective Umayyad and ‘Abbasid dynasties, as well as the slave states of the Saltaka and Mamluks. The final portion of the course will focus on the gunpowder empires of the Ottomans, Safavids, and Mughals. The central theme of this course will be an examination of the Islamic community, or umma, from its earliest days and how it interacted over the next thousand years with different surrounding traditions and cultures in the Mediterranean, the Indian Subcontinent, the Caspian, 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 hierarchal urbanism.
INSTRUCTOR(S): C. Mitchell
FORMAT: Lecture
CROSS-LISTING: RELS 2503.03
EXCLUSION: First-year students and HIST 2501.03
HIST 2504.03: History of the Modern Middle East in the 20th Century.
This class will focus on contemporary history of the Middle East from World War One onwards. It will pay particular attention to the Mandate period of the 1920s and 1930s, and the subsequent creation of the state of Israel in 1948. Other topics will be covered: pan-Arabism, the Arab League, the rise of the 11th assemblies, and the ongoing Palestinian-Israeli conflict.
INSTRUCTOR(S): A. Ghazal
FORMAT: Lecture/discussion
HIST 2510.03: Modern History of South Asia.
This course will examine the region of South Asia from the mid-19th century - the height of the British Raj - to the present. Areas of concentration will include resistance to British rule, rise of the Congress Party, the 1947 Partition, and subsequent decolonization. The respective histories of modern India, Pakistan, and Bangladesh will be examined against the backdrop of nationalism, communism, and regional conflict.
INSTRUCTOR(S): C. Mitchell
FORMAT: Lecture
HIST 2520.03: Ancient Israel in her Near Eastern Context.

See class description for CLAS 2220.03 in the Classics section of this catalog.

HIST 2614.03: Making Gender - Male and Female from Antiquity to Mary Wollstonecraft.

This class examines the diverse and fascinating ways western cultures have constructed and conveyed the meanings of gender. The history of women informs us about the once little-known history of femininity. And, as a result, historical changes in definitions of masculinity become visible. The meanings of gender are exposed in this class through topics such as: the origins of western civilization, the Galenic one-sex model of physiology, patristic theology, the cult of curiously lovely, eighteenth-century salons; and the rights of man.

INSTRUCTOR(S): S.M. Titelbaum
FORMAT: Lecture/tutorial
CROSS-LISTING: GYST 2300.03

HIST 2615.03: Making Gender - Male and Female from the American Revolution to the Present.

This class examines the diverse and fascinating ways western cultures have shaped the meanings of gender. The history of women informs us about the once little-known history of femininity. And, as a result, historical changes in definitions of masculinity become visible. The meanings of gender are explored in this class through topics such as: the doctrine of separate spheres, the family wage, the homosexual, imperialism, citizenship, welfare dependency, and infertility.

INSTRUCTOR(S): S.M. Titelbaum
FORMAT: Lecture/tutorial
CROSS-LISTING: GYST 2301.03

HIST 2711.03: Struggles that Shaped the Modern World: 1600-1900.

European expansion from the 16th century reshaped the global economy, obliterating 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 increasing power 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 pursuare their interests through resistance, accommodation, coercion, cooperation and isolation. This course explores the reasons why select societies navigated these encounters to better understand the intricate patterns of linkage and division that mark our world in modern times.

INSTRUCTOR(S): P. Zacherls
FORMAT: Lecture


After World War II, African and Asian nationalists pressed home their claims for independence from colonial rule. During the Cold War, the movements for social reform in the so-called Third World combined with these nationalist traditions to create many enduring sites of conflict. This course explores the strategies, successes and failures of these movements of opposition, assessing their impact in shaping the 20th century.

FORMAT: Lecture

HIST 2995.03: History of Modern Medicine, 1800-1950.

This class examines the state of medicine in 1800, 1850, 1900 and 1950, and the transition of American and Canadian medicine from a low status, ineffective, poorly trained group of competing sects to what it is today. For each of the four periods the emphasis is on medical training, the diagnostic and therapeutic capabilities of physicians, their views on disease etiology, their attempts to control the size and quality of the profession and to prohibit the entry of women, and the scientific breakthroughs that were made.

FORMAT: Lecture/discussion
CROSS-LISTING: BIOL 3404.03
EXCLUSION: HIST 2295.03

HIST 3000.03: Topics in Early Modern European History.

Topics to be studied and researched will vary from year to year. In some years, the geographical focus may be Britain, while in others it will be western Europe more generally. Topics may include the religious reformatons; 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 rather with topics that have no strict chronological limits. Subjects of study include monasticism, heresy, education and the universities, town and cathedral, lay-clerical conflict, and "popular" concepts of religion. Each year several topics are examined in detail, with the help of original documents in translation, and using recent periodical literature and/or monographs. Students prepare two versions of a well-researched paper, and class discussions are used to explore related materials and readings in greater depth. Some prior knowledge of medieval European history is essential.

INSTRUCTOR(S): C.J. Neville
FORMAT: Lecture/discussion
PREREQUISITE: HIST 3006.06 or HIST 1005.06 or HIST 2001.03 or HIST 2002.03 or HIST 2015.03
CROSS-LISTING: RELS 3008.03
EXCLUSION: HIST 3015.03 and 3022.03

HIST 3003.03: England and the Celtic Realms. 1000-1603.

This class examines the social, political and cultural history of the Gaelic speaking peoples of the British Isles from c. 1000 to the union of the crown in 1603, with particular emphasis on relations between the peoples of Wales, Scotland, and Ireland on the one hand, and the culture of the English kingdom on the other. The course begins with a comparative study of such fundamental Celtic institutions as the family, kinship, the law, and the church at the end of the first millennium, and on the various sources that inform the early history of the three realms. It then examines the considerable depth the penetration and influence of European ideas into all three in the aftermath of the Norman Conquest of England 1066, and in the centuries that followed. Classes are conducted in the form of lecture/ tutorials, that is, a single lecture once a week is followed by a tutorial in which readings relating to the lecture topic are discussed. In an attempt to appreciate more fully the civilisation of the period, the reading of contemporary works (in translation) constitutes an integral part of the class.

INSTRUCTOR(S): C.J. Neville
FORMAT: Lecture/discussion
PREREQUISITE: A 1000- or 2000-level class in medieval history
CROSS-LISTING: HIST 3705.03

HIST 3006.03: Renaissance and Reformation Europe, 1348-1559.

This survey of the major themes, subjects, and personalities in western European history from the Italian Renaissance to 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 2305.03, 2320.03

HIST 3007.03: The European Enlightenment.

This course examines eighteenth-century European Enlightenment and the continuing controversies over its interpretations and its legacies. Class discussions will focus on Enlightenment debates on religion, gender, science, non-European people, society and government, and the possible impact of the Enlightenment on the French Revolution.

INSTRUCTOR(S): J.T. Piekacz
FORMAT: Seminar
CROSS-LISTING: HIST 4045.03
PREREQUISITE: One European history course.
FORMAT: Seminar.
INSTRUCTOR(S): J.T. Pekacz.

The course looks at the historical development of the norms and practices surrounding sexuality and family relations, with special focus on the changes wrought by the sixteenth-century religious reformation. It focuses on the development of a modern understanding of sexuality. Topics include: divorce, adultery, marriage, family and gender roles, and prostitution.

CROSS-LISTING: GWST 3013.03
PREREQUISITE: One previous history course.
FORMAT: Lecture/discussion.
INSTRUCTOR(S): K.J. Kesselring.

HIST 3020.03: Fall of the Roman Republic.
PREREQUISITE: One 2000 level class in European or modern British history
FORMAT: Seminar.
INSTRUCTOR(S): C. Bell.

HIST 3030.03: Sex and Gender in Reformation Europe.
PREREQUISITE: One European-history course.
FORMAT: Lecture/discussion.
INSTRUCTOR(S): G. Hanlon.

HIST 3045.03: The French Revolution.
PREREQUISITE: FYP or some background in early modern or medieval history.
FORMAT: Lecture/discussion.
INSTRUCTOR(S): J. Bingham.

HIST 3046.03: The Holocaust.
PREREQUISITE: one previous history course.
FORMAT: Seminar.
INSTRUCTOR(S): J. Bingham.

HIST 3051XY.06: Fascist and National Socialist Movements in Europe, 1900-1945.
PREREQUISITE: One European-history course.
FORMAT: Lecture/discussion.
INSTRUCTOR(S): J. Bingham.

HIST 3052.03: Fascist and National Socialist Movements in Europe, 1900-1945.
PREREQUISITE: One European-history course.
FORMAT: Seminar.
INSTRUCTOR(S): J. Bingham.

HIST 3053.03: Fascist and National Socialist Movements in Europe, 1900-1945.
PREREQUISITE: One European-history course.
FORMAT: Seminar.
INSTRUCTOR(S): J. Bingham.

HIST 3054.03: Europe and World War Two.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3055.03: The Holocaust: The Destruction of the Jews of Europe, 1933-1945.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3056.03: The Holocaust: The Destruction of the Jews of Europe, 1933-1945.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3057.03: History of Marine Sciences.
PREREQUISITE: One 2000-level class in European or modern British history.
FORMAT: Lecture.

HIST 3058.03: Russian Topics.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3059.03: Russian Society.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3060.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3061.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3062.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3063.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3064.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3065.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3066.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3067.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3068.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3069.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3070.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3071.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3072.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3073.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3074.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3075.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3076.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3077.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3078.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3079.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3080.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3081.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3082.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3083.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3084.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3085.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3086.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3087.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3088.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3089.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3090.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3091.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3092.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3093.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3094.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3095.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3096.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3097.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3098.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3099.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.

HIST 3100.03: Science and Religion: Historical Perspectives.
PREREQUISITE: One previous history course.
FORMAT: Lecture.
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 Review 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): K.J. Kesselring
FORMAT: Seminar
CROSS-LISTINGS: RUSS 3094.03

HIST 3096.03: The History of Ideas in Russia - From Official Nationality to Solzhenitsyn's Neo-Slavophilism.
This class examines some of the main currents in Russian intellectual history from the middle of the nineteenth century through the 1990s. Topics include classical Slavophilism and early Westernism, Populism and Nihilism, Anarchism, Marxism, Leninism, Socialist Realism, anti-Stalinism, Glasnost, neo-Westernism (Sukhanov), and neo-Slavophilism (Solzhenitsyn).
RECOMMENDED: HIST 3020.00
INSTRUCTOR(S): Staff
FORMAT: Lecture/discussion
CROSS-LISTINGS: RUSS 3096.03

HIST 3102.03: Seminar in Tudor History, 1485-1603.
This class examines in depth the major events, personalities, and developments of sixteenth-century England. Topics include the dissolution of the monasteries, formation of the state, the reformation in religion and their broader effects, royal propaganda, political culture, and the achievements of the Elizabethan age. Class discussions will rely on detailed readings of primary sources and historiographical debates. Students will be expected to produce a major, well-researched essay. Some prior knowledge of early modern English history is essential.
INSTRUCTOR(S): K.J. Kesselring
FORMAT: Seminar
PREREQUISITE: One previous British history class
EXCLUSION: HIST 2104

HIST 3103.03: Seminar in Stuart History, 1603-1688.
This class examines in depth the principal events of seventeenth-century English history. Topics include the fear of Catholicism at home and abroad; the causes and course of the civil war, including the growth of radical political thought; the Cromwellian regime; the importance of Parliament; the Restoration; and the Revolution of 1688. Class discussions will rely on detailed readings of primary sources and historiographical debates. Students will be expected to produce a major, well-researched essay. Some prior knowledge of early modern English history is essential.
INSTRUCTOR(S): K.J. Kesselring
FORMAT: Seminar
PREREQUISITE: One previous British history class
EXCLUSION: HIST 2103

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 pursues the origins of the modern English family by tracing the history of household organization, family and sexual relations in England between 1580 and 1880. 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 3104.03, 2301.03
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 became labeled as beyond the boundaries of acceptable society and how such labeling affects practice and experience.
INSTRUCTOR(S): Staff
FORMAT: Seminar
PREREQUISITE: One previous history class

Aspects of daily life are often assumed to be “outside” of History, either unchanged 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; 2114.03; 3115.03; 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; 3115.03; 2030X/Y.06; 2081X/Y.06.

HIST 3114.03: Britain in the age of the Second World War.
This class examines in depth major themes in British history from the early 1930s to the early post-war years, including the great depression, appeasement and the outbreak of the Second World War, the experience and impact of war, wartime politics and strategy, the welfare state, the post-war Labour government and the transition to peace.
INSTRUCTOR(S): C. Bell
FORMAT: Lecture/discussion
PREREQUISITE: One of the following: HIST 2111.03; 2112.03; 3112.03; 3113.03; 2030X/Y.06; 2081X/Y.06.
HIST 3116.03: Advanced Seminar in British History - Culture, Class, and Society in Twentieth-Century Britain.

How do the arts reflect social and political change? This course 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-racial society, how these effects social relationships, constellations, and other social and political 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 5160.03

HIST 3210.03: Canadian Cultural Landscape.

This course explores the origins of one "signature" landscape in each province. Contact with different geographies shaped distinctive regional histories; but at the same time, the story of each place is tied to the national narrative. These landscapes also illuminate how nature has been understood, used, and transformed since the fifteenth century.

INSTRUCTOR(S): C. Campbell
FORMAT: Lecture and Discussion
CROSS-LISTING: CANA 3020

HIST 3220.03: Youth Culture in Canada, 1950s to 1970s.

The 1950s and 1960s were decades of often startling social change throughout North America in general and in Canada in particular. This class will attempt to understand these changes and their impact on our society. The primary focus of the investigation is the popular youth culture of the time, the "culture of 'sex, drugs and rock n' roll.'" The class will look at economic and social factors underlying youth culture, at some of the major thinkers who influenced it (such as Marshall McLuhan and Herbert Marcuse), and the responses of authority to youth culture. Approved with Canadian Studies.

RECOMMENDED: HIST 2222.03
FORMAT: Lecture/tutorial
PREREQUISITE: One previous history class

HIST 3222.03: Topics in Canadian Social History, Nineteenth and Twentieth Centuries.

This seminar will explore major themes in Canadian social development. The topics discussed will vary from year to year but will emphasize such themes as changing values in Canadian society; the nature of popular cultures; the relationship of order and disorder; the family, gender, religion; and social classes. Approved with Canadian Studies.

RECOMMENDED: HIST 2222.03
FORMAT: Lecture/tutorial
PREREQUISITE: One previous history class

HIST 3223.03: The Caring Society? - Welfare in Canada since 1900.

This class examines changes over the twentieth century in the ways Canadians have dealt with people's needs, their own or others', whether for income, housing, personal care, or other matters of survival and well-being. Both private and government forms of welfare provision will be studied, with the overall purpose of understanding why Canada came to have the kind of welfare state it does. Among the topics that may be covered are: changing views on the origins and prevention of dependency; definitions of need; religious and ethnic variations in welfare practices; connections between welfare and women's lives; charitable fund-raising; promoters and opponents of government social programs; financing the welfare state; gender, race, class, and constitutional, and class issues in welfare. Approved with Canadian Studies.

INSTRUCTOR(S): S. Tillotson
FORMAT: Lecture/tutorial or seminar
PREREQUISITE: HIST 1862X/Y.06 or HIST 1867X/Y.06 or HIST 2212.03 or HIST 2226X/Y.06 or HIST 2227.03
CROSS-LISTING: HIST 5223.03

HIST 3226.03: Law and Justice in Canadian Society, to 1890.

Discusses order and disorder in the Canadian society of the 19th century. We will attempt to understand the development of the legal system in Canada, the nature of crime, and the changing roles of criminals, criminals, and the public in the late 19th century. We will also try to understand the effects of legal 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 3225.03

HIST 3227.03: Criminal Law, Crime and Punishment in Canadian Society, 1890 to the Present.

Continuing the approach and themes of HIST 3226.03, this class studies crime, punishment, and the criminal law as they reflect social, economic, political, and ideological developments. As appropriate these are placed within their international context, and in particular linked to the American system of law and justice. We pay attention to the impact of technological change on crime, detection of crime, enforcement mechanisms, and alternative methods of punishment. Approved with Canadian Studies.

RECOMMENDED: One previous history class
INSTRUCTOR(S): R. Blaisdale
FORMAT: Lecture/discussion
EXCLUSION: HIST 3225.03

HIST 3228X/Y.06: Religion in Canada.

We analyze shifting patterns 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.

EXCLUSION: HIST 3225.03

HIST 3229X/Y.06: Religion in Canada.

See class description for REL 3800X/Y.06 in the Comparative Religion section of this calendar.

HIST 3245.03: French Canada.

Given in English for English-speaking students, this class studies the development of French-Canadian nationalist politics in its social, cultural, philosophic and economic contexts. While the emphasis is on Quebec-Canada relations, French-Canadians in the Maritimes, Ontario and the West will also be studied. Approved with Canadian Studies.

INSTRUCTOR(S): S.M. Tillotson
FORMAT: Lecture/discussion
PREREQUISITE: One class in Canadian history, or instructor's consent
EXCLUSION: HIST 2240.05

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 nationalism, the opening of new frontiers; politics and ideology. Approved with Canadian Studies.

FORMAT: Lecture/discussion
PREREQUISITE: A survey of Canadian history or HIST 1862.06 or HIST 1867.06

HIST 3260.03: History of the Canadian West.

This class takes a thematic approach within a chronological framework, exploring social, economic and political topics in the development of Western Canada. Among the themes considered are: Native economies, political dissent, labour radicalism, ethnic relations, and federal-provincial relations. Approved with Canadian Studies.

FORMAT: Seminar or lecture/discussion
PREREQUISITE: A class in Canadian history
EXCLUSION: HIST 2250.03

Download this document here: https://www.history.ualberta.ca/
HIST 3273.03: Nova Scotia: Pre-Conference.
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-Conference.
This course 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 3270.06

HIST 3282.03: Public History.
This course explores major issues and debates in the practice of history outside the academy. Against such theoretical concepts as the usable past and the challenge to the nationalist narrative, we will examine critically the presentation and politics of history in the arts, media, historic places, memorials and state policy.
FORMAT: Lecture/discussion
PREREQUISITE: One second-year course in history
EXCLUSION: HIST 3222.02 in 2005-2006

HIST 3292.03: Wealth and Power in North America.
Business enterprises have played a major role in shaping the social and political as well as economic development of the United States and Canada over the past two hundred years - perhaps more so than in most other modern nations. This class explores the growth and significance of business in the history of these two countries. Among the topics covered are: entrepreneurship, technical innovation and economic growth; the rise of big business and management organization; the convoluted and controversial linkages of business and government; and the emergence of multinational enterprises and their impact on Canadian-American relations. Approved with Canadian Studies.
RECOMMENDED: A survey class in United States or Canadian history
FORMAT: Seminar
PREREQUISITE: One class in Canadian or United States history, or an appropriate class in a related discipline.
EXCLUSION: HIST 3292.03

This course examines the emergence and transformation of the global economic system known as Fordism, beginning with Henry Ford's revolutionary marriage of mass production with mass consumption in 1914. Topics to be explored include: technological change in the workplace; the relationship between industrial unionism and radical political movements; the gender, racial and religious politics of Fordism; and the growth of mass culture in the era of mechanical reproduction.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Seminar
PREREQUISITE: At least one previous History credit; second-year standing or better
EXCLUSION: HIST 3292

HIST 3300.03: Family and Community in North America, 1450-1870.
This course examines aspects of the historical development of the Americas from the beginnings of European imperialism in the fifteenth century to the emergence of nation states in the nineteenth century. It explores topics such as relationships between Aboriginal and European populations, religion and socio-economic development, popular culture and gender, imperialism and the slave trade, the development of slavery; the rise of revolutionary ideologies; the American and Haitian Revolutions; and the impact of civil wars.
INSTRUCTORS: J. Banister
FORMAT: Lecture/discussion
PREREQUISITE: Any one of HIST 2331, HIST 2006, HIST 2007, or permission of instructor

HIST 3302.03: Technology and History in North America.
The effects of technology on our lives are ever-present, from debates over the ethical uses of biogenetics to promises of a glowing future through "high-tech" enterprises and computer networking. The continuing impact of technological change has been a central feature of the history of the United States and Canada since the Industrial Revolution in the nineteenth century. This class examines aspects of this history, including the origins of technological innovation, the impact of technological change on the household, the workplace, the environment as well as broader economic and political events. Approved with Canadian Studies.
RECOMMENDED: One class in Canadian or United States History
FORMAT: Lecture/Discussion

HIST 3331.03: The United States, Canada and the World.
At the end of the Second World War the United States was the world's foremost military and economic nation, and Canada had gained a sense of autonomy as an emerging "middle power". This class focuses on the foreign relations of these two countries through the Cold War and post-Cold War era, 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
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 Socialis Republics - manifested in the post World War era and continued until George Bush and Mikhail Gorables proclaimed its end in 1989. In order to explore this topic in this course we will examine a number of issues including: the origins of the cold; the Korean War; the Cuban Missile Crisis; the Nuclear Arms Race; détente and the end of the Cold War. Rather than concentrating on the events as they unfolded, however, this course will focus on questions of interpretation and methodology. Toward this end, the seminars are designed to introduce students to both the historiography of the period under question and to some of the theories historians have used to think about and/or interpret the Cold War experiences.
CROSS-LIST: HIST 3335.03
INSTRUCTORS: S.J. Corrie
FORMAT: Lecture/discussion
PREREQUISITE: Any 3000 or 2000 level North American history course

HIST 3350.03: Family and Community in North America, 1600-1900.
The family in North American society, from 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
European colonial rulers and business interests laid out the framework of the sub-Saharan African colonial order from about 1850 to the 1920s, seeking ways to exploit African labor and natural resources. But imperial plans were limited and sometimes frustrated by African interests, and by historical dynamics within Africa, such as the rise of new merchants and Islamic revolution. This class assesses how the evolution of Africa intersected with European imperial ambitions to profoundly change African society during this early colonial period.
INSTRUCTOR(S): P. Zachernuk
FORMAT: Lecture/discussion
CROSS-LISTING: HIST 5430.03
EXCLUSION: HIST 3450X/Y.06
PREREQUISITE: Any 2000-level African history class or permission of the instructor

HIST 3431.03: Struggles in The City: Labor, Migration and Urban Life in Colonial Africa.
There were many important urban centres in pre-colonial Africa; however, colonialism and industrialization changed both the pace and nature of urbanization. Old cities grew and new cities and mining settlements were established. Africans came to labor in these colonial cities for a host of reasons - some were forced off their homesteads when settlers and colonial governments appropriated vast tracts of land, others needed to enter the cash economy to pay colonial taxes; women and men sought new opportunities and adventure. This movement to the cities transformed the lives of millions of Africans. This course will focus on the lives of these urban dwellers, the development of urban cultures, the gendered character of urbanization, the creation of new social, political, economic and criminal networks, conflict and cooperation amongst urbanites, and the nature of colonial oppression and control in the cities.
INSTRUCTOR(S): G. Kynoch, P. Zachernuk
FORMAT: Lecture/discussion
CROSS-LISTING: HIST 5431.03

HIST 3435.03: The Rise and Fall of African Slavery.
Many African societies, like pre-industrial societies elsewhere, used slaves as well as other forms of labor for a variety of purposes. The rise of external slave trades after 1700 — notably across the Atlantic and Sahara — transformed many African societies into specialized slave exporters. As external slave trades declined in the 19th century, many African societies used the special slave labor to produce exports, and 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, race and class structure.
INSTRUCTOR(S): P. Zachernuk
FORMAT: Lecture/discussion

HIST 3451.03: Southern Africa to 1860.
Examines the history of Southern Africa before the coming of the mineral revolution. The class focuses on South Africa, but with a regional perspective. Themes include the nature of Khoi and San societies, the expansion of Bantu-speakers, Dutch settlement and administration of the Cape colony, the rise of the Zulu, Shaka’s empire and the Zulus, the British takeover from the Dutch, the impact of the humanitarian movement and the Great Trek, African peoples 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 3450U.01

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, 2133.03, 2132.03
INSTRUCTOR(S): G. Kynoch
FORMAT: Lecture/discussion

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 modernize Egypt. New Islamic states founded in the west developed plantation economies, of coffee and sugar. On the Atlantic coast, merchant princes made their fortunes supplying tropical goods for Europe’s Industrial Revolution. In Central Africa the search for slaves and ivory both remained large and new internal migrant labor developed. In the south, the rise of Zulu power generated waves of conquest and consolidation. This class assesses the extent to which Africa was reshaped in the revolutionary century before colonial partition.
INSTRUCTOR(S): P. Zachernuk
FORMAT: Lecture/discussion
PREREQUISITE: Any 2000-level African history class or permission of the instructor

HIST 3471.03: Wars and Revolutions in Twentieth-Century Africa.
Africa as portrayed in the Western media is a continent plagued by bloody conflicts. All too often these conflicts have not been carefully explained, rather they have been written off as “tribal” squabbles or incomprehensible episodes of hereditary. This course will examine several types of conflicts throughout the twentieth-century and will seek questions to such questions as: What initiated these conflicts? What were the combatants fighting for? How did these conflicts influence wider social, economic and political developments? In what ways did colonial policies and the colonial legacy influence African conflicts? What role has the international community played in African conflicts? What role have African elites or local communities played in these conflicts? Grappling with these questions will allow us to move beyond simplistic explanations to acquire a better understanding of the wars and revolutions that have so marked twentieth-century Africa.
INSTRUCTOR(S): G. Kynoch, P. Zachernuk
FORMAT: Lecture/discussion
CROSS-LISTING: HIST 5471.03

HIST 3500.03: Topics in Global History.
This is a special course dedicated to these topics which comprises a multi-regional, global theme treated in the early modern and modern eras. Topics will vary, but possible course themes include: History of Slavery from a Global Perspective, Rise of Early Modern world-systems, and Colonialism and Ideology in Asia and Africa.
FORMAT: Lecture
PREREQUISITE: Instructor permission

HIST 3505.03: 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 sultans across Spain, North Africa, the Levant, Iran, Central Asia, and South Asia between 750 and 1400. Emphasis will be placed on the role of heterodoxy and the emergence of numerous Islamic communities and movements in the Islamic world. The focus will also be on the An-Na`ibs as the Abbasid Empire (750-1258) struggled to maintain political and doctrinal unity. There will also be a discussion of: What initiated these conflicts? What were the combatants fighting for? How did these conflicts influence wider social, economic and political developments? In what ways did colonial policies and the colonial legacy influence African conflicts? What role has the international community played in African conflicts? What role 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 5475.03

150 History
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 Constitutional Revolution of 1906, the rise and establishment of the Persianate World. Special emphasis is given to the shipping industries and maritime roles of the state, capital, and labor; and the features of seafaring culture. An examination of our maritime heritage. Within the context of these overlapping periods - the age of discovery, the age of sail, and the age of steam - the focus is on the development of merchant and naval fleets; the roles of the state, capital, and labor; and the features of seafaring cultures. Special emphasis is given to the shipping industries and maritime traditions of this region. Approved with Canadian Studies.

INSTRUCTOR(S): C. Mitchell
FORMAT: Lecture/tutorial or seminar
PREREQUISITE: HIST 2502.03 or HIST 2503.03 or HIST 2504.03 or permission of the instructor
EXCLUSION: HIST 3750.03 in 2006-07

HIST 3750.03: Social History of Seafaring: Maritime Culture in the Age of Sail.
An examination of our maritime heritage. Within the context of these overlapping periods - the age of discovery, the age of sail, and the age of steam - the focus is on the development of merchant and naval fleets; the roles of the state, capital, and labor; and the features of seafaring cultures. Special emphasis is given to the shipping industries and maritime traditions of this region. Approved with Canadian Studies.

INSTRUCTOR(S): C. Mitchell
FORMAT: Lecture/tutorials or seminar
PREREQUISITE: HIST 2501.06 or HST 2502.03 or HST 2503.03 or HST 2504.03 or HIST 2504.03 or permission of the instructor
EXCLUSION: First-year students.

HIST 3751.03: Topics in Modern History.
This class will explore major themes in the history of the 19th and 20th centuries. Topics discussed will vary from year to year, but the class will involve an in-depth examination of a selected subject in modern history, and may include an historiographical, comparative, or interdisciplinary dimension.

INSTRUCTOR(S): A. Ghazal
FORMAT: Lecture - Discussion
PREREQUISITE: HIST 2019.06 or HIST 2015.03 or HIST 2041.03 or permission of the instructor

HIST 3985.03: The Human Record: A Short History of History from Antiquity to the Nineteenth Century.
How did we come to study history? In what ways does our understanding of the past differ from that of our ancestors? Do different cultures through 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" sources from Thucydides and Sima Qian in antiquity to Leopold von Ranke in the nineteenth century. Attention will also be paid to the development of alternative or subversive historiographical traditions within different societies, to the problem of historical dissent, and to the historiographical cultures of non-western societies, especially Chinese and Islamic. (Recommended for History Majors and Honours students.)

FORMAT: Lecture/seminar
PREREQUISITE: HIST 2901.03 or HST 2902.03 or HST 2903.03 or permission of the instructor
EXCLUSION: First-year students.
HIST 4003.03: Medieval Civilization.
Each year several topics are chosen, broad enough to be used as central themes in the context of which medieval civilization may be closely examined; for instance, monasticism, universities, peasants and popular culture. Such topics are studied in some depth, where possible using original sources in translation, and recent periodical literature and/or monographs. Students master the basic work in certain areas, but are also encouraged to develop particular topics in more depth. Class discussions are used to unravel controversies or difficult aspects. Students are expected to contribute to such discussions and to write one or two well-argued and documented papers. Some prior knowledge of medieval European history is essential.
INSTRUCTOR(S): C.J. Neville
FORMAT: Seminar
PREREQUISITE: HIST 2100.06 or 2101.03 or 3001.03
CROSS-LISTING: HIST 5105.03
EXCLUSION: HIST 3000.06, HIST 3001.03
HIST 4004.03: Crime and Society in Post-Conquest England.
This class explores the development of the criminal law in England between 1066 and 1300. After some introductory lectures by the instructor on the legacy of Anglo-Saxon legal norms and the creation of the royal 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, inquest sessions headed by the justices of assize, and the central court of the King's Bench. The origins and elaboration of particular offences, including treason, felony (murder, rape, arson, burglary, and larceny), and trespass are examined. Emphasis is placed on the social aspects of crime in medieval England, and extensive use is made of recent periodical literature dealing with crime and its effect in this period.
INSTRUCTOR(S): C.J. Neville
FORMAT: Seminar
PREREQUISITE: HIST 2100.06 or 2101.03 or HIST 3003.03
CROSS-LISTING: HIST 5003.03
EXCLUSION: HIST 3004.05, HIST 3005.03, and 3011.06
HIST 4045.03: The French Revolution.
The seminar will focus on current interpretations of the French Revolution. Each time the seminar is offered, it may focus on a specific theme related to the French Revolution. This may include: continuity or change in the origins of the French Revolution since the collapse of the Marquis “consensus” in the 1980s, and the attempts to resolve the controversy in the most recent scholarship on the major interpretations of the Terror in the French Revolution, the legitimacy of revolution as a tool of social and political change, and the legacy of the Terror for modern political culture.
INSTRUCTOR(S): J.T. Pekar
FORMAT: Seminar
PREREQUISITE: One European history course
CROSS-LISTING: HIST 5064.03
This class explores the nature and development of the English criminal justice system during the period in which it first began to be exported to other areas, and at home had to deal with the turmoil wrought by religious war and political revolution. This class will use 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 legitimate 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. Kewatting
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 eventful periods in British history, that leading up to and including civil war and revolution 1642 to 1660. Select primary sources will be used in addition to secondary works. Topics to be studied include the social structure of early Stuart England; the Church and its critics; foreign policy; radical politics; the military course of the war; religious sectarianism; and the impact of the war and its aftermath on the populace.
FORMAT: Seminar
PREREQUISITE: Any class in medieval or early modern British history
CROSS-LISTING: HIST 5105.03
HIST 4106.03: Topics in Early Modern English History.
Topics to be studied will vary from year to year, and may include the religious reformations, print culture, political protest, and state formation. The course will offer students the opportunity to examine in depth key features of English history in the sixteenth and early seventeenth centuries.
FORMAT: Seminar
PREREQUISITE: HIST 2106
HIST 4110XY.03: Rome and the East.
This course is 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 extensive writings in shaping the historical records.
INSTRUCTOR(S): C.M. Bell
FORMAT: Seminar
HIST 4160.03: Advanced Seminar in Baroque Culture.
This experimental class will offer a small group of Honours and graduate students in Theatre, History, and other related disciplines a first-hand opportunity to study European Baroque culture while surrounded by its material traces. Topics covered include: seventeenth- and eighteenth-century theatre and opera, historical costume, Baroque court life; and/or the history of Central Europe. Faculty and local experts in the UNESCO-heritage town of Cesky Krumlov in the Czech Republic. For a complete class description see THEA 4733.03 in the Theatre section of this calendar.
FORMAT: Lecture/lab
PREREQUISITE: Permission of the Departments of Theatre and History
CROSS-LISTING: THEA 4735.03
HIST 4162XY.06: Advanced Seminar in Baroque Culture.
Taught at the State Castle, Cesky Krumlov, in the Czech Republic, this class offers undergraduate students in History, Theatre and related disciplines the opportunity to study European Baroque culture while surrounded by its material traces. Topics covered include: seventeenth- and eighteenth-century theatre and opera, historical costume, Baroque court life; and/or the history of Central Europe. Faculty and local experts in the UNESCO-heritage town of Cesky Krumlov in the Czech Republic. For a complete class description see THEA 4733.03 in the Theatre section of this calendar.
FORMAT: Lecture/lab
PREREQUISITE: Permission of the Departments of Theatre and History
CROSS-LISTING: THEA 4735.06
HIST 4166.03: Topics in Canadian Social History, Nineteenth and Twentieth Centuries.
This seminar is an opportunity to explore in depth a specific theme or issue in Canadian history. The exact topic will vary from year to year, but will focus on some aspect of social, political or cultural history. The subject may be regional or national in scope. Fast examples include cowboys in...
the North American west, native newcomer relations, and the social history of health. Weekly discussions and a research paper emphasize historiographical debates as well as its significance to the story of Canada. Approved with Canadian Studies.

INSTRUCTOR(S): Staff
FORMAT: Seminar
CROSS-LISTING: HIST 3223.03

HIST 4400.03: Topics in African History.
This class will undertake a careful, in-depth examination of a select theme in African history. The theme will vary from year to year, but the aim will be to probe the deep complexities of Africa’s past that recent scholarship is bringing to light. Themes may be regional or continental, and could include such topics as slavery, race, gender, urban history, religious change, migration, or nationalism. The core of the work will be a significant research paper and seminar presentations. Classes will also involve the reading, presentation, and discussion of selected readings.

INSTRUCTOR(S): G. Kynoch, P. Zachernuk
FORMAT: Seminar
PREREQUISITE: At least one-third year African history class or permission of the instructor.
CROSS-LISTING: HIST 5400.03

HIST 4475.03: African Intellectuals and the Modern Experience.
African thinkers have long pondered the challenges of the modern era, and have established lines of thought with which African intellectuals now address Africa’s profound problems. But this engagement with the modern world has moved through different phases, just as the social location of the African intelligentsia has changed over time. This class will explore the intellectual history by setting specific writers in context, and then examining their original writings to ponder such questions as: What were the roots of “African Christianity”? How did African intellectuals respond to “scientific” racism? What was the appeal of Pan-Africanism? What was Negroitude? How socialist was African socialism? How do postmodern insights about the invention of identity affect the idea of being “African”?

INSTRUCTOR(S): P. Zachernuk
FORMAT: Seminar
CROSS-LISTING: HIST 5475.03
EXCLUSION: HIST 4475.03

HIST 4500.03: Topics in Modern History.
This seminar is specifically intended for students in the 20-credit Major and Honours degree programs in History. The specific content of the seminar varies from year to year, but generally involves examination of one subject in history in some depth, and may include an historiographical, comparative, or interdisciplinary dimension.

FORMAT: Seminar
PREREQUISITE: Instructor’s permission
CROSS-LISTING: HIST 5500.03

HIST 4510.03: Topics in Islamic and Middle East History.
This is a special course dedicated to a topic dealing with the Islamic world/Middle East from the medieval era to the present. Topics will vary, but possible course themes include: political thought in Islam, slavery in Islamic civilization, Nationalism and Ethnicity in the Middle East, and Women in the Islamic world.

FORMAT: Seminar

HIST 4545.03: Scripture and Statecraft: History of Islamic Political Thought.
This class is dedicated to understanding how Arab-centric tribal relations and networks initially defined Islamic politics in 7th-century Arabia, and how those definitions were later influenced by external ‘imperial’ and ‘kingly’ traditions (from Byzantium, Romans, Byzantines). Muslim concepts of authority, however, were never and still are defined by prophetically génie and charisma, and parts of this course will examine the shi’ite doctrine of imamate and the evolution of Islamic political thought 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’i imams and Sufi-Imam. Discussions will also focus on Muhammad Ibn ‘Abd al-Wahhab and Jamal al-Din ‘Al- ‘Afghani and the extent to which Islamic political thought reoriented and reinvigorated in the wake of European hegemonic imperialism. The remainder of the class will examine the rise of Islamism, its radicalization following World
HIST 4550.03: Orientalism and Occidentalism.
This seminar is intended for senior undergraduates 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 Homer, the description of "the Other" has been a constant 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, Oriental scholarship has historically been attracted to understanding and denoting the non-Christian. 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 - Shaykhagh, Soroush, al-Khidr - who have written and commented on these dynamics between Western and Islamic civilization.
INSTRUCTOR(S): C. Mitchell
FORMAT: Seminar
PREREQUISITE: Instructor's permission

HIST 4600.03: Topics in Late Nineteenth- and Twentieth-Century American and British History.
This class will, depending upon the staffing in any particular year, examine a selection of themes in late 19th and 20th century British and American history, including, for instance, labor/labor history, political history (including state formation), cultural history, and history of race and cultural 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: HIS 5600.03

HIST 4614.03: Topics in the History of Sexuality.
This seminar is intended for senior undergraduates. The specific content of the course varies from year to year, with a general focus on comparative, historiographic, and theoretical issues relating to the history of sexuality. Topics may include: the rise and fall of schools of sexuality as embodied by Ellis, Freud, and Kinsey; sexual violence and harassment; the commodification of sexuality; the history of the body, sexuality and colonialism; gay and lesbian subcultures; and the intersection of class, race, and gender in sexual experiences, discourses, and communities.
INSTRUCTOR(S): T. McCallum
FORMAT: Seminar
CROSS-LISTING: COST 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 4986XY.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
INSTRUCTOR(S): Undergraduate Coordinator
FORMAT: Seminar
PREREQUISITE: Concurrent enrolment in HIST 4990X/Y, or instructor's permission

HIST 4987.03: The Historiography of American Foreign Relations, 1776-1945.
This course is designed to introduce students to the history of American foreign policy from the Revolutionary War until World War Two. However, special emphasis will be given to events in contemporary American history. That said, rather than concentrating solely on the events as they unfolded, this course will focus on questions of interpretation and methodology. Toward this end, the seminars are designed to introduce students to both the historiography of the event under question and to some of the "theories" historians have used to interpret American foreign policy. The goal of the course is to provide students with the necessary tools to think critically about various forces at work in the development and execution of contemporary US policy.
INSTRUCTOR(S): S.J. Corke
FORMAT: Seminar
PREREQUISITE: A third-year 20th Century American History class

HIST 4988.03: The Historiography of American Foreign Relations Post-1945.
This course is designed to introduce students to the history of American foreign policy from the Origins of the Cold War to the demise of the Soviet Union. Rather than concentrating solely on the events as they unfolded, however, this course will focus on questions of interpretation and methodology. Toward this end, the seminars are designed to introduce students to both the historiography of the event under question and to some of the "theories" historians have used to interpret American foreign policy. The goal of the course is to provide students with the necessary tools to think critically about various forces at work in the development and execution of contemporary United States policy.
INSTRUCTOR(S): S.J. Corke
FORMAT: Seminar
PREREQUISITE: One of HIST 3307, HIST 3308, HIST 3309, HIST 3305, or HIST 3311 or both HIST 3310 and HIST 3313

HIST 4990XY.06: Honours Essay in History.
All History Honours students and those in combined Honours programs in which History is their principal subject must write a substantial essay on a topic to be chosen in consultation with the undergraduate coordinator and an individual faculty supervisor.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Honours Essay
PREREQUISITE: Admission to History Honours Program
History of Science & Technology

Location: University of King's College
Helixia, NS, B3H 2A1
Telephone: (902) 422-1271
Fax: (902) 422-3247

Interim Director
Stewart, I., BSc (Trent), MA (Tori), PhD (Canbdr)

Teaching Staff at the University of King's College
Frappier, M., BScA, MA (Can), PhD (Western)
Fraser, K., BA (Vind), MA (DAI), MPhil, PhD (Canbdr)
Hayward, A., BSc (UBC)
Johnston, A., BSc (Vind), MA (DAI), PhD (DAI)
McKaig, G., BA, MA, PhD (Toronto)
Snobelen, S., BA (Hons), MA (Victoria), MPhil, PhD (Canbdr)
Stewart, I., BSc (Trent), MA (DAI), PhD (Canbdr)

Teaching Staff at Dalhousie University
Mills, L., BSc (Carleton), MB, PhD (Yale), FES, Ing Professor (King's)
Wiglesworth, J., BA, MA (Calgary), PhD (Bask)

I. History of Science and Technology Program

The history of science and technology cuts across traditional disciplines of the sciences and humanities, treating science and technology, including mathematics and medicine, as historically and philosophically significant in themselves and as integral components of the general development of knowledge, culture and society. Using the combined resources of philosophical, historical and sociological methods, the program develops an interdisciplinary understanding of the character and development of science and technology, tracing the roots and trajectories of primary conceptions of nature and of our place within it. The history of science examines the evolution and role of the “scientific method” in Western thought from Ancient times to the contemporary world, and provides a meeting place for the so-called “two cultures” in our attempt to determine what it is to be Modern.

The History of Science and Technology Program is a Combined Honours RA or BSc program offered jointly by Dalhousie University and the University of King's College. This program brings together established departmental offerings in the arts, social sciences and science at Dalhousie and joins these with History of Science and Technology classes — including a core class for each upper year of study — at King's. The King's portion of this interdisciplinary degree program consists of interdisciplinary classes designed for an integrated study of the history of science from Ancient to Modern times. These classes are taught by specialists from a number of disciplines, involve team-teaching throughout, and are supported by a tutorial system. The intention is to provide students with a many-sided yet unified introduction to the study of the history of science.

The interdisciplinary offerings within History of Science & Technology at King's count as one of two honours subjects. History of Science & Technology classes are designed so that important figures and developments in the history of science may be considered on their own terms and in relation to other important aspects of the periods. This will involve familiarity with primary texts in the field as well as the philosophical, cultural and social contexts within which these texts appear. The non-required classes focus on related issues within the history of science. Many of them pursue in greater depth questions introduced in the core classes.

Aside from preparing undergraduates for future specialized training at the graduate level in the expanding fields of Science and Technology Studies and the History and Philosophy of Science and Technology, History of Science & Technology is intended to provide a broad view of the growth of science and technology, their conceptual foundations and cultural ramifications. Similarly, History of Science & Technology provides science students with an examination of the roots and assumptions of their fields of study.

II. Degree Program

The Dalhousie departmental offerings within the History of Science and Technology Program include the other honours subject, a number of possible electives, and certain cross-listed classes. The other honours subject must be selected from the following list of Dalhousie departments and Programs: Classics, English, French, Gender and Women's Studies, German, History, International Development Studies, Music, Philosophy, Political Science, Russian Studies, Sociology, Social Anthropology, Spanish, Theatre, Biochemistry, Biology, Chemistry, Computing Sciences, Earth Sciences, Economics, Marine Biology, Mathematics, Microbiology and Immunology, Neuroscience, Physics, Psychology, and Statistics. Electives may be taken in any of the above-mentioned departments and programs as well as in the following: Canadian Studies, Comparative Religion, Contemporary Studies, Early Modern Studies, Music, and Oceanography.

A. Combined Honours

Students who are eligible to take an honours degree should apply to the History of Science & Technology Office at the other department or program concerned as early as possible, normally before registering in the second year. All students must meet the degree requirements for the College of Arts and Sciences as detailed in the Degree Requirements section of this calendar, page 65. Because it is an honours program, the quality of work required in the program is higher than that required in a 15-credit or 20-credit major program.

Applications for admission must be made to the Dalhousie department concerned and to the History of Science and Technology Office at King’s on forms available from the Registrar at Dalhousie or King’s. Students should apply to the program and seek advice on class selection before registering for the second year. If this is not done, it may be necessary to make up some work not previously taken. For each individual student, the entire degree program, including elective classes, is subject to supervision and approval by the Dalhousie department concerned and by a member of the History of Science & Technology teaching staff.

All History of Science & Technology students are encouraged to acquire (through appropriate classes) competence in languages which are relevant to their degree, interest and future plans. The joint Dalhousie/King’s History of Science and Technology Combined Honours Program is based on the general requirement that the full credits needed to graduate include:

1. In the case of a Combined Honours BSc degree, a normal requirement of eleven full credits beyond the 1000-level in the two honours subjects, but not more than seven full credits being in either of them. Students may, with the approval of both the Dalhousie department concerned and the History of Science and Technology teaching staff, elect a maximum of thirteen full credits in the two principal subjects, not more than nine full credits being in either of them. In this case the requirement in (2) below is reduced to two or three full credits.

For the BSc, the larger number of honours credits must be in the science subject.

In the case of a Combined Honours B.A. degree, a normal requirement of twelve full credits beyond the 1000-level in the two honours subjects, split evenly between the History of Science & Technology and the other department. Students may, with the approval of both the Dalhousie department concerned and our 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.

History of Science & Technology
II. Exclusions

EXCLUSION: HSTC 2201.03, BIOL 3502.03, HIST 3072.03, HIST 3074X/ Y.06, SCIE 4000.03


This class treats the study of nature in the ancient and medieval West by a combination of both thematic and chronological approaches. It considers the most general views of nature and science as well as specific developments within these general understandings. For the purposes of the class, the ancient and medieval West is divided into four time periods: the ancient, the Hellenic, the Hellenistic and Roman, and finally the medieval. Through the reading of selected works, developments in respect to the following are treated: I. Concepts of nature, II. Mathematics and Astronomy, III. Material and Elemental theories, IV. Biology and the Soul. V. The meaning of "technē".

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

INSTRUCTOR(S): I. Stewart

FORMAT: Lecture/seminary

HSTC 2200X/Y.06: Introduction to the History of Science.

This class is a broad introductory survey of the central developments in the history of science, open to first and higher level students whatever their field, and may be an introduction to further study in the history of science. It examines the most revolutionary figures from the Greeks to the modern period. The work of each of these had such a profound influence upon their own era and upon subsequent times that students in the humanities will find this class clarifies the nature of science and its cultural importance. Students in the sciences will recognize that their contributions have been permanently woven into the fabric we call science. In uncovering the sources and character of each of these transformations in the theory and practice of science, the class will challenge conventional views about the nature and place of science. This class may be taken as an arts or science credit.

NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively. Students who are registered as combined honours with History of Science and Technology are not permitted to take this course.

INSTRUCTOR(S): I. Stewart, M. Frapprier

FORMAT: Lecture/tutorial

3. Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively. Students who are registered as combined honours with History of Science and Technology are not permitted to take this course.

Instructor(s): I. Stewart, M. Frapprier

Format: Lecture/lecture/tutorial

Cross-listing: HSTC 2201X/Y.06, HSTC 2202X/Y.06, BIOL 3502X/Y.06, SCIE 4000X/Y.06

Exclusion: HSTC 2201.03, BIOL 3502.03, HST 3072.03, HST 3074X/ Y.06, SCIE 4000.03


This class treats the study of nature in the ancient and medieval West by a combination of both thematic and chronological approaches. It considers the most general views of nature and science as well as specific developments within these general understandings. For the purposes of the class, the ancient and medieval West is divided into four time periods: the ancient, the Hellenic, the Hellenistic and Roman, and finally the medieval. Through the reading of selected works, developments in respect to the following are treated: I. Concepts of nature, II. Mathematics and Astronomy, III. Material and Elemental theories, IV. Biology and the Soul. V. The meaning of "technē".

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

INSTRUCTOR(S): I. Stewart

FORMAT: Lecture/seminary

HSTC 2200X/Y.06: Introduction to the History of Science.

This class is a broad introductory survey of the central developments in the history of science, open to first and higher level students whatever their fields, and may be an introduction to further study in the history of science. It examines the most revolutionary figures from the Greeks to the modern period. The work of each of these had such a profound influence upon their own era and upon subsequent times that students in the humanities will find this class clarifies the nature of science and its cultural importance. Students in the sciences will recognize that their contributions have been permanently woven into the fabric we call science. In uncovering the sources and character of each of these transformations in the theory and practice of science, the class will challenge conventional views about the nature and place of science. This class may be taken as an arts or science credit.

NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively. Students who are registered as combined honours with History of Science and Technology are not permitted to take this course.

INSTRUCTOR(S): I. Stewart, M. Frapprier

FORMAT: Lecture/lecture/tutorial

Cross-listing: HSTC 2201X/Y.06, HSTC 1200X/Y.06, BIOL 3502X/Y.06, SCIE 2000X/Y.06

Exclusion: HSTC 2201.03, BIOL 3502.03, HIST 3072.03, HIST 3074X/ Y.06, SCIE 4000.03

HSTC 2202.03: The Beginnings of Western Medicine: the Birth of the Body.

This class will look at how the body was viewed in ancient scientific theory and practice. Western medicine as a rationalized scientific practice finds its origins in the ancient Greek philosophical and medical texts attributed to "Hippocrates". Through a close reading of selected ancient medical texts, this class will explore ideas of how the human body is constituted, how it relates to the Cosmos as a whole, what the role of the physician was seen to be, and how illness and healing were seen as changes in the balance of the components of the body.

INSTRUCTOR(S): Staff

FORMAT: Lecture/lecture/tutorial

HSTC 2204.03: The Darwinian Revolution.

Arising from the accurate and detailed observations of Charles Darwin and his contemporaries, the Darwinian Revolution marks the greatest revolution in our conception of nature and our place within it, deeply challenging received views on chance, ideology, 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/lecture/tutorial

156 History of Science & Technology
HSTC 2205.03: Natural Knowledge and Authority — Science and the State.

The central place of modern science and technology in Western economies has led to a strangely oblivious 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 18th century, as it has also been a feature of the rise of the modern state and of its current redeployment under the demands of the global economy. This class considers the history of changes and continuities in that mutual relation from the Renaissance to the present.

INSTRUCTOR(S): Staff
FORMAT: Lecture/tutorial

HSTC 2206.03: Bio-Politics: Human Nature in Contemporary Thought.

To what extent do biology and culture determine what it is to be human? Drawing on theorists ranging from Foucault and La Hacking to Chomsky and Steven Pinker, this course will examine the recent political, moral and existential issues raised by attempts to answer that question. Topics will include sociobiology, 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.

Of the most radical enduring outcomes of the scientific revolution is the idea that nature, including living organisms and sentient beings, can be understood as a kind of machine. The course examines selected topics in the development of this mechanical conception of the world from the 17th century of the present, paying particular attention to issues surrounding the nature of life and consciousness. Topics will include the "mechanical philosophy" of the 17th and 18th centuries, the vitalist-mechanist debates of the 19th and 20th centuries, extraterrestrial beings, paying special attention to the ways in which early modern writers used these tales to speculate on philosophical, political, and scientific issues.

INSTRUCTOR(S): Staff
FORMAT: Seminar

HSTC 2340.03: The Origins of Science Fiction in Early Modern Europe.

In 1543, Nicolaus Copernicus 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 science fiction, science and art, 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 technologi-social, science-fiction relations in the journalistic press, science fiction from H.G. Wells' War of the Worlds to Star Wars and Jurassic Park, and science in computing and cyberspace.

INSTRUCTOR(S): Staff
FORMAT: Lecture/seminar

HSTC 2602.03: Astronomy Before the Telescope.

We examine the history of astronomy from the earliest Neolithic sites through to Copernicus. We begin with a look at the phenomena of naked-eye astronomy: the observed motions of the sun, the moon, the stars, and the planets. From this we will turn to the earliest evidence for astronomy in stone-age structures, and then we will see how a sophisticated astronomy and astrology developed among the Babylonians. We will see how the Ptolemaic system combined Babylonian numerical data with Greek geometrical models, and how astronomy migrated from Babylon to Egypt and Greece. This will help us to understand how the world-views that pervaded into the Middle Ages and beyond.

The transition of Greek astronomy and astrology to India and later to the Arab world allows us to look at the different traditions that arose in these different cultures. Finally, the assimilation of Greek and Arabic astronomy in the Latin West, beginning in the twelfth century, will pave the way for a contextual examination of the work of Copernicus. The supposed novelty, believability, and superiority of the heliocentric hypothesis will be examined.

INSTRUCTOR(S): Staff
FORMAT: Lecture/seminar

HSTC 3000X/Y.06: The Scientific Revolution.

This class examines the origins and meanings of the "Scientific Revolution", the term now used to describe the spectacular changes in world view in the 16th to 18th centuries that came to be associated with the rise of natural philosophy. The class will explore the new conceptions of mechanism, the body, matter and motion that emerged in this period, along with the new methods of experiment and mathematical reasoning; the discoveries in astronomy, biology and physics; and the rise of public and commercial science in the 18th century. The result of individual innovation, internal reform, the impact of other fields of thought and the appropriation of non-Western ideas and technologies, these shifts in outlook will be examined against the backdrop of the broader transformations that took place in culture, society, politics, religion and philosophy. Emphasis will be placed on reading the primary texts of notable figures such as Copernicus, Galileo, Descartes and Newton, as well as the activities of men and women who existed on the peripheries of science, either by virtue of marginalization or by belonging to anti-science oppositional cultures.

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

INSTRUCTOR(S): S. Stocklen
FORMAT: Lecture/seminar

HSTC 3100.03: Aristotle's Physics.

The Physics defines nature and its study both for Aristotle and for much of the development of science and philosophy of nature in the west. The class will treat the dialectic which Aristotle finds in earlier thinkers on nature, the definition of nature; the causes, chance and necessity, time, the void, infinity and limit in nature and place. Finally, it will consider the understanding of change which is at the heart of the work as a whole.

INSTRUCTOR(S): K. Fraser
FORMAT: Lecture/tutorial
HSTC 3120.03: Distilling Nature’s Secrets: The Ancient Alchemists.

This course explores the scientific and esoteric currents which contributed to the rise of alchemy in the early modern. This ‘sacred science’ of transmutations was a cultural synthesis of Greek natural philosophy, late pagan mysticism, and New Testament theological techniques. The physical processes enacted in the alchemical laboratory — where metals were decomposed, purified and transformed — were experienced inwardly by the alchemist himself as a spiritual drama of death and resurrection, analogous to the rites of initiation in the mystery cults. Alchemy was thus a form of spiritual and moral evolution stimulated by the contemplation of self and cosmos. The texts studied in the course range from technical manuals preserved on papyrus, to the highly esoteric and visionary works of the Hermetic philosopher Zosimos (circa 300CE). The relation between these technical and occult dimensions will be of central concern.

INSTRUCTOR(S): K. Fraser
FORMAT: Lecture/seminar

HSTC 3121.03: In search of the Philosopher’s Stone: The History of European Alchemy.

This course traces the development of alchemical theories and practices in the Medieval Latin West up to the emergence of early modern chemistry. It employs a multi-disciplinary approach which treats the scientific, technological, esoteric and iconographic dimensions of alchemy as interdependent. The entire development of European alchemy is covered from the transmission of the Greek and Islamic alchemical traditions in the 12th century up to Newton, whose alchemical theories represent a point of transition to early modern chemistry in one direction, and to a more spiritualised occult philosophy in the other.

This course is independent of HSTC 3120.03. All students interested in the interactions of science, magic and mysticism are welcome.

INSTRUCTOR(S): K. Fraser
FORMAT: Lecture/seminar

HSTC 3200.03: Science and Religion: Historical Perspectives.

Beginning with an overview of the history and methodology of the study of science and religion, this course will trace the development of science and religion from the dawn of civilization to the end of the eighteenth century, with a focus on the emergence of the modern period. From an examination of the enigmatic and fascinating world of the early modern, this course will move through a treatment of the centrality of science to Medieval science, and the introduction of the “Witchfinder” Design Argument of the seventeenth and eighteenth centuries. The course will include a study of the development of the scientific revolution and the development of new experimental science. We will also discuss the histories of some scientific theories (for example, of contamination and generation) that made particular use of observations made with microscopes. Finally, the course will explore the development of science in the modern world, and the impact of science on society.

INSTRUCTOR(S): K. Fraser
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, this course will trace the development of science and religion from the dawn of civilization to the end of the eighteenth century, with a focus on the emergence of the modern period. From an examination of the enigmatic and fascinating world of the early modern, this course will move through a treatment of the centrality of science to Medieval science, and the introduction of the “Witchfinder” Design Argument of the seventeenth and eighteenth centuries. The course will include a study of the development of the scientific revolution and the development of new experimental science. We will also discuss the histories of some scientific theories (for example, of contamination and generation) that made particular use of observations made with microscopes. Finally, the course will explore the development of science in the modern world, and the impact of science on society.

INSTRUCTOR(S): K. Fraser
FORMAT: Lecture/seminar

HSTC 3202.03: Origins of Science: 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, astrology and astronomy were conceptually indistinguishable throughout much of western history. Together, they revealed how people saw their place in the Cosmos, and they reflect the perceived relationship of humanity to nature and the gods. For this reason, the history of early science cannot be understood without the history of divination. In this course we will take a multidisciplinary approach to the historical material, combining approaches from history, philosophy, classics, religious studies, and cultural anthropology.

INSTRUCTOR(S): K. Morris
FORMAT: Lecture/seminar

HSTC 3310.03: History of the Marine Sciences.

Oceanography did not take definitive form until late in the 19th century. Its roots lie not in the Challenger Expedition of the 1850s, the popular stereotypes, but partly in ancient cosmologies and geography. In this class,
Descartes, Newton and Leibniz. Time became a different kind of social philosophy of nature meant a change in the techniques of measurement, temporality of the human and the heavens. The revolution in the fortune will be considered along with Renaissance notions of the Jewish thought. This class will consider time as it is viewed in periods of the west from the Renaissance to the present. The early modern conceptions of time and fortune will be considered along with Renaissance notions of the temporality of the human and the heavens. The revolution in the philosophy of nature meant a change in the techniques of measurement, and in the very notions of time, culminating in the conceptions of Descartes, Newton and Leibniz. Time became a different kind of social reality through the enlightenment, a middle ground of progress between the human and the natural, a ground disclosed most fully in the thought of Kant and Hegel. The nineteenth century gave rise to time, not a mediating role but an otherness in Darwin, Marx, Nietzsche. In it an overriding direction, as disclosed in the second law of thermodynamics, or is it the illusion bound up with indelible necessity? Does relativity leave us with a coherent concept or is time left a presentation of the phenomena, a way of being, as for Monet? The course will end in considerations of time and chaos theory, of the first three minutes and of the last.

HSTC 3611.03: 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", "Positivism", "Ancient Method", "Embryology", "‘Interior analytics’", etc. For descriptions of the current year’s studies topics, please contact the History of Science and Technology Program. NOTE: Not more than two studies courses (one full credit) and no more than one of each course number, can be taken for credit towards the History of Science and Technology Program.

INSTRUCTOR(S): Staff
FORMAT: Lecture/discussion
EXCLUSION: HSTC 3600.03
HSTC 3613.03: Studies in Science and Nature in the Modern Period. Topics vary each year. Some of the topics are "The Century of the Gone", "Cyborgics", "Nazi Science", "The Political Economy of Science", etc. For descriptions of the current year's studies topics, please contact the History of Science and Technology Program. NOTE: Not more than two studies courses (one full credit) and no more than one of each course number, can be taken for credit towards the History of Science and Technology Program.

INSTRUCTOR(S): Staff
FORMAT: Lecture/discussion
HSTC 4000X/Y.06: Science and Nature in the Modern Period. This class examines the history and culture of science in the post-Newtonian period and the attempts to come to terms with contemporary science and its notions of "scientific method" and natural law, the rise of globalization, "technoscience" and a scientific way of life. The class will examine the themes of the "scientific revolution", the rise of "big" science, probabilistic accounts of the world, the triumph of the "new physics" of quantum mechanics and relativity theory and the construction of notions of gender and human nature in modern biology and psychology. These issues will be examined in the broader cultural and philosophical transformations of the modern period. NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

INSTRUCTOR(S): M. Frappier
FORMAT: Lecture/ Seminar
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 secret pursuit of astronomy and optics, along with his inductive scientific method, laws 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 secret pursuit of astronomy and optics, along with his inductive scientific method, laws of nature and proceeds through the attempts to develop a complete program of idealist Naturphilosophie and its spread throughout European thought by the medium of romanticist art and natural philosophy. 

HSTC 4400.03: Newton and Newtonianism. This seminar focuses on the reading of primary texts in the field. In this class, students are 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. The program. Students must complete 60 credit hours before registering in this class.

HSTC 4500X/Y.06: Honours Seminar in the History of Science and Technology. This honours seminar is specifically intended for students in the Combined Honours Degree in History of Science and Technology and will meet the requirements of the 2nd year credit.

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

HSTC 4510.03: Independent Readings in History of Science and Technology. Independent reading classes will be offered annually. The student is assigned to a member of the staff for regular meetings to discuss readings in a selected area. Papers and research projects are expected.

FORMAT: Individual instruction.

PREREQUISITE: Honours registration in the History of Science and Technology, permission of the instructor and the Director of the program.

Students must complete 60 credit hours before registering in this class.

HSTC 4511.03: Independent Readings in History of Science and Technology.

Independent reading classes will be offered annually. The student is assigned to a member of the staff for regular meetings to discuss readings in a selected area. Papers and research projects are expected.

FORMAT: Individual instruction.

PREREQUISITE: Honours registration in the History of Science and Technology, permission of the instructor and the Director of the program. Students must complete 60 credit hours before registering in this class.

HSTC 4515.06: Independent Readings in History of Science and Technology.

Independent reading classes will be offered annually. The student is assigned to a member of the staff for regular meetings to discuss readings in a selected area. Papers and research projects are expected.

PREREQUISITE: Honours registration in the History of Science and Technology, permission of the instructor and the Director of the program. Students must complete 60 credit hours before registering in this class.

HSTC 4550X/Y.06: Honours Thesis in the History of Science and Technology. In this class the student is assigned to a member of staff for regular meetings to discuss readings and present research for the purpose of completing an honours thesis in the History of Science and Technology. NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

PREREQUISITE: Honours registration in the History of Science and Technology, permission of the instructor and the Director of the program.
International Development Studies

Location: Henry Hicks Academic Administration Building 3rd Floor, 6299 South Street, Room 339
Halifax, NS B3H 4H6
Telephone: (902) 494-3814
Fax: (902) 494-2105
Email: IDSDal.ca
Website: www.dal.ca/ids

Dean
Baskley, M.E., MA, PhD (Toronto)
Chair and Honours Advisor
Glazebrook, T.
Email: trish.glazebrook@dal.ca

Undergraduate Advisors
Cameron, J., BA(Dal), MA (SFU), PhD (York) (494-7011)
Email: john.cameron@dal.ca
Mackintosh, M., BA (NSU)
Email: marian.mackintosh@dal.ca

Assistant Professors
Winham, G.R. (Political Science)
Thiessen, V. (Sociology & Social Anthropology)
Sinclair, A. (Economics)
Parpart, J.L., BA (Brown), MA, PhD (Boston)

Professors Emeriti
Passari, J.L., BA (Boson), MA, PhD (Boston)
Sinclair, A. (Economics)
Thiessen, V. (Sociology & Social Anthropology)
Wiseman, G.R. (Political Science)

Assistant Professors
Cameron, J., BA (Dal), MA (SFU), PhD (York)
Mammkulaman, N., BA (Bangalore, India), MA (Ossex) (on leave 2008/09)
Tassem, R. BA (VLU), MA, PhD (Guelph) (on leave 2008/09)
Ulacki, T., BA (McGill), MA (SMU), PhD (Sussex)

Cross-Appointed Faculty
Allan, S. (Political Science)
Artur, P. (Political Science)
Barlow, J.H. (Sociology & Social Anthropology)
Betts, J. (Hasten College)
Bladby, M.S. (Sociology & Social Anthropology)
Black, D. (Political Science)
Boardman, R. (Political Science)
Chatt, A. (Chemistry)
Chiricop, A. (Law/Trinity Affairs)
Cork, S.J. (History)
Cohen, F. (Resource & Environmental Studies)
Dubba, J. (Sociology & Social Anthropology)
Furboek, K. (Political Science)
Fitting, E. (Sociology & Social Anthropology)
Gahagan, J. (Health and Human Performance)
Gansemer Barber, P. (Sociology & Social Anthropology)
Gluebrooks, P. (Philosophy)
Harvey, F. (Political Science)
Jackson, L. (Health & Human Performance)
Karamanou, J. (Social Work)
Kirk, J. (Sociology)
Krych, C. (History)
Lane, P. (Biology)

Lesher, B. (Economics)
McQuart, G. (History of Science & Technology)
Mopple, R. (French)
Noble, B. (Sociology & Social Anthropology)
Olley, R. (Sociology & Social Anthropology)
Patton, D. (Business Administration)
Poulton, M. (Planning)
Ramos, H. (Sociology)
Saugebert, J. (Business Administration)
Saunders, P. (Law)
Sullivan, K. (Public Administration)
Tanne, S. (Health & Human Performance)
Vander Zwagug, D. (Law)
Wattenhaigh, J.A. (English)
Wheeler, D. (Management)
William, M. (biology & Resource and Environmental Studies)
Wright, T. (Environmental Programs)
Zachemah, P. (History)

Adjunct Professors
Barber, B. (NSCAD)
Birse, A. (Sociology and Social Anthropology)
Framnouket, S. (Calgary)
Harder, J. (BCU)
Kenna, C. (Dal)
Malloy, J.R. (Economics)
O'Malley, A. (SMU)
Shaw, T.M. (UIW)
Tharmamaylam, I. (SMU)
Vothmeyer, H. (SMU)
Zentrifug, S. (Dal)

I. Introduction

International Development Studies is an interdisciplinary program involving the study of inequality, social change and justice in a global world. The IDS program is structured around two broad axes: development theory/practice, and the global/local. Areas of teaching expertise among the core faculty in IDS include development theory, gender, culture, human security, rural development, migration, participatory development and global citizenship. However, additional areas of expertise are drawn from over 50 cross-appointed and adjunct faculty members who teach courses cross-listed with IDS and/or supervise our honours thesis and graduate students. We take a broad view of development - including development issues within Canada as well as the developing world. The department’s areas of expertise include many of the key regions of the developing world, particularly Africa, Asia, Latin America and the Caribbean.

We offer a diverse set of opportunities for students to participate in experiential learning in both Canadian and international contexts. Experiential learning enables students to focus on skills development in a range of areas: language development, research, writing, managerial, etc. Through our experiential learning opportunities, students can volunteer or intern in Halis, Uganda, Cuba, and many other locations. Students are encouraged to draw upon international development experiences from over twenty overseas linkage programs through Dalhousie and more than 50 local Halifax community organizations. Halifax is the main Maritime regional centre for official and non-governmental organizations active in international development, thereby offering opportunities for students to become engaged locally in development.

Students normally participate in experiential learning programs whether locally or abroad in their third year of study. The IDS program offers a number of study abroad options including a term abroad in Cuba (Fall or Winter) with FLACSO (Facultad Latino Americana de Ciencias Sociales Program Cuba) and the University of Havana as well as summer programs in Cuba and Uganda.

As an interdisciplinary program, IDS recommends students consider combined degree programs. Students are therefore encouraged to enter the combined honours or double major programs which provide...
opportunities that further integrate their IDS studies with those of an approved area of study such as anthropology or zoology. Students with backgrounds in sciences are also welcome in this program as topics in international development cut across all disciplines from anthropology to zoology.

The interdisciplinary nature of the program requires that students take a number of credits outside the IDS department as approved IDS courses in other units. The first year of study at Dalhousie is dedicated to completing first-year requirements. Incoming students are encouraged to take a broad range of disciplines in their first year to prepare them for the interdisciplinary nature of the program. First-year students are encouraged to participate in a range of IDS non-course offerings including regular seminar series called the Global Development Seminar Series and the African Studies Seminar Series. Other events and activities will be advertised on the IDS website or information can be obtained from the IDS office.

The IDS program offers a core course in the second year. "Introduction to Development Studies I and II," in which students can apply their knowledge from first-year courses in the context of development theory, history and practice. Several other core courses are offered in third and fourth year as an array of elective course options. Students are encouraged to acquire competence in a relevant language in addition to English (e.g., Arabic, French, Spanish, or Russian). Research design and basic statistics courses (e.g., POLI 3492/3493 or SOSA 3402/3403) may also be useful skills to acquire throughout the IDS degree.

II. Degree Programs

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

A. BA with Honours in International Development Studies

Honours programs in IDS are designed for students with a demonstrated aptitude for advanced study in the field. The Honours degree is intended for students who plan to proceed to graduate work and for others who want the experience of an intensive research project, the Honours thesis. Students are encouraged to apply for either the Honours or Combined Honours programs. In the case of a Combined Honours, the thesis course will be determined by the area of study with the highest number of credits. Students must complete the requirements for the BA with major in International Development Studies and fulfill the following additional requirements:

- Admission to programs is based on academic performance. Applicants normally should have achieved an overall Grade Point Average (GPA) of at least 3.30 (B+) or better and 4.00 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 4011 or 4022: Honours Thesis Course.
- Honours students must also take INTD 4022 or 4011: Advanced Seminar.
- Deadline for Honours Applications is April 30th of the year the student will begin the Honours Program. Application forms for the Honours Program are available at the Registrar's Office and can be submitted to the Honours Advisor/Department Chair in IDS.

B. BA with Combined Honours

After meeting the first-year requirements, students have two options from which to choose. The First Option is a minimum 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 minimum 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. Students interested in taking any of these combined honours programs or in discussing other possible programs should consult initially with the Honours Advisor of the selected departments.

To obtain a BA with Combined Honours, with an emphasis upon International Development Studies, students must have:

1. The two core IDS credits: INTD 2001.03/2002.03 and INTD 3001.03/3002.03.
2. Three full credits at the 3000-level or above from two IDS disciplines with at least one full credit per discipline (see list in section IV, page 166).
3. Three full credits at the 4000-level or above from the IDS list of classes.
4. INTD 4011 or 4022: Honours Thesis Course
5. INTD 4022.03 or 4011.03: Honours Thesis Seminar

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 4000-level or above from one of the IDS disciplines (see list in section IV, page 166).
4. An additional full credit at the third year level or above from the IDS offerings in another discipline (see list in section IV, page 166).

C. Honours Conversion in International Development Studies

Dalhousie graduates who wish to upgrade their qualifications from a 15-credit Bachelor of Arts degree to a 20-credit Honours Bachelor of Arts degree may enter this program if they meet the usual conditions for admission to the Honours program. Students must complete the full set of Honours requirements usually by taking five (5) additional full credits. Students interested in this program should consult the Undergraduate Advisor.

D. 20-credit BA with Major in International Development Studies

Departmental requirements

Normally, completion of appropriate first-year classes at least two of the major participating social science or humanities disciplines (2.0 full credits):

- COMR 1000X/Y.06, 1070.03/1300.03; ECON 1101.03/1102.03; ERTH 1020.03/1040.03; GOVT 1070.03/1060.03; HIST 1004X/Y.06, 1903.03, 1922.03, 1862X/Y.06; PHLR 1000X/Y; POLI 1010.03/1020.03, 1025.03, 1030.03; SOC 1000X/Y.06, 1100X/Y.06; RUSN 1020.03, 1070.03; ENVS 1000X/Y.06; SOSA 1000X/Y.06, 1050X/Y.16, 1080.03/Y.06.
- or completion of King’s Foundation Year Program

Advanced Courses Required

- INTD 2001.03/2002.03
- INTD 3001.03/3002.03
- INTD 4011.03/4022.03
- INTD 4022.03/4011.03
- INTD 4022.03 or 4011.03: Honours Thesis Seminar

In total, a minimum of six (6) and a maximum of nine (9) full IDS credits are required.

NOTE: A minimum of the equivalent of three (3) full-credit classes must be at the 3000-level or above.
E. 20-credit BA with Double Major

Departmental Requirements

Normally, completion of appropriate first-year classes in at least two of the major participating social science or humanities disciplines (2.0 full credits):
• COMR 1000X/Y.06, 1070.03/1300.03; ECON 1101.03/1102.03; ERTH 1040.03/1050.03; GEOG 1030.03/1060.03, HIST 1000X/Y.06, 1682X/Y.06, 1501.03/1502.03, POLI 1010X.06, 1020X.06, 1030X.06, 1050X/1100X.06, 1100X/1105Y.06
• or completion of King’s Foundation Year Program.

Advanced Classes Required

• INTD 2001.03/2002.03
• INTD 3001.03/3002.03
• At least one full credit at or above the 3000 level from the IDS list below (including list in section IV, page 166)
• At least one full credit at or above the 2000 level in each of two IDS disciplines (total of 2 full credits see list in section IV, page 166)

In total, at least ten (10) and no more than thirteen (13) credits at 2000 level or above in the two major fields, with no fewer than four (4) and no more than nine (9) in either and at least two (2) full credits in each above the 2000 level.

NOTE: A double major is available in Environmental Science and International Development Studies. See page 67 for details.

F. 20-credit Major Conversion in International Development Studies

Dalhousie graduates who wish to upgrade their qualifications from a 15-credit Concentration to a 20-credit Major degree may enter this program. Students must complete the full set of 20-credit Major requirements, usually by taking (5) additional full credits.

G. 15-credit BA with Concentration in International Development Studies

Departmental Requirements

Normally, completion of appropriate first-year classes in at least two of the major participating social science or humanities disciplines (2.0 full credits):
• COMR 1000X/Y.06, 1070.03/1300.03; ECON 1101.03/1102.03; ERTH 1040.03/1050.03, HIST 1000X/Y.06, 1682X/Y.06, 1501.03/1502.03, POLI 1010X.06, 1020X.06, 1030X.06, 1050X/1100X.06, 1100X/1105Y.06
• or completion of King’s Foundation Year Program.

Advanced Classes Required

• INTD 2001.03/2002.03
• INTD 3001.03/3002.03
• The equivalent of one full credit at or above the 2000 level in each of two IDS disciplines (see list in section IV, page 166)

In total, a minimum of five (5) and a maximum of eight (8) IDS credits are required.

III. Class Descriptions

A. Core Classes

INTD 2001.03: Introduction to Development I.

Poverty, inequality and injustices 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/tutorial
PREREQUISITE: Completion of at least two of the following first year classes or equivalents: RELS 1000X/Y.06, 1070.03/1300.03; ECON 1101.03/1102.03; ERTH 1040.03/1050.03, HIST 1000X/Y.06, 1682X/Y.06, 1501.03/1502.03, 1682X/Y.06; POLI 1010X.06, 1020X.06, 1030X.06, 1050X/1100X.06, 1100X/1105Y.06
• or completion of King’s Foundation Year Program.

INTD 3001.03: Seminar in Development III: Development Theory.

The mutual constitutiveness of theory and practice makes it imperative that we develop a sound understanding of the way the development experience has been theorized. This course seeks to provide a foundation of the major theoretical frameworks that have sought to understand the field that constitutes development. This is undertaken by examining some of the “classic” texts and writings, which needless to say, have had an impact on the practice of development.

FORMAT: Lecture/seminar
PREREQUISITE: 2nd year Arts and/or science class

INTD 3002.03: Seminar in Development IV: Development Practice.

This course is designed for third year undergraduate students who are interested in a career in international development. The course will introduce students to the internal dynamics of development organizations (both governmental and non-governmental), development planning, methodologies of development practice in the field, ethical issues related to development work, fundraising, project proposal writing and project evaluation. The major assignment will involve the preparation of a development project proposal. Because this is a course in development practice, it will involve both seminar discussions and practical hands-on activities. Different sections of the course may include different thematic emphases – e.g. rural development, gender and development and community development.

INSTRUCTOR: Seminar

INTD 4011.03: Advanced Seminar in Development Theory A.

This course is a continuation and extension of the debates in development theory offered in 3001 at a senior, fourth year level. This class is compulsory for honours IDS students but is open to all upper level IDS
INTD 4012.03: Honours Thesis Course B.
The honours thesis class is open to only those students who have been accepted into the IDS honours program. This class will support students through the writing of their honours theses, from proposals to completion. Issues of research design, method, and ethics will be addressed, and work in progress will be presented. INTD 4021 can also be taken to meet this requirement for honours students in IDS.
FORMAT: Seminar
PREREQUISITE: INTD 3001.03 and INTD 3002.03

INTD 4021.03: Honours Thesis Course A.
The honours thesis class is open to only those students who have been accepted into the IDS honours program. This class will support students through the writing of their honours theses, from proposals to completion. Issues of research design, method, and ethics will be addressed, and work in progress will be presented. INTD 4012 can also be taken to meet this requirement for honours students in IDS.
FORMAT: Seminar
PREREQUISITE: INTD 3001.03 and INTD 3002.03

INTD 4022.03: Advanced Seminar in Development Theory B.
This course is a continuation and extension of the debates in development theory offered in INTD 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 4021 can also be taken to meet this requirement for honours students in IDS.
FORMAT: Seminar
PREREQUISITE: INTD 3001.03 and INTD 3002.03

INTD 3001.03/3012.03/3202X/Y.06: International Development Studies Through Canada World Youth.
This class is intended for Canada World Youth (CWY) participants who wish to use the Canada World Youth experience as a basis for further study — locally, nationally, and/or following Canada World Youth field placements. CWY participants are required to keep a journal of their observations and to write several reports reflecting on the relevant literature and/or past experiences. CWY participants must be accepted into the IDS honours program. This class will support students through the writing of their honours theses, from proposals to completion. Issues of research design, method, and ethics will be addressed, and work in progress will be presented. INTD 4021 can also be taken to meet this requirement for honours students in IDS.
FORMAT: Seminar
PREREQUISITE: INTD 3001.03

B. Additional IDS Courses

INTD 1201X/Y.06/2201X/Y.06/3201X/Y.06: International Development Studies Through Canada World Youth.
This class is intended for Canada World Youth (CWY) participants who wish to use the Canada World Youth experience as a basis for further study — locally, nationally, and/or following Canada World Youth field placements. CWY participants are required to keep a journal of their observations and to write a research report drawing upon their experiences on the CWY project both in Canada and overseas. Upon return to Canada, they should communicate with the International Development Studies Office at Dalhousie and should extrude guidance be sought, they inform the Course Instructor at that point. Normally, within 60 days of their return, they should submit their reports (in accordance with detailed guidelines provided by the Instructor) for evaluation. All CWY class participants are encouraged to present talks to local high schools, youth groups, and appropriate community/university organizations. The degree of analysis will be more demanding the higher the level of class taken. In such cases, papers may be written in English or French. 
RECOMMENDED: High school/university global studies.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Consult the Department for more information.
RESTRICTION: Can only be taken once in a student's program

INTD 3045.03: Indian Society: Change and Continuity.

The objective of this half-credit class is to introduce students to the society and culture of India from an interdisciplinary perspective. India presents a society of enormous complexity and an uneven living civilization of great antiquity. The focus of the class will be on selected, significant aspects of Indian society with particular emphasis on issues of current relevance. Topics discussed include: a historical background, social structure, political and social constraints to economic development, health issues, major religions and philosophy, development and foreign policy since independence, science and technology, disaster relief and development, and literature. This class counts as a half-credit in Sociology and Social Anthropology towards the IDS-established discipline requirement.
FORMAT: Lecture/discussion
PREREQUISITE: 2nd year Arts and/or science class
CROSS-LISTING: SOC 3310/3310

INTD 3101.03/3102.03/3202X/Y.06: Special Topics in International Development Studies.
A class on a particular aspect of international development taught by special arrangement between individual IDS major or honours students and individual instructors associated with the program. Available in semesters 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 ethos of cross-cultural work, as well as how information is collected (research methods) and distributed (development education). Several qualitative research skills such as interviewing, participant observation, focus groups and participatory rural appraisal (PRA) will be covered and there will be opportunities to try some of these research methods over the course of the semester. Development education techniques such as theatre for development, radio for development and documentaries will also be examined.
FORMAT: Lecture and seminar

INTD 3108.03: Experiential learning: Canada.
Experiential learning is an opportunity for you to begin to reflect on the global/local and theory/practice dynamics of the world around us. Other programs and departments use terms such as internship, volunteer or co-op placements. IDS has adopted the term experiential learning because it reflects the interplay between academic and practical skills development that this program offers. Experiential learning courses are available for both local/Canadian and international placements. The Canadian component of experiential learning focuses on the themes of community development and public engagement. The international component addresses questions of global citizenship. The Canadian component of experiential learning combines classroom learning with volunteer work experience in a community organization in Halifax or other parts of Canada. You are required to volunteer for a minimum of 10 hours for the term, or approximately 3 hours/week. In addition to this work, you are required to complete a set of readings (to be developed in collaboration with the course instructor) and three academic assignments (a mid-term report, a reflective paper and an academic paper).
FORMAT: Seminar

INTD 3109.03: Experiential Learning: Abroad.
The experiential learning abroad course is open to International Development Studies students who wish to obtain academic credit in conjunction with an overseas placement, volunteer experience or internship. Students who have already secured a place in an overseas experiential learning program can register for this half-credit. Special permission to register for this course is required and an application for this course must be completed prior to registration (see the IDS Department website for applications). Students are required to complete course readings and to write several reports reflecting on the relevant literature and the practical work experience. One half credit is completed over the course of a full academic year.
FORMAT: Seminar

INTD 3110.03: Migration and Development.
The purpose of this course is to explore and better understand the connections between migration and development in contemporary societies. Classes will introduce or further explore one main theme or issue, such as development-induced displacement, labour migration, and...
INTD 3111.03: Popular Culture and Development.

Development does not occur in a vacuum; it is informed by a particular cultural understanding and carried out by a specific mode of politics. Similarly, culture too, unlike the common belief, is not an autonomous realm, but 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.

FORMAT: Seminar

INTD 3112.03: Development and Democracy in India.

The largest democracy in the world is in the throes of an economic “revolution” experiencing one of the fastest growth rates. In sixty years since independence, India has traveled from being a “socialist” state to one that has pinned its hopes on capitalism. Simultaneously, the secular and democratic eddies of the state itself has taken a beating with the emergence of violent religious nationalism. This course will be an in-depth look into the complex dynamics that shape the relationship between development and democracy in one of the most ethnically diverse societies in the world.

FORMAT: Lecture/ seminar

INTD 3125.03: The French-Speaking World.

Introduction to the French-speaking world from a political, 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, exams and written papers. The language of the class will be English.

INSTRUCTORS: R. Mopobo
CROSS-LISTING: FREN 3125.03

INTD 3150.03: Aspects de la francophonie/Aspects of the Francophone World.

Taught in French.

Introduction to the study of the francophone world: political, economic, linguistic, literary and cultural aspects. From year to year the class might emphasize different regions: Western Countries, Sub-Saharan Africa, Pacific Islands, West India, Northern Africa.

INSTRUCTORS: R. Mopobo
FORMAT: Lecture
PREREQUISITE: 2000-level class or consent of instructor
CROSS-LISTING: FREN 3150.03

INTD 3203.06: Field School in Africa.

This course involves a combination of lecture, discussion and field placement with NGOs in Africa. The program is 4 weeks in duration in Africa. Currently, the program is conducted in collaboration with Muhuru University of Science & Technology in Uganda. The course is preceded by pre-departure briefings in Halifax.

FORMAT: Lecture, Discussion, Field placement with NGOs in Africa
PREREQUISITE: INTD 3001.03, INTO 2002.03, INTO 3001.03, INTO 3002.03 or permission of course instructor

INTD 3301.03: Spanish Language and Grammar: The Cuban Dialect.

NOTE: INTO 3001 - 3006 are offered as part of the Cuba Semester program. Only students enrolled in this program may take these courses. Spanish Language and Grammar: The Cuban Dialect (prerequisite for the remaining classes).

INTD 3302.03: Social Development in Cuba.

This course examines the situation of women, the family and children in Cuba, and the educational system in theory and in practice.

INTD 3303.03: The Political Economy of Cuba.

Analysis and debate of the forms of politics practiced in the Cuban revolution, as well as State institutions, during the various stages of the revolutionary process. Study of the Cuban economy and all its principle strategies, including the economic crisis and Cuba’s reinvention in the international economic arena.

INTD 3304.03: Sustainable Development in Cuba.

This course 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.*

INSTRUCTORS: Latin American Faculty of Social Sciences (FLACSO), University of Havana
FORMAT: Fourteen weeks - University of Havana
PREREQUISITE: Students must be at least, functional in Spanish (SPAN 3020.06 and SPAN 3020.06)
CROSS-LISTING: SPAN 3001.03, 3020.03, 3020.05, 3020.03, 3020.06
RESTRICTION: Open to students enrolled in 3rd or 4th year of the IDS or Spanish program or comparable programs at other universities.

INTD 3310.06: Cuban Culture and Society.

Through seminars, lectures and other activities, students will be introduced to Cuban society and culture. This class consists of briefings 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.

INSTRUCTORS: Latin American Faculty of Social Sciences (FLACSO), University of Havana, and Staff
FORMAT: Six weeks summer immersion with two weeks in Havana
PREREQUISITE: Beginning Spanish or equivalent, INTO 2001.03/2002.03
CROSS-LISTING: SPAN 3310.06

INTD 4001.03/4002.03/4003.06/4100.06: Special Topics in International Development Studies.

See class description for INTO 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.

PREREQUISITE: INTO 3001.03/3002.03/3002.06

INTD 4004.03: Topics in Cuban Development.

This class will undertake a careful, in depth examination of a select theme in Cuban development. The theme will vary from year to year. These may include such topics as: Issues of Gender & Society, Economic Relations & International Policy, Sustainable Development & Social Participation in Rural Communities & Agricultural cooperatives, Family, Poverty, Social Development and Community Programs, Social Class Dynamics and Economic Strategies. The class will be taught in Spanish. Classes will involve the reading, presentation, and discussion of selected readings.

FORMAT: Seminar
PREREQUISITE: Minimum of 2 years of Spanish and/or equivalent and at least one third year IDS course or permission of the instructor
CROSS-LISTING: SPAN 4004.03
INTD 4211.03: Gender and Development: Theory, Concepts and Methods.

The primary aim of this course is to provide a broad foundation to some of the theoretical perspectives which have informed current thinking in gender and development. The course introduces students to key concepts in the analysis.

CROSS-LISTING: GWST 4211.03

INTD 4320.03: Empowerment, Gender and Development.

Feminist scholarship and activism has sponsored a number of theoretical explanations for gender inequalities. In the last decade, poststructuralist and postmodernist critiques have influenced feminist theories in important ways. Grand theories of the past have been called into question; universals have been overtaken by particularities and difference(s).

Feminists have reacted to these critiques in a number of ways. Some reject it outright, while others call for a synthesis. Scholars and activists concerned with international development have frequently rejected these debates as irrelevant to the practical concerns of development. However, some scholars have responded more favorably to these ideas. This class will explore the various feminist theories, particularly postmodernist influences, and assess their importance for both the theory and practice of development, especially the development of women.

CROSS-LISTING: GWST 4320.03, HIST 4320.03, HIST 5320.03, INTD 5320.03

IV. IDS Approved Classes from Other Units

A list of classes routinely accepted within International Development Studies at Dalhousie University follows. It is possible to take a number of other classes, but only after approval by the Undergraduate Advisor. Some of these other classes are taught at Dalhousie, some at Saint Mary’s. For a full listing of Saint Mary’s University faculty and classes in IDS, please consult the current Saint Mary’s University academic calendar, which is available in the Dalhousie IDS Office or online.

NOTE: Classes marked * are not offered every year so please consult the current timetable, in addition to the calendar, when registering.

1. Biology

The importance of an understanding of biology for informed contribution to sustainable development cannot be over-emphasized.

- BIR 3067.03: Environmental Ecology
- BIR 3068.03: Agroecosystems
- BIR 3069.03: Plants and Civilization
- BIR 3071.03: Nature Conservation
- BIR 4065.03: Sustainability and Global Change
- BIR 4164.01: Political Ecology

2. Earth Sciences

Geology lies behind many of the environmental problems facing humanity today - while energy and mineral resources provide an underpinning of many of the development plans of Third World nations.

- ERTH 2410.03: Environmental and Resource Geology
- ERTH 3410.03: Environmental Geology

3. Economics

A group 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 2291.03: European Economy - History
- ECON 2334.03: Globalization and Economic Development Current Debates
- ECON 2366.03: Regional Development
- *ECON 3327.03: Poverty and Inequality
- *ECON 3330.03: International Trade
- ECON 3332.03: International Finance
- ECON 3332.03: Resource Economics
- *ECON 3333.03: Theories of Economic Development
- ECON 3385.03: Environmental Economics

4. English, French and Spanish

Language skills are obviously important for effective communication for those wishing to pursue international development studies; but through the study of languages and literature, important insights about culture and development experience are also to be gleaned. The IDS program encourages students minimally to study one additional (relevant) language to English.

English
- *ENGL 2212.03: World Literature in English - Fiction
- *ENGL 2213.03: World Literature in English - Poetry
- ENGL 2223X/Y.06: Fictions of Development
- ENGL 3090X/Y.06: Postcolonial Literature
- ENGL 3096.03: Post-Colonial Literatures

French
- FREN 3125.03: Le Monde francophone/The French-speaking World
- *FREN 3135.03: Aspects de la francophonie/Aspects of the Francophone World
- FREN 3175.03: Topical Issues in Francophone/Theitmes de la francophonie

Please note: Some courses in the French Department’s Senegal Semester Abroad Program are likely to be eligible for IDS credit. Consult the undergraduate advisor to determine eligibility.

Spanish
- *SPAN 2069.03: Central America to 1979
- *SPAN 2070.03: Area Studies on Mexico and Central America
- *SPAN 2109.03: Cuba from Colonial Times to 1963
- *SPAN 2110.03: The Cuban Cultural Revolution
- *SPAN 2130.03: Latin American Dictators in the Novel
- *SPAN 2200.03: LaCivilizatión de Hispanoamérica
- *SPAN 2220.03: Contemporary Latin American Prose, Part I
- *SPAN 2240.03: Contemporary Latin American Prose, Part II
- *SPAN 3040X/Y.06: Culture and Society of the Dominican Republic
- *SPAN 3070.03: Contemporary Latin American History
- *SPAN 3080.03/3302.03: 3303.03/3304.03/3306.06: The Cuba Program at FLACSO (Facultad Latino Americána de Ciencias Sociales)

Some of these other classes, but only after approval by the Undergraduate Advisor.

5. Environmental Studies

Most environmental scientists have primary expertise in a particular discipline and work cooperatively with specialists from other disciplines to solve environmental problems. Dalhousie now offers a minor in both environmental studies and science. However, current programs that also provide courses emphasizing environmental subjects include Earth Sciences (geology and hydrogeology), marine biology and POLI 3585.03.

- ENV 3000.03: Environmental Science Internship
- ENV 3120.03: Environmental Law II - Natural Justice and Unnatural Acts
- ENV 3400.03: Environmental and Ecosystem Health
- ENV 5001.03: Environmental Problem Solving I
- ENV 5002.03: Environmental Problem Solving II - The Campus as a Living Laboratory.
- ERTH 2410.03: Environmental and Resource Geology
- ERTH 3412.03: Enhanced Environmental Geology
- PHIL 2485.03: Technology and the Environment
- POLI 3570X/Y.06: Management and Conservation of Marine Resources
- POLI 3589.03: Politics of the Environment
- POLI 3589.03: Politics of the Sea

166 International Development Studies
6. Gender and Women's Studies
It is important to recognize the implications of gender issues and to be sensitive to how these are viewed in different cultural circumstances. Hence, students are strongly encouraged to participate in at least one of the following GWST classes.

GWST 3168.03: Issues in Latin American Society
GWST 3310.03: Human Rights: Political Issues
GWST 3311.03: Sport and Politics
GWST 3315.03: African Politics
GWST 3317.03: Politics in Southern Africa
GWST 3390.03: Gender and Development: Theory, Concepts and Methods
GWST 4040.03: Empowerment, Gender, and Development

7. History
Just as people need to know who they are and how they arrived there, groups, races, classes, states and nations need a sense of their own past as part of their culture and to guide their future development choices.

HIST 2006.03: The Atlantic World, 1450-1650: European Colonization of the Americas
HIST 2007.03: The Atlantic World, 1650-1800: European Empires in the Americas
HIST 2201.03: Soviet Russia
HIST 2271.03: Atlantic Canada to Confederation
HIST 2272.03: Atlantic Canada since Confederation
HIST 2310.03: Latin America
HIST 2312.03: Central America to 1979
HIST 2313.03: Central America since Independence
HIST 2342.03: Cuba from Colonial Times
HIST 2343.03: The Cuban Cultural Revolution
HIST 2346.03: Colonial Latin America
HIST 2371.03: Latin America since Independence
HIST 2425.03: Africa Before 1900
HIST 2426.03: Africa Since 1900
HIST 2502.03: The Ottoman Empire and Its Legacy in the Middle East, 1750-1923
HIST 2503.03: From Cordobas to Jakarta: Islamic Civilization in a Global Perspective (ninthteenth - eighteenth centuries)
HIST 2542.03: Modern History of Turkey, Iran, Israel, and the Arab-Speaking lands (nineteenth-twentieth centuries)
HIST 2721.03: Freedom Fighters or Terrorists?
HIST 3003.03: Russian Society
HIST 3092.03: Russian Topics
HIST 3093.03: Latin America: Revolution and Repression.
HIST 3100.03: Indigenous Movements in Latin America
HIST 3434.03: The Making of Colonial Africa, c. 1850-1910
HIST 3438.03: Struggles in the City: Labour, Migration and Urban Life in Colonial Africa.
HIST 3439.03: The Rise and Fall of African Slavery
HIST 3441.03: Southern Africa to 1860
HIST 3442.03: Southern Africa since 1860
HIST 3443.03: Gender and Development in Africa
HIST 3444.03: Distortion or Development - African Economic History.
HIST 3445.03: Wars and Revolutions in Nineteenth Century Africa
HIST 3447.03: Wars and Revolution in Twentieth Century Africa
HIST 3510.03: Topics in Global History
HIST 3513.03: Calips and Kings: Islamic Civilization in the abbasid and Mongol Age (750-1400)
HIST 3511.03: Suicides and Shakes: Politics and Religion in the Islamic Gunpowder Age (1300-1800)
HIST 3512.03: Modern History of Iran, Central Asia, and the Caucasus
HIST 4271.03: The Fisheries of Atlantic Canada's Society and Ecology in Historical Perspective
HIST 4301.03: Topics in Latin American History
HIST 4330.03: Empowerment, Gender, and Development
HIST 4440.03: Topics in African History

8. Philosophy
Issues in International Development are fundamentally concerned with principles of ethics and justice. Philosophy provides students with the necessary foundation to think about these principles and apply them to international issues in an informed way.

PHIL 2381.03: Ethics in the Business World
PHIL 2415.03: Justice in Global Perspective
PHIL 2480.03: Environmental Ethics
PHIL 2485.03: Technology and the Environment
PHIL 3470.03: Human Rights: Philosophical Issues

9. Political Science
Political Science is critical for individuals who want to know more about the values, laws, institutions and policy mechanisms that govern their lives in society, and, as well, the differences between their systems of government and those in other countries.

POLI 2006.03: The Atlantic World, 1450-1650: European Colonization of the Americas
POLI 2007.03: The Atlantic World, 1650-1800: European Empires in the Americas
POLI 3303.03: Human Rights: Political Issues
POLI 3311.03: Sport and Politics
POLI 3315.03: African Politics
POLI 3317.03: Politics in Southern Africa
POLI 3390.03: Governance and Globalization
POLI 3430.03: Politics in Latin America
POLI 3450.03: Human Rights: Philosophical Issues
POLI 3523.03: Comparative Foreign Policy Simulation
POLI 3551.03: The UN in World Politics
POLI 3553.03: The New International Division of Labour
POLI 4337.03: Management and Conservation of Marine Resources (summer only)
POLI 4340.03: Foreign Policies of Third World States
POLI 4350.03: Human Development/Security at the Start of the Twenty-First Century
POLI 5381.03: Diplomacy and Negotiation
POLI 5385.03: Politics of the Environment
POLI 5387.03: The International Political Economy
POLI 5396.03: Explaining Global Conflict and Violence
POLI 4606.03: Nature, Capitalism and Statecraft
POLI 4606.03: The New International Division of Labour
POLI 4606.03: OOL, Natural Gas and Government: The Political Economy of Regulation
POLI 4606.03: OOL, Natural Gas and Government: The Political Economy of Regulation

10. Religious Studies
Understanding religion and its influences on human behaviour involves grasping both the meaning of faith in the lives of participants and the critical analysis of outside observers. It has important implications for international cultures and development questions.

RELS 2001.03: Judaism
REL 2002.03: Buddhism
REL 2010.03: Islam
REL 2011.03: Hinduism
REL 2012.03: Chinese and Japanese Religions
REL 2013.03: Buddhism
REL 2015.03: Women and Islam
REL 2040.03: Religion and International Development
REL 3014.03: Comparative Mysticism
REL 3015.03: Mythos, Symbols and Tales

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 2020X/Y.06: Imperial and Soviet Russia
RUSN 2021X/Y.06: Imperial Russia
Italian Studies

NOTE: Classes in Italian studies are administered by the French Department (page 115).

I. Introduction
Learning to read and speak Italian offers access to an important world culture. While modern Italy began to emerge in its present-day form in the late 19th century, the civilizations that preceded it have exerted a dominant influence on the culture of the West. Whether in religion, art, music, or science, Italy’s past offers many keys to the present. Through its tradition of global exploration and entrepreneurial endeavors, Italy has played a significant role in world history. Today, it is one of the G8, the world’s wealthiest democratic nations, and a leader in a variety of fields, including film, design, cuisine, and intellectual life. Classes in Italian literature and culture, building on classes in Italian language, will open up to the student this wide and fascinating array of topics.

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

A. BA (15-Credit) Area of Concentration
A minimum of 4 full credits (24 credit-hours) and a maximum of 9 in Italian studies above the 1000 level. Within these 4 credits, students must include ITAL 2010.06 and ITAL 3010.06. At least two full credits must be above the 2000 level.

B. BA (20-Credit) Double Major
A minimum of 4 full credits (24 credit-hours) and a maximum of 9 in Italian studies above the 1000 level, combined with one of the Major subjects in the BA program. Within these 5 credits, students must include ITAL 2010.06 and ITAL 3010.06, at least one other full credit above the 2000 level. At least two full credits must be above the 2000 level.

C. BA (20-Credit) Combined Honours
A minimum of 5 full credits (30 credit-hours) in Italian studies above the 1000 level is required for the Combined Honours program, along with one of the Combined Honours subjects in the BA program. Within those 5 credits, students must include ITAL 2010.06 and ITAL 3010.06, at least one other full credit above the 2000 level and at least one half credit at the 4000 level.

NOTE: Italian studies can only be the second subject for the Double Major or Combined Honours. It cannot be the primary subject for these programs.

III. Class Descriptions
ITAL 1010X/Y:06: Italian for Beginners.
Introduction to the basic structures of Italian, combined with practical vocabulary for oral and written communication. This class aims to develop all language skills (listening, speaking, reading, writing), by integrating grammar study, oral and written exercises, and situational contexts. The class also includes an introduction to Italian culture. This class fulfills the BA language requirement.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Lecture/lab/tutorial
EXCLUSION: ASC 1010X/Y.06
ITAL 1012X/Y.06: Reading Italian. This class is a study of the basic structures of written Italian required to develop a thorough reading knowledge of the language. Emphasis in the initial phase of the class is placed on acquiring fundamental vocabulary and developing the ability to recognize it in typical patterns of usage. Systematic features of Italian and correspondences between Italian and English are studied. In the second phase of the class, students are introduced to short reading selections ranging from current newspaper articles and features to expository texts in a variety of disciplines from the humanities, social sciences, and physical sciences. In the final stage of the class, longer texts are studied. These are examined to introduce students to matters of style, usage, etc., but the primary emphasis in the presentation of class material, in assignments, and in testing continues to be on the comprehension of texts as texts.

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

FORMAT: Lecture/lab
CROSS-LISTING: ASSC 1012X/Y.06

ITAL 2010X/Y.06: Intermediate Italian. This class is open to students with a sound knowledge of the basics of the Italian language (vowels, sentence structure, high frequency vocabulary) and is designed to build on that knowledge. The objective of the course is fourfold: 1) to develop awareness of finer points of usage in writing Italian; 2) to provide practice in listening comprehension of material ranging from texts read aloud to spontaneous dialogue; 3) to provide the practice required for the consolidation and development of speaking skills; 4) to provide the practice required for the consolidation and development of reading skills through texts that will expand awareness of Italian culture and literature.

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

FORMAT: Lecture/discussion
PREREQUISITE: ITAL 1010X/Y.06, or ASSC 1010X/Y.06
EXCLUSION: ITAL 2000X/Y.06

ITAL 2011X/Y.06: The Origins of Modern Italy. An introductory survey of Italian history from the late Renaissance to the French Revolution, and Italy’s passage from the Western world’s pilot economy and culture, to a place on the margins of Europe. Specifically, the class deals with the ecology and the economy, the influence of the Church and the Inquisition, the impact of piracy, banditry, epidemics and the Thirty Years War, the decline of the Spanish Empire, and the evolution from a Baroque sensitivity to the Enlightenment. Open to first-year students. Taught in English.

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

FORMAT: Lecture/discussion
CROSS-LISTING: HIST 2000X/Y.06
EXCLUSION: HIST 2001X/03

ITAL 2200.03: Modern Italian Culture. This course will focus on the transformation of modern Italian culture from the early twentieth century to the present, with discussion of major historical and social events of the period. Topics may include fascism, futurism, neo-realism, the rise of media culture, the revival of Italian cinema, and Italy’s political role in the European Union. This course will be conducted entirely in English.

FORMAT: Lecture
EXCLUSION: ITAL 2200X.03

ITAL 2210.03: Introduction to Italian Literature. This course will provide an overview of the development of Italian Literature from the Middle-Ages to the present day. Literature covered will include works by Dante Alighieri, Leonardo da Vinci, Niccolò Machiavelli, Galileo Galilei, Giacomo Leopardi, Luigi Pirandello, Italo Calvino, and Umberto Eco. The course will be given in English and readings for Italian minor and major students will be in Italian.

FORMAT: Lecture
PREREQUISITE: ITAL 1010X/Y.06 or permission of instructor
EXCLUSION: ITAL 3200.03

ITAL 3010X/Y.06: Advanced Italian. This course will focus on spoken and written Italian. Cultural aspects of Italy’s past and contemporary history will be the subjects of oral discussion and written composition. Topics such as fine arts, theatre, cinema, music, culinary history, and fashion will be the basis for language practice. The goal of the course is to provide students with conversational and writing skills. Attention will be given to finer points of grammar, particularly Italian morphology and syntax. Students will engage in small group work and individual reporting. The material for the course will be drawn from both specialized workbooks and news/articles from authentic Italian newspapers and websites. Some class time will be devoted to impromptu discussions allowing students to test their thinking and communication skills.

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

FORMAT: Lecture/discussion
PREREQUISITE: ITAL 3010X/Y.06 or permission of instructor

ITAL 3200.03: Modern Italian Literature. This course will examine Italian literary production from the early twentieth century to today, in the context of modern and contemporary history and social conditions. The focus will be mainly on short fiction. The choice of authors highlights some of the most important names in Italian literature and is designed to represent a variety of writing styles, genres, and regional origins. Some of the authors discussed will be Gabriele D’Annunzio, Italo Svevo, F.T. Sciaccia, Andrea Zanzotto, and Dacia Maraini. The class will be conducted entirely in Italian.

FORMAT: Lecture/discussion
PREREQUISITE: ITAL 3010X/Y.06 or permission of instructor

ITAL 3300.03: Twentieth Century Italian Fiction. This course will focus on Italian fiction writers since World War II. The class will discuss works by Italo Calvino, Leonardo Sciascia, Antonio Tabucchi, Natalia Ginzburg, Clara Sereni. The class will provide a set of critical tools to understand the literary discourse and will place the content in its historical and cultural context. Readings and lectures will be in Italian.

INSTRUCTORS: F. Caballero
FORMAT: Lecture
PREREQUISITE: ITAL 2200X.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 in the history of its commedia dell’arte to its political and literary movements to its world-renowned filmmaking practice, from the changing role of women in Italian society to its religious evolution, from its history of migration and exploration to its “Made in Italy” international appeal and marketing. Topics may be added and perspectives changed as the contemporary Italian and European context evolve. The class will be conducted in a seminar setting where students may report on the specific issue and subject researched. Students will take part in reading and critical evaluation of peer work and individually propose an oral presentation on a selected theme that elicits their interest.

FORMAT: Lecture/discussion
PREREQUISITE: ITAL 3010X/Y.06 or permission of instructor

ITAL 3600.03: Italian National Cinema: The New Wave. The focus of the course is the Neorealism of Italian cinema, which received international recognition since the 1980s. Its aim to investigate current Italian film production within the social and cultural climate of contemporary Italy.

FORMAT: Lecture/semester
CROSS-LISTING: THEA 3320
ITAL 4010.03: Advanced Composition.
This course addresses issues of syntax and grammar, register and style, and advanced vocabulary for both creative and academic writing. It teaches students to write a well-structured short story as well as a cogent essay for upper-level literature classes in Italian. It will have both a theoretical and a practical component and will be writing intensive. Students will exercise advanced reading skills, advanced grammar skills (using sophisticated Italian syntax and morphology), and advanced composition skills (from structuring a creative piece of work to essay composition and completion). Compositions will address Italian literary and academic works. Students will work both in groups and individually. The class will be given in a workshop format, and student participation is essential to its success. It is recommended that students read Italian as much as possible (texts from mass media, popular fiction as well as academic material). Work in class and at home will include summaries, synopses, bullet-point schemes, writing and re-writing, peer reviewing, and related research.
FORMAT: Seminar/tutorial
PREREQUISITE: ITAL 3010X/Y.06 or permission of instructor

ITAL 4020.03: Italian to English Translation.
The course introduces students to theoretical, technical, and practical aspects of interpretation and translation. Students will practice translation from ITALIAN to ENGLISH by using sample texts from history, literature, film, newspapers, and websites. In doing so, they will be introduced to a variety of styles, literary devices, semantic and cultural distinctions, and structural differences between Italian and English. Students will acquire the necessary tools to develop fine translation skills from Italian to English.
FORMAT: Lecture/discussion
PREREQUISITE: ITAL 3010X/Y.06 or permission of instructor

ITAL 4040.03: Dante’s Inferno.
From Dante’s spiritual crisis to his descent into the pit of Hell and encounter with Satan. A journey of self-discovery, the Comedy is one of the world’s literature absolute masterworks and a summa of the medieval culture. This class offers a general knowledge of its first section, Inferno, and provides an introduction to medieval culture and history. Each class will involve reading from the text, commentary and discussion of the readings assigned. The course is usually attended by Italian minors and majors students will be required to read the texts in Italian.
INSTRUCTORS: F. Cusabutto
FORMAT: Lecture
PREREQUISITE: A 2000 level in any of the following: Classics, English, Comp. Religion, European Studies, French, Spanish, German, Russian, Music, History or permission of instructor.
CROSS-LISTING: REL 4040

ITAL 4060.03: Topics in the Civilization of Baroque Italy.
This course emphasizes the methods and sources historians employ to study Italian history, cira 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 4980.03: Independent Study.
Individually directed research and writing under the supervision of a member of department.
FORMAT: Seminar

ITAL 4990.03: Independent Study.
Individually directed research and writing under the supervision of a member of department.

Journalism

Contact Person: Professor Kim Karmara
Location: University of King’s College
Telephone: 422-1271 Ext 164

I. Minor in Journalism Studies
Students may take a Minor in Journalism Studies as part of a Dalhousie or King’s four-year Major or Honours Arts degree. The goal of the Minor in Journalism Studies is to introduce students to journalism and to basic journalistic methods and techniques. Students who wish to take a Minor in Journalism Studies must meet the requirements for the Major or the Honours program in their chosen discipline and successfully complete 30 credit hours in Journalism, including JOUR 1001X/Y and JOUR 2004X and 21 credit hours in electives.

II. Curriculum
A. Core Requirements
Students must complete 5.5 full credits of core courses:
JOUR 1001X/Y.06: Foundations of Journalism.
This course gives students both a theoretical and practical introduction to journalism. In one part, students will learn how to read, listen and watch the news knowledgeably and critically. They will look at the history of journalism as it has developed in newspapers, radio, television and internet and examine how the structure of the media influence journalistic principles and practices. The other part of this class teaches students how to write imaginative and interesting prose using correct English and effective story telling methods. Students will be required to write nearly every day and will have their work assessed by professional journalists. NOTE: Students taking this class must register in both X and Y in consecutive terms. Credit will be given only if both are completed consecutively.

JOUR 2000.03: Reporting Techniques.
This is a practical course. The objective of lectures, class discussions and in- and out-of-class assignments is to help students become better practitioners of newspaper journalism. The course will consider the power of "story" in news writing and reporting. It will examine in detail matters of structure and style. Students will produce stories (based on ideas they generate themselves) for The Transcript, an online newspaper about the university community in Halifax. They will also do regular (although unannounced) in-class, on-the-clock basic reporting assignments - to familiarize them with working under the pressure of tight deadlines. PREREQUISITE: JOUR 1001.06

B. Elective Requirements
Students must complete 21 credit hours in electives from the list below:
This class will introduce students to broadcast news writing and reporting, emphasizing skills particular to radio such as writing for the ear and to deadline, interviewing for tape and on-air performance. Students will visit a radio news operation and examine policy, broadcast standards and ethical issues. PREREQUISITE: JOUR 1001.06
RESTRICTION: This class is not available to students in the BJH program.
JOUR 3003.03: Introduction to Television. This class will introduce students to broadcast news writing and reporting, emphasizing skills particular to television such as writing to pictures and interviewing live to tape. Students will visit a television news operation and examine policy, broadcast standards and ethical issues. PREREQUISITE: JOUR 1001.06

RESTRICTION: This class is not available to 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 a working knowledge of how business functions. It will provide students with the tools to analyze and present complex economic situations in clear language. PREREQUISITE: JOUR 2000.03 or JOUR 2001.06 or permission of the Instructor.

JOUR 3340.03: Introduction to Narrative Nonfiction. Narrative nonfiction writing includes literary journalism, memoir and essay. In this introductory class, students will learn about the historical development of this genre as well as read and discuss some of the best examples of historical and contemporary narrative nonfiction. The goal is for students to become better informed readers as well as to produce their own writing. PREREQUISITE: JOUR 1001.06 or permission of the Instructor.

JOUR 3341.03: 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 3350.03: Copy Editing. In this course, students will focus on the skills copy editors need to perform the most basic and essential of their tasks - handling stories. Students will edit, on paper and on screen, real stories selected for their potential as well as their problems. They will work on them for tightness, polish, accuracy and style. The goal is to help students develop the copy editor's "double vision" - the ability to see the story as a whole, and line by line, as a collection of parts, to see both the forest and the trees. This class is not only for students who want to become copy editors, but also for students who want to become better editors of their own writing. PREREQUISITE: JOUR 2000.03 or JOUR 2001.06

JOUR 3357.03: 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 3360.03: Great Journalists. Students taking this class will read, watch and listen to the work of great journalists including Nellie Bly, James Cameron, Joan Didion and Barbara Froom. Hard work, dedication, imagination and courage helped make these journalists great. Studying their work helps us realize how valuable journalism can be.

JOUR 3360.03: 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.
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 the context of understanding how courts reason, and the principles that they bring to bear in reaching their decisions. The class will look in particular at introductory case law concerning tort law (wrongs by one person against another), personal property, criminal law, and the law as it relates to Aboriginal peoples.

Enrolment is limited to students in their second year of undergraduate studies and beyond.

INSTRUCTOR(S): S. Coughlan, D. Darling

FORMAT: Lecture/discussion 3 hours

Please refer to the Dentistry, Law, Medicine, Graduate Studies Calendar for detailed information on Law programs at the undergraduate and graduate levels.

I. Minor in Law and Society

Students taking a Major or Honours BA in the Faculty of Arts and Social Sciences may take a Minor in Law and Society.

A. Required Classes

- LAWS 2500.06: Introduction of Law passed with a minimum of B-

B. Elective Requirements

These full classes or equivalent from the approved list below, including at least one half-class from each of the following disciplines: History, Philosophy, Political Science, and Sociology and Social Anthropology. To count towards the Minor, classes must be passed with a minimum of B. Additions to the following list will be made as the program develops.

- HIST 2221.03: Rough Justice - to the 1890s
- HIST 2222.03: Rough Justice - 1890s to the Present
- HIST 3263.03: Law and Justice in Canadian Society, to 1890
- HIST 3227.03: Criminal Law, Crime and Punishment, 1890 - present
- PHIL 2020.03: Legal Thinking
- PHIL 2160.03/GWST 2500.03*: Philosophical Issues in Feminism
- PHIL 2475.03: Justice in Global Perspective
- PHIL 2490.03: Social, Ethical and Professional Issues in Computer Science
- PHIL 3031.03: Philosophy of Law
- POLI 2210.03: Unity and Diversity: Dynamics of Canadian Federalism
- POLI 2320.03: World Politics
- POLI 3280.03: Constitutional Issues in Canadian Politics
- POLI 3330.03: Human rights: Political Issues
- POLI 3402.03: Human rights: Philosophical Issues
- POLI 3482.03/GWST 3680.03**: Women as Citizens
- POLI 3501.03: Diplomacy and Negotiations
- SOCI 2036.06: Social Inequality
- SOCI 2180.03: Sociology of Crime and Criminal Justice
- SOCI 3185.03: Native Peoples in North America
- SOCI 3225.03: Culture, Rights, Power
- SOCI 3275.03: Crime and Public Policy

Other Approved Electives

- JOUR 3333.03: News Media and the Courts
- LAWS 2122.03/2123.03: Canadian Legal History
- PSY 3224.03: Forensic Psychology
- PSY 4000.03: Senior Seminar (on a forensic topic)
- SCIE 3280.03: Environmental Law

- SOCI 3281.03: Youth Crime
- SOCI 3286.03: Sociology of Criminal Law
- SOCI 3295.03: Society and the Police

*fulfills the PHIL requirement even if taken as GWST 2500
**fulfills the POLI requirement even if taken as GWST 3650
Linguistics

Location: 6135 University Ave.
Halifax, NS B3H 4P9
Telephone: (902) 494-1440
Fax: (902) 494-3925

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

Dalhousie Coordinator
Please consult the Linguistics Program Website for this year’s Program Coordinator.

Dalhousie Faculty
Furrow, M., English, Professor
Gordon, T.W., French, Adjunct Professor
Hamel, M.-J., French, Associate Professor
De Mén, F., French, Professor
Milacevic, J., French, Assistant Professor
Mopoli, K., French, Associate Professor
Hymers, M., Philosophy, Associate Professor
Dasacn, H., Psychology, Assistant Professor
Yoon, M., Psychology, Adjunct Professor
Barnard, J., Russian Studies, Associate Professor

I. Halifax Interuniversity Program in Linguistics
Halifax area universities offer a joint program in linguistics. Students enrolled in this program take classes from Dalhousie, Saint Mary's and Mount Saint Vincent University to 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.A, page 32). Interested students should contact the program coordinator for more information.

An undergraduate degree in linguistics gives students opportunities to study the formal, functional, and systemic nature of language and languages. This is achieved through the study of linguistic theory and through training in methods of linguistic analysis. Linguistics degrees have many practical applications. Linguistics provides the groundwork for teaching languages: linguists write the descriptions language teachers use and linguistics provides methods for understanding language learning processes and disorders. Linguistics also provides relevant background for research into sign languages and the development of computer languages. It forms the basis for understanding bilingualism, for language planning in multilingual countries, for developing programs for increasing literacy, and for enhancing the efficiency of translation services. Linguistics informs literary and cultural studies, and is central in the developing cognitive sciences. It is, of course, also a discipline in its own right which may be studied for its own sake.

The study of language as both a cognitive and social phenomenon entails cognate relationships with an extremely wide array of disciplines. Some of these are suggested by the interdisciplinary nature of the program. Faculty from Anthropology, English, French, Gender and Women’s Studies, Political Science, Philosophy, Psychology, Russian, and Sociology are participants. Many students will elect to combine linguistics majors with majors in the other areas in which cross-listed and recommended classes are offered.

“Core” classes are offered by the Linguistics Program through Modern Languages Departments at Saint Mary’s and Mount Saint Vincent and the Department of French at Dalhousie.

Some of the classes include: The English Language, Philosophy of Language, Psycholinguistics, Neurolinguistics.

II. Degree Programs
Although the Linguistics program is offered jointly by several universities, the degree is granted by the student’s home University. Students must meet the general requirements set by the University in which they are registered.

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

Core Program Requirements

• A two semester (full credit equivalent) Introduction to Linguistics, which can be taken at any of the three institutions:
  • SMU LIN 1200.1(2) Introduction to Linguistic Analysis
  • SMU LIN 2310.1(2) Nature of Language, and MSVU 2322.1(2) The Analysis of Language

Students who may not be eligible for the Honours Program are encouraged to enter the 20-credit Major program. Students who plan to do graduate work in linguistics: Students must have a GPA of 3.0 or better for admission to the honours program, and must maintain a GPA of 3.0 or better in classes contributing to their honours degree in linguistics.

B. Combined Honours in Linguistics

Combined honours programs with Linguistics may be arranged with other departments.

C. 20-credit BA with Major in Linguistics

Students who may not be eligible for the Honours Program are encouraged to enter the 20-credit Major degree program. Consult the program coordinator.

Program Requirements

• A minimum of 10 credits. These must include:
  • Two to four of the following half-credit classes (or equivalent), depending on the specific degree:
    • DAL FREN 3021.06 Linguistics or FREN 2020.05 Introduction to Linguistics plus FREN 3021.03 (Phonetics) or FREN 3022.03 Sémantique (taught in French)
    • MSU LING 2311.1(2) Nature of Language, and MSU 2322.1(2) The Analysis of Language
  • Two to four of the following half-credit classes (or equivalent),
    • DAL FREN 2301.1(2) Phonology
    • MSU LING 2310.1(2) Morphology
    • MSU LING 2310.1(2) Syntax
    • MSU LING 2341.1(2) Sémantique

• One credit selected with the advice of the program coordinator. In addition to regularly scheduled classes, special topics / directed readings, computer language classes and/or intermediate level formal logic classes may be recommended here.

• The equivalent of a one-credit second (or foreign) language class at the intermediate level; and,
• Five credits selected from the list of linguistics classes offered at Dalhousie, and neighbouring universities (see the list of options below).

B. Combined Honours in Linguistics

Combined honours programs with Linguistics may be arranged with other departments.

C. 20-credit BA with Major in Linguistics

Students who may not be eligible for the Honours Program are encouraged to enter the 20-credit Major degree program. Consult the program coordinator.

Program Requirements

• A minimum of six full credits, at least 3 credits of which must be at the 3000 level or above. These must include:
  • A two semester (full credit equivalent) Introduction to Linguistics, listed under Core Program Requirements (above);
• Two of the half-credit classes (or equivalent), listed under Core Program Requirements (above);

• The equivalent of one full credit selected with the advice of the program coordinator. This requirement may be met by regularly scheduled classes listed or cross-listed as linguistic classes, by special topics / directed readings classes in linguistics, and by computer language classes.

• A two semester (full credit equivalent) Introduction to Linguistics, listed under Core Program Requirements (above);

• The equivalent of one full credit selected with the advice of the program coordinator. This requirement may be met by regularly scheduled classes listed or cross-listed as linguistic classes, by special topics / directed readings classes in linguistics, and by computer language classes.

• One full credit selected from the list of options below:

D. 20-credit BA with Double Major in Linguistics

Program Requirements
A minimum of four full credits, as outlined below. At least two of the four credits must be at or above the 3000 level. These must include:

• A two semester (full credit equivalent) Introduction to Linguistics, listed under Core Program Requirements (above);

• Two of the half-credit classes (or equivalent), listed under Core Program Requirements (above);

• The equivalent of one full credit selected with the advice of the program coordinator. This requirement may be met by regularly scheduled classes listed or cross-listed as linguistic classes, by special topics / directed readings classes in linguistics, and by computer language classes.

• One full credit selected from the list of options below:

E. 15-credit BA with Concentration in Linguistics

Program requirements
A minimum of four full credits, as outlined below. At least two of the four credits must be at or above the 3000 level.

• A two semester (full credit equivalent) Introduction to Linguistics, listed under Core Program Requirements (above);

• Two of the half-credit classes (or equivalent), listed under Core Program Requirements (above);

• The equivalent of one full credit selected with the advice of the program coordinator. This requirement may be met by regularly scheduled classes listed or cross-listed as linguistic classes, by special topics / directed readings classes in linguistics, and by computer language classes.

• One full credit selected from the list of options below:

III. Options

Students should plan their programs with attention to the prerequisites for the classes listed below. Some of the classes are offered infrequently. Please consult the relevant university’s calendar for class descriptions, prerequisites and this year’s current offerings.

A. Classes Offered at Dalhousie University

Contemporary Studies

• CTMP 2391.03: Seminars

• CTMP 4115.05: Language and Politics: The Linguistic Turn in Contemporary Political Thought

English

• ENGL 2201.06: The English Language

• ENGL 3407.06: Old English

French

• Unless specifically indicated otherwise, all courses are taught in French.

• FREN 3020.05: Quebec French

• FREN 4001.05: History of French: The Middle Ages

• FREN 4001.05: History of French: The Modern Period

• FREN 4001.05: Lexicology

• FREN 4012.05: Aspects of French Structure

• FREN 4013.05: Pragmatics

• FREN 4014.05: Language and Society

• FREN 4015.06: Advanced Translation into English

• FREN 4016.06: Introduction to Applied Linguistics and Language Teaching (taught in English)

• FREN 4017.03: General Translation

• FREN 4018.03: Electronic Tools and Resources for French (taught in English)

Philosophy

• PHIL 3010.03: Philosophy of Language

• PHIL 4510.03: Topics in the Philosophy of Language

Psychology

• PSY 2900.03: Psycholinguistics

• PSY 3920.03: Sensory Neuroscience: Hearing and Speech

• PSY 3920.03: Neurolinguistics

• PSY 3930.03: Language & Literacy

Russian

• RUS 4001.06: The Structure of Contemporary Standard Russian

Sociology

• SOCA 3041.03: Sociolinguistics

B. Classes offered at Saint Mary’s University (SMU) and Mount Saint Vincent University (MSVU)

Anthropology

• SMU ANT 2391.02: Introduction to Linguistic Anthropology

• SMU ANT 2392.01: Language, Culture and Society

• SMU ANT 3331.02: Language Use and Issues in Northern Canada

• SMU ANT 4491.02: Ethnography of Communication

• SMU ANT 4492.02: Anthropological Analysis of Linguistic Communities

• MSVU LING 2281.12: Language and Culture

Education

• MSVU LING 3385.12: Teaching English as a Second Language I

• MSVU LING 3386.12: Teaching English as a Second Language II

English

• SMU EGL 2311.02: Modern English Language

• SMU EGL 3312.01 (2): Modern English Language in Canada

• SMU EGL 3402.01: History of the English Language

• SMU EGL 3308.12: English Prise Style from 1500

• SMU EGL 4490.0: Discourse Analysis

French

• SMU Fre 3312.02: French Phonetics

• SMU FRE 3341.02: Linguistic Study of French

• SMU FRE 3358.02: Acadain Language and Culture

• SMU FRE 4449.02: Canadian French: Sociolinguistic Perspectives

• MSVU LING 3371.02: Structure and Variety in Contemporary French

• MSVU LING 3372.02: Structure and Variety in Contemporary French

• MSU LING 3384.12: The Development of Modern French

Linguistics

• SMU LIN 4410.02: Directed Readings in Linguistics I

• SMU LIN 4411.02: Directed Reading in Linguistics II

• SMU LIN 3341.02: Special Topics in Linguistics I

• SMU LIN 4432.02: Special Topics in Linguistics II

• SMU LIN 3341.02: Advanced Morphology

• SMU LIN 3342.02: Comparative Linguistics

Political Studies

• MSVU LING 3308.12: Language and Politics

Philosophy

• SMU PH 4021.02: Philosophy of Language: Meaning

• SMU PH 4031.02: Philosophy of Language: Speech Acts
Music

Location: Dalhousie Arts Centre
6101 University Avenue, Room 514
Halifax, NS B3H 4B2
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. (902-2418)

Student Advisor
Stodola, L. (904-3489)

Professors
Schneader, D.P., AMus, BA, MA (Western) PhD (Cantab)
Servant, G. W., BMus (Dal), MMus, DMA (Hartt), Artist Diploma (Opernhaus Zurich)

Associate Professors
Bair, J., BMus (Wilmington Lawer), MA (McGill), PhD (SUNY Stony Brook)
Djokic, P., BMus, MMus (Julliard)
Stodola, L., BMus (Chicago), MMus (Julliard)
Swanson, M., BMus (Leithbridge), PC DimpMus, Opera Program (Goldhill School of Music and Drama, London, U.K.)

Assistant Professors
Allen, P., BMus (Mt. Allison), MMus (Yale)
Bair, S. BA (Music) (Gonzala Marymount), MA (UCLA), PhD (UCLA)
Blank, J., BMus (McGill), MMus, DMus (Montreal)
Warwick, J., BMus (Toronto), MA (York), PhD (UCLA)

Instructor
Ewer, G. BMus (Dal)

Sessional Lecturers
Reach, D., BMus (Dalhousie)
Mitchell, C.

Part-Time Instructors
Adams, C., BAEd (Acadia), Masters Conducting Program Diploma (Calgary)
Bowden, D., BMus, BMus (Toronto)
Brownell, J., BMus (Acadia), MMus (Arizona State)
Chung, Y., BMus (UBC), BMus (Minnesota)
Coughlin, P., BMus (Toronto)
Davies, E., BMus (Eastman), MMus (Emporia State)
Fournier, C., BMus (Toronto), MMus (Julliard)
Hofman, A., BMus, MMus (New England Conservatory)
Issacs, M., BMus (Toronto), MMus (Northwestern)
Kapoor, M., Artist’s Diploma (Toronto)
Lemieux, S., BMus (Ottawa), MMus (Michigan)
Parker, D., BMusEd (Acadia), MMus (Boston University), Artist Diploma (Toronto)
Rapson, J., BMus (Toronto)
Redmond, P., BA, BEd (Mt. St. Vincent)
Rothwell, I.
Scott, M., BMus (Dal)
Sheppard, C., BMus (Dal)
Shephard, J., BMus, MMus (New England Conservatory)
I. Introduction

The Music Department provides a wide variety of programs for those whose demonstrated talent and specific pre-university training qualify them for specialization in Music studies. Certain classes and ensembles are available to the non-specialist student who wishes to increase both musical awareness as a listener and involvement as a performer.

The Bachelor of Music Program offers intensive professional music training which prepares students for careers or further study in many areas, including performance, composition, theory, musicology, music criticism or music education. It also offers excellent preparation for professional studies in other areas, such as law or journalism.

The 20-credit BA in Music, the Honours BA in Music, and the BA or BSc Combined Honours with Music programs provide a strong foundation for various professions where a working knowledge of music is desirable, such as librarianship, media programming and production, music industry commercial studio and electroacoustic work, arts management, recreational and therapeutic work, to name only a few.

The Combined Honours BA (Music and Theatre) combines the essential curricula of the voice and acting programs producing the potential 'triple threat' stage performer.

Elective classes for non-majors are available, some of which require no musical background or training.

II. Degree Programs

A. Elective Classes for Non-Majors

- MUSC 1020.03: Listening to Classical Music
- MUSC 1021.03: Listening Beyond the Classics
- MUSC 1051.03: Preparatory Music Theory I
- MUSC 1052.03: Preparatory Music Theory II
- MUSC 2007X/Y.03: The Guitar: History and Techniques
- MUSC 2008X/Y.06: Modern Guitar
- MUSC 2015X/Y.06: Topics in Music and Cinema
- MUSC 2016.03: Popular Music Until 1990
- MUSC 2019.03: The Rock 'n' Roll Era and Beyond
- MUSC 2020.03: The History of Jazz
- MUSC 2040X/Y.06: Recording Studio Techniques
- MUSC 3001.03: Introduction to Music and Sound Technology
- MUSC 3004.03: Electroacoustic Music
- MUSC 3100.06: History of Musical Theatre (cross-listed with THEA 3100.06)
- MUSC 3162.06: Topics in Canadian Music
- GWSY 2006.03: Women, Gender and Music (MUSC 3006.03 for Music Majors)
- MUSC 3165.03: Narrative Strategies in 20th-Century Music (cross-listed with GWSY 3100.03)

Other classes in Music may be taken by special permission of the Department. Applied study (individual studio instruction) may be taken subject to an audition and available space.

B. Admission Procedures for all Music Programs

All Music programs require that candidates (including transfer students) apply to both the university and Department and audition for Applied Study. See the Department’s web site at http://music.dal.ca for the full application process. Re-audition and testing may be required if enrollment is deferred, if a program is interrupted for a year or more, or if an applied study class is not successfully completed in one academic year.

C. Ensemble Participation

All students (majors or non-majors) enrolled in an applied study class (instrument or voice) must participate in a minimum of one ensemble each year as a co-requisite. Bachelor of Music students normally participate in two ensembles each year. Ensembles are chosen in accordance with instrument/program requirements and in consultation with the applied studies instructor. Please see the Department for specific guidelines and rehearsal schedules. As of the 2007/08 year, students will register online for a non-credit Ensemble requirement and receive a Pass/Fail grade.

Students enrolled in applied study must successfully complete all Ensemble requirements in order to graduate.

Students should note that ensemble participation normally requires weekly rehearsals along with regularly scheduled concert performances. Since rehearsals and concerts are often in the evening, students are advised not to undertake evening commitments that could conflict with these program and class requirements.

Membership in the various ensembles is open to the university and the community by audition. Please contact the director of each ensemble listed below or the Department for further details.

- Dalhousie Chorale (Ch.L. Easton)
- Dalhousie Chamber Choir (C. Everitt)
- Dalhousie Symphony Wind Ensemble (C. Adams)
- Dalhousie Chamber Orchestra (P. Dykie)
- Dalhousie Jazz Ensemble (G. Mitchell)
- Dalhousie Percussion Ensemble
- Dalhousie Opera Workshop (C. Servant, M. Swanson, N. Scott-Stoddard)
- Small Ensembles (staff coaches)
- Collaborative Piano (staff coaches)
- Dalhousie Orchestra
- Voice Chamber Ensemble (M. Swanson)
Standards for Preparatory Classes
Minimum grades for advancement to first-year Music degree studies (see Special Notes #2 and #3 above):

MUSC 1001.03 C-
MUSC 1002.03 B-
MUSC 1011.03 B-
MUSC 1100.03 Y.06

B. Bachelor of Music (BMus)
The BMus is a four-year program with sixteen out of twenty credits in Music. Upon successful completion of the second year, students in good standing (minimum overall average GPA of 2.7 [B-] in first and second year Music classes) may continue with studies in the BMus General degree or may apply for one of three concentrations (Composition, Musicology or Performance). Additional requirements for acceptance to the areas of concentration are listed below with concentration requirements.

Students wishing to pursue one of the three concentrations must apply for their area by March 1 of their second year of study.

1. Common Curriculum
First Year
- MUSC 1000-level Applied Study (MUSC 1011X/Y.06 to MUSC 1121X/Y.06)
- MUSC 1201.03: Music Theory I
- MUSC 1202.03: Music Theory II
- MUSC 1207X/Y.05: Aural Skills I
- MUSC 1211X/Y.05: Keyboard Skills I
- MUSC 1233.03: Music History I
- MUSC 1235.03: Music History II
- Arts and Social Sciences or Science elective, 1 full credit (Writing Class elective)

* MUSC 1022X/Y.00 Ensemble I (normally 2 ensembles, as approved by the Department and Applied Study instructor)
* MUSC 1070X/Y.03 B-
* MUSC 1001.03 C+

Second Year
- MUSC 2000-level Applied Study (MUSC 2101X/Y.06 to MUSC 2212X/Y.06)
- MUSC 2201.03: Music Theory III
- MUSC 2202.03: Music Theory IV
- MUSC 2207X/Y.05: Aural Skills II
- MUSC 2212X/Y.05: Keyboard Skills II
- MUSC 2233.03: Music History III
- MUSC 2353.03: Music History IV, Focused Study *
- Arts and Social Sciences or Science electives, 2 half credits

* MUSC 0222X/Y.00: Ensemble II (normally 2 ensembles, as approved by the Department and Applied Study instructor)

Third Year
- MUSC 3000-level Applied Study (MUSC 3101X/Y.06 to MUSC 3212X/Y.06)
- MUSC 3281.03: Form and Analysis I
- MUSC 3282.03: Orchestration
- MUSC 3283.03: Modal Counterpoint or MUSC 3284.03: Tonal Counterpoint
- MUSC 3299.03: Graduation Project OR MUSC 3299.03: Graduation Requirement (Thesis)

NOTE: Those students who are interested in pursuing a career in classroom teaching of music must complete an undergraduate degree in Music and then complete a Bachelor of Education (BEd) degree at another institution. Students are advised to consult provincial regulations for teacher certification and entrance requirements for their institution of choice, and to meet with the Music Department Student Advisor, in order to ensure optimal course selection within the BMus General degree program.

2. BMus General Degree
Students in good standing (minimum overall average GPA of 2.7 [B-] in first and second year Music classes) may proceed to a BMus General degree. Students in good standing (minimum overall average GPA of 2.7 [B-] in first and second year Music classes) may continue with studies in the BMus General degree or may apply for one of three concentrations (Composition, Musicology or Performance). Additional requirements for acceptance to the areas of concentration are listed below with concentration requirements.

Students wishing to pursue one of the three concentrations must apply for their area by March 1 of their second year of study.

Students well for advanced degrees in Music including the Bachelor of Education, as well as for a wide range of careers in music.

Students must submit a proposal for their intended graduation credit (4599.03 Project or 4399.03 Thesis) by March 1 of the third year of study, according to Department guidelines. Students must achieve a minimum grade of 2.7 (B-) in this credit.

Third Year
- MUSC 3000-level Applied Study (MUSC 3101X/Y.06 to MUSC 3212X/Y.06)
- MUSC 3283.03: Modal Counterpoint OR MUSC 3284.03: Tonal Counterpoint
- MUSC 3299.03: Graduation Project OR MUSC 3299.03: Graduation Requirement (Thesis)

NOTE: Those students who are interested in pursuing a career in classroom teaching of music must complete an undergraduate degree in Music and then complete a Bachelor of Education (BEd) degree at another institution. Students are advised to consult provincial regulations for teacher certification and entrance requirements for their institution of choice, and to meet with the Music Department Student Advisor, in order to ensure optimal course selection within the BMus General degree program.

3. Concentration in Composition
Students in good standing (minimum overall average GPA of 2.7 [B-] in first and second year Music classes) may proceed to a BMus General degree or may apply for one of three concentrations (Composition, Musicology or Performance). Additional requirements for acceptance to the areas of concentration are listed below with concentration requirements.

Students must submit a proposal for their intended graduation credit (4599.03 Project or 4399.03 Thesis) by March 1 of the third year of study, according to Department guidelines. Students must achieve a minimum grade of 2.7 (B-) in this credit.

Third Year
- MUSC 3000-level Applied Study (MUSC 3101X/Y.06 to MUSC 3212X/Y.06)
- MUSC 3211X/Y.06: Composition I
- MUSC 3212X/Y.06: Composition II
- MUSC 3213X/Y.06: Composition III
- MUSC 3299.03: Graduation Project OR MUSC 3299.03: Graduation Requirement (Thesis)

NOTE: Those students who are interested in pursuing a career in classroom teaching of music must complete an undergraduate degree in Music and then complete a Bachelor of Education (BEd) degree at another institution. Students are advised to consult provincial regulations for teacher certification and entrance requirements for their institution of choice, and to meet with the Music Department Student Advisor, in order to ensure optimal course selection within the BMus General degree program.

Fourth Year
- MUSC 4000-level Applied Study (MUSC 4101X/Y.06 to MUSC 4121X/Y.06)
- MUSC 4281.03: Form and Analysis II
- MUSC 4322.03: Orchestration
- MUSC 4599.03: Graduation Project OR MUSC 4399.03: Graduation Requirement (Thesis)

NOTE: Those students who are interested in pursuing a career in classroom teaching of music must complete an undergraduate degree in Music and then complete a Bachelor of Education (BEd) degree at another institution. Students are advised to consult provincial regulations for teacher certification and entrance requirements for their institution of choice, and to meet with the Music Department Student Advisor, in order to ensure optimal course selection within the BMus General degree program.

3. Concentration in Composition
Students in good standing (minimum overall average GPA of 2.7 [B-] in first and second year Music classes) along with a minimum overall average GPA of 3.3 (B+) in their Music Theory and Composition classes (MUSC 1201, 1202, 2201 and 2210) may submit a portfolio of original music (normally prepared in the MUSC 2210 Introduction to Composition) by March 1 of the second year to apply for admission to this concentration.

Students selected for this concentration will demonstrate outstanding abilities and potential as composers. See Department for further details concerning admission procedures.

Students who are accepted in this concentration must achieve a minimum grade of 3.3 (B+) in Composition I (MUSC 3210.03) in order to remain in the concentration. Students must achieve a minimum grade of 2.7 (B-) in both MUSC 4210.03 and MUSC 4299.03.

Third Year
- MUSC 3000-level Applied Study (MUSC 3101X/Y.06 to MUSC 3212X/Y.06)
- MUSC 3211X/Y.06: Composition I
- MUSC 3212X/Y.06: Composition II
- MUSC 3213X/Y.06: Composition III
- MUSC 3299.03: Graduation Project OR MUSC 3299.03: Graduation Requirement (Thesis)

NOTE: Those students who are interested in pursuing a career in classroom teaching of music must complete an undergraduate degree in Music and then complete a Bachelor of Education (BEd) degree at another institution. Students are advised to consult provincial regulations for teacher certification and entrance requirements for their institution of choice, and to meet with the Music Department Student Advisor, in order to ensure optimal course selection within the BMus General degree program.

Fourth Year
- MUSC 4000-level Applied Study (MUSC 4101X/Y.06 to MUSC 4121X/Y.06)
- MUSC 4281.03: Form and Analysis II
- MUSC 4322.03: Orchestration
- MUSC 4599.03: Graduation Project OR MUSC 4399.03: Graduation Requirement (Thesis)
Faculty of Arts and Social Sciences

MUSC 4281.03: Form and Analysis II
MUSC 3661.03: Introduction to Music and Sound Technology
MUSC 3661.03: Electronic Composition
MUSC 4299/Y.05: Area Graduation Requirement (Composition)
Arts and Social Sciences or Science elective, one full credit.
Music elective, 5 credit.

4. Concentration in Musicology
Students in good standing (minimum overall average GPA of 2.7 [B+] in first and second year Music classes) must submit two writing samples by March 1 of the second year to apply for admission to this concentration.

Students selected for this concentration will demonstrate outstanding abilities and potential as musicologists. See Department for further details concerning admission procedures.

Students who are accepted in this concentration must achieve a minimum grade of 2.7 (B+) in the graduation requirement MUSC 4399/Y.

Third Year
MUSC 3000-level Applied Study (MUSC 3013X/Y.06 to MUSC 3123X/Y.06)
MUSC 3281.03: Modal Counterpoint or 3284.03: Tonal Counterpoint
MUSC 3281.03: Form and Analysis I
MUSC 3551.03: Music since 1945
MUSC 0232X/Y.03: Ensemble III (normally 2 ensembles, as approved by the Department and Applied Study instructor)

Fourth Year
MUSC 4000-level Applied Study (MUSC 4013X/Y.06 to MUSC 4123X/Y.06)
MUSC 4281.03: Form and Analysis
MUSC 4399/Y.05: Graduation Requirement (Thesis)
MUSC 0422X/Y.03: Ensemble IV (normally 2 ensembles, as approved by the Department and Applied Study instructor)

Also in the third and fourth years (5.5 credits)

1.5 credits of Music electives (any choice, but students are strongly encouraged to take MUSC 3202.03: Orchestration)

The equivalent of 2 full credits to be chosen from Musicology electives
1 credit of any introductory language course (X/Y.06). In a case where a student already has a second language, he or she can be directed towards a third language OR to a full credit of literature courses in the second language (e.g., FREN 2021.03: Langue et culture together with FREN 2201.03: Introduction à la littérature for a French-speaking student)
One of: HIST 1004X/Y.06: Introduction to European History or HIST 1862X/Y.06: North American Experiences

5. Concentration in Performance
Students in good standing (minimum overall average GPA of 2.7 [B+] in first and second year Music classes) along with a minimum grade of 3.3 (B+)

Students selected for this concentration will demonstrate outstanding abilities and potential as performers. See Department for further details concerning admission procedures.

Students who are accepted in this concentration must achieve a minimum grade of 3.3 (B+) in their first and second year Applied Study may audition at the end of second year to apply for admission to this concentration.

Students selected for this concentration will demonstrate outstanding abilities and potential as performers. See Department for further details concerning admission procedures.

Students who are accepted in this concentration must achieve a minimum grade of 3.3 (B+) in third year Performance Concentration: Applied Study (MUSC 3701.06 to 3721.06) and in the Third Year performance recital (MUSC 3199/03) in order to remain in the concentration. Students must achieve a minimum grade of 2.7 (B-) in their fourth year Performance Concentration Applied Study (MUSC 4701.06 to 4721.06) and in their Fourth Year performance recital (4199/03).

Third Year
MUSC 3000-level Performance Concentration Applied Study (MUSC 3701X/Y.06 to MUSC 3723X/Y.06)
MUSC 3999/Y.05: Half-Recital (Year III Performance)
MUSC 3281.03: Modal Counterpoint or 3284.03: Tonal Counterpoint
MUSC 3281.03: Form and Analysis I
MUSC 0232X/Y.03: Ensemble III (normally 2 ensembles, as approved by the Department and Applied Study instructor)

Fourth Year
MUSC 4000-level Performance Concentration Applied Study (MUSC 4701X/Y.06 to MUSC 4723X/Y.06)
MUSC 4199/Y.03: Area Graduation Requirement (Performance: Recital)
MUSC 4281.03: Form and Analysis II
MUSC 0422X/Y.00: Ensemble IV (normally 2 ensembles, as approved by the Department and Applied Study instructor)

Availing of the required and elective courses in the third and fourth years of the Bachelor of Music degree. Students must achieve an average minimum overall GPA of 2.7 (B-) in Music classes beyond the 1000-level in order to graduate with a Bachelor of Music degree. Students must achieve a minimum grade of C in first year applied study in order to advance to second year applied study. Grades in Music classes beyond the 1000-level must be C or better in order to count toward the BMus degree.

See also the sections above for specific standards regarding Areas of Concentration.

Voice (5.5 credits):
MUSC 3177.03: Vocal Literature
MUSC 3314.03: History of Opera
1.5 credits Music elective, any choice.
MUSC 2175.03: Lyric Diction for Singers, taken in year 2 or 3, depending on cycle with Pedagogy/Literature
2 full credits Arts and Social Sciences or Science electives (at least one Arts and Social Sciences or Science elective taken over the 4-year program must be an Introductory Language course: either Italian, German or French)

Piano (5.5 credits):
MUSC 3306.03: Piano Pedagogy
MUSC 3355.03: The Piano and its Literature
2.5 full credits Music electives, any choice; however, if offered, students should take:
MUSC 3355.03: Chamber Music Literature
2 full credits Arts and Social Sciences or Science electives

Strings (5.5 credits):
MUSC 3306.03: Music Violin
MUSC 4170.03: Improvisation Techniques and Practices
2 full credits Music electives, any choice
2 full credits Arts and Social Sciences or Science electives

Guitar (5.5 credits):
MUSC 3306.03: Music Guitar
MUSC 3308.06: Modern Guitar
MUSC 3314.03: History of Opera
1.5 credits Music elective, any choice.
MUSC 2175.03: Lyric Diction for Singers, taken in year 2 or 3, depending on cycle with Pedagogy/Literature
2 full credits Arts and Social Sciences or Science electives

Saxophone (5.5 credits):
MUSC 3250.03: Saxophone Pedagogy
MUSC 3355.03: Chamber Music Literature
2 full credits Arts and Social Sciences or Science electives

Wind and brass instruments, percussion (5.5 credits):
2.5 Music electives, any choice
2 full credits Arts and Social Sciences or Science electives

6. Standards
Students may not enter in the Bachelor of Music Graduation Requirement classes (MUSC 4999-MUSC 4999) until the fourth year of the Program.

Students must achieve an average minimum overall GPA of 2.7 (B-) in Music classes beyond the 1000-level in order to graduate with a BMus degree. Students must achieve a minimum grade of C in first year applied study in order to advance to second year applied study. Grades in Music classes beyond the 1000-level must be C or better in order to count toward the BMus degree.

See also the sections above for specific standards regarding Areas of Concentration.

178 Music
C. BA with Combined Honours in Music and Theatre

The Departments of Music and Theatre offer a highly specialized four-year BA with a Combined Honours in Music and Theatre, which blends the principal classes of the Bachelor of Music concentration in voice with Theatre classes in Acting and Improvisation, Dance and Movement. Students must audition for both the Music and Theatre Departments; a maximum of five students will be selected for entrance into the program each year. The graduate of this program will advance toward a professional career in the performing arts equipped with a solid “triple sensation” foundation in music and theatre.

Students interested in completing this program must successfully complete the auditions/entrance tests for the first year of the Music Program, and have an interview with the Theatre Department. Permission to continue in this program is subject to a successful completion of THEA 1003X/Y.06 and the securing of a place in THEA 2003X/Y.06.

To qualify for graduation a student must participate by having a significant role in at least one staged musical production (either an integral part of DalTheatre Productions or the Opera Workshop) and also must submit a comprehensive essay on an aspect of musical theatre.

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

NOTE: Students having to withdraw from this Program through failure to achieve the required standards in Music must re-audition if desiring a degree program in Theatre. Students having to withdraw from this Program through failure to achieve the required standards in Theatre classes must re-apply to the Department of Theatre if desiring a degree program in Theatre.

First year (5.0 credits):
• MUSC 1011X/Y.06 Voice I
• MUSC 1201.03 Music Theory I
• MUSC 1211X/Y.05 Aural Skills I
• MUSC 1221X/Y.03: Keyboard Skills I
• THEA 1003X/Y.06: Introduction to Theatre (Writing Requirement)
• THEA 1002X/Y.06: Introduction to Acting and Performance
• MUSC 0122X/Y.01 Ensemble I (normally Chamber Choir / Opera Workshop)

Second year (5.0 credits):
• MUSC 2011X/Y.06 Voice II
• MUSC 2201.03 Music Theory III
• MUSC 2211X/Y.05 Aural Skills II
• MUSC 2221X/Y.03: Keyboard Skills II
• THEA 2003X/Y.06: Acting II
• THEA 2021X/Y.06: Dance & Movement II
• MUSC 0222X/Y.01 Ensemble II (normally Chamber Choir / Opera Workshop)

Third year (5.0 credits):
• MUSC 3011X/Y.06 Voice III
• MUSC 3119X/Y.06: THEA 3010X/Y.06: The History of Musical Theatre
• THEA 3003X/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 (see Degree Requirements, p. 40 of this Calendar)
• MUSC 0322X/Y.01 Ensemble III (normally Chamber Choir / Opera Workshop)

Fourth year (5.0 credits):
• MUSC 4011X/Y.06 Voice IV
• THEA 4002X/Y.06 Acting IV
• THEA 4041X/Y.06: Advanced Performance Techniques
• Arts & Social Science: Two remaining 1000-level Life or Physical Science, Social Science, or Language Class Requirement (see Degree Requirements, p. 40 of this Calendar)
• MUSC 4022X/Y.00 Ensemble IV (normally Chamber Choir / Opera Workshop)

Honours Music and Theatre students will be awarded the 21st credit for their satisfactory participation in a DalTheatre or Opera Workshop production.

D. 20-credit BA with Major in Music

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

Departmental Requirements

First year (5.0 credits):
• MUSC 1011X/Y.06 Voice I
• MUSC 1201.03 Music Theory I
• MUSC 1211X/Y.03 Aural Skills I
• MUSC 1221X/Y.01: Keyboard Skills I
• One full credit Arts and Social Sciences Writing Class
• One full credit Arts and Social Sciences Writing Class
• MUSC 0221X/Y.00 Ensemble I (normally 1 ensemble, as approved by the Department and Applied Study instructor)

Second year (5.0 credits):
• MUSC 2011X/Y.06 Voice II
• MUSC 2201.03 Music Theory III
• MUSC 2211X/Y.05 Aural Skills II
• MUSC 2221X/Y.03: Keyboard Skills II
• MUSC 2231X/Y.03: Music Theory III
• MUSC 2241X/Y.03: Music Theory IV
• One full credit Arts and Social Sciences Writing Class
• One full credit Arts and Social Sciences Writing Class
• MUSC 0222X/Y.01 Ensemble II (normally 1 ensemble, as approved by the Department and Applied Study instructor)

Additional Music Requirements:
• MUSC 3051.03: Music History I (recommended during 2nd year)
• MUSC 3053.03: Music History II
• MUSC 3052.03: Music History III
• 3 to 5.5 full credit Music electives, at least 3 above the 2000-level

NOTE: Students wishing to pursue a BA or BSc double major with music should consult with the department’s student advisor.

E. 20-credit BA with Honours in Music

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

Departmental Requirements

First year (5.0 credits):
• MUSC 1011X/Y.06 Voice I
• MUSC 1201.03 Music Theory I
• MUSC 1211X/Y.03 Aural Skills I
• MUSC 1221X/Y.01: Keyboard Skills I
• One full credit Arts and Social Sciences Writing Class
• One full credit Arts and Social Sciences Writing Class
• MUSC 0221X/Y.00 Ensemble I (normally 1 ensemble, as approved by the Department and Applied Study instructor)

Second year (5.0 credits):
• MUSC 2011X/Y.06 Voice II
• MUSC 2201.03 Music Theory III
• MUSC 2211X/Y.05 Aural Skills II
• MUSC 2221X/Y.03: Keyboard Skills II
• MUSC 2231X/Y.03: Music Theory III
• MUSC 2241X/Y.03: Music Theory IV
• One full credit Arts and Social Sciences Writing Class
• One full credit Arts and Social Sciences Writing Class
• MUSC 0222X/Y.01 Ensemble II (normally 1 ensemble, as approved by the Department and Applied Study instructor)
Additional Music Requirements
- MUSC 1352.03: Music History I (recommended during 2nd year)
- MUSC 1353.03: Music History II
- MUSC 2352.03: Music History III
- MUSC 4399.03: Graduation Requirement (Thesis)
- 5 to 7 full credits Music electives, at least 3 above the 2000-level

F. Bachelor of Arts (Combined Honours Program)

Bachelor of Science (Combined Honours Program)

Students may enroll in either of these combined honours programs with the joint approval of the Music Department and the department of the allied subject (in compliance with the Combined Honours requirements detailed in the Degree Requirements section, page 40 of this calendar).

Departmental Requirements

1000-level
- MUSC 1000-level Applied Study (MUSC 1011X/Y.06 to MUSC 1211X/Y.06)
- MUSC 1211.03: Music Theory I
- MUSC 1202.03: Music Theory II
- MUSC 1270X/Y.03: Aural Skills I
- MUSC 1271X/Y.03: Keyboard Skills I
- MUSC 1352.03: Music History I
- MUSC 0122X/Y.00: Ensemble I (normally 1 ensemble, as approved by the Department and Applied Study instructor)

Additional Music Requirements:
At least 4 credits in Music above the 1000-level, at least 2 of which must be at the 3000- or 4000-level. Among those, one half-credit additional class in Musicology must be completed (choices from MUSC 2352.03, 3353.03, 3351.03).

NOTE: Students considering Honours programs must meet with the Music Department Student Advisor as soon as possible in their program, and no later than their second year of studies. For Combined Honours programs, students must consult with Advisors in BOTH departments for application procedures and deadlines. Students may apply for both music programs before registering for the second year. Application forms are available from departments, at the Registrar’s Office, or at www.registrar.dal.ca/forms.

G. Cooperative Degree Programs with the University of King’s College

The following degree programs are offered in cooperation with the University of King’s College: Bachelor of Music with King’s Foundation Year (FYK), Bachelor of Journalism with Music History Option; and Bachelor of Arts combined honours in Contemporary Studies. Students may also pursue a 20-credit BA and an honours BA through the University of King’s College. Please consult the University of King’s College (Office of the Registrar) for further information including curriculum and registration details.

III. Class Descriptions

NOTE: Not all classes are offered every year. Please consult the current timetable to determine current offerings.

MUSC 1001.03: Preparatory Music Theory I.
An introduction to University music studies for prospective music majors recommended by audition to foundational level classes in music: also open to non-majors. A knowledge of music reading and rudiments is presumed. Extensive work in rudiments applied to all aspects of music instruction in music or singing is presumed. Rhythm and phrase structures, “musica ficta” and elementary modal harmony in two- and three-part writing. Comparison of tonality, atonality, modality, and chromatic tonality, exploration of chord building triadic and otherwise, simple (bar) chording; elementary diatonic modulation in two- and three-part writing. Comparison of tonality, atonality, modality, and chromatic tonality, exploration of chord building triadic and otherwise, simple (bar) chording; elementary diatonic harmony previewing the start of MUSC 1201.03; four-part writing as an immediate transition to MUSC 1202.03.
NOTE: Non-majors taking MUSC 1002.03 as an elective are not required to enrol in the aural/keyboard classes.

INSTRUCTOR(S): G. Ewer
FORMAT: Lecture 2 hours, lab

MUSC 1002.03: Preparatory Music Theory II.
A continuation of MUSC 1001.03 for foundational students and non-majors. Rhythm and phrase structures, “musica ficta” and elementary modal harmony in two- and three-part writing. Comparison of tonality, atonality, modality, and chromatic tonality, exploration of chord building triadic and otherwise, simple (bar) chording; elementary diatonic harmony previewing the start of MUSC 1201.03; four-part writing as an immediate transition to MUSC 1202.03.
NOTE: Non-majors taking MUSC 1002.03 as an elective are not required to enrol in the aural/keyboard classes.

INSTRUCTOR(S): G. Ewer
FORMAT: Lecture 2 hours, lab

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; the art and psychology of listening. This class is for non-music majors and cannot be counted as a credit toward a degree in Music.

INSTRUCTOR(S): A. Hoffman
FORMAT: Lecture
EXCLUSION: MUSC 1001.06

MUSC 1021.03: Listening Beyond the Classics.
Designed for the interested listener who desires to acquire an informed response to musical experiences. Knowledge of musical notation and terminology is not a prerequisite. The class is a survey of musical styles from the late nineteenth century to the present day. We will consider: music and image; the art and psychology of listening. This class is for non-music majors and cannot be counted as a credit toward a degree in Music.

INSTRUCTOR(S): A. Hoffman
FORMAT: Lecture
EXCLUSION: MUSC 1001.06

MUSC 1070X/Y.03: Preparatory Aural Skills.
An introduction to the basic concepts and practice of aural perception, through guided progressive training exercises in sight singing and dictation.

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

INSTRUCTOR(S): G. Ewer
FORMAT: Lab 2 hours

MUSC 1071X/Y.03: Preparatory Keyboard Skills.
An introduction to keyboard proficiency, to prepare the student for successful training in keyboard harmony.

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

INSTRUCTOR(S): D. Bradshaw
FORMAT: Lab 2 hours

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 repertoires appropriate to those idioms will be prepared by the students for class performance. No prior instruction in music or singing is presumed.

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

180 Music
NOTE: Successful completion of Conservatory Theory Grades III-V does not guarantee exemption from this class.

INSTRUCTORS: 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 of the 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.

INSTRUCTORS: 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 of the Acting Program.

MUSC 1100X/Y.06: Preparatory Applied Study. For students in the Preparatory Year. By special recommendation some music majors may be advised by the Auditioning Committee to begin individual lessons at a level prerequisite to first year Applied Study classes.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

MUSC 1000-Level Applied Study. Individual studio instruction. May be taken as elective subject to audition and available space. Please note that all applied study classes require an audition. Please contact the Department for audition dates or visit website http://music.dal.ca. Auxiliary fees apply. Co-requisite ensemble participation is required. Students must achieve a minimum grade of C in first year applied study in order to advance to second year applied study.

• MUSC 1101X/Y.06: Voice I
• MUSC 1102X/Y.06: Guitar I
• MUSC 1103X/Y.06: Piano I
• MUSC 1104X/Y.06: Organ I
• MUSC 1105X/Y.06: Violin I
• MUSC 1106X/Y.06: Viola I
• MUSC 1107X/Y.06: Cello I
• MUSC 1108X/Y.06: Double Bass I
• MUSC 1109X/Y.06: Flute I
• MUSC 1110X/Y.06: Oboe I
• MUSC 1111X/Y.06: Clarinet I
• MUSC 1112X/Y.06: Bassoon I
• MUSC 1113X/Y.06: Saxophone I
• MUSC 1114X/Y.06: French Horn I
• MUSC 1115X/Y.06: Trumpet I
• MUSC 1116X/Y.06: Trombone I
• MUSC 1117X/Y.06: Tuba I
• MUSC 1118X/Y.06: Percussion I
• MUSC 1119X/Y.06: Lute I
• MUSC 1120X/Y.06: Harpichord I
• MUSC 1121X/Y.06: Recorder I

NOTE: Students taking any of the above classes must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

MUSC 1201.03: Music Theory I. In order to fully understand the principles and origins of common-practice tonal music, as studied in MUSC 1202, this course proposes a survey of both pre- and post-tonal music, showing how they relate to each other. The focus will be on melody (modes, phrase structure, cadences and motivic manipulation of the Middle Ages, Renaissance and early 20th century) and counterpoint (exercises in two-part species counterpoint and analysis of about 20th century counterpointal pieces). SIGNATURE REQUIRED.
NOTE: Successful completion of Conservatory Theory Grades III-V does not guarantee exemption from this class.

INSTRUCTORS: J. Bias
FORMAT: Lecture 3 hours
PREREQUISITE: Permission of the Department, based on placement testing, or MUSC 1001.03/MUSC 1002.03
CO-REQUISITE: MUSC 1270X/Y.03, 1271X/Y.03

MUSC 1202.03: Music Theory II. An introduction to elementary tonal harmony, developing skills in part-writing and harmonic analysis. SIGNATURE REQUIRED.
NOTE: Successful completion of Conservatory Theory Grades III-V does not guarantee exemption from this class.

INSTRUCTORS: J. Bias
FORMAT: Lecture 3 hours
PREREQUISITE: MUSC 1201.03 or permission of the Department
CO-REQUISITE: MUSC 1270X/Y.03, MUSC 1271X/Y.03

MUSC 1270X/Y.03: Aural Skills I. A class designed to correlate with MUSC 1201.03 and MUSC 1202.03. Melodic, harmonic, rhythmic, textural and stylistic factors are visualized, performed and dictated systematically. Lab work in ear-training and sight-singing is done three times per week. Each student is a member of a small working section.
SIGNATURE REQUIRED.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

INSTRUCTORS: G. Ewer
FORMAT: Lab 3 hours
PREREQUISITE: Permission of the Department; MUSC 1001.03/1002.03 or equivalent
CO-REQUISITE: MUSC 1201.03, 1202.03, and 1270X/Y.03

MUSC 1271X/Y.03: Keyboard Skills I. The development of basic skills in sight reading, score reading and harmonized accompaniment at the keyboard.
SIGNATURE REQUIRED.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

INSTRUCTORS: D. Bradshaw
FORMAT: Lab 2 hours
PREREQUISITE: Permission of the Department; MUSC 1001.03/1002.03 and 1071X/Y.01 or equivalent
CO-REQUISITE: MUSC 1201.03, 1202.03, and 1270X/Y.03

MUSC 1352.03: Music History I. An introduction to thinking and writing about music. This course will use well-known works to develop an understanding of musical styles and functions, and it will explore such topics as melody, harmony, rhythm, texture and timbre. One of the goals of the course is to acquire university-level research, critical listening and analytical skills. The ability to read musical notation is required.
SIGNATURE REQUIRED.
FORMAT: Lecture

MUSC 1353.03: Music History II. A survey of Western European art music from antiquity to 1750. The work required will include critical listening, writing, course study and historical research.
FORMAT: Lecture
PREREQUISITE: MUSC 1352.03 or permission of instructor
EXCLUSION: MUSC 1351.03 and MUSC 1353.03

MUSC 2007X/Y.06: The Guitar: History and Techniques. This class will introduce students to the various styles of guitar playing from classical to jazz to folk. The history of the instrument (including lute and other related plucked instruments) and an examination of the key styles and performers will be covered. Practical instruction will be provided for students in this class. For students in the Preparatory Year. By special recommendation some guitarists will attempt to accommodate the various skill levels of the students enrolled.
MUSC 2008X/Y.06: Modern Guitar.
A class for students with a serious interest in preparing for studio guitar playing. The class includes jazz, folk, rock and accompanying idioms. Students will receive instruction and participate in ensemble playing in improvisation, score reading, chording, and arranging.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
INSTRUCTOR(S): D. Reach, M. Scott
FORMAT: Lab and lecture 2 hours
EXCLUSION: MUSC 3313X/Y.06
PREREQUISITE: MUSC 2007.06 or permission of instructor
EXCLUSION: MUSC 3308X.05

MUSC 2016.03: Topics in Music and Cinema.
A study of the use of music in cinema with focus on the following topics: music in silent film, borrowed music, cinema and opera, music as special effects, music as subject, and notable scores/tunes. The focus is on feature-length films, but some animations and experimental films will be included.
FORMAT: Lab (Screening)/lecture, 4 hours
EXCLUSION: MUSC 2016.05

MUSC 2017.03: Music and Cinema: Composer/Director Collaborations.
A study of the collaboration of notable film composers and directors, focusing on the role of the music in contributing to the understanding and broadened perception of the film. The films included may be early or recent, from the United States or abroad.
FORMAT: Lab (Screening)/lecture, 4 hours
EXCLUSION: MUSC 2017.05

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 exposed to live popular music and to contribute to class discussions. Students will gain greater knowledge of history, as it affects and is affected by musical activities, and they will appreciate the motives behind the debates that have always surrounded popular music. Above all, students will learn to understand the history of rock'n'roll in terms of changes in both musical techniques and social values, and to recognize music as a site of celebration and struggle.
FORMAT: Lecture/discussion, 3 hours

MUSC 2019.03: The Rock'n'Roll Era and Beyond.
This course focuses on the many different kinds of popular music that have proliferated since the 1950s. While no previous background in music is required, students will be expected to listen closely to selected music and to contribute to class discussions. Students will gain greater knowledge of history, as it affects and is affected by musical activities, and they will appreciate the motives behind the debates that have always surrounded popular music. Above all, students will learn to understand the history of rock'n'roll in terms of changes in both musical techniques and social values, and to recognize music as a site of celebration and struggle.
FORMAT: Lecture/discussion, 3 hours

MUSC 2020.03: The History of Jazz.
This class is a survey of the origins and development of jazz, concentrating on the historical and social contexts of music and musicians. We will discuss the kinds of music that have been called jazz, and we will analyze their roles in twentieth century culture. Knowledge of musical notation and terminology is not required.
FORMAT: Lecture/discussion, 3 hours
EXCLUSION: MUSC 2019.03, MUSC 3313X/Y.06

MUSC 2000-level Applied Study.
Individual studio instruction. May be taken as elective class subject to audition and available space. Please note that all applied study classes require an audition. Please contact the Department for audition dates or visit website http://music.dal.ca. Auxiliary fees apply. Co-requisite ensemble participation is required.

MUSC 2011X/Y.06: Voice I
MUSC 2012X/Y.06: Voice II
MUSC 2013X/Y.06: Guitar III
MUSC 2014X/Y.06: Piano IV
MUSC 2015X/Y.06: Organ V
MUSC 2016X/Y.06: Violin VI
MUSC 2017X/Y.06: Viola VII
MUSC 2018X/Y.06: Cello VIII
MUSC 2019X/Y.06: Double Bass IX
MUSC 2020X/Y.06: Flute X
MUSC 2111X/Y.06: Oboe XI
MUSC 2112X/Y.06: Clarinet XII
MUSC 2113X/Y.06: Bassoon XIII
MUSC 2114X/Y.06: Saxophone XIV
MUSC 2115X/Y.06: French Horn XV
MUSC 2116X/Y.06: Trumpet XVI
MUSC 2117X/Y.06: Trombone XVII
MUSC 2118X/Y.06: Tuba XVIII
MUSC 2119X/Y.06: Percussion XIX
MUSC 2120X/Y.06: Lute XX
MUSC 2121X/Y.06: Harp/Chordophone XXI
MUSC 2122X/Y.06: Recorder XXII
NOTE: Students taking any of the above classes must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

MUSC 2130X/Y.06: Jazz Dance I (Spring Session Only).
This class is a practical exploration into the Luigi Jazz Dance technique, incorporating the use of space, rhythm, and correct body alignment. Emphasis is on the development of personal expression through the medium of dance. Students are expected to develop an awareness of dance terminology and vocabulary.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Lab/demonstration/lecture
CROSS-LISTING: THEA 2020X/Y.06: Jazz Dance I (spring session only)

MUSC 2164.03: Special Topics—Applied Study.
A class for music students to pursue applied study in a secondary idiom as a special topic. Enrollment in this class is at the discretion of the department through approval of the Committee on Studies and an audition. This class involves an auxiliary fee.
SIGNATURE REQUIRED
FORMAT: Individual studio instruction

MUSC 2175X/Y.03: Lyric Diction for Singers.
An introduction to lyric diction and the expression of text in concert and operatic repertoire. A study of the International Phonetic Alphabet and its application to the lyric pronunciation of the four most commonly used languages in Classical singing: Italian, German, English and French. This course cannot satisfy a language requirement in a program.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Lecture/lab
PREREQUISITE: Permission of the instructor
EXCLUSION: MUSC 3313X.05

MUSC 2201.03: Music Theory III.
A continuation of Theory II, covering the study of altered chords, modulation to all 12 consonant keys, and the relationship of harmony to melody, phrasing, rhythm, meter and performance issues. Emphasis is placed on concepts of functional harmony by means of written exercises in four-part harmony and analysis of 18th and 19th century music.

182 Music
The study of chromatic harmony and complex modulation. Exercises may include some texture other than four-part choral style, and analysis includes forms such as binary, ternary, sonata, rondo and variation. SIGNATURE REQUIRED
INSTRUCTOR(S): J. Bain
FORMAT: Lecture 3 hours
PREREQUISITE: MUSC 2201.03, 1270X/Y.03, 1271X/Y.03
CO-REQUISITE: MUSC 2270X/Y.03, 2271X/Y.03
MUSC 2210.03: Introduction to Composition.
An introductory composition class in which students will write short pieces for a solo instrument or a small chamber ensemble. Each piece will be written using a different approach, including for example traditional tonality, modes, intervallic organization and 12-tone techniques. INSTRUCTOR(S): J. Blais
FORMAT: Lecture and Tutorial
PREREQUISITE: MUSC 1202.03 OR permission of instructor
MUSC 2270X/Y.03: Aural Skills II.
This class provides further practice in melodic and harmonic dictation and sight-singing; it correlates with MUSC 2201.03 and 2202.03. A special component deals with solmization skills in sight reading. SIGNATURE REQUIRED
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
INSTRUCTOR(S): G. Eser
FORMAT: Lab 2 hours
PREREQUISITE: MUSC 1201.03, 1202.03, 1270X/Y.03, 1271X/Y.03
CO-REQUISITE: MUSC 2201.03, 2202.03, 2270X/Y.03
MUSC 2271X/Y.03: Keyboard Skills II.
A continuation of MUSC 1271X/Y.03. SIGNATURE REQUIRED
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Lab 2 hours
PREREQUISITE: MUSC 2201.03, 1202.03, 1270X/Y.03, 1271X/Y.03
CO-REQUISITE: MUSC 2201.03, 2202.03, 2270X/Y.03
MUSC 2352.03: Music Theory III.
A course in Western classical art music from 1750 to the present. The work required will include critical listening, writing, score study and harmonic interpretation. FORMAT: Lecture
PREREQUISITE: MUSC 1352.03 and/or permission of the instructor
EXCLUSION: MUSC 2350.03 and MUSC 2351.03
MUSC 2353.03: Music History IV: Focused Study.
This class provides the opportunity for the advanced study of selected topics in music history. Its specific focus changes each year according to the instructor, but it always develops concepts and methods introduced in Music History III, and it challenges students with more in-depth analysis of a genre, composer, period or style. Thus, topics covered will include the medieval lute; the works of Beethoven; music in the 1960s; cool jazz. SIGNATURE REQUIRED
PREREQUISITE: MUSC 1353.03 and MUSC 2352.03
MUSC 2600X/Y.06: Recording Studio Techniques.
Techniques for 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. The course is designed as an "instrument" in its own right, and as an extension of their own instrumental techniques. In addition to technical topics (microphone usage, console and recorder operations, etc.) there is a further emphasis on production techniques: approaches to performing and directing in the studio; proper conduct on both sides of the glass; planning, budgeting and running a session; creative use of technical resources.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Lab and lecture, 3 hours
PREREQUISITE: Interview with the instructor
MUSC 3000-level Applied Study.
Individual studio instruction. May be taken as an elective class subject to audition and available space. Please note that all applied study classes require an audition. Please contact the Department for audition dates or visit the website http://music.dal.ca. Auxiliary fees apply. Co-requisite ensemble participation is required.
• MUSC 3103X/Y.06: Voice III
• MUSC 3102X/Y.06: Guitar III
• MUSC 3101X/Y.06: Piano III
• MUSC 3104X/Y.06: Organ III
• MUSC 3105X/Y.06: Violin III
• MUSC 3106X/Y.06: Viola III
• MUSC 3107X/Y.06: Cello III
• MUSC 3108X/Y.06: Double Bass III
• MUSC 3109X/Y.06: Flute III
• MUSC 3110X/Y.06: Oboe III
• MUSC 3111X/Y.06: Clarinet III
• MUSC 3112X/Y.06: Bassoon III
• MUSC 3113X/Y.06: Saxophone III
• MUSC 3114X/Y.06: French Horn III
• MUSC 3115X/Y.06: Trumpet III
• MUSC 3116X/Y.06: Trombone III
• MUSC 3117X/Y.06: Tuba III
• MUSC 3118X/Y.06: Percussion III
• MUSC 3119X/Y.06: Lute III
• MUSC 3120X/Y.06: Harpsichord III
• MUSC 3121X/Y.06: Recorder III
MUSC 3000-level Performance Concentration Applied Study
Individual studio instruction for students in the BMus Performance Concentration. Please note that acceptance to the Performance Concentration applied study requires a written application, audition, and permission of the Department. Auditions take place at the conclusion of the second year of the Bachelor of Music program. Auxiliary fees apply. Co-requisite ensemble participation is required:
• MUSC 3103X/Y.06: Voice III
• MUSC 3102X/Y.06: Guitar III
• MUSC 3101X/Y.06: Piano III
• MUSC 3104X/Y.06: Organ III
• MUSC 3105X/Y.06: Violin III
• MUSC 3106X/Y.06: Viola III
• MUSC 3107X/Y.06: Cello III
• MUSC 3108X/Y.06: Double Bass III
• MUSC 3109X/Y.06: Flute III
• MUSC 3110X/Y.06: Oboe III
• MUSC 3111X/Y.06: Clarinet III
• MUSC 3112X/Y.06: Bassoon III
• MUSC 3113X/Y.06: Saxophone III
• MUSC 3114X/Y.06: French Horn III
• MUSC 3115X/Y.06: Trumpet III
• MUSC 3116X/Y.06: Trombone III
• MUSC 3117X/Y.06: Tuba III
• MUSC 3118X/Y.06: Percussion III
• MUSC 3119X/Y.06: Lute III
• MUSC 3120X/Y.06: Harpsichord III
• MUSC 3121X/Y.06: Recorder III
MUSC 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...
MUSC 3061.03/3661.03: Electroacoustic Music. An introduction to techniques and strategies for the creation and performance of electroacoustic and experimental music. The emphasis is on individual student creative works, with collective critiques. Students are encouraged to explore historic, contemporary, cross-disciplinary and experimental strategies in the creation and performance of their work.
NOTE: Music majors must register in MUSC 3661.03
FORMAT: Lab and seminar, 3 hours
PREREQUISITE: MUSC 3660.03, or its equivalent; permission of the instructor
MUSC 3066.03: Women, Gender, and Music. The class explores the variety of ways in which gender shapes musical discourse. The role of gender in music will be examined through three broad topics: the history of female contributions to music as musicians, composers, patrons and listeners, musical constructions of gender, race, class and sexuality; and feminist criticism in recent musical discourse. Music students will be directed to more technical literature for their assignments and research paper, and will be required to engage in more technical descriptions of the music for all written work.
FORMAT: Lecture 3 hours
PREREQUISITE: MUSC 2202.03, 1352.03, 1353.03, 2352.03
CROSS-LISTING: GWST 2066.03
MUSC 3103/X.06: Jazz Dance II (Spring Session Only). This class is the continued practical exploration into the Luigi Jazz Dance Technique at the intermediate level. Emphasis is on the development of personal expression through the medium of dance. Students must have a basic foundation in dance technique. All students are required to chartograph 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.
SIGNATURE REQUIRED
PREREQUISITE: MUSC 2130X/Y.06 or permission of instructor
CROSS-LISTING: THEA 3020X/Y.06: Jazz Dance II (spring session only)
MUSC 3160.03: Conducting. A practical introduction to the basic techniques of conducting. SIGNATURE REQUIRED
FORMAT: Lab 2 hours
PREREQUISITE: MUSC 2202.03 and/or permission of the instructor
MUSC 3161.03: Choral Techniques. Study of the distinctive features of conducting choral ensembles with emphasis on rehearsal technique, score preparation, interpretation and group methods of building vocal tone. Practical experience will be gained in university and community settings.
SIGNATURE REQUIRED
FORMAT: Lab 2 hours
PREREQUISITE: MUSC 2202.03 and/or permission of the instructor
MUSC 3176.03: Principles of Vocal Pedagogy. An introduction to the classic pedagogies of the Italian, German, French and English schools of singing. Spectrogram analysis of vowel formant distribution will be studied as well. Students will apply the techniques studied through a supervised practicum.
SIGNATURE REQUIRED
FORMAT: Lecture/tutorial
PREREQUISITE: MUSC 2101.03 and permission of the instructor
COSIGNATURE: MUSC 3101.03/3701.03 or 4101.03/4701.03
MUSC 3177.03: Vocal Literature. An introductory survey of Classical song literature from the Renaissance to the modern day covering the historical context, style and vocal performance practice through listening, assigned readings and score study.
SIGNATURE REQUIRED
FORMAT: Lecture PREREQUISITE: Permission of the instructor
MUSC 3186.03: Piano Pedagogy. Discussion, analysis and comparison of piano pedagogical methods used in teaching from beginning to early advanced levels of performance. Reading skills, psychological issues, lesson planning, adjudication/ examination grading tips and theoretical connections are among the topics to be covered as well as supervised practicum and observation.
SIGNATURE REQUIRED
FORMAT: Lecture
PREREQUISITE: Permission of the instructor
MUSC 3199X/Y.03: Recital (Year III - Performance). Required of and restricted to all third-year Bachelor of Music students whose concentration is in Performance. The recital repertoire should consist of 30 to 45 minutes of music.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
MUSC 3210X/Y.06: Composition I. Open only to students accepted into the B.Mus., 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. Bain
FORMAT: Individual lessons and group courses with other Composition students
MUSC 3261.03: Form and Analysis I. Analytic study of the form and content of selected late eighteenth and nineteenth century compositions in various styles and idioms. SIGNATURE REQUIRED
INSTRUCTOR(S): J. Bain
FORMAT: Lecture
NOTE: Prerequisites: MUSC 2202X/Y.06, 2350X/Y.06, 2351X/Y.06
MUSC 3282.03: Orchestration. A survey of the development of the orchestra and the orchestral instruments with an introduction to acoustics. Technique in the deployment of instrumental combinations is emphasized through practical exercises in scoring for small chamber ensembles and a medium-sized orchestra common in the 20th century.
SIGNATURE REQUIRED
INSTRUCTOR(S): J. Bain
FORMAT: Lecture 2 hours
PREREQUISITE: MUSC 2202.03, 2350X/Y.06, 2351X/Y.06
MUSC 3283.03: Modal Counterpoint. Polyphonic techniques of the Renaissance period studied through written exercises in species and free counterpoint, as well as through analysis of works by Lasso, Palestrina, Victoria and others.
SIGNATURE REQUIRED
INSTRUCTOR(S): J. Bain
FORMAT: Lecture 3 hours
PREREQUISITE: MUSC 2202.03
EXCLUSION: MUSC 3281.03
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 2351.03 or MUSC 2352.03 or permission of the department

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 intersection of different 'scalar' collections and chromaticism, the changing nature of harmonic function, and the role of transformation and large-scale key relationships. INSTRUCTOR(S): J. Bain FORMAT: Seminar PREREQUISITE: MUSC 2202.03 or permission of the instructor

MUSC 3308X/Y.06: Modern Guitar.
A class for students with a serious interest in preparing for studio guitar playing. The class includes jazz, folk, rock and accompanying idioms. Students will receive instruction and participate in ensemble playing in improvisation, score reading, chording, and arranging. Music students will be required to complete more advanced assignments and exams. NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively. INSTRUCTOR(S): D. Roach FORMAT: Lab/lecture, 2 hours PREREQUISITE: MUSC 2202.03, MUSC 2102 EXCLUSION: MUSC 2808

MUSC 3314.03: History of Opera.
Consideration of the history of Opera from its origins 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 150.03 and MUSC 1501.03, or permission of the instructor EXCLUSION: MUSC 2311.06 and MUSC 3311.06

MUSC 3319X/Y.06: The History of Musical Theatre.
A survey of musical theatre - history, dramaturgy and production - from its roots in the traditions of European comic opera and the nineteenth-century operetta to the works of Lloyd Webber, Sondheim and other present-day writers. A reading knowledge of music is not a prerequisite for this class. NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively. FORMAT: Lecture 3 hours CROSS-LISTING: THEA 3310X/Y.06

MUSC 3351.03: Music Since 1945.
This course examines themes in Music since 1945. Topics to be considered include compositional techniques, music and cultural theory, and avant garde and mainstream musics. FORMAT: Lecture 3 hours PREREQUISITE: Normally, for Music majors, MUSC 2202.03, MUSC 2351.03 or MUSC 2352.03

MUSC 3353.03: Chamber Music Literature.
A study in depth of chamber music from the Eighteenth century to contemporary schools. INSTRUCTOR(S): P. Allen FORMAT: Lecture 3 hours PREREQUISITE: MUSC 2351.03 or MUSC 2352.03 or permission of the department

MUSC 3355.03: The Piano and Its Literature.
A study in depth of the evolution of the piano and its repertoire from the Eighteenth century to the contemporary. INSTRUCTOR(S): L. Shuldia FORMAT: Lecture 3 hours PREREQUISITE: MUSC 2351.03 or MUSC 2352.03 or permission of the department

MUSC 3362.03: Topics in Canadian Music.
This course focuses on one or more of the following topics: Canadian composers, performers and musical institutions. The perspective may be analytical, aesthetic and/or historical. FORMAT: Lecture 3 hours; individual tutorial PREREQUISITE: MUSC 2201.03, 2202.03 or permission of instructor

MUSC 3365.03: Narrative Strategies in Nineteenth-Century Music: Gender, Identity, and Social Politics.
An interdisciplinary survey of nineteenth-century instrumental music, focusing on the narrative potential of nineteenth-century musical conventions and their relationship to other aspects of nineteenth-century Western culture. Representative musical works will be studied within the context of broader social and cultural issues, including gender, race, class, sexuality, nationality, ethnicity, and identity. FORMAT: Seminar PREREQUISITE: Permission of the instructor

MUSC 3366.03: Popular Music Analysis.
In this class for music majors, we examine various methods and techniques for studying popular music. We consider the central debates of this relatively new field of scholarly inquiry, and we assess the contributions of popular music scholarship to the larger fields of music study. INSTRUCTOR(S): J. Warwick FORMAT: Seminar PREREQUISITE: MUSC 1352.03, MUSC 1353.03, 2352.03, or permission of the instructor

MUSC 3450.03: Introduction to the Principles of Music in the Elementary School.
Pedagogical aspects of music in the Elementary School 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 piano for the school setting; functional instruments in the classroom including recorder and guitar. FORMAT: Lecture 3 hours, lab 2 hours plus field observation PREREQUISITE: Permission of the Department and an interview with the instructor

MUSC 3480X/Y.03: Band Instruments.
A practical introduction to the principal band instruments. Group instruction is offered in flute, oboe or bassoon, saxophone, trumpet or French horn, trombone and tuba, and percussion. This class normally is restricted to students majoring in wind, brass or percussion instruments. SIGNATURE REQUIRED NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively. FORMAT: Lab 2 hours PREREQUISITE: Permission of the Department, and an interview with the Class Coordinator
MUSC 4000-level Applied Study.

Individual studio instruction. May be taken as elective subject to audition and available space. Please note all applied study classes require an audition. Please contact the Department for audition dates or visit website http://music.dal.ca. Corequisite fees apply. Co-requisite ensemble participation is required. 

- MUSC 4103X/Y.06: Voice IV
- MUSC 4102X/Y.06: Guitar IV
- MUSC 4101X/Y.06: Piano IV
- MUSC 4104X/Y.06: Organ IV
- MUSC 4105X/Y.06: Violin IV
- MUSC 4106X/Y.06: Viola IV
- MUSC 4107X/Y.06: Cello IV
- MUSC 4108X/Y.06: Double Bass IV
- MUSC 4109X/Y.06: Flute IV
- MUSC 4110X/Y.06: Oboe IV
- MUSC 4111X/Y.06: Clarinet IV
- MUSC 4112X/Y.06: Bassoon IV
- MUSC 4113X/Y.06: Saxophone IV
- MUSC 4114X/Y.06: French Horn IV
- MUSC 4115X/Y.06: Trumpet IV
- MUSC 4116X/Y.06: Trombone IV
- MUSC 4117X/Y.06: Tuba IV
- MUSC 4118X/Y.06: Percussion IV
- MUSC 4119X/Y.06: Lute IV
- MUSC 4120X/Y.06: Harpsichord IV
- MUSC 4121X/Y.06: Recorder IV

MUSC 4000-level Performance Concentration

Individual studio instruction for students in the BMus Performance Concentration. Please note that acceptance to the Performance Concentration applied study requires a written application, audition, and permission of the Department. Auditions take place at the conclusion of the second year of the Bachelor of Music program. Auxiliary fees apply. Co-requisite ensemble participation is required.

- MUSC 4103X/Y.06: Voice IV (Performance)
- MUSC 4102X/Y.06: Guitar IV (Performance)
- MUSC 4101X/Y.06: Piano IV (Performance)
- MUSC 4104X/Y.06: Organ IV (Performance)
- MUSC 4105X/Y.06: Violin IV (Performance)
- MUSC 4106X/Y.06: Viola IV (Performance)
- MUSC 4107X/Y.06: Cello IV (Performance)
- MUSC 4108X/Y.06: Double Bass IV (Performance)
- MUSC 4109X/Y.06: Flute IV (Performance)
- MUSC 4110X/Y.06: Oboe IV (Performance)
- MUSC 4111X/Y.06: Clarinet IV (Performance)
- MUSC 4112X/Y.06: Bassoon IV (Performance)
- MUSC 4113X/Y.06: Saxophone IV (Performance)
- MUSC 4114X/Y.06: French Horn IV (Performance)
- MUSC 4115X/Y.06: Trumpet IV (Performance)
- MUSC 4116X/Y.06: Trombone IV (Performance)
- MUSC 4117X/Y.06: Tuba IV (Performance)
- MUSC 4118X/Y.06: Percussion IV (Performance)
- MUSC 4119X/Y.06: Lute IV (Performance)
- MUSC 4120X/Y.06: Harpsichord IV (Performance)
- MUSC 4121X/Y.06: Recorder IV (Performance)

MUSC 4150X/Y.06: Advanced Applied Study.

By special permission of the department, a student may enroll in a fifth year of applied study, subject to enrollment quotas and budget. Individual studio instruction. Auxiliary fees apply. Co-requisite ensemble participation is required.

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

PREREQUISITE: MUSC 4103X or 47XX and permission of the instructor, subject to budget and current studio capacity

MUSC 4160X/Y.03: Applied Study (Instruction).

Students in the fourth Year of the Bachelor of Music Concentration Instruction enroll in this class, consisting of thirteen bi-weekly one-hour studio lessons plus repertoire class/ensemble as appropriate to their particular Applied Study class. Co-requisite ensemble participation is required.

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

MUSC 4170X/Y.03: Improvisation Techniques and Practices.

A studio class in the techniques and performance skills of improvisation as related to the jazz idiom, and other contemporary and non-Western music; students will perform as soloists and in small ensembles.

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

INSTRUCTOR(s): C. Mitchell
FORMAT: Studio class
PREREQUISITE: 3000-level applied study class, and the approval of the instructor

MUSC 4180X/Y.06: Symphony Apprenticeship.

A student in the Bachelor of Music Performance Concentration who has demonstrated exceptional aptitude and ability in his/her orchestral instrument, appropriate to the standards for employment by Symphony Nova Scotia, will serve apprenticeship in the Symphony, supervised by his/her Department Instructor. Preference will normally be given to a fourth-year student. Normally the majorly all or all of the 34-38 services will be played during the First Term. Qualification for this credit will be subject to the needs of the Symphony, nomination by the Department, and a successful audition for the Symphony Artistic Director and relevant Symphony Section Principals. The student will be hired by the Symphony at the current per-service rate, and must be a Member in Good Standing of the Atlantic Federation of Musicians. The student will be graded by his/her supervising Instructor on personal observation and on receipt of a signed evaluation from the Artistic Director of the Symphony. Normally there shall be only one such apprenticeship per season, and it is not renewable.

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

FORMAT: Placement in Symphony Nova Scotia, 34-38 Services
PREREQUISITE: Nomination by Department; audition with Symphony Artistic Director and relevant Symphony Section Principals
RESTRICTION: Limited to a student in the fourth year of the BMus Program Performance Concentration

MUSC 4199X/Y.03: Area Graduation Requirement (Performance: Recital).

Required of and restricted to all students in the Performance concentration of the Bachelor of Music program. The recital repertoire should consist of 55 to 75 minutes of music.

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

MUSC 4210X/Y.06: Composition II.

Open only to students accepted into the BMus., Concentration in Composition. Techniques and approaches of today’s music studied through writing of musical works for diverse instruments and ensembles, and through analysis of important works of repertoire. Emphasis will be given to creativity and to practical aspects of musical composition: effectiveness of orchestration, playability, quality of score, and preparation of parts.

SIGNATURE REQUIRED

NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
MUSC 4280.03: Contemporary Techniques.
Some of today's main compositional techniques will be studied in this course. These may include advanced modal and 12-tone writing, interval and texture-oriented procedures, as well as aleatoric strategies. Special attention will be given to problems of notation and instrumentation raised by the atom-mentioned approaches.
SIGNATURE REQUIRED
FORMAT: Lecture 2 hours
PREREQUISITE: MUSC 3210X/Y.06 and permission of the instructor
MUSC 4281.03: Form and Analysis II.
ANALYTIC STUDY OF THE FORM AND CONTENT OF SELECTED TWENTIETH CENTURY COMPOSITIONS IN VARIOUS STYLES AND IDIOMS.
SIGNATURE REQUIRED
INSTRUCTOR(S): J. Bain
FORMAT: Seminar
PREREQUISITE: MUSC 2202.03, 3280X/Y.03 or 3284.03 and 3281.03
MUSC 4283.03: Early Music Analysis.
A seminar exploring the various approaches to early music analysis, covering chant, early polyphony and music by significant figures before 1600 including Machaut, Dufay and Josquin.
SIGNATURE REQUIRED
INSTRUCTOR(S): J. Bain
FORMAT: Seminar
PREREQUISITE: MUSC 3281.03 or permission of the Instructor
MUSC 4299X/Y.03: Area Graduation Requirement (Composition Recital).
A jury-based assessment of the final requirements for the BMus, Composition Program.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
MUSC 4364.03: Topics in Music.
These are intensive studies of selected topics announced annually.
SIGNATURE REQUIRED
FORMAT: Seminar 2-3 hours
PREREQUISITE: MUSC 3280.03, 3281.03, 2350.03, 3251.03, or MUSC 2352.03, 3252.03
MUSC 4365.03: Topics in Musicology.
These are intensive studies of selected topics announced annually.
SIGNATURE REQUIRED
FORMAT: Seminar 2-3 hours
PREREQUISITE: MUSC 3280.03, 3281.03, 2350.03, 3251.03, or MUSC 2352.03, 3252.03
MUSC 4366.03: Topics in Music.
See class description under MUSC 4364.03
MUSC 4367.03: Topics in Musicology.
See class description under MUSC 4365.03
MUSC 4368.03: Special Studies.
Individually directed research and writing under the supervision of an appropriate member of the Department.
SIGNATURE REQUIRED
PREREQUISITE: MUSC 2350.03, 3251.03, or MUSC 2352.03
MUSC 4369.03: Special Studies.
See class description under MUSC 4368.03
Pedagogical aspects of theory and listening including Canadian Music; vocal and conducting techniques for Junior and Senior High School ensembles.
FORMAT: Lecture 2 hours plus field observation
PREREQUISITE: Permission of the Department
MUSC 4499X/Y.03: Graduation Requirement, Instruction.
Students in the BMus Concentration Instruction must receive Departmental Approval to 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 4599X/Y.03: Graduation Project.
Students in the BMus General degree program must receive Departmental approval to fulfill this graduation requirement. Project proposals must be submitted by students no later than March 1 of the third year of study. For more details on project options and application requirements, please consult the Department.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
MUSIC 2010.06: Introduction to Music. (6)
MUSIC 2020.06: Intermediate Music. (6)
II. Degree Programs

All students planning to take a degree in philosophy are encouraged to talk to an undergraduate advisor; those planning to do an honours degree must consult with the honours advisor. Students who intend to specialize in philosophy should take an honours degree, the normal preparation for graduate study in philosophy.

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

Note: In the statement of program requirements and prerequisites, “credit” means one full credit (six credit-hours).

A. BA with Honours in Philosophy

See BA Concentrated Honours under Degree Requirements.

Students interested in Honours Programs are encouraged to apply by the middle of their third year. Please contact Honours Advisor. The Honours application form is available online at www.registrar.dal.ca/forms.

Departmental Requirements

At least 10 credits in Philosophy of which at least 6 and no more than 11 are beyond the 1000 level.

Select at least one credit from the following:

- Philosophy (logic) half credit: 3100.03, 3100.06
- epistemology (3051.03) and a half credit in ethics (3105.03)
- At least one credit at the 4000 level

Select at least one credit from the following:

- Philosophy (history) half credit: 2900.03, 2900.06, 2900.09, 3000.03
- At least four credits at or above the 3000 level including a half credit in epistemology (3105.03) and a half credit in ethics (3105.03) and at least one credit at the 4000 level
- Honours Thesis

Honours Philosophy with Emphasis on Cognitive Science

Cognitive Science is the study of intelligence and cognition in human beings and machines (computers). The goal is to come to a fuller understanding of human learning and intelligence and to develop devices that extend human abilities. Students may choose to do an Honours BA with an emphasis on cognitive science. The requirements for this degree are the same as above, except that three philosophy credits and two non-philosophy credits must be in cognitive-science related classes. Those who complete the requirements will have the words “With Emphasis on Cognitive Science” on their transcript upon graduation. Contact the Philosophy Department for details.

B. BA with Combined Honours

See BA Combined Honours under Degree Requirements.

Departmental Requirements

At least 4 and no more than 9 credits in Philosophy beyond the 1000 level, including 2 credits beyond the 2000 level. Since the requirements for the combined honours degree vary (depending on the program with which

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 or 1010) 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-philosophy classes provide the student with a good introduction to philosophical thinking, by far the best introduction is provided by the full year introduction (PHIL 1000 or 1010). Some 2000-level classes have prerequisites which can be met either by a philosophy class or a class in another relevant discipline. The King’s College Foundation Year satisfies the requirement of a previous philosophy class. Classes at the 3000-level and beyond usually have further requirements. See the class descriptions below.
Dalhousie University has approved a set of Minors for the Bachelor of Philosophy.

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).

At least two credits at or above the 3000 level including a half credit in epistemology (3051.03) and a half credit in ethics (3105.03).

C. 20-credit BA with Major in Philosophy

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, 3900.03

Select at least one credit from the following:
Philosophy (history) half credit 2350.03, 2370.03, 2610.03, 2620.03, 3110.03, 3115.03, 3630.03, 3635.03, 3640.03

At least two credits at or above the 3000 level including a half credit in epistemology (3051.03) and a half credit in ethics (3105.03).

D. 20-credit BA with Double Major

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, 3900.03

Select at least one credit from the following:
Philosophy (history) half credit 2350.03, 2370.03, 2610.03, 2620.03, 3110.03, 3115.03, 3630.03, 3635.03, 3640.03

At least three credits at or above the 3000 level including a half credit in epistemology (3051.03) and a half credit in ethics (3105.03 or 3106.06).

E. 15-credit BA with Concentration in Philosophy

Departmental Requirements
At least 4 and no more than 8 credits in Philosophy beyond the 1000 level, including 2 credits beyond the 2000 level.

Select at least one half credit from the following:
Philosophy (logic) half credit 2130.03, 2660.03, 3060.03, 3140.03, 3160.03, 3900.03

Select at least one credit from the following:
Philosophy (history) half credit 2350.03, 2370.03, 2610.03, 2620.03, 3110.03, 3115.03, 3630.03, 3635.03, 3640.03

At least two credits at or above the 3000 level including at least a half credit in epistemology (3051.03) or a half credit in ethics (3105.03).

F. Bachelor of Computer Science (BComp) with Minor in Philosophy

Dalhousie University has approved a set of Minors for the Bachelor of Computer Science (with or without Honours or Co-op).

Departmental Requirements
At least 4 full credits at or above the 2000 level in Philosophy.

Select at least one-half credit from the following:
One of PHIL 2130.03, 2660.03, 3140.03, 3160.03, or 3900.03

Select at least one-half credit from the following:
One of PHIL 2350.03, 2610.03, 2620.03, 3630.03, 3635.03 or 3640.03

At least two full credits at or above the third year level, including at least a half credit in epistemology (3051.03) or a half credit in ethics (3105.03).

III. Class Descriptions

NOTE: Many classes are listed as being exclusionary to one another. This means that students may not take both classes so designated.

PHIL 1000XY.06: Introduction to Philosophy.
An introduction to a variety of philosophical problems, such as the relation of mind to body, freedom of the will, the foundation of morality, the existence of God, the nature of personal identity, and the possibility of knowledge based on reason and experience. Sections differ somewhat in approach and requirements. Consult the department to find out which ones especially suit you. This class does not satisfy the Faculty Writing Requirement.

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

FORMAT: Lecture/discussion
EXCLUSION: PHIL 1003X/Y.06, PHIL 2040.03 and PHIL 2050.03

PHIL 1010XY.06: Introduction to Philosophy.
See description for PHIL 1000XY.06. This class does satisfy the Faculty Writing Requirement. Since PHIL 1010XY.06 consists of sections taught by different instructors, statements about its objectives and approach must be confined to generalizations. Detailed syllabuses 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: eWriting Requirement, lecture / discussion
EXCLUSION: PHIL 1003X/Y.06, PHIL 2040.03 and PHIL 2050.03

PHIL 1050.03: Ethics in Science.
An introduction to ethical questions that arise in the practice of science. The class will explore a variety of ethical questions associated with the study and practice of science. Students will learn about the nature of philosophical approaches to ethics and how to employ these insights to the tasks of recognizing and reflecting on ethical issues that arise when engaged in scientific research and practice. This class is designed to be part of the Dalhousie Integrated Science Program, so examples will be chosen that relate to the specific scientific topics studied within that program. The class involves both lectures and discussion. Assignments include essays and oral presentations. It will serve as one-half of the writing requirement for first year students. Available to DISP students only.

INSTRUCTOR(S): Staff
FORMAT: Lecture/discussion
EXCLUSION: PHIL 2600.03, PHIL 2670.03

PHIL 1080.03: Reasoning Skills.
Thinking clearly and effectively is something that people can learn to do. Understanding some basic concepts as well as mastering certain practical techniques can help in this. In this class you will learn about classifying concepts and how to define them; about the nature of arguments and the way to bring their structure to the surface by diagramming techniques; about some of the classic fallacies people commit in their reasoning; about some of the basic concepts and procedures of Logic. This class does not satisfy the logic requirement for the major or honours in Philosophy.

INSTRUCTOR(S): D. Abramson, T. Vinc
FORMAT: Lecture/discussion
EXCLUSION: PHIL 1090.03, PHIL 2150.03
PHIL 1080.03: Ethics in the World of Business. Business practices are sometimes in accord with moral principles, sometimes at odds with them. By considering cases that illustrate business practices and dilemmas this class studies the application of ethical principles to the world of business in national and international contexts.

PHIL 2205.03: Philosophy of Religion. Monotheistic religions (such as Judaism, Christianity, and Islam) assert the existence of a single God. This class addresses philosophical problems posed by traditional monotheism: Why care whether monotheism is true? Why care whether belief in God is rational? Does the rationality of belief in God depend on the evidence for and against God’s existence? What is the best evidence for and against? What bearing does God have on human morality?

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 2080.06 above.) A student may take either or both half-year classes. Neither class satisfies the Faculty Writing Requirement.

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.

PHIL 2210.03: Crisis and Consent: Foundations of Political Thought: 1789-1900. See class description for POLI 2420.03, in the Political Science section of this Calendar.

PHIL 2170.03: Philosophy of Sex and Love. Philosophers have long been interested in the nature of intimate human relationships. 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.

PHIL 2020.03: Legal Thinking. Should the state prevent people from ending their lives to escape the pain of terminal disease? Shall we leave people free to make up their own minds regarding abortion? Should the law be used to control pornography? Is affirmative action demanded by (or inconsistent with) equality under the law? Legislation enacted in these and other controversial areas will dramatically affect how we live. It thus demands our critical attention. This class examines the role of practical reason in resolving such legal controversies. No previous study of philosophy is presupposed.

PHIL 2070X/Y.06: Foundations of Political Thought II: Rights, Rationality, and Democracy. See class description for POLI 2410.03, in the Political Science section of this Calendar.

PHIL 2220.03: Revolution and Rationality: Foundations of Political Thought: 1789-1900. See class description for POLI 2420.03, in the Political Science section of this Calendar.

PHIL 2070X/Y.06: Politics and the Language of Meaning. See class descriptions for CLAS 2361.03B and CLAS 2362.03, in the Classics section of this Calendar.

PHIL 2230.03: History of Philosophy: Ancient. The beginnings of Western philosophy are studied in the writings of the pre-Socratics, Plato, and Aristotle.

PHIL 2260.03: Philosophy of Art. Examines questions such as: What is art? What is its place in human life? Can judgments of artistic value be rational and objective? Can fear of fictional objects be real fear? Can music be a language?

PHIL 2381.03: Mediaeval Philosophy from Augustine to Anselm. The 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.

PHIL 2100.03: How to Win an Argument. This class is devoted to developing the practical skills involved in evaluating reasoning and producing convincing arguments. Note that this class does not count towards satisfying the logic requirement for the major or honours program.

PHIL 2010.03: Introduction to Philosophy I and II. These classes are an introduction to a variety of philosophical problems. (See description for PHIL 2080.06 above.) A student may take either or both half-year classes. Neither class satisfies the Faculty Writing Requirement.

PHIL 2080.06: Foundations of Political Thought: 1651-1778. See class description for POLI 2410.03, in the Political Science section of this Calendar.

PHIL 2080.06: Politics and the Language of Meaning. See class description for POLI 2410.03, in the Political Science section of this Calendar.

PHIL 2105.03: Foundations of Political Thought: 1651-1778. See class description for POLI 2410.03, in the Political Science section of this Calendar.

PHIL 2110X/Y.06: Foundations of Political Thought: 1789-1900. See class description for POLI 2420.03, in the Political Science section of this Calendar.

PHIL 2120.03: Crisis and Consent: Foundations of Political Thought: 1789-1900. See class description for POLI 2420.03, in the Political Science section of this Calendar.

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.

PHIL 2190.03 and PHIL 2190.03 RESTRICTION: For first year students only

PHIL 2020.03: Legal Thinking. Should the state prevent people from ending their lives to escape the pain of terminal disease? Shall we leave people free to make up their own minds regarding abortion? Should the law be used to control pornography? Is affirmative action demanded by (or inconsistent with) equality under the law? Legislation enacted in these and other controversial areas will dramatically affect how we live. It thus demands our critical attention. This class examines the role of practical reason in resolving such legal controversies. No previous study of philosophy is presupposed.

PHIL 2020.03: Legal Thinking. Should the state prevent people from ending their lives to escape the pain of terminal disease? Shall we leave people free to make up their own minds regarding abortion? Should the law be used to control pornography? Is affirmative action demanded by (or inconsistent with) equality under the law? Legislation enacted in these and other controversial areas will dramatically affect how we live. It thus demands our critical attention. This class examines the role of practical reason in resolving such legal controversies. No previous study of philosophy is presupposed.

PHIL 2020.03: Legal Thinking. Should the state prevent people from ending their lives to escape the pain of terminal disease? Shall we leave people free to make up their own minds regarding abortion? Should the law be used to control pornography? Is affirmative action demanded by (or inconsistent with) equality under the law? Legislation enacted in these and other controversial areas will dramatically affect how we live. It thus demands our critical attention. This class examines the role of practical reason in resolving such legal controversies. No previous study of philosophy is presupposed.

PHIL 2020.03: Legal Thinking. Should the state prevent people from ending their lives to escape the pain of terminal disease? Shall we leave people free to make up their own minds regarding abortion? Should the law be used to control pornography? Is affirmative action demanded by (or inconsistent with) equality under the law? Legislation enacted in these and other controversial areas will dramatically affect how we live. It thus demands our critical attention. This class examines the role of practical reason in resolving such legal controversies. No previous study of philosophy is presupposed.

PHIL 2020.03: Legal Thinking. Should the state prevent people from ending their lives to escape the pain of terminal disease? Shall we leave people free to make up their own minds regarding abortion? Should the law be used to control pornography? Is affirmative action demanded by (or inconsistent with) equality under the law? Legislation enacted in these and other controversial areas will dramatically affect how we live. It thus demands our critical attention. This class examines the role of practical reason in resolving such legal controversies. No previous study of philosophy is presupposed.

PHIL 2020.03: Legal Thinking. Should the state prevent people from ending their lives to escape the pain of terminal disease? Shall we leave people free to make up their own minds regarding abortion? Should the law be used to control pornography? Is affirmative action demanded by (or inconsistent with) equality under the law? Legislation enacted in these and other controversial areas will dramatically affect how we live. It thus demands our critical attention. This class examines the role of practical reason in resolving such legal controversies. No previous study of philosophy is presupposed.

PHIL 2020.03: Legal Thinking. Should the state prevent people from ending their lives to escape the pain of terminal disease? Shall we leave people free to make up their own minds regarding abortion? Should the law be used to control pornography? Is affirmative action demanded by (or inconsistent with) equality under the law? Legislation enacted in these and other controversial areas will dramatically affect how we live. It thus demands our critical attention. This class examines the role of practical reason in resolving such legal controversies. No previous study of philosophy is presupposed.

PHIL 2020.03: Legal Thinking. Should the state prevent people from ending their lives to escape the pain of terminal disease? Shall we leave people free to make up their own minds regarding abortion? Should the law be used to control pornography? Is affirmative action demanded by (or inconsistent with) equality under the law? Legislation enacted in these and other controversial areas will dramatically affect how we live. It thus demands our critical attention. This class examines the role of practical reason in resolving such legal controversies. No previous study of philosophy is presupposed.
Computers can enable people to do things that our present laws and policies were not formulated to cover (hacking, sharing files on the internet, and companies sharing data). In such cases, people need to be able to decide for themselves the best course of action, and defend such decisions. This course aims at developing the ethical reasoning skills and sensitivities that computer professionals will need to make good decisions and to justify them. The course includes a general introduction to ethical theories and their use in making and justifying decisions. We then consider various issues and case studies, illustrating the kinds of problems that can arise from the use and misuse of computers and technology: the responsibilities of computing professionals; ethics on the internet (hacking, computer crime, netgagging); 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.
EXCLUSION: COMP 3090.03

PHIL 2475.03: Justice in Global Perspective.

In this class, we will explore answers to the central question in philosophical ethics—“How should we live our lives and interact with others?” in the context of the international community or “Global Village” in which we now live. The class will involve close concentration on analyses of liberal and non-liberal theories from around the world on the subjects of: moral rights, the nature of justice, social welfare, human diversity and equality, and the nature of social responsibility. Specific topics may include: the impact of globalization on understanding of moral rights (human rights, labour rights, language rights, etc.), third world responses to western conceptualizations of rights, new conceptions of justice and social transformation including conceptions of restorative justice, conceptualizations or race and ethnicity and sources of personal and communal identity, the nature and importance of autonomy, the importance of different cultural constructions of gender and the problem of sexual violence in a global perspective, and frameworks for understanding shared agency and shared responsibility for poverty and environmental degradation.

INSTRUCTOR(S): S. Campbell
FORMAT: Lecture/discussion

PHIL 2480.03: Environmental Ethics.

This class examines humanity’s relation to nature from a philosophical perspective. Of particular importance will be the moral or ethical obligations which we may have towards the natural environment. Attention will be given to the historical sources of the attitudes and values which have given rise to current ecological problems in the environment, as well as to the question of how to remediate our relationship to nature. We will read from environmental thinkers, bioethicists, ecofeminists, deep ecologists, and others, and discuss issues concerning animal rights, environmental justice, and activism.

INSTRUCTOR(S): P. Clauzun
FORMAT: Lecture/discussion

PHIL 2485.03: Technology and the Environment.

What is technology and what role does it play in current environmental problems? Can technologies help us find solutions to environmental challenges, or do they pose new problems? This course will explore the role of technology in addressing environmental challenges. We will discuss 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. Clauzun
FORMAT: Lecture/discussion
CROSS-LISTING: INTD 2485.03

PHIL 2490.03: Social, Ethical and Professional Issues in Computer Science.

Computers can enable people to do things that our present laws and policies were not formulated to cover (hacking, sharing files on the internet, and companies sharing data). In such cases, people need to be able to decide for themselves the best course of action, and defend such decisions. This course aims at developing the ethical reasoning skills and sensitivities that computer professionals will need to make good decisions and to justify them. The course includes a general introduction to ethical theories and their use in making and justifying decisions. We then consider various issues and case studies, illustrating the kinds of problems that can arise from the use and misuse of computers and technology: the responsibilities of computing professionals; ethics on the internet (hacking, computer crime, netgagging); 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.
EXCLUSION: COMP 3090.03

PHIL 2560.03: Minds and Machines: Introduction to Cognitive Science.

Could we build a robot (or program a computer) that has a mind? What is the relationship between the mind, brain, body and the world? How can technology assist cognition? In what ways are human cognitive systems similar to and different from animal cognitive systems? This course takes a philosophical approach, introducing assumptions and issues arising in research at the intersections of artificial intelligence, robotics, neuroscience, psychology, linguistics, animal cognition, evolutionary biology, and philosophy. This course will introduce students to the use of various cognitive science disciplines, and will provide an introduction to cognitive science as a unified discipline.

INSTRUCTOR(S): S. Campbell, T. Vinci
FORMAT: Lecture/discussion
EXCLUSION: PHIL 3460

PHIL 2610.03: History of Philosophy: The Rationalists.

The philosophy of Descartes, Spinoza, and Leibniz.

INSTRUCTOR(S): T. Vinci, N. Brett, D. MacIntosh
FORMAT: Lecture/discussion
PREREQUISITE: One previous credit in philosophy or permission of the instructor

PHIL 2620.03: History of Philosophy: The Empiricists.

The philosophy of Locke, Berkeley, and Hume, with an introduction to Kant.

INSTRUCTOR(S): T. Vinci, N. Brett, D. MacIntosh
FORMAT: Lecture/discussion
PREREQUISITE: One previous credit in philosophy or permission of the instructor

PHIL 2660.03: Logic: Understanding Scientific Reasoning.

The class is a general philosophical introduction to methods of evaluating hypotheses, experimental tests, and reasoning in science with applications to everyday reasoning as well. The class is divided into discussion of three kinds of evaluation: theoretical hypotheses, statistical and causal hypotheses, and decisions. No background in science or philosophy is presupposed for this class.

INSTRUCTOR(S): Staff
FORMAT: Lecture/discussion

PHIL 2705.03: Philosophy in Literature.

A study of some philosophical themes in modern literature. All readings will be literary works.

INSTRUCTOR(S): Staff
FORMAT: Lecture/discussion
EXCLUSION: PHIL 2700.03

PHIL 2710.03: Existentialism.

The existentialists focus on what is individual and unique about human lives. They emphasize the sense in which we choose projects and lives and even deaths for ourselves and find self-identity in our ways of avoiding...
PHIL 2720.03: Ethics and the Good Life.
This course is an introduction to various ethical views in the history of Western Philosophy, concentrating on the issues facing people who are concerned with what human beings should aim for and do if they are to lead lives that are fulfilling.
INSTRUCTOR(S): G. Scherkoske
FORMAT: Lecture/discussion
EXCLUSION: PHIL 3100X/Y.06
CROSS-LISTING: PHIL 5105.03
PREREQUISITE: Two previous credits in philosophy.
PHIL 2805.03: Ethics & Health Care: Patient Care.
How much information must health professionals provide to patients? Can they violate a patient's expressed wishes if they judge a patient to be not fully competent? When dealing with patients from different cultures, whose ethics should be followed: those of the patient or those of the caregiver? Should doctors be permitted to end the life of a patient when the patient requests assisted suicide? In this class we will explore questions of this nature through a combination of lecture and discussions. Students are encouraged to take this class in conjunction with PHIL 2810.03.
INSTRUCTOR(S): Staff
FORMAT: Lecture/discussion
EXCLUSION: PHIL 2805/Y.06
PREREQUISITE: Two previous credits in philosophy.
PHIL 2810.03: Ethics & Health Care: Social Policy.
Should the state regulate access to abortion? Should it permit all innovations in assisted reproduction? What are the key ethical questions regarding embryonic stem cell research, cloning, and genetic manipulation? What principles should govern the use of human and animal subjects in medical research? What criteria should we use to determine a fair allocation of health care resources in light of the fact that demand inevitably exceeds supply? In this class we will explore questions of this nature through a combination of lecture and discussions. Students are encouraged to take this class in conjunction with PHIL 2805.03.
INSTRUCTOR(S): Staff
FORMAT: Lecture/discussion
EXCLUSION: PHIL 2810/Y.06
PREREQUISITE: Two previous credits in philosophy.
PHIL 3051.03: Theory of Knowledge.
A study of fundamental issues in the contemporary theory of knowledge. The class examines skepticism and investigates the nature of knowledge, belief, meaning, evidence, and truth. Questions are raised about perception and memory and their relation to knowledge.
INSTRUCTOR(S): M. Hymers, T. Vinci
FORMAT: Lecture/discussion
PREREQUISITE: Two of PHIL 2610.01, 2620.01, 2130.03 or permission of the instructor.
CROSS-LISTING: PHIL 5051.03
EXCLUSION: PHIL 3051.06
PHIL 3105.03: Ethics.
A systematic study of the foundation of morality, including readings from Kant, Foundation of the Metaphysics of Morals and Hume, A Treatise of Human Nature.
INSTRUCTOR(S): N. Brett, D. MacIntosh, G. Scherkoske
FORMAT: Lecture/discussion
PREREQUISITE: Two previous credits in philosophy or permission of the instructor.
CROSS-LISTING: PHIL 5105.03
EXCLUSION: PHIL 3010/Y.06
PREREQUISITE: Two previous credits in philosophy.
PHIL 3110.03: History of Ethics: Plato to Epicurus.
In this class we will carefully read a number of seminal works in the history of Western Moral Philosophy covering Plato, Aristotle, Stoicism and Epicureanism.
INSTRUCTOR(S): G. Scherkoske, P. Schetko, P. Czajbrook
FORMAT: Seminar with class discussion
PREREQUISITE: Two previous credits in philosophy.
PHIL 3115.03: History of Ethics: Kant's Moral Theory.
In this class we will look closely at one of the most seminal thinkers in the history of Western Moral Philosophy. The course will explore Kant's own writing, some of his most important predecessors, and contemporary commentators. The class will aim to develop a plausible understanding of Kantian ethics - including both its normative and meta-ethical commitments. A primary concern will be the relevance of Kant's views for contemporary moral reflection.
INSTRUCTOR(S): G. Scherkoske, D. MacIntosh
FORMAT: Seminar with class discussion
PREREQUISITE: Two previous credits in philosophy.
PHIL 3140.03: Logic: Logical Theory I.
An introduction to metalevel, with special attention to the soundness and completeness of non-classical logics.
INSTRUCTOR(S): P.K. Schotch
FORMAT: Lecture/discussion
PREREQUISITE: PHIL 2310.03
CROSS-LISTING: PHIL 5410.03
EXCLUSION: PHIL 3150.03
PHIL 3165.03: Logic: Logical Theory II.
Devoted primarily to the study of formal semantics and its relation to natural language.
INSTRUCTOR(S): P.K. Schotch
FORMAT: Lecture/discussion
PREREQUISITE: PHIL 2310.03 or permission of the instructor.
CROSS-LISTING: PHIL 5410.03
EXCLUSION: PHIL 3140.03
PHIL 3170.03: Contemporary Feminist Theories.
Contemporary feminism is not a single theory but comprises multiple theoretical perspectives, reflecting both a diversity in women's experience of subordination and a diversity of interests and approaches. This class aims to present some of the richness and variety in feminist theory while offering students the opportunity for sustained critical engagement with influential feminist thinkers.
INSTRUCTOR(S): S. Campbell
FORMAT: Seminar
PREREQUISITE: One previous credit in philosophy or in Gender and Women's Studies or permission of the instructor.
CROSS-LISTING: GWST 3500.03/5170.03
PHIL 3211.03: Philosophy of Law.
Is coercion central to law? How are law and morality related? What justification can be given for punishment? What is the appropriate scope of individual liberty? These and other issues relating to the analysis and evaluation of law will be examined. The class will examine the competing claims of the Positivist, Realist, and Natural Law accounts of law before turning to some normative issues concerning the justification of legal practice.
INSTRUCTOR(S): N. Brett
FORMAT: Lecture/discussion
PREREQUISITE: Two previous credits in philosophy, permission of the instructor.
CROSS-LISTING: PHIL 5211.03
PHIL 3300.03: Philosophy of Language.
What does it mean to say that the elements of language have meaning? INSTRUCTOR(S): M. Hymers
FORMAT: Lecture/discussion
PREREQUISITE: Two previous credits in philosophy including one half credit in logic class, half- or full-year
CROSS-LISTING: PHIL 3300.03
PHIL 3420.03: Philosophy of Biology.
This class provides an up-to-date systematic examination of ten leading issues in the philosophy of biology. How far can the Darwinian paradigm be taken to explain adaptive complexity? Is the new emphasis on developmental theory likely to revolutionize evolutionary theory? What are the most fundamental units of selection? Can the concept of biological function be understood without attributing purpose to nature? Why is the concept of species so elusive? Is there a human nature? Is genuine altruism
possible given the forces of selection? Is there progress in evolution? How should clashes between faith and reason over the nature of our evolution be approached?

PHYL 3450.03: 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 Denis D. Williams, but also at historical treatments of metaphysics 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.

PHYL 3650.03: History of Philosophy: Kant.
This course will examine philosophical and scientific articles, and possibly short works of fiction, which explore various theories, problems and arguments regarding the status of minds in the physical world and the relationships between mind, body and world. We will explore and discuss controversies regarding the thesis that the mind is (nothing but?) the brain, and issues such as the theoretical foundations of artificial intelligence, the problem of subjectivity and consciousness, "naturalized" intentionality (how thoughts— if they are physical things or processes—can have the property of being about other things), and animal cognition.

PHYL 3440.03: Philosophy of Mind: The Mind-Body Problem.
This course will critically examine philosophical and scientific articles, and possibly short works of fiction, which explore various theories, problems and arguments regarding the status of minds in the physical world and the relationships between mind, body and world. We will explore and discuss controversies regarding the thesis that the mind is (nothing but?) the brain, and issues such as the theoretical foundations of artificial intelligence, the problem of subjectivity and consciousness, "naturalized" intentionality (how thoughts— if they are physical things or processes—can have the property of being about other things), and animal cognition.

PHYL 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, Amelia Feist and Ronald De Sousa have argued powerfully that rationality requires emotions. Other philosophers have argued that we need a renewed assessment of the epistemic importance of emotion in revealing power and value. Topics will include: emotional rationality; emotion and value; self- person authority; cognitive, social constructivism and psycho- evolutionary arguments; and feminist epistemology; emotion; power and racial construction.

PHYL 3455.03: Philosophy of Mind: Personal Identity.
This course will critically examine philosophical and scientific articles, and possibly short works of fiction, which explore various theories, problems and arguments regarding the status of minds in the physical world and the relationships between mind, body and world. We will explore and discuss controversies regarding the thesis that the mind is (nothing but?) the brain, and issues such as the theoretical foundations of artificial intelligence, the problem of subjectivity and consciousness, "naturalized" intentionality (how thoughts— if they are physical things or processes—can have the property of being about other things), and animal cognition.

PHYL 3470.03: Human Rights: Philosophical Issues.
This course will critically examine philosophical and scientific articles, and possibly short works of fiction, which explore various theories, problems and arguments regarding the status of minds in the physical world and the relationships between mind, body and world. We will explore and discuss controversies regarding the thesis that the mind is (nothing but?) the brain, and issues such as the theoretical foundations of artificial intelligence, the problem of subjectivity and consciousness, "naturalized" intentionality (how thoughts— if they are physical things or processes—can have the property of being about other things), and animal cognition.

PHYL 3475.03: Democratic Theory.
This is a course in normative political theory. We will critically examine some recent normative political theory, and then examine the prospects and pitfalls of attempts by recent liberal theory to articulate a principled vision of global justice. We will consider Rawls’ original bounded theory of justice and examine some challenges it faces from both cosmopolitan theories of justice and proponents of nationalism. Next we will consider rival political conceptions of liberal international justice, and Rawls’ response in the form of his recent ‘The Law of Peoples’. Concluding, we will examine specific issues of applied political justice (namely, human rights and immigration) as well as issues of economic and social justice and poverty.

PHYL 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.

PHYL 3630.03: History of Philosophy: Kant.
Special attention will be paid to Kant’s metaphysics.

PHYL 3640.03: History of Philosophy: Twentieth-Century Philosophy.
The Twentieth Century has been a period of revolutionary change in Anglophone philosophy. This class surveys the most influential figures, including Moore, Austin, Ayer, Wittgenstein, and Quine.

PHYL 3650.03: Modern Philosophy.
"Modern Philosophy" refers to a philosophical perspective that arose during the great advances of Western science in the 17th and 18th centuries. Modern Philosophy seeks to advance the thesis that persons are beings with conscious thoughts (ideas) and that all of the interesting forms of contact people have with the world - perceptual, semantic, epistemic, causal - are mediated by conscious thoughts. Modern Philosophy also seeks to reconcile this thesis with the scientific/mechanistic 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 PHYL 3600.03 but can be taken independently.)
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 Kripke 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 3651.03 but can be taken independently.)
INSTRUCTOR(S): M. Hymers, P. Glazebrook
FORMAT: Lecture/discussion
PREREQUISITE: 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 5192.03

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 5210.03

PHIL 4190.03: Topics in the History of Philosophy I.
In this seminar class, students focus on a particular topic in the History of Philosophy and investigate it in detail. When the class is offered, the topic is assigned by the Department at the end of the preceding academic year and is then posted at the Department and in the Faculty's timetable on the Web.
INSTRUCTOR(S): Staff
FORMAT: Seminar
PREREQUISITE: At least two previous credits in philosophy or permission of the instructor
CROSS-LISTING: PHIL 5191.03

PHIL 4191.03: Topics in the History of Philosophy II.
In this seminar class, students focus on a particular topic in the History of 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 5190.03

PHIL 4192.03: Topics in the History of Philosophy III.
In this seminar class, students focus on a particular topic in Modern Philosophy (e.g., the work of Locke or Hume) and investigate it in detail. When the class is offered, the topic is assigned by the Department at the end of the preceding academic year and is then posted at the Department and in the Faculty's timetable on the Web.
INSTRUCTOR(S): Staff
FORMAT: Seminar
PREREQUISITE: At least two previous credits in philosophy or permission of the instructor
CROSS-LISTING: PHIL 5192.03

PHIL 4200.03: Topics in Normative Theory.
In this seminar class, students focus on a particular topic in Normative Theory and investigate it in detail. When the class is offered, the topic is assigned by the Department at the end of the preceding academic year and is then posted at the Department and in the Faculty's timetable on the Web.
INSTRUCTOR(S): N. Berti, P. Glazebrook, G. Scherko-Koor
FORMAT: Seminar
PREREQUISITE: At least two previous credits in philosophy or permission of the instructor
CROSS-LISTING: PHIL 5200.03
PHIL 4215.03: Topics in the Philosophy of Law.  
In this seminar class, students focus on a particular topic in the Philosophy of Law and investigate it in detail. When the class is offered, the topic is assigned by the Department at the end of the preceding academic year and is then posted at the Department and in the Faculty’s timetable on the Web.  
INSTRUCTOR(S): N. Brett  
FORMAT: Seminar  
PREREQUISITE: At least two previous credits in philosophy or permission of the instructor  
CROSS-LISTING: PHIL 5215.03

PHIL 4220.03: Contemporary Philosophical Issues.  
Intensive study of a few topics which are currently being debated and may fall outside of or cut across standard classification of areas of interest. Examples are evolution and value, philosophical accounts of “race” and culture, artificial intelligence, probability, theories of causation, supervenience.  
INSTRUCTOR(S): Staff  
FORMAT: Seminar  
PREREQUISITE: At least two previous credits in philosophy or permission of the instructor  
CROSS-LISTING: PHIL 5220.03

PHIL 4470.03: Contemporary Liberalism and Democracy.  
Liberalism takes a variety of forms and includes many topics including the rule of law, limited government, the free exchange of goods, entitlement to property, the self, and individual rights. In philosophical and political assumptions provide the intellectual context within which its account of the individual, its vision of the community and its preferred allocation of resources will be assessed.  
INSTRUCTOR(S): N. Brett, G. Schorkoske  
FORMAT: Seminar  
PREREQUISITE: Two full credits in philosophy or political science or permission of the instructor  
CROSS-LISTING: POLI 4479.03/5479.03, ECON 4446.03/5446.03, PHIL 5470.03

PHIL 4480.03: Social Choice Theory.  
Arrow's theorem brings together the theory of voting and welfare economics, seemingly leading both (and the theory of democracy as well) to ruin. This class will consider how to cope with the problem. Cross-listed in Economics and Political Science.  
INSTRUCTOR(S): P.K. Schotch  
FORMAT: Seminar  
PREREQUISITE: At least two previous credits in philosophy or permission of the instructor  
CROSS-LISTING: POLI 4489.03/5489.03, ECON 4441.03/5441.03, PHIL 5480.03

PHIL 4500.03: Topics in Feminist Philosophy.  
In this class, we shall explore some of the current research in a focused area of feminist philosophy. Previous topics have included feminist ethics, feminist epistemology, post modern feminism, the feminist sexuality debates and ecocommunism.  
INSTRUCTOR(S): P. Glazebrook, S. Campbell, L. Meynell  
FORMAT: Seminar  
PREREQUISITE: Strong background in philosophy or feminist theory (normally including at least one previous class in feminist philosophy or instructor's consent)  
CROSS-LISTING: CONV 4500.03/5500.03, PHIL 5500.03

PHIL 4510.03: Topics in the Philosophy of Language.  
In this seminar class, students focus on a particular topic in the Philosophy of Language and investigate it in detail. When the class is offered, the topic is assigned by the Department at the end of the preceding academic year and is then posted at the Department and in the Faculty’s timetable on the Web.  
INSTRUCTOR(S): M. Hymers  
FORMAT: Seminar  
PREREQUISITE: At least two previous credits in philosophy or permission of the instructor  
CROSS-LISTING: PHIL 5510.03

PHIL 4680.03: Topics in the Philosophy of Science.  
In this seminar class, students focus on a particular topic in the Philosophy of Science and investigate it in detail. When the class is offered, the topic is assigned by the Department at the end of the preceding academic year and is then posted at the Department and in the Faculty’s timetable on the Web.  
INSTRUCTOR(S): L. Meynell  
FORMAT: Seminar  
PREREQUISITE: At least two previous credits in philosophy or permission of the instructor  
CROSS-LISTING: PHIL 5680.03

PHIL 4801.03: Topics in Ethics and Health Care.  
In this seminar class, students focus on a particular topic in Ethics and Health Care and investigate it in detail. When the class is offered, the topic is assigned by the Department at the end of the preceding academic year and is then posted at the Department and in the Faculty’s timetable on the Web.  
INSTRUCTOR(S): Staff  
FORMAT: Seminar  
PREREQUISITE: PHIL 2800.06 or 2805.03 AND 2810.03 or permission of the instructor  
CROSS-LISTING: PHIL 5801.03, BIOT 5801.03

PHIL 4855.03: Topics in Metaphysics.  
In this seminar class, students focus on a particular topic in Metaphysics and investigate it in detail. When the class is offered, the topic is assigned by the Department at the end of the preceding academic year and is then posted at the Department and in the Faculty’s timetable on the Web.  
INSTRUCTOR(S): Staff  
FORMAT: Seminar  
PREREQUISITE: At least two previous credits in philosophy or permission of the instructor  
CROSS-LISTING: PHIL 5855.03

PHIL 4940.03/4960.03/4980.03/4970X/Y.06/4990X/Y.06: Directed Reading.  
Consult department for details. In special cases, classes to suit individual interests can be developed jointly by a student and an instructor.  
NOTE: Students taking PHIL 4970X/Y.06 OR 4990X/Y.06 must register in both X and Y in consecutive terms; credit will only be given if both are completed consecutively.  
INSTRUCTOR(S): Staff  
FORMAT: Individual instruction  
PREREQUISITE: At least two previous credits in philosophy or permission of the instructor  
RESTRICTION: Students may only register for this class with the written permission of the faculty member
Political Science

Location: Henry Hicks Academic Administration Building Third Floor, Room 301
Halifax, NS, B3H 4P6
Telephone: (902) 494-2396
Fax: (902) 494-3805
Website: www.politicalscience.dal.ca

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

Chair
Finbow, R. (Room 301B, 494-6606, email: finbow@dal.ca)

Undergraduate Advisor
Turnbull, L. (Room 360, 494-6636, email: Turnbull@dal.ca)

Professors Emeriti
Beck, J.M., OC, BA (Acadia), MA, PhD (Toronto), LL.D (Dal), LL.D (SFE), LL.D (RMC), FRSC
Braybrooke, D., BA (Osyrs), MA, PhD (Dal), FRSC
Carbert, L., BA (Alta), MA, PhD (York)
Cameron, D.M., BA (Queen’s), MA, MPH, PhD (Toronto)
Eayrs, J.G., BA (Toronto), AM, PhD (Gd), FRSC, OC
Stairs, D.W., BA (Dal), MA (Oman), PhD (Toronto) FRSC, OC
Winham, G.R., BA (Roussian), Dip. in Int. Law (Manc), PhD (NorthCar), FRSC

Professors
Arthur, P., BA (Ghana), MSc (LSE), MA (WLU), PhD (Queen’s)
Boardman, R., BSc, PhD, DSc (Toronto), FRHistS (McCulloch Professor in European Union Studies)
Beck, J.M., OC, BA (Acadia), MA, PhD (Toronto), LLD (StFX), FRSC
Beck, J.M., OC, BA (Acadia), MA, PhD (Dal), LLD (SFE), FRHistS (McCulloch Professor in European Union Studies)

Associate Professors
Carbert, L., BA (Alta), MA, PhD (York)

Assistant Professors
Beck, J.M., OC, BA (Acadia), MA, PhD (Toronto), LLD (StFX), FRHistS (McCulloch Professor in European Union Studies)
Beck, J.M., OC, BA (Acadia), MA, PhD (Dal), LLD (SFE), FRHistS (McCulloch Professor in European Union Studies)

Professor Louise Carbert is the Coordinator of Graduate Studies.

For General Interest
Students taking an Honours Degree in Political Science or majoring in Political Science are encouraged to seek advice from Professor Peter Arthur, the Undergraduate Advisor, in developing a program of studies. Professor Louise Carbert is the Coordinator of Graduate Studies.

I. What is Political Science?

Politics has been described as “Who Gets What, When, How, Why” in society. The study of politics, or Political Science, is one of the oldest academic disciplines known to humankind. In Ancient Greece political philosophers concerned themselves with creating a good society, and balancing justice with order. Today, Political Scientists still study those matters, but the discipline has grown to encompass many aspects of government, such as parliaments, electoral processes and constitutions; or external relations, including issues of war, peace and poverty. Political Science is important to society because, in an age of complex government, an educated citizen is the best safeguard for democracy. Political Science is valuable for individuals who want to know more about the values, laws, institutions and policy mechanisms that govern their lives in society, and as well, the differences between their system of government and those in other countries. Beyond this, Political Science is an especially useful preparation for students who wish to pursue careers in teaching, law, public service or business.

Dalhousie University’s approach to Political Science is a blend of traditional and modern analysis. The Department offers work in classical political philosophers; and most classes emphasize government structure and policy making, including domestic public administration and foreign policy. Other classes deal with political behaviour such as public opinion or interest group activity. Classes in modern research methods, including quantitative analysis, are also offered.

The admission requirements for Political Science are listed under the Faculty of Arts and Social Sciences. There are no additional requirements for Political Science beyond those of the Faculty.

Students taking an Honours Degree in Political Science or majoring in Political Science are encouraged to seek advice from Professor Peter Arthur, the Undergraduate Advisor, in developing a program of studies. Professor Louise Carbert is the Coordinator of Graduate Studies.

II. Degree Programs

Students concentrating in Political Science may take a 15-credit concentration program, a 20-credit major, or a 25-credit honours program. The degree requirements are spelled out in University and Faculty regulations, and in departmental regulations outlined below. The specific classes to be taken in each individual program are chosen in consultation with the undergraduate advisor.

A student’s program may consist of a general selection of classes from the Department’s offerings or may emphasize one of the sub-fields of Political Science, as set out below. Students are encouraged to develop distinctive programs tailored to their own particular interests and circumstances. They should, however, seek advice early in their program to ensure that they are consistent with University regulations.

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

Introductory
• POLI 1010.03, 1015.03, 1020.03, 1025.03, 1030.03, 1035.03, 1100X/Y.06, 1101X/Y.06

Canadian Government and Politics
• POLI 2110.05, 2220.05, 2230.05
• POLI 3210.03, 3220.03, 3271.03, 3272.03, 3274.03, 3276.03, 3281.03, 3282.03, 3283.03, 3321.03, 3322.03, 3324.03, 3325.03, 3326.03, 3329.03, 3330.03, 3333.03, 3337.03X/Y.06

Comparative Government and Politics
• POL 2300X/Y.06
• POL 3202.03, 3203.03, 3341.03, 3342.03, 3343.03, 3344.03, 3345.03, 3346.03, 3347.03, 3348.03, 3409.03

Political Theory and Methodology
• POLI 2410.03, 2420.03
• POLI 3401.03, 3402.03, 3403.03, 3427.03, 3428.03, 3430.03, 3431.03, 3435.03, 3445.03, 3447.03, 3490.03, 3491.03
To gain admittance into the Honours program, 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:
   - POLI 2410.03
   - POLI 2420.03
   - POLI 3492.03 (or equivalent)
   - POLI 3493.03

A. Honours Program

An honours program normally consists of a first year class, or two half-credit classes, and not less than nine or more than eleven additional classes, or equivalent in half-credit classes, in Political Science. Although nine to eleven classes, or their equivalent, represent the range allowed under the general university regulations, the Department recommends quite strongly that the normal honours program consist of nine classes, or equivalent, past the first-year class, including the honours essay. The intent of this recommendation is to encourage our honours students to take supporting class work in related disciplines.

Any exception to the requirements stipulated below can only be obtained through written petition to the Undergraduate Committee, which reserves the authority to determine admission into the Honours program in these cases.

Students seeking entry to the Honours Program are advised to see the Honours Advisor in the spring term of their 3rd year.

Core Classes

For purposes of the honours program the Department has designated a number of second year classes as honours core classes. These core classes represent the political science sub-fields of Canadian government and politics, comparative government and politics, political theory and methodology, and international politics and foreign policy. The core classes by area are as follows:

- POLI 2410.03, POLI 2420.03
- POLI 2430X/Y.06
- POLI 2440X/Y.06
- POLI 2450X/Y.06
- POLI 2460X/Y.06

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 above.

3000 level

- POLI 3420X/Y.06 (or equivalent)
- POLI 3440X/Y.06
- POLI 3450X/Y.06

4000 level

- POLI 4440X/Y.06

Overall, these requirements leave a minimum of two optional credits, which may be taken at the second, third, or fourth year levels.

To gain admittance into the Honours program, students must have:

1. 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 3492.03 and 3493.03

One full credit, or equivalent, at the 3000-level in Political Science

Students should complete the Honours Application Form (available from the Registrar) and submit it to the Political Science Honours coordinator at the end of their third year.

In their fourth year, honours students may petition to take a graduate seminar class, in addition to POLI 4204.06, which is regularly offered as an undergraduate class. These are the core classes for graduate students and correspond to the same four areas of study within Political Science as the second-year honours core classes.

This provides fourth-year honours students with the opportunity to work with graduate students at an advanced level. Honours students will be admitted to graduate core classes in the field in which they intend to write their honours essay.

The core graduate seminars by area are as follows:

- POLI 5260X/Y.06: Advanced Seminar in Canadian Politics
- POLI 5301.03: Comparative Theory, or
- POLI 5400.03: Approaches to Development
- POLI 5520X/Y.06: Theories of International Relations

The honours essay is counted as one credit. It is prepared during the fourth year under the supervision of a faculty member. The essay shows the student’s ability to develop a systematic argument with reference to pertinent literature and other such data or analytical materials as may be appropriate. The credit number for the honours essay is POLI 4600.06.

Arrangements are made for honours students in the last year to meet their supervisor with some regularity to discuss and ultimately present the work represented in their essay. Honours students will also be expected to participate in the Honours Seminar, which will count toward the “21st” grade required by the University.

B. Combined Honours

PLEASE NOTE: Be sure to read the Faculty of Arts and Social Sciences requirements for the Combined Honours Program listed in the Degree Requirements section of this Calendar.

Several of the more common combined honours programs are: Political Science and Philosophy; Political Science and History; Political Science and Economics; Political Science and Sociology; Political Science and Computer Science and Political Science and International Development Studies. Students interested in taking any of these combined honours programs or in discussing other possible programs should consult initially with the Honours Supervisor.

To obtain a Combined Honours, with an emphasis upon Political Science, students must have:

- Two core classes in Political Science, which must include POLI 2410.03 and POLI 2420.03 (NOTE: The prerequisite for these classes is an introductory class in Political Science);
- A methods class in one of the two fields (e.g., POLI 3492.03) and 3493.03;
- At least two full credits at an advanced level in Political Science (in addition to 3492.03 and 3493.03);
- POLI 4600X/Y.06.

To gain admittance into the Combined Honours program, with an emphasis upon Political Science, students must have a B+ average in a group of three Political Science classes comprised of two core classes (including POLI 2410.03 and POLI 2420.03) and 3492.03 and 3493.03.

Students who take a combined Honours, with an emphasis on a subject OTHER than Political Science, must take a minimum of:

- One core class in Political Science (note that the prerequisite for core classes in an introductory class in Political Science);
- POLI 3492.03 (or an equivalent quantitative methods class (approved by the Department)); and POLI 3493.03;
- One full credit in Political Science at an advanced level; and
- One full-credit Political Science class beyond the 1000 level.

To gain admittance into the Combined Honours program, with an emphasis upon a subject OTHER than Political Science, students must
have a B+ average in a group of two Political Science classes, including a core class.

C. 20-credit BA with Major in Political Science
The Major program offers the opportunity for students to design a more focused study within a specific subfield of Political Science. The Major program is a 20-credit class: students must have a minimum of six and a maximum of nine Political Science classes in total above the 1000 level; three of these classes must be beyond the 2000-level.

Departmental Requirements

1000 level
- One full credit (or two half credits) from the following: POLI 1010.03, 1015.03, 1020.03, 1025.03, 1030.03, 1035.03, 1100X/Y.06, 1103X/Y.06

2000 level
- Two full credits in different core class fields

3000 level
- Three full credits. Note: one half credit must be either POLI 3492.03 or equivalent) or POLI 3493.03.
- One additional full credit in Political Science above the 1000 level

Other required classes
- A writing class or King’s Foundation Year Program.

D. 20-credit BA with Double Major in Political Science
Departmental Requirements

1000 level
- One full credit (or two half credits) from the following: POLI 1010.03, 1015.03, 1020.03, 1025.03, 1030.03, 1035.03, 1100X/Y.06, 1103X/Y.06

2000 level
- Two full credits in different core class fields

3000 level
- Two full credits. Note: one half credit must be either POLI 3492.03 or equivalent) or POLI 3493.03.

Other political science
- One additional full credit in Political Science above 1000 level

Other required classes
- A writing class or King’s Foundation Year Program

Equivalent
- Classes equivalent to POLI 3492 are STAT 1010, SOSA 3403 and CTMP 3000

E. 15-credit BA with Concentration in Political Science
Departmental Requirements

At least four, but not more than eight, full classes or equivalent in Political Science at the 2000 level or above

1000 level
- One full-credit introductory class or two half-credit classes; alternatively the King’s Foundation Year Program with a final grade of “B” or higher

2000 level
- At least two full credits in two different core class fields.

3000 level
- At least two additional full credits should be taken from third-year level offerings

Summer School Classes
The Department normally offers several second-year or third-year classes in the summer sessions. For details, see the University summer school calendar.

III. Class Descriptions
The first digit of each class number indicates year, or level, of class. Except for 1000-level classes, the second digit denotes the sub-field within which the class is listed.

Not all classes are offered every year. For final listings check with the Department office or the current timetable.

POLI 1010.03: From Concepts to Reality: Freedom and Government.
The central concept of the class is political freedom. We pursue the concept in the works of several theorists, but principally Isaiah Berlin. Having established some workable notions of political freedom, we consider how they are established and maintained in the design of government. Of course there are many types of governments, and almost all make the claim to enhance freedom. We can examine only some Western governments, in particular, the parliamentary systems, the mixed parliamentary-presidential systems, and the American system. The objective is to figure out how governmental institutions are designed to enhance freedom and to limit it.

FORMAT: Lecture
EXCLUSION: POLI 1100X/Y.06, 1103X/Y.06, 1020.03, 1030.03

The central concept of the class is political freedom. It is examined in the works of several theorists, but principally Hannah Arendt. Having established the idea of active, free citizenship that she espouses, we consider how it is established and maintained - or not - in the political processes that animate the institutions of government. These political processes include interest groups, social movements, political parties, and elections. For the most part we examine such processes in the West. The objective is to figure out how the active, free citizen can be expected to fare in them.

FORMAT: Lecture
EXCLUSION: POLI 1100X/Y.06, 1103X/Y.06, 1025.03, 1035.03

POLI 1020.03: Governments and Democracy.
What do governments do? What is democratic government? These and other questions are the focus of this class. We look at government institutions in Canada, the United States, and other countries. Topics include constitutional change, the powers of Prime Ministers and Presidents, the workings of parliaments, electoral systems, and the role of the courts.

FORMAT: Lecture
EXCLUSION: POLI 1100X/Y.06, 1103X/Y.06, 1010.03, 1013.03

POLI 1025.03: Ideas, Politics, and People.
Should governments spend more, or less, on health care? Is globalization good or bad for Canada? A central theme of political science is the clash of ideas in contemporary society. First, we explore, through current issues, some of the key concepts of liberalism, socialism, conservatism, feminism and other ideas about politics. The second part of the class focuses on political parties, interest groups and social movements, elections and the media, with emphasis on politics in Canada and the United States.

FORMAT: Lecture
EXCLUSION: POLI 1100X/Y.06, 1103X/Y.06, 1015.03, 1013.03

POLI 1030.03: Canadian Government in Comparative Perspective.
Should Canada have an elected Senate like the United States? Is Britain less democratic than Canada because it does not have a Charter of Rights and Freedoms? Students in this class will explore these and many other questions that arise from the study of Canadian government in comparison with government in the U.S. and Britain, the two countries from which we borrowed most of our political traditions. We will examine the constitutional, executive, legislative, and judicial systems of these three countries, with the central focus on Canada.

FORMAT: Lecture
EXCLUSION: POLI 1100X/Y.03, 1103X/Y.03, 1010.03, 1020.03
POLI 1035.03: The Political Process in Canada: A Comparative Approach. Why do Canadians practice politics differently from the citizens of the U.S. and Britain? Are we different in how we approach politics, or do the differences have more to do with the processes we use? In this class we will explore Canadian political culture, electoral systems, parties and interest groups, all in comparison with similar behaviours and processes in Britain and the U.S. FORMAT: Lecture EXCLUSION: POLI 1100X/Y.06, 1105X/Y.06, 1035X/03, 1025X/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 contemporary 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 consecutively. credit will be given only if both are completed consecutively. FORMAT: Lecture, tutorial EXCLUSION: POLI 1105X/Y.06, 1102X/Y.05, POLI 1020X/Y.03, POLI 1025X/03, POLI 1055X/05, POLI 1105X/Y.06

POLI 1103X/Y.06: Introduction to Government and Politics. The approach and format in POLI 1103 is similar to that in POLI 1100X/Y.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 consecutively; credit will be given only if both are completed consecutively. FORMAT: In-person Reading, Lecture, tutorial EXCLUSION: POLI 1010X/Y.06, 1015X/Y.06, 1020X/Y.03, POLI 1025X/03, POLI 1055X/05, POLI 1105X/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 is nearly voted to separate in 1995 and the current government of that province says it will try again. The west feels alienated from Ottawa. Nova Scotia wants a better deal on equalization. Aboriginal peoples are pressing for self-government and the courts say they have a right to get. 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 2220X/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 the concentration of power at both the federal and provincial levels of government? Are Members of Parliament who are not in the Cabinet really “rebels” or are they shaping in the Cabinet? If they are rebel, do other parties and public service advisors have more influence than the vast majority of elected representatives? Are political parties relevant as vehicles for citizen representation? Are interest groups or social movements any more relevant? Do elections matter? Are the media merely the political instruments of the business elites? Are these among the issues that are examined in this class in an attempt to understand the most critical factors that shape the structure of power in contemporary Canadian government. Approved with Canadian Studies. FORMAT: Lecture and discussion PREREQUISITE: An introductory class in Political Science EXCLUSION: POLI 2220X/Y.06

POLI 2230.03: Local Government. Most Canadians live in cities, yet local government is the weakest unit in our federal system. What accounts for this? After all, local government has often been described as the foundation of democracy. In Canada, local governments have many unique characteristics, from their constitutional status to the council system and a tradition of non-partisan government. We will explore the character of local government and the issues related to local governance, including regional and metropolitan restructuring and citizen participation, municipal finance, provincial-local relations, and the role of the federal government. FORMAT: Lecture and discussion PREREQUISITE: An introductory class in Political Science EXCLUSION: POLI 2230X/03

POLI 2300X/Y.06: Comparative Politics. This class introduces students to the methodology and scope of comparative politics, including analysis of political institutions and behaviour. General overviews and selected case studies are provided for liberal democracies, post-communist, newly industrializing and least developed countries. Topics include theories of the state, political culture and socialization, electoral and party systems, interest groups, ethnic and regional clearances, gender politics, policy outcomes and systems performance, political participation and leadership and contemporary challenges and changes. Group presentations are used for student exploration of these themes. NOTE: Students taking this class must register in both X and Y. In consecutive terms, credit will be given only if both are completed consecutively. FORMAT: Lecture/discussion PREREQUISITE: Introductory political science class or instructors' permission

POLI 2410.03: Crisis and Consent: Foundations of Political Thought: 1651-1778. This class covers some of the most important early modern theorists. (Hobbes, Locke, Hume, Smith, Rousseau, and Montesquieu). It looks at the development of natural rights, democracy, capitalism, and citizenship. FORMAT: Lecture, tutorial PREREQUISITE: An introductory class in Political Science or Philosophy CROSS-LISTING: PHIL 2410X/Y.03 EXCLUSION: POLI 2480X/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, Toeppervarril, Mill, Hegel, Marx, Nietzsche), and investigates human rights, democracy, utilitarianism, individualism, socialism, and the roots of postmodern thought. POLI 2410 is not a formal prerequisite for POLI 2420. Although students will find POLI 2410 to be a very useful introduction to POLI 2420. FORMAT: Lecture, tutorial PREREQUISITE: An introductory class in Political Science or Philosophy CROSS-LISTING: PHIL 2220.03 EXCLUSION: POLI 2480X/Y.06

POLI 2520.03: World Politics. Why do states fight wars? Commit genocide? Sign treaties? Acquire and sell ballistic missile and nuclear technologies? Join economic and military alliances? Enforce and/or dismantle sanctions against states like Iraq? Why are European states creating their own rapid reaction force separate from NATO, and why are U.S. and Canadian officials concerned about these trends? Why can’t we enforce international law as effectively as we enforce domestic law? Can we identify an objective set of moral standards to guide relations between states and peoples? Does foreign investment by multinational corporations help or hinder development? Why are so many countries cutting development assistance? Is the U.N. a useful institution
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 2503.03, 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. surpasses Canada on all dimensions of power and influence by factors of 10 to 12 to one, and in some fields (e.g., military capacity) by considerably more. One in five of Canada’s economic production goes into exports, and it has over 8% of the goods it needs from across to the United States. Canadians cannot to go the movies, watch television, listen to popular music, consume fast food, or do errands at the local shopping centre without exposing themselves to what a prominent American political scientist has described as this country’s “soft power.” This class will consider how Canadians are affected by these and other influences from south of the border, how they have debated them among themselves, and what public policies have been established in response to the concerns they have generated. FORMAT: Lecture and discussion
PREREQUISITE: An introductory class in Political Science
EXCLUSION: POLI 2510.03, Y.06, 2524.03

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. Once the topics covered in these classes differ from year to year, students should seek further information from the Political Science Department before registering. FORMAT: Lecture/Seminar
PREREQUISITE: Instructor’s Permission

POLI 3205.03: Canadian Political Thought.
This class addresses philosophical questions that play a major role in contemporary Canadian politics. These include minority rights and multiculturalism, federalism, federalism and self-determination; and citizenship and the politics of identity. Approved with Canadian Studies. FORMAT: Seminar
PREREQUISITE: POLI 2210.03/2220.03 or POLI 2410.03/2420.03
CROSS-LISTING: POLI 5205.03

POLI 3206.03: Constitutional Issues in Canadian Politics.
These are political issues that possess an important constitutional dimension. They include judicial review and the role of the Supreme Court of Canada, constitutional amendment, the representation formula, the Charter of Rights and Freedoms, language rights and the Crown. FORMAT: Seminar
PREREQUISITE: POLI 2210.03/2220.03
CROSS-LISTING: POLI 5206.03

POLI 3208.03: Canadian Provincial Politics.
An analysis of the dynamics and structures of provincial governments. Political parties, voting behaviour, legislatures, electoral systems, bureaucrats and policy formulation constitute the core of this class. Attention is also paid to interprovincial and international relations. FORMAT: Seminar
PREREQUISITE: POLI 2220.03 or POLI 2220.03 or instructor’s permission
CROSS-LISTING: POLI 5208.03

POLI 3220.03: Intergovernmental Relations.
This class examines the territorial division of political and administrative power and the nature of relations between governments which result from such a division of power, including federal-provincial, municipal or “tri-level” relations. Specific topics will include the role of the courts in constitutional interpretations, the instruments of “fiscal federalism” (including equalization payments, conditional grants, tax sharing arrangements and shared cost programs), administrative relationships and the concept of “executive federalism”. These themes will be pursued further by each student through the preparation of a research paper. This paper will deal with a policy area selected by the student (transportation, education, health, etc.) and will provide an opportunity for a more intensive examination of the impact of intergovernmental relations, on public policy and vice versa. Additional information about class requirements, please consult the instructor.
FORMAT: Lecture and discussion
PREREQUISITE: POLI 2220.03 or instructor’s permission

POLI 3224.03: Canadian Political Parties.
The Canadian party system, viewed as an integral part of the entire political system, presents a number of interesting questions for exploration, such as the alleged fickleness of voters, the role of party leaders, and the manner in which parties contribute to Canadian democracy. The particular themes emphasized will vary from year to year. Approved with Canadian Studies. FORMAT: Lecture and discussion
PREREQUISITE: POLI 2220.03 or instructor’s permission.

POLI 3228.03/4228.03: Pressure Politics in Canada: Opportunities and Obstacles.
This class will examine the territorial division of political and administrative power and the nature of relations between governments which result from such a division of power, including federal-provincial, municipal or “tri-level” relations. Specific topics will include the role of the courts in constitutional interpretations, the instruments of “fiscal federalism” (including equalization payments, conditional grants, tax sharing arrangements and shared cost programs), administrative relationships and the concept of “executive federalism”. These themes will be pursued further by each student through the preparation of a research paper. This paper will deal with a policy area selected by the student (transportation, education, health, etc.) and will provide an opportunity for a more intensive examination of the impact of intergovernmental relations, on public policy and vice versa. Additional information about class requirements, please consult the instructor.
FORMAT: Seminar
PREREQUISITE: POLI 2220.03 or instructor’s permission
CROSS-LISTING: POLI 5224.03

POLI 3229.03/4229.03: Pressure Politics in Canada:
Pressure Politics in Canada: Opportunities and Obstacles.
This class will examine the territorial division of political and administrative power and the nature of relations between governments which result from such a division of power, including federal-provincial, municipal or “tri-level” relations. Specific topics will include the role of the courts in constitutional interpretations, the instruments of “fiscal federalism” (including equalization payments, conditional grants, tax sharing arrangements and shared cost programs), administrative relationships and the concept of “executive federalism”. These themes will be pursued further by each student through the preparation of a research paper. This paper will deal with a policy area selected by the student (transportation, education, health, etc.) and will provide an opportunity for a more intensive examination of the impact of intergovernmental relations, on public policy and vice versa. Additional information about class requirements, please consult the instructor.
FORMAT: Seminar
PREREQUISITE: POLI 2220.03 or instructor’s permission
CROSS-LISTING: POLI 5229.03

POLI 3231.03: Urban Governance in Canada.
Despite the fact that most Canadians live in cities, municipal governments are junior partners in Canadian federalism. Municipal, business, and community leaders in urban centres are advocating new relationships among municipal and upper levels of government - they want a "New Politics."
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 colonial relationships, the debate over free trade, economic nationalism, and Canada’s place in a global economy will be analyzed. Students will consider staples, liberal Keynesian and neo-classical, socialist and feminist perspectives. Other topics include women, trade unions, native and immigrant communities, and the impact of economic forces on national unity. Students will debate controversial themes on such topic. Student essays will explore a range of contemporary issues including the debt crisis, the federal-provincial fiscal relations, the economic consequences of Quebec separation, regional development programs, and policies for industrial development, human resources, technological change, poverty and inequality, etc.
FORMAT: Seminar
PREREQUISITE: Open to graduate students and senior undergraduates, who have completed classes in Canadian politics or economic history, or by permission of the instructor.
CROSS-LISTING: POLI 5233.03

POLI 3235.03: The Politics of Regionalism.
The class surveys the interaction between politics and economics in Canada with emphasis on the question of regional development. It will canvass competing explanations for differences in economic development amongst Canada’s regions with special emphasis on long-term 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. Students, 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 in Canadian politics, or permission of the instructor.
CROSS-LISTING: POLI 5235.03

POLI 3250.03: Canadian Public Administration.
This class examines the organization and management of the executive-hierarchic structures of government for the formulation and management of public policy and public services. It considers the design and operation of the cabinet system and ministerial portfolio; relations between ministers and the caucus public service; policy and budgetary processes; and, the structural designs of departments, agencies, crown corporations and regulatory commissions. A major focus will be the effects of the new public management on public administration, as governments in Canada, as elsewhere, seek to cope with budgetary restraints, increased demands for quality services and public participation, and greater effectiveness in securing results. Approved with Canadian Studies.
FORMAT: Lecture and discussion
PREREQUISITE: POLI 2210.03, 2220.03 or instructor’s permission.
CROSS-LISTING: POLI 5250.03

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 2210.03, 2220.03 or instructor’s permission.
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, PLAD 6780.03

POLI 3303.03: Human Rights: Political Issues.
This class will introduce students to the evolving place of human rights in politics, both comparative and international. We begin by examining the historic emergence of human rights as an issue in world politics, principally since the Second World War. We then focus on a number of specific topics and controversies concerning human rights in world politics, including: the sources of and struggle to end human rights-abusive regimes in Latin America; the multicultural politics of human rights; human rights in national foreign policies, with a specific focus on the challenges posed by China; Islam and human rights; genocide and humanitarian intervention; and efforts to foster justice and reconciliation in the aftermath of abusive regimes. Finally we look specifically at the role of human rights in domestic politics, focusing on the issues of women’s rights and sexual orientation.
FORMAT: Seminar
PREREQUISITE: POLI 2300.06 or equivalent, or instructor’s consent.
CROSS-LISTING: POLI 5303.03

POLI 3304.03: Comparative Federalism.
A seminar class which examines the theory and practice of federalism within a comparative framework. The actual federations discussed depend in part on student interest but usually includes both established federal nations and those moving in that direction.
FORMAT: Seminar
PREREQUISITE: POLI 2210.03, 2220.03 or POLI 2300.06 or instructor’s permission.
CROSS-LISTING: POLI 5304.03, PLAD 6755.03

POLI 3311.03: Sport and Politics.
This class examines the role of sport in domestic, transnational and international politics. It addresses the gap in much of mainstream political science concerning the pervasive influence of popular cultural trends and practices on political relations. Some topics include: the role of sport in political socialization and the creation of national identity; the politics of the Olympic Games, and sport and political change in South Africa.
FORMAT: Seminar
PREREQUISITE: POLI 2300.06 or POLI 2301.03/2501.06 or permission of instructor.
CROSS-LISTING: POLI 5311.03

POLI 3315.03: African Politics.
The diversity of states, politics, economy and society in post-colonial sub-Saharan Africa is examined in this seminar. Topics include theoretical approaches, economic frameworks, governmental regimes, structural adjustments, civil society, and intra-regional political economies, and selected aspects of policy such as economic reform, political liberalization, women and development, drought and ecology, AIDS and health.
FORMAT: Seminar
INSTRUCTOR(S): Staff
PREREQUISITE: POLI 2300.06 or equivalent or instructor’s permission.
CROSS-LISTING: POLI 5315.03
POLI 3317.03: Politics of Southern Africa.
This class focuses on political change in the Southern African region since the end of colonialism. It compares the experience of the various countries in the region to development and security pressures related to the legacies of colonialism, persistent economic problems and recent structural adjustments, environmental degradation and threats, ethnic, class and gender cleavages, strategic and social problems related to first apartheid and later post-apartheid transitions, issues of governance and regional conflict as well as more positive trends that towards abatements in civil wars and a surge of democratization. As well as country comparisons, the class will look at the region as a whole, exploring the opportunities for and constraints against formal regional cooperation on economy or security as well as informal processes that constitute the basis of “new” regionalism forces.
PREREQUISITE: POLI 2300X/Y.06 or equivalent or instructor’s permission
CROSS-LISTING: POLI 5317.03

POLI 3320.03: European Politics.
This class looks at the political systems of selected countries in Europe, including Germany, Britain, Spain, Ireland, and Switzerland. Topics include political parties and elections, federalism, ethnicity and regional nationalism, immigration politics, and changing state-economy relations.
FORMAT: Seminar
PREREQUISITE: A class in Political Science or instructor’s permission
EXCLUSION: POLI 3320X/Y.06

POLI 3321.03: Politics of the European Union.
Western Europe is a complex polity. Almost all countries are members of the European Union (EU), which has common government institutions and policy-making processes. The class examines these important developments in the context of theories of integration. Among topics discussed are the common currency, agricultural politics, the common foreign and security policy, social policy issues, and the significance of institutions such as the European Parliament. The role of the EU in the global economy, and expansion into central and Eastern Europe, are also discussed.
FORMAT: Seminar
PREREQUISITE: A class in Political Science or instructor’s permission
EXCLUSION: POLI 3321X/Y.06

POLI 3322.03: The EU as a Global Actor.
The aim is to enable the student to analyze and understand the international roles played by the EU in both economic and political areas. What is the EU, how does it act 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 UN, 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 2500.03 or 2500.05 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 Maastricht treaty (1992). Among others: the Single European Act (1987), the Treaty of Maastricht (1992) and the Treaty of Amsterdam (1997), the Treaty of Nice (2001) as well as the Constitutional Treaty (2004). How were these successive treaties negotiated? Why has the EU/EU gone through so many treaty reforms? Is there a particular trend in the reforms? Which theories can help us to understand the changes?
FORMAT: Lecture
PREREQUISITE: POLI 2300.03 or POLI 2520.03 or POLI 2530.03 or CROSS-LISTING: POLI 5323.03

POLI 3350.03: Governance and Globalization.
This seminar class provides students with an opportunity for critical evaluation of the negotiations 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 transnational production and increased capital mobility as well as the rise in numbers and influence of NGOs and new social movements. Hence, “new” forms of governance emerging out of decentralization and/or disinvestment of state authority and supra-national arrangements that are broadly captured within the concept of “global governance” will be explored along with traditional concept of governance that centre on the actors, structures and environments of governmental policy-making. A range of issues will be examined – governing of economies, environment, communications, human rights, health, conflict and complex emergencies – within the context of the theoretical debates involving the “internationalisation” of the state; the role of identities – e.g. nationalist, ethnic, gender, cosmopolitan; the growing relevance of globalisation and the nature of and prospects for democracy and citizenship.
FORMAT: Seminar
PREREQUISITE: POLI 2300X/Y.06 or equivalent or permission of instructor
CROSS-LISTING: POLI 5350.03

POLI 3360.03: Politics in Latin America.
This seminar class surveys the politics of Latin American states from colonial to contemporary times. Students first examine political history and development, focusing on particular challenges of colonial inheritance, military politicization, modernization, development and dependency and international interference. Institutions, public policies, and state-society relations are then discussed. Other topics include women and indigenous peoples, and prospects for durable democratization.
Students will debate controversial questions on each topic.
FORMAT: Seminar
PREREQUISITE: POLI 2300 or instructor’s consent
CROSS-LISTING: POLI 5360.03

POLI 3379.06: U.S. Constitution, Government, and Politics.
The purpose of this seminar class is to gain a thorough and critical understanding of the American political process. To this end, a series of topics are examined, beginning with the framing of the constitution and concluding with questions about political culture. There is considerable emphasis on formal and informal political institutions, especially political parties and elections.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Seminar
PREREQUISITE: POLI 2210.03/2220.03 or POLI 2300X/Y.06 or instructor’s consent
CROSS-LISTING: POLI 5379.03

POLI 3401.03: Contemporary Political Thought.
How ought we to evaluate the political norms and beliefs which we hold as we enter the next millennium? This class provides a conceptual overview of contemporary political thought from the development of 20th century liberal democracy to the contemporary criticisms articulated by its opponents. Topics to be discussed include: liberalism and “neo-liberal” democracy, justice and distributive justice; liberty and libertarianism; rights, property and theories of entitlement; civic and citizenry; identity and community; race and representation; epistemology (including feminist epistemology); public choice theory, and postmodernism.
INSTRUCTOR'S Staff
FORMAT: Lecture/Seminar
PREREQUISITE: POLI 2400.03/2420.03 or PHIL 2210.03/2220.03 or instructor’s permission

POLI 3403.03: Human Rights: Philosophical Issues.
This class is designed to complement POLI 3300.03, which focuses on contemporary political problems surrounding the application of human rights in specific contexts. This class, in contrast, examines the normative issues inherent in the concept of human rights. The class begins by
investigating the development and definition of “rights” within liberal theory, then looks more specifically at the normative problems concerning the idea of “human” rights. Finally, the class discusses the philosophical debates involved in attempting to apply such manifestly liberal concepts in non-liberal contexts.

FORMAT: Lecture/discussion
PREREQUISITE: POLI 2410.03 or POLI 2420.03, or permission of instructor
CROSS-LISTING: POLI 3403.03

POLI 3427.03: Women in Western Political Thought. The role of women in political life has been either ignored or denied by major thinkers. Pertinent texts will be read along with interpretations by modern feminists in order to assess why the formal political establishment of women has not resulted in greater substantive equality.

FORMAT: Lecture and discussion
PREREQUISITE: POLI 2410.03 or POLI 2420.03 or PHIL 2210.03 or 2220.03, or instructor's permission
EXCLUSION: POLI 2227.03

POLI 3428.03: Woman as Citizen. Does feminism entail the end of male/female gender roles? Or can women be “equal, but different”? If so, how should government respond in terms of public policy? And how might women do politics differently from men? This class examines the historical context of feminist theory, with attention to its impact on conventional approaches to social and political thought.

FORMAT: Seminar
PREREQUISITE: POLI 2410.03 or POLI 2420.03 or instructor's permission
CROSS-LISTING: GWST 3609.03

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 or POLI 2420.03 or instructor's permission

POLI 3475.03: Democratic Theory. Democracy is an essential component of legitimacy for all western states; few would be inclined to assert their “undemocratic” nature. But what are the essential characteristics of democracy, and to what extent must modern democratic theory remain grounded in nineteenth-century western liberal thought? While this class has a predominantly theoretical orientation, it will not ignore the relations between democratic theory and economic production/reclass distribution, as well as an investigation into how democratic theory can be developed in non-western political contexts.

FORMAT: Seminar
PREREQUISITE: Any political or moral philosophy class or instructor's consent
CROSS-LISTING: POLI 5475.03 or PHIL 3475.03

POLI 3492.03: Political Inquiry I: Statistical Analysis. This class covers topics related to research design, data gathering and appropriate data analysis, and computer programming using SPSS.

FORMAT: Lecture/discussion/lab
PREREQUISITE: Introductory Political Science class or instructor's permission.
CROSS-LISTING: POLI 3493.03 (political science honours students only)

POLI 3493.03: Political Inquiry II: Philosophy of the Social Sciences. What is good political science, and what is not? This class is designed as a study of the discipline itself, from a perspective of research design. It investigates the major theoretical and methodological approaches currently employed to study political processes. 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 might 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 empirical applications of research methods. Given that the subject matter of political life is the distribution of power, it is not surprising that social considerations feature strongly throughout our discussions.

FORMAT: Lecture
PREREQUISITE: Introductory Political Science class or instructor's permission.
CROSS-LISTING: POLI 5403.03

POLI 3520.03: Building Democracy and Peace. Many people have long argued that there is an intimate relationship between democracy and peace. Thus, they claim, democracies are much more inclined to peace – both internal and external than other political systems. It is clear that democracy allows the representation of a large number of interests in society, and this can lead to peaceful resolution of or accommodation of disputes. There have been many studies about established democracies in this regard, but less research into societies in transition – i.e., countries which are democratizing. Since countries in transition present the vast majority of countries in the world, it would seem timely to study this phenomenon. Democratization involves a multitude of steps and must therefore incorporate a great variety of actors, particularly in post-conflict societies. The role of (overlapping) elements in post-conflict societies in the process of democratization appear to be the key. These elements are civil society, the institutional environment and refugees. This third or fourth year level course will examine these key actors/elements and processes.

FORMAT: Lecture
PREREQUISITE: 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 multilateral communications.

FORMAT: Seminar
PREREQUISITE: POLI 2520.03/2530.03
CROSS-LISTING: POLI 5525.03

POLI 3531.03: The United Nations in World Politics. The evolution of the United Nations from its early concentration on problems of collective security, through the period of preventive diplomacy and anti-colonialism, to its present role as a forum for the aspirations and demands of the Less Developed Countries is reviewed. The more distant future, and the continuing relevance of the United Nations in world politics, and how its role and objectives should be determined, are considered.

FORMAT: Seminar
PREREQUISITE: Class in international politics or instructor's permission
CROSS-LISTING: POLI 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
POLI 3571X/Y.08: 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 decisions process and relevant methodologies for examining decision strategy are examined. Students develop an ability to explain foreign policy decisions of the United States.
FORMAT: Seminar
PREREQUISITE: Classes in international politics, US politics or instructor's consent
CROSS-LISTING: POLI 5574.03
EXCLUSION: POLI 3574X/Y.06

POLI 3575.03: Nuclear Weapons and Arms Control in World Politics.
The seminar examines the technological, doctrinal, and political aspects of the nuclear weapons "problem" and the arms control "solution." It also assesses the fate of contemporary nuclear arms control efforts.
FORMAT: Seminar
PREREQUISITE: Class in international relations or defence policy, or with instructor's permission
CROSS-LISTING: POLI 5575.03

POLI 3577.03: Civil-Military Relations in Contemporary Western Society.
The class will examine the trilateral relationship between society, government, and the military in the post-Cold War era. The context includes: changing societal values and the domestic pressures they produce; and the implications of a constantly changing strategic environment. Different perspectives will be examined to assess the implications for civil-military relations of the above-noted changes: legal/constitutional (Charter challenges); military/professional (operational requirements); and political (constituency and special interest demands).
FORMAT: Seminar
PREREQUISITE: POLI 2520.03, 2530.03 or instructor's permission
CROSS-LISTING: POLI 5577.03

POLI 3581.03: Diplomacy and Negotiation.
This class looks at the way states decide which diplomatic strategies to pursue, and why these succeed or fail. Among the themes are the evolution of diplomacy, national bargaining power, and the effects of psychology, domestic politics, and culture. Specific cases, including the Balkan crisis, the Cuban missile crisis, and the Canada-US free trade talks, are analyzed. Students participate in a simulation exercise.
FORMAT: Seminar
PREREQUISITE: Class in international politics or instructor's consent
CROSS-LISTING: POLI 5581.03

POLI 3585.03: Politics of the Environment.
Environmental issues have become increasingly important on international agendas. In this class, political analysis of these questions is grounded in a global ecological perspective. The topics for discussion include acid rain and other problems in the relations between advanced industrialized countries, the role of international institutions and...
of global conflict and war.

During a 13-week period in 1994 more than 800,000 people were killed in
the conflict 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 (368 casualties) every day for four years. Large-scale
violence associated with interstate and intra-state conflict and war
continues to have undeniable relevance for all of humanity. Given the res
of ethnic conflicts in Europe and proliferation of advanced weapons
technology world wide, providing answers to pressing questions about
the onset, escalation and de-escalation of violent conflict.

This course will take a multi-disciplinary approach to contemporary
issues in maritime security. It will examine the political-strategic
dimension of maritime security and its operational application. The course
will start by addressing maritime strategy from a conceptual and legal
basis, and then move to address maritime security from the Canadian
perspective.

POLI 3906.03: 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 (368 casualties) every day for four years. Large-scale
violence associated with interstate and intra-state conflict and war
continues to have undeniable relevance for all of humanity. Given the res
of ethnic conflicts in Europe and proliferation of advanced weapons
technology world wide, providing answers to pressing questions about
the onset, escalation and de-escalation of violent conflict.

POLI 3907.03: International Political Economy.
This course is composed of two overlapping constituent themes. The first
theme is that of competing explanations of international political economic
behaviour - behaviour affected by that diffuse political authority
characteristic of the international system, the second, that of examining the basic
issues in international political economy - the fundamental questions as to why
international trade, international finance, unequal economic
development, international organization, and the multinational enterprise.
The first theme functions to create the over-all framework of analysis by
which competing approaches to international political economy can be
evaluated. The second theme will integrate these approaches with issue
areas within the fields of international trade, international finance, and
what might be termed "international production" (within which fields
issues such as economic development, the multinational enterprise, and
the global "division of labour" constitute the major foci). The course
sessions will roughly be constituted by 50 percent lecture and 50 percent
organized student contributions for seminar discussion and debate.

INSTRUCTOR(S): Davis, J.

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.

POLI 3909.03: 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.

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.

POLI 3910.03/3920.03: Special Topics in Political Science.
An examination of selected issues in Political Science. This class explores
e.g., when a visiting scholar at the campus) a special topic that is not
regular offering of the department. It is taught as a lecture or seminar
class, not as an independent studies class. Since the topics covered in these
classes differ from year to year, students should seek further information
from the Political Science Department before registering. The subject
matter in this class will be explored in greater depth than a class offered
under POLI 3901.03/2020.03.

SIGNATURE REQUIRED.

POLI 4240.03: Policy Formulation in Canada.
This class provides a general introduction to the field of public policy
management, for graduate and honours undergraduate students. Using
British 'best practice' ideas of professional policy making and Canadian
statements of generic policy competencies, it seeks to improve the policy
capacity of participants. It does this by increasing their knowledge of
public policy structures, processes, and outputs, and secondly, by giving
them knowledge that they can use in policy advocacy both inside and
outside government. The first section of the class examines policy
definitions and professional policy making approaches in the 21st century.
The second section considers the role of the state in the 21st century, and
the policy competencies that analysts must have is that role is to be carried

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

POLI 4240.03: Policy Formulation in Canada.
This class provides a general introduction to the field of policy
management, for graduate and honours undergraduate students. Using
British 'best practice' ideas of professional policy making and Canadian
statements of generic policy competencies, it seeks to improve the policy
capacity of participants. It does this by increasing their knowledge of
public policy structures, processes, and outputs, and secondly, by giving
them knowledge that they can use in policy advocacy both inside and
outside government. The first section of the class examines policy
definitions and professional policy making approaches in the 21st century.
The second section considers the role of the state in the 21st century, and
the policy competencies that analysts must have is that role is to be carried

NOTE: Students taking this class must register in both X and Y in
consecutive terms; credit will be given only if both are completed
consecutively.
out effectively. Section three explores vertical, horizontal and external policy relationships, both as determinants of policy and as practical matters of management. Section four explores, and helps participants to gain proficiency in, the most recent processes of strategic policy design and implementation. This blend of theory and practice will increase the policy knowledge of all participants, and equip those who are in professional programs, including the various public services, to contribute more effectively policy processes in the future.

SIGNATURE REQUIRED.

FORMAT: Seminar
PREREQUISITE: Open to Honours students in their fourth year and to graduate students.
CROSS-LISTING: POLI 5240.03, PUAD 5120.03

POLI 4241.03: Introduction to Policy Analysis.
This class examines four aspects of policy analysis: (1) The role of the analyst in modern government; (2) The analyst’s working environment; (3) Techniques used in carrying out research and preparing position papers; (4) and the analyst's responsibilities to government and to the public in determining what information should reach decision-makers. Approved with Canadian Studies.
SIGNATURE REQUIRED.
FORMAT: Seminar
PREREQUISITE: POLI 4240.03 or instructor’s permission
CROSS-LISTING: POLI 5241.03, PUAD 5121.03

POLI 4479.03: Liberalism.
Liberalism takes a variety of forms and includes many topics including the rule of law, limited government, the free exchange of goods, entitlement to property, the self, and individual rights. Its philosophical and political assumptions provide the intellectual context within which its account of the individual, its vision of the community and its preferred allocation of resources will be assessed.
SIGNATURE REQUIRED.
FORMAT: Seminar
PREREQUISITE: Normally, classes in philosophy or political science or economics; consult instructor.
CROSS-LISTING: PHIL 4470.03/5470.03, ECON 4446.03/5446.03, POLI 5479.03

POLI 4600X/Y.06: Honours Essay.
Political Science undergraduates in the Honours program are required to attend the Honours-seminar as scheduled. This seminar is designed as a research seminar for Honours students.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
INSTRUCTOR(S): Honours Co-ordinator.
RESTRICTION: Restricted to Political Science Honours students in their final year.

POLI 4636.03: Nationalism and Statecraft.
An examination of the sources, ingredients and consequences of contemporary nationalism, with particular reference to its implications for the conduct of international politics. In the early sessions of the class, pertinent literature from the pre-World War II period will be evaluated for its relevance to our understanding of current circumstances, in which the apparent revival of nationalist impulses has coincided with intensifying manifestations of functional interdependence.
SIGNATURE REQUIRED.
FORMAT: Seminar
CROSS-LISTING: POLI 5636.03

POLI 4656.03: Oil, Natural Gas and Government: The Political Economy of Regulation.
Given that oil and natural gas activities are vital both for internal Canadian energy consumption and for an increasing fraction of Canadian energy exports to the United States, the conjoint management of these activities by the private and public sectors is of considerable importance. This course is designed to give students interested in issues related to oil and natural gas, natural resource exploitation, and public policy and administration, an understanding of how oil and gas activities are managed. Key to this understanding is an appreciation of the differing industrial structures characteristic of the oil and gas industries, both up- and downstream, and how these affect their management. There reference will be made to industrial organisation theory in terms of a general framework of analysis. The class will then relate these industrial structures to such theories of regulation and management of those of “capture”, principal-agent, and the use of market solutions (for example, the issues of auction design). The nature of comparative regulatory systems is the next focus of interest: We compare Canada versus the United States (oil); and continental Europe versus North America (natural gas) to the a feel of the issues and the possible range of regulatory solutions for both onshore and offshore activities. Of particular interest here are the problems associated with the best managed systems; multiple conflicting regulatory authorities, adverse selection, moral hazard, distorted incentives, the possible presence of oligopoly rents, and the problems of regulatory capture.
SIGNATURE REQUIRED.
FORMAT: Seminar
PREREQUISITE: Third-level International Relations class; or instructor’s permission
CROSS-LISTING: POLI 5656.03
Religious Studies

Departmental Requirements

A. BA (20-credits) with Major in Religious Studies

1000 level
- Select two classes from: RELS 1001.03, 1002.03, 1300.03

2000 level
- Select two classes from: RELS 2001.03, 2002.03, 2003.03
- Select two classes from: RELS 2011.03, 2012.03, 2013.03
- Select one other credit at or above 2000 level

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

4000 level
- At least one half credit at 4000 level

B. BA double major in Religious Studies (20 credits)

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

C. BSc double major, second subject in Religious Studies (20 credits)

Students must complete the Faculty requirements for a double major. Religious Studies can be the second subject only, with no fewer than 4 full credits, 2 of which must be at the 3000 level or higher.

D. BA Combined Honours in Religious Studies (20 credits)

Departmental Requirements

- At least two classes from: RELS 1001.03, 1002.03, 1300.03
- At least two classes from: RELS 2001.03, 2002.03, 2003.03
- At least two classes from: RELS 2011.03, 2012.03, 2013.03
- At least one and one half credits at 3000 level or above
- At least one half credit at 4000 level
- Completion of the Honours Examination if the major work is done in Religious Studies

E. BSc Combined Honours, second subject in Religious Studies (20 credits)

Students must complete the Faculty requirements for the combined honours degree. Religious Studies can be the second subject only, with no fewer than 4 full credits beyond the 1000 level, 2 of which must be at the 3000 level or higher.

F. BA with Concentration in Religious Studies (15 credits)

Departmental Requirements

- At least two classes from: RELS 2001.03, 2002.03, 2003.03
- At least two classes from: RELS 2011.03, 2012.03, 2013.03
- At least two full credits above the 2000 level

This program provides Religious Studies majors with a broad introduction to both Eastern and Western religious life, and to the various ways in which religion may be studied. In light of their specific interests, Religious Studies majors are encouraged to enrol in related classes offered by other Departments. Programs should be planned in consultation with the Religious Studies undergraduate advisor.

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

G. Emphasis in Canadian Studies

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

III. Class Descriptions

First-year students are not admitted to classes beyond the 1000 level without the consent of the instructor. Classes at the 2000 level do not have prerequisites; in general, they are available only to students in their second year or above. Prerequisites for classes at the 3000 and 4000 levels are...
### RELS 1001.03: Introduction to Eastern Religions

This course serves as an introduction to the history, beliefs, and practices of Hinduism, Jainism, Sikhism, Buddhism, Taoism, and Confucianism.

**FORMAT:** Lecture

**EXCLUSION:** COMR 1000.06

### RELS 1002.03: Introduction to Western Religions

This course serves as an introduction to the history, beliefs, and practices of Judaism, Christianity, Zoroastianism, and Islam.

**FORMAT:** Lecture

### RELS 1300.03: Explorations in Religion

The description and understanding of religion requires diverse approaches: historical, psychological, sociological, philosophical. It also requires that knowledge of oneself go hand in hand with knowledge of the human phenomenon of religion. This class introduces the student to basic concepts in the academic study of religion and to some of the most recent scholarship in the area.

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

**FORMAT:** Lecture/seminar

### RELS 2001.03: Judaism

An introduction to Jewish beliefs, practices history, and writings from the Hellenistic period to the present. Topics to be covered include: the Torah, the Talmud, the development of the Rabbinic tradition, and the formation of modern Jewish identity in relation to the Holocaust and the founding of the State of Israel.

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

**FORMAT:** Lecture/seminar

**PREREQUISITE:** Students should be in second year or above

### RELS 2002.03: Christianity

An introduction to Christian beliefs, practices, history and writings from the New Testament period to the present. Topics to be covered include: Christian Origins, the Trinity, the Christological debates, the development of the biblical canon, and the 20th century rise of fundamentalism and ecumenism.

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

**FORMAT:** Lecture/seminar

**PREREQUISITE:** Students should be in second year or above

### RELS 2003.03: Islam

An introduction to Muslim beliefs, practices, history and writings from the 7th century to the present. Topics to be covered include: the life and mission of Mohammed, the Qur'an, the Islamic legal tradition, the development of the Hadith, and the rise of political Islam in recent centuries.

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

**FORMAT:** Lecture/seminar

**PREREQUISITE:** Students should be in second year or above

### RELS 2004X/Y.06: Meetings between Hellenism, Judaism, Christianity, and Islam from Philo Judeaus to Dante.

Please see description for CLAS 2300 in the Classics section of this calendar.

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

**INSTRUCTOR(S):** W. J. Hosking

**FORMAT:** Lecture

**CROSS-LISTING:** CLAS 2300, HST 905

### RELS 1101.03: Hinduism

An introduction to the religious and cultural traditions of India, with particular attention to Indian cultural history. Topics to be covered include: Vedic religion, classical Brahmanical religion, the caste system, bhakti (devotional) traditions and the rise of epic literature, philosophical traditions and the Upanishads, and the interaction between Hinduism and other religious traditions of the subcontinent (e.g., Jainism, Indian Buddhism, Sikhism). Modern issues such as the impact of colonial rule, independence, and partitioning upon Hindu identity will also be discussed, with particular emphasis on the thought of Mohandas Gandhi.

**INSTRUCTOR(S):** TBA

**FORMAT:** Lecture/seminar

**PREREQUISITE:** Students should be in second year or above

### RELS 1002.03: Chinese and Japanese Religions

An introduction to the cultural, religious, and philosophical traditions of East Asia, with a primary focus on China and Japan. Topics to be covered include: Classical Confucianism, Neo-Confucianism, Philosophical and Religious Taoism, Shinto, Chan and Zen Buddhism. The course will also examine the interaction, competition, and overlap between these traditions.

**INSTRUCTOR(S):** TBA

**FORMAT:** Lecture/seminar

**PREREQUISITE:** Students should be in second year or above

### RELS 2003.03: Buddhism

Buddhism originated in India in the 6th century B.C.E. with Siddhartha Gautama, the Buddha - the Enlightened and the Compassionate- and from there spread throughout South East Asia and the Far East in the following millennium. It practically disappeared from the land of its origin after nearly sixteen hundred years during which time it permanently influenced Indian thought and spirituality. Buddha was considerably modified by the great cultures of China, Korea and Japan. Buddhism has influenced the religious world-views and practices of more than half of humanity, largely owing to its great impact in Asia. Now, many Westerners are also drawn to the philosophy and meditational practices of different forms of Buddhism. This class will offer a basic introduction to the history, ideas and practices of Buddhism.

**FORMAT:** Lecture/seminar

**PREREQUISITE:** Students should be in second year or above

### RELS 2004.03: Introduction to the New Testament

This course is designed as an introduction to the academic study of Christian Origins and its associated literature, most prominently the collection of materials comprising the New Testament, but also focusing on non-canonical writings. The course will examine the first-century origins of Christianity in the Roman province of Judea, and its movement into other regions such as Anatolia and the Italian peninsula.

**FORMAT:** Lecture

**RESTRICTION:** Second year or above

### RELS 2005.03: 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 well as contemporary points of debate surrounding the meaning of visible markers of Muslim identity like the hijab (veil).

**FORMAT:** Lecture/seminar

**CROSS-LISTING:** COSS 2003.03

**RESTRICTION:** Second year or above

### RELS 2070.03: The Study of Scripture: Topics in Religious Textual Traditions

This course is intended as an introduction to the modern academic study of a specific collection of religious texts. The body of literature studied will vary, but the course will emphasize the historical formation, creation, and interpretation of a single body of material (e.g., the New Testament, the Qur'an, the Anuradha, the Bhagavad-gita, or the Christian Gospels), as understood through the eyes of modern scholarship.  

---

208 Religious Studies
INSTRUCTOR(S): M. Mitchell

symbols; the problem of religious ethics in wartime in the modern world. The class will examine comparatively the Religious attitudes toward war have ranged from pacifism, through wealth and how should it be distributed? Do men and women have different roles to play? A detailed syllabus is available from the Department of Classics.

EXCLUSION: 1st year students and HIST 2501.03

FORMAT: Lecture
CROSS-LISTING: RELS 2090.03, HIST 2501.03

RELIS 3007.03: Western Spirituality - Mystics. Some have argued that the mystic's experience lies at the heart of all religions, while others see it as dangerous to what has traditionally been regarded as religious. Original accounts of Jewish, Christian, Muslim and American spiritualities are studied in their historical context in this class. A detailed syllabus is available from the Department of Classics.

FORMAT: Lecture/seminar
PREREQUISITE: At least one of RELS 2001.03, RELS 2002.03, RELS 2003.03 or permission of the instructor

RELIS 3008.03: The Medieval Church. This class does not attempt to provide a chronological survey of the development of the Western church, but is an advanced seminar dealing with topics which have no strict chronological limits. Subjects of study include monasticism, heresy, education and the universities, town and cathedral, the transition from medieval to modern society? Is there a search going on for spiritual growth, spiritual awareness, spiritual expression? What does religion mean to people in contemporary society? 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 SOCIA 100X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06, RELS 1001.03/1021.03, or permission of the instructor
CROSS-LISTING: SOCIA 3103.03

RELIS 3104.03: 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?

FORMAT: Lecture/seminar
PREREQUISITE: A class in Religious Studies or the permission of the instructor; students must be in third-year or above

RELIS 3106.03: Women and Religion. This course will study the roles and the understanding of women in both ancient and modern religious contexts, including an investigation of attitudes towards women in the authoritative writings and practices of various traditions. Special attention will be given to the differing and
RELS 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 study of 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): TBA
FORMAT: Lecture/seminar
PREREQUISITE: Any Religious Studies course at the second year level, or one of RELS 1001.03/1002.03, GWST 1010.03, GWST 1015.03, or permission of the instructor
CROSS-LISTING: GWST 3016.03

RELS 3010.03: Science and Religion: Contemporary Perspectives.
Beginning with an overview of the history and methodology of the study of science and religion, encounters between science and religion are traced from the dawn of civilization to the end of the eighteenth century, with a special focus on the early modern period. From an examination of the biblical view of nature, ancient Babylonian astrology and divination and Plato’s Timaeus, this course moves through a treatment of the centrality of theology to Medieval science on to natural theology and the “Watchmaker” Design Argument of the seventeenth and eighteenth centuries. Models of conflict, harmony and complementarity offered to characterize relations between science and religion are explored through case studies such as Galileo’s controversy with the Church and instances where religious belief inspired scientists like Boyle and Newton. Claims that certain religious traditions (notably Protestantism and its dissenting offshoots) facilitated the rise of modern science are also appraised. Science-religion relations are examined both from the standpoint of mainstream religion and with respect to religious heterodoxy, prophecy, alchemy, magic and witchcraft. This course employs examples from Islamic cultures in addition to the Judeo-Christian tradition. Special features include a focus on primary texts and guest lectures by scientists.
INSTRUCTOR(S): TBA
FORMAT: Lecture/Discussion
CROSS-LISTING: GWST 3014.03, CTMP 3201.03

RELS 3410.06: St. Augustine’s Confessions.
A study of the three parts of Augustine’s Confessions with a view to understanding his dissatisfaction with the various positions he adopted prior to his conversion to Christianity (Part 1), the practical consequences of this conversion (Part II), and the new theological understanding of time, space and motion which came out of his Trinitarian exegesis of the first chapters of Genesis (Part III). This class presupposes some knowledge of the history of Ancient Philosophy, and some of Latinn. This class is given alternately with CLAS 3420.03/3420.04.
INSTRUCTOR(S): W. Hankey
FORMAT: Seminar
PREREQUISITE: This class presupposes some knowledge of the history of Ancient Philosophy, and some of Latin.
CROSS-LISTING: CLAS 3410.06

RELS 4310.03: Topics in Comparative Religion/RELS 4320.03: Independent Study in Comparative Religion.
Structured as a seminar or for independent guided study depending on the interests and needs of the students and faculty. The intention is to devote some concerted time to a specific topic of interest (e.g., Cults and New Religions, The Goddess, Feminine in World Religions, Death, The Soul, Sufism). Consult the Department for topic discussed in any given term. These classes will normally only be arranged at the request of a student who is majoring in Religious Studies, though other students may then be admitted to the class upon application to the instructor. These classes permit the student majoring in Religious Studies to integrate the interests and needs of the students and faculty. The intention is to devote some concerted time to a specific topic of interest (e.g., Cults and New Religions, The Goddess, Feminine in World Religions, Death, The Soul, Sufism). Consult the Department for topic discussed in any given term. These classes will normally only be arranged at the request of a student who is majoring in Religious Studies, though other students may then be admitted to the class upon application to the instructor.
Russian Studies

Location: 6135 University Ave.
Rooms 3010-3016
Halifax, N.S, B3H 4P9
Telephone: (902) 494-3473
Fax: (902) 494-7848
Email: rusn@dal.ca
Website: www.dal.ca/russian

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

Chair
Barnstead, J.A.

Undergraduate Advisor
Barnstead, J.A. (494-6951)

Professor Emeritus
Pereira, N.G.O., BA (Williams), MA, PhD (UC Berkeley)

Associate Professor
Barnstead, J.A., BA (Oakland), AM (Harvard)

Assistant Professor
Leving, Y., BA, MA, PhD (Hebrew University)

Instructor
Spasova, S., BA, MA, PhD (University of Wisconsin)

I. Introduction
The Russian Studies Department offers courses 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 English and Russian in order to give as many students as possible from other disciplines the opportunity to become acquainted with this important part of Russian life.

Classes in Russian culture and civilization are intended to introduce students to art, architecture, music, religion, and other areas of Russian life which are necessary to understand the language and literature. Films, guest speakers, and evenings of Russian poetry are scheduled periodically. The Dalhousie Association of Russian Students organizes a variety of events throughout the year.

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 3003.03
• RUSN 3029.03
and ONE of the following:
• RUSN 3102.03, RUSN 3121.03, RUSN 3122.03, or any 4000-level half class taught in Russian.

Exam
A written and oral examination with a minimum average of B- on each part. Students who fail the examination on the first attempt will be allowed to take it over after one year.

No one is entitled to take the examination without having done the class work.

Administration
Please consult the Russian Studies Department for details.

III. Degree Programs
Classes in the Russian Studies Department are open to students either (1) as electives in any degree program; (2) as constituents of a major or honours degree in Russian; or (3) with classes in another discipline forming part of a combined honours degree.

All Bachelor degree programs are governed by the general Requirements for Degrees set out in the University Calendar, in addition to the departmental requirements stated below. See “Degree Requirements” section, page 60 of this calendar for complete details.

A. BA with Honours in Russian Studies

Departmental requirements
1000 level
• RUSN 1000X/Y.06
• RUSN 1020.03
• RUSN 1070.03

2000 level
• RUSN 2002.03
• RUSN 2003.03
• RUSN 2051.03
• RUSN 2052.03
• Five other credits at or above the 2000 level and not including those listed below.

3000 level
• Two credits at 3000 level or higher, one being RUSN 3002.03 and 3003.03

4000 level
• RUSN 4000X/Y.06

Other required classes
• One credit in Russian History (normally: RUSN 2022.03 and 2023.03). This requirement is included in the number of credit hours noted above.
• Honours Thesis
B. 20-credit BA with Major in Russian Studies

Departmental requirements

1000 level
- RUSN 1000X/Y.06
- RUSN 1020.03

2000 level
- Four credits at or above the 2000 level including RUSN 2002.03, 2003.03, 2051.03 and 2052.03

3000 level
- Three credits at or above the 3000 level, one being RUSN 3002.03 and 3003.03

4000 level
- RUSN 4000X/Y.06

Other required classes
- One full credit in Russian History (normally RUSN 2022.03 and 2023.03)

C. 15-credit BA with Concentration in Russian Studies

Departmental Requirements

1000 level
- RUSN 1000X/Y.06
- RUSN 1020.03

2000 level
- RUSN 2002.03, 2003.03, 2051.03 and 2052.03
- One additional credit at or above 2000 level

3000 level
- Two credits at or above the 3000 level, one being RUSN 3002.03 and 3003.03

D. Intensive Russian Program

Coordinator

Pereira, N.G.O. (494-3473/3946)

Associate Coordinator

Neklioudova, T. (494-3473)

1. Introduction

The Intensive Russian Program (the oldest of its kind in Canada), is an inter-disciplinary class of instruction which allows students to undertake intensive study of the Russian language both here and in Russia at St. Petersburg University. This program is offered at the third-year level of intensive study of the Russian language for students who have successfully completed two years of Russian or its equivalent. Students at Dalhousie must enrol in a third-year fall preparatory session prior to going to Russia.

If students from elsewhere wish to join the third-year program only in Russia, they may do so after successful completion of application requirements.

2. Classes at Dalhousie

(September to December)

Students are required to take:
- RUSN 3002.03: Grammar;
- RUSN 3003.03: Russian Society Today;
- two additional A-term classes in Russian History and Russian literature, language.

3. Classes at St. Petersburg State University

(January to May)

- RUSN 3011.05: Grammar I;
- RUSN 3012.03: Grammar II;
- RUSN 3013.05: Conversation;
- RUSN 3015.03: Translation;
- RUSN 3016.03: Literature - Reading and Analysis

IV. Class Descriptions

RUSN 1000X/Y.06: Elementary Russian.

For students who have little or no previous knowledge of the Russian language. Equal emphasis is placed on developing oral and reading skills with a sound grammatical basis.

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

FORMAT: Instruction

RUSN 1020.03: Russian Culture and Civilization under the Tsars.

Conducted in English. The class traces developments in the Russian artistic, literary, scientific, and political life of the 19th century, with emphasis on the period of the Tsars.

FORMAT: Instruction/drill 6 hours

PREREQUISITE: C+ or higher in RUSN 1000X/Y.06 or permission of instructor

RUSN 2002.03: Intermediate Russian I.

A continuation of RUSN 2002.03. Oral and reading skills and a further knowledge of grammar are developed through study and discussion of Russian texts.

FORMAT: Instruction/drill 4 hours

PREREQUISITE: C+ in RUSN 2000X/Y.06 or permission of instructor

RUSN 2003.03: Intermediate Russian II.

A continuation of RUSN 2003.03.

FORMAT: Instruction/drill 4 hours

PREREQUISITE: C+ in RUSN 2000X/Y.06 or permission of instructor

EXCLUSION: RUSN 2000X/Y.06

RUSN 2004.03: Introduction to Business in Russia.

This class provides an overview of the present business practices and climate in Russia. Topics addressed include: (1) the historical antecedents for present business practices in Russia; (2) banking and monetary policy (history, reforms, the current situation); (3) the Russian stock market (stock exchanges, current and pending laws concerning stock and bonds); (4) organization of exhibitions and public relations in the Russian milieu; (5) logistics of doing business in Russia; (6) insurance practices; (7) the Russian real estate market; (8) Russian business ethics; and (9) a roundtable discussion with Russian businessmen.

FORMAT: Lecture (1 roundtable discussion)

RUSN 2021X/Y.06: Imperial and Soviet Russia.

See class description for HIST 2020X/Y.06 in the History section of this calendar.

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

RUSN 2022.03: Imperial Russia.

Equivalent to the first half of HIST 2020.06. Chronologically covers the imperial period of Russian history, from Peter the Great to the Revolution of 1917.

FORMAT: Lecture/discussion
RUSN 2036.03: Russian Film I. An overview of the most significant trends and periods in the development of Russian cinema from the 1900s to the present. PREREQUISITE: RUSN 2051.03, lecture and discussion 3 hours EXCLUSION: RUSN 3000X/Y.06

RUSN 2037.03: Russian Film II. An overview of the most significant trends and periods in the development of Russian cinema since the 1960s, concentrating on the main genres and styles, major directors and productions, and examining issues of race, gender, war, and violence in Soviet, Post-Soviet, and New Russian cinema. PREREQUISITE: RUSN 2036.03, lecture and discussion 3 hours EXCLUSION: RUSN 3000X/Y.06

RUSN 2051.03: Survey of Russian Literature. Conducted in English with section in Russian for majors. Required for majors and honors candidates. An overview of Russian literature from its beginnings through Tolstoy. PREREQUISITE: Writing Requirement (when taken in combination with RUSN 2052.03), lecture and discussion 3 hours EXCLUSION: RUSN 2050.06

RUSN 2052.03: Survey of Russian Literature. Conducted in English with section in Russian for majors. Required for majors and honors candidates. An overview of Russian literature from Chekhov to the present. PREREQUISITE: Writing Requirement (when taken in combination with RUSN 2051.03), lecture and discussion 3 hours EXCLUSION: RUSN 2050.06

RUSN 2061.03: Russian Modernism. Conducted in English. A study of trends in literature and the arts at the turn of the century. Known as "The Silver Age", this is one of the most innovative and dynamic periods in Russian culture. PREREQUISITE: RUSN 2050.06 or equivalent

RUSN 2062.03: Russian Literature - 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. PREREQUISITE: RUSN 2050.06 or equivalent

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. PREREQUISITE: RUSN 2050.06 or equivalent

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. PREREQUISITE: RUSN 2050.06 or equivalent

RUSN 2191.03: Survey of Russian Theatre. Conducted in English. An overview of Russian writing for the theatre, with emphasis on the nineteenth and twentieth centuries. PREREQUISITE: RUSN 2050.06 or equivalent

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. PREREQUISITE: RUSN 2050.06 or equivalent

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. PREREQUISITE: RUSN 2050.06 or equivalent

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 F. Tyutchev and Lev Tolstoy are discussed together with the ideas of such great Russian philosophers as V. Solovyov and N. Berdiaev. PREREQUISITE: RUSN 2050.06 or equivalent

RUSN 2760.03: Dostoevsky and Western Literature. Conducted in English. With all his love for Russia, Dostoevsky treasured his country's beauty and agreement, and other themes. PREREQUISITE: RUSN 2050.06 or equivalent

RUSN 3002.03: Advanced Russian I. Conducted in Russian. Following a thorough review, this class concentrates on expanding all aspects of the student's knowledge of Russian grammar. Texts are read extensively and intensively. Discussion and compositions are based on the assigned readings. PREREQUISITE: RUSN 3000X/Y.06

RUSN 3003.03: Advanced Russian II. A continuation of RUSN 3002.03. PREREQUISITE: RUSN 3000X/Y.06

RUSN 3011.03: Grammar I. This class is offered in Russian only as part of the Intensive Russian Program in Russia. PREREQUISITE: RUSN 3000X/Y.06

EXCLUSION: RUSN 2050.06

EXCLUSION: RUSN 2050.06

EXCLUSION: RUSN 2050.06

EXCLUSION: May not be taken by students who have completed HIST 2020X/Y.06
RUSN 3012.03: Grammar II.
This class is offered in Russian only as part of the Intensive Russian Program in Russia. Continuation of RUSN 3011.03
CROSS-LISTING: RUSN 3010.06
FORMAT: Conversation
PREREQUISITE: Student must be enrolled in the 3rd year grammar class or must have permission of instructor.
EXCLUSION: RUSN 3010.06
RUSN 3029.03: Conversation.
Development of conversational skills and vocabulary building.
FORMAT: Conversation practice
RUSN 3031.03: Conversation.
This class is offered in Russian only as part of the Intensive Russian Program in Russia. Systematic development of conversational ability on everyday themes: transport, city services, theatre, sport, shopping, the library, the educational system, the structure of the government, etc.
FORMAT: Lecture/discussion
RUSN 3032.03: Translation.
This class is offered in Russian only as part of the Intensive Russian Program in Russia. Work on translation of literary, business and journalistic texts.
FORMAT: Lecture/discussion
RUSN 3035.03: Literature: Reading and Analysis.
This class is offered in Russian only as part of the Intensive Russian Program in Russia. Reading and analysis of literary texts.
FORMAT: Lecture/discussion
RUSN 3090.03: Russian Society Today.
Basic institutions of Russian society are considered in their historical context, with special attention to the role of official culture and literature, the workings of the economy, and social stratification.
RECOMMENDED: RUSN 3001.06, 2nd year Russian (This class is part of the Full Intensive Russian Program.)
FORMAT: Seminar
PREREQUISITE: Reading knowledge of Russian and some Russian history
CROSS-LISTING: HIST 3090.03/SOCL 3090.03
RUSN 3092.03: Russian Topics.
Topics to be studied and researched will vary from year to year. They may include the sources of Bolshevism/Leninism, the doctrine of peaceful coexistence, the position of national minorities, the role of literature (official and samizdat) and the press, the Cult of Personality, Krushchev's "Thaw", Brezhnev, Gorbachev, and Yeltsin.
RECOMMENDED: HIST 2020.06 or RUSN 2022.03/2023.03
FORMAT: Seminar
PREREQUISITE: One 2000-level class in history
CROSS-LISTING: HIST 3092.03
RUSN 3096.03: The History of Ideas in Russia: From Official Nationality to Solzhenitsyn's Neo-Slavophilesm.
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 Slavophiles and early Westernism, Populism and Nationalism, Marxism, Marxism, Leninism, Socialist Realism, anti-Stalinism, Glasnost, neo-Westernism (Sakharov), and neo-Slavophilesm (Solzhenitsyn).
RECOMMENDED: HIST 2020.05 or RUSN 2022.05/2023.05
FORMAT: Lecture/discussion
CROSS-LISTING: HIST 3096.03
RUS 3099.03: Solzhenitsyn Seminar.
Alexander I. Solzhenitsyn is one of the most controversial and influential Russian writers of the twentieth century. His life spanned the entire Soviet period and even his creative output continues unabated. Solzhenitsyn's books are an unique blend of literary imagination, philosophical reflections, memoirs and witness-bearing, historical conscience and chronicle. This seminar will study several of his more important historical works; these may include One Day in the Life of Ivan Denisovich, Cancer Ward, First Circle, Lenin in Zurich, Glogg Archipelago, August 1914 and subsequent volumes of the cycle.
FORMAT: Seminar
CROSS-LISTING: HIST 3099.03
RUSN 3102.03: Black Identity in Pushkin (Russian).
Conducted in Russian. A close study of the poetry and prose of the father of Russian literature, Aleksandr Sergeevich Pushkin, needs to be grounded in the centrality of his Black Identity for his life and oeuvre. Pushkin's unfinished work, Ajap Vetel'kevsky serves as the window illustrating his artistic genius and struggle for a mode of expression for his own identity. The silences which shroud Pushkin's blackness are probed to reveal their ideological, historical, legal and human significance, which are then critically assessed. The major narrative and lyric poems, Eugene Onegin, the Little Tragedies, Boris Godunov, the Tale of Beli, the Queen of Spades, as well as Pushkin's letters and critical works are revisited in this new light. Students will explore such themes as marginalization, liberty, provocation, 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 cultures.
FORMAT: Lecture/discussion
PREREQUISITE: RUSN 3003.06
EXCLUSION: RUSN 3100.03
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, Ajap Vetel'kevsky serves as the window illustrating his artistic genius and struggle for a mode of expression for his own identity. The silences which shroud Pushkin's blackness are probed to reveal their ideological, historical, legal and human significance, which are then critically assessed. The major narrative and lyric poems, Eugene Onegin, the Little Tragedies, Boris Godunov, the Tale of Beli, the Queen of Spades, as well as Pushkin's letters and critical works are revisited in this new light. Students will explore such themes as marginalization, liberty, provocation, 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 cultures.
FORMAT: Lecture/discussion
PREREQUISITE: RUSN 3003.06
EXCLUSION: RUSN 3100.03
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 3320.03
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, Chekhov, Dostoevsky, Nabokov, Krzhizhanovsky, Bulgakov, Bebel, Zoshchenko, Khama, Eppel, Dostoevsky, Pekorz, and Senkin.
FORMAT: Lecture/discussion
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 program which stresses the areas of convergence between the two disciplines. Sociology and Social Anthropology provide an academic training which is rigorous and cosmopolitan. Students develop research skills along with a general intellectual preparation which stands them in good stead for graduate work in the disciplines or for a broad range of professions such as law, medicine, social work or journalism.

RUSN 3520.03: Chekhov and Turgenev.
Conducted in English. Close analysis and discussion of the major works of Turgenev, sensitive painter of socio-political and psychological issues of the second half of the nineteenth century in Russia, and Chekhov, unexcelled short-story writer and radical innovator in modern theatre.
FORMAT: Lecture/discussion

RUSN 3800.03: Gogol and His Tradition.
Author of “Overcoat,” “Nose,” Taras Bulba, Dead Souls, Gogol has been proclaimed: “a pathological liar and honest anatomist of the soul, jejunum jokester and tragic poet, realist and fantast.” An in-depth study of this major writer.
FORMAT: Lecture/discussion

RUSN 3820.03: Nabokov.
A close study of selected works by consummate twentieth century prose stylist Vladimir Nabokov — novelist, poet, critic and translator, author of the notorious Lolita.
FORMAT: Lecture/Discussion

RUSN 4000X/Y.06: The Structure of Contemporary Standard Russian.
This class is offered in Russian. Required for honours candidates. Systematic study of the structure of Russian: analysis of special problems in phonology, morphology, syntax, and stylistics. Tailored to the individual needs of the student, with emphasis on practical applications of linguistic insights.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
PREREQUISITE: RUSN 3000.06 or permission of the instructor
FORMAT: Lecture/discussion 3 hours

RUSN 4302.03: Russian Poetry.
Conducted in Russian. A combination of an introduction to the theory of poetry with close analysis of masterpieces of nineteenth and twentieth century Russian poetry chosen to fit the interests of the individual student.
FORMAT: Lecture/Discussion
PREREQUISITE: Permission of the instructor

RUSN 4950X/Y.03: 4960/03, 4990.06: Special Topics.
Conducted in Russian. Offers the student an opportunity to work with an advisor in researching subjects which are not regularly taught in the Department. Recent topics have included Old Church Slavonic, the historical phonology and morphology of Russian, and Russian symbolism. Students who wish to register for a specific program should consult the chair of the Department.
NOTE: Students taking 4990 must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
PREREQUISITE: Permission of the Instructor

RUSN 4960.06: Special Topics.

Location: 1313 University Ave., Room 1128
Halifax, NS B3H 4P9
Telephone: (902) 494-6593
Fax: (902) 494-2897
Website: www.dal.ca/FASS

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

Chair
Murphy C. (494-2069)

Undergraduate Coordinator
Dufrein, L. (494-8869)

Professors Emeriti
Clairmont, D.H., BA, MA (McMaster), PhD (Wash. U)
Thiessen, V., BA (Man), MA, PhD (Wis)

Professors
Apostle, R.A., BA (Simon Fraser), MA, PhD (Calif), McCulloch Professor
Barkow, J.H., AB (Brooklyn), AM, PhD (Chi)
Binkley, M.E., BA, MA, PhD (Toronto)

Associate Professors
Butler, P.M., BA (McGill), MA, PhD (New School)
Jarman, J., BA, MA (Toronto), PhD (Canad)
Murphy, C.J. BA (F. J.), MA (Dell), PhD (Toronto)
Stolzman, J., BA (Ore), MS (Fla), PhD (Ore)

Assistant Professors
Clark, P.G., BA, MA (McMaster), PhD (UBC)
Fitting, E., BA (Toronto), MA (Div), PhD (New School)
Helland, C., BA, MA (Concordia), PhD (Toronto)
Khanmohammadi, A., BA, MA, PhD (McMaster)
Martin, F., BA (Queen’s), MA (Melbourne)
Noble, B., BA, MA, PhD (Alberta)
Oakley, R., BA (Saint Mary’s), MA, PhD (Toronto)
Park, M., BA (Toronto), MA (York), PhD (London School of Economics)
Ramos, H., BA (York), PhD (McGill)
Whelan, E. BA (Winnipeg), MA (Queen’s), PhD (Carleton)

Adjunct Professors
Gamborg, H.V., BA (Brenda), AM, PhD (Princeton)
Morgan, J.G., BA (Notf), MA (McMaster), DPhil (Oxon)

II. Introduction
A. Sociology

From its inception in the nineteenth century, sociology has been concerned with understanding the growth and evolution of modern societies. Classical sociologists attempted to identify universal laws of human behaviour which would help them to understand the nature of social change and of social order, the role of the individual vis-a-vis the broader society, and the production and reproduction of social inequalities. While contemporary sociologists have abandoned the search for universal laws, the discipline continues to study the social context of human action, and has contributed substantially to knowledge and understanding of our own world.

B. Social Anthropology

Anthropology is composed of four subfields, social/cultural, archaeological, biological, and linguistic. The strength of our program is the concentration upon Social Anthropology, the area most complementary to Sociology. Social Anthropology, with its 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 program provides the opportunity for students to become conversant with the comparative cultural implications of modern societies such as different forms of family and kinship practices, changing gender relations, the organization of work, land and social injustice, medicine and health, religion, and political economy. How do people in different places and times react, resist, and adapt to change?

II. Degree Programs

The Department’s BA degree program is offered as a 15-credit concentration or a 20-credit major in Sociology and Social Anthropology. The BA honours degree is offered through more specialized programs of study in Sociology, or in Social Anthropology. Bachelor’s 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 Bachelor’s degree programs are governed by the general requirements for Degrees set out in the University Calendar, in addition to the departmental requirements stated below. See “Degree Requirements” section page 65 of this calendar for complete details.

NOTE:
1. No more than one credit may be obtained for introductory classes from SOSA 1000.06, 1050.06, 1100.06, 1200.06.
2. For purposes of gaining entry to 2000 and 3000 level SOSA classes, King’s Foundation Year satisfies the introductory class prerequisite.
3. If they so elect, King’s Foundation Year students may also obtain credit for one introductory class from SOSA 1000.06, 1050.06, 1100.06, or 1200.06.
4. Students may obtain credit for both SOSA 2001.06 and 2002.06, and those proposing to apply to the honours program are particularly encouraged to acquire a foundation in both disciplines.

A. Concentrated Honours BA Program

The Department’s honours programs are designed for students with an interest in, and demonstrated aptitude for, advanced study in either Sociology or Social Anthropology. Admission to these programs is based solely on academic performance. More specifically, the Department requires a grade average of B+ (3.30) or higher on classes above 1000 in Sociology and the minor (or second major) subject. In addition, a minimum cumulative GPA of 2.70 is required. Potential applicants should consult with one of the Department’s Undergraduate Advisors, preferably during their second year of study, and should plan to take the 3000 level classes required for honours during their third year. The Advisor will assist the student to design a program of study with a concentration in Social Anthropology or Sociology meeting the general Faculty requirements and the specific requirements for each program as set out below. It is important that students have a strong foundation before undertaking the honours thesis, therefore SCMA 2003 or SOSA 2002, and two of the required 3000 level courses are pre-requisites to the departmental Honours Seminar (SCMA 4000.06 or SOSA 4500.06). Students who, after their third year, have not taken the pre-requisite classes may still do honours, but should plan to do so part-time over two years. The honours thesis paper is produced for the class SOSA 4500X.Y.06 (Sociology) or SOSA 4400X.06 (Social Anthropology). This fulfills the College of Arts and Science Honours Qualifying Examination requirement. Students with the honours concentration in Sociology may not declare Social Anthropology as their secondary subject; students with the honours concentration Social Anthropology may not declare Sociology as their secondary subject.

Departmental Requirements

Clases required in Concentrated Honours in Social Anthropology:

1000 level
- One of: SOSA 1000.06, 1050.06, 1100.06, 1200.06, or King’s Foundation Year Program.

2000 level
- SOSA 2001.06 or 2002.06
- At least one additional 2000 level credit.

3000 level
- SOSA 3400.03
- SOSA 3402.03
- SOSA 3405.03
- A minimum of one additional SOSA 4000-level seminar (0.5 credit).
In total a minimum of nine (9) and a maximum of eleven (11) SOSA credits beyond the 1000 level are required.

Clases required in Concentrated Honours in Sociology:

1000 level
- One of: SOSA 1000.06, 1050.06, 1100.06, 1200.06, or King’s Foundation Year Program.

2000 level
- SOSA 2001.06 or 2002.06
- At least one additional 2000 level credit.

3000 level
- SOSA 3400.03
- SOSA 3402.03
- A minimum of one additional SOSA 4000-level seminar (0.5 credit).
In total a minimum of nine (9) and a maximum of eleven (11) SOSA credits beyond the 1000 level are required.

NOTE: Students considering graduate work in Sociology are strongly advised to take SOSA 4502.05 (Quantitative Analysis for the Social Sciences II), since intermediate statistical competence is often required as a component of graduate social science programs.

B. Combined Honours in Sociology or Social Anthropology and another field

The requirements noted below normally apply. In some cases a variation may be allowable when approved by honours advisors in both departments, for example when a similar class is required by both departments.

Classes required in Combined Honours with Sociology as the primary subject:

1000 level
- One of: SOSA 1000.06, 1050.06, 1100.06, 1200.06 or King’s Foundation Year Program.
Classes required in Combined Honours with Social Anthropology as the primary subject:

1000 level
- One of: SOSA 1000.06, 1050.06, 1100.06, 1200.06 or King’s Foundation Year Program.

2000 level
- SOSA 2001.06 (recommended) or 2002.06

3000 level
- SOSA 3400.03
- SOSA 3402.03
- SOSA 3403.03

4000 level
- SOSA 4001.03 (recommended) or 4002.03
- A minimum of one additional SOSA 4000-level seminar (half credit) excluding SOSA 4211.03.

In total, a minimum of 11 and maximum of 13 credits beyond the 1000 level in the two honours subjects with a grade of “C” or better. Of this, at least 4 credits must be in the other honours subject.

Classes required in Combined Honours with Sociology or Social Anthropology as the secondary subject:

1000 level
- One of: SOSA 1000.06, 1050.06, 1100.06, 1200.06 or King’s Foundation Year Program.

2000 level
- Either SOSA 2001.06 or 2002.06
- At least one additional 2000 level credit.

3000/4000 level
- Total of three full SOSA credits, including at least one half credit at the 4000 level.

In total, a minimum of 6 and a maximum of 9 SOSA credits beyond the 1000 level are required.

C. Honours Conversion in Sociology or Social Anthropology

This program permits Dalhousie graduates to undertake an additional five credits upgrading their qualifications from the 15-credit BA to Honours. Students must meet the usual conditions for admission to honours, and complete the full set of Honours requirements in either Sociology or Social Anthropology. Interested students should consult an Undergraduate Advisor. Students with a 20-credit major may also upgrade to honours.

D. 20-credit BA with Major in Sociology and Social Anthropology

Departmental requirements

1000 level
- One of: SOSA 1000.06, 1050.06, 1100.06, 1200.06, or King’s Foundation Year Program.

2000 level
- Either SOSA 2001.06 or 2002.06
- At least one additional 2000 level credit.

3000/4000 level
- Total of two full SOSA credits at the 3000 level or above.

E. 20-credit BA with Double Major in Sociology and Social Anthropology

Students must obtain at least ten and no more than thirteen credits beyond the 1000 level in two allied subjects, with no fewer than four and no more than nine in either.

Departmental requirements

1000 level
- One of: SOSA 1000.06, 1050.06, 1100.06, 1200.06, or King’s Foundation Year Program.

2000 level
- Either SOSA 2001.06 or 2002.06
- At least one additional 2000 level credit.

3000/4000 level
- Total of three full SOSA credits, including at least one half credit at the 4000 level.

F. 20-credit Major in Sociology and Social Anthropology Conversion

This program permits Dalhousie graduates to undertake an additional year of study upgrading their qualifications from the 15-credit BA to the 20-credit BA. Students must meet the full set of Major requirements.

G. 15-credit BA with Concentration in Sociology and Social Anthropology

Departmental Requirements

1000 level
- One of: SOSA 1000.06, 1050.06, 1100.06, 1200.06, or King’s Foundation Year Program.

2000 level
- Either SOSA 2001.06 or 2002.06
- At least one additional 2000 level credit.

3000 level
- Total of two full SOSA credits.

In total, a minimum of 4 and a maximum of 8 SOSA credits beyond the 1000 level are required.

III. Class Descriptions

Some classes listed may not be offered in a given academic year. Consult the timetable for details. Where prerequisites apply, students requesting exceptions must obtain permission directly from the instructor involved.

Note:
1. Enrolment in 4000 level classes is restricted to Honours and Major students in their fourth year of study.
2. No more than one credit may be obtained for introductory classes from SOSA 1000.06, 1050.06, 1100.06, 1200.06.
3. King's Foundation Year Program satisfies the introductory class prerequisite.

**SOSA 1000X/Y.06: Culture and Society.**
An introduction to the comparative study of human society from the parallel perspectives of Sociology and Social Anthropology.

**PREREQUISITE:** None.

**NOTE:** Students 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.**

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

**SOSA 1100X/Y.06: Introduction to Anthropology.**
Social anthropologists study cultural diversity in western and non-western societies. Often living among the people they study, anthropologists attempt to understand the structures that shape and constrain peoples’ lives, and the ways in which people make sense of their changing circumstances. Classic studies focused on rural people in the developing world (hunter-gatherers, pastoralists, peasants). Contemporary studies are just as likely to focus on development, migration, art, 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, 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, 1100X/Y.06 or 1200X/Y.06

**SOSA 1200X/Y.06: Introduction to Sociology.**

**NOTE:** Students 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 2001X/Y.06: Ethnography in a Global Context.**
Ethnography describes how people conduct their lives in a particular time and place. This class examines the challenge, complexity, strengths, and limitations of ethnographic knowledge and writing in Social Anthropology. Students will learn about a number of different ethnographic settings which may vary from year to year. A selection of ethnographies, films, autobiographical writing, and critical commentaries will be used to reveal how social anthropologists generate ethnographic knowledge about past and present societies, and why research priorities shift. Approved with International Development Studies.

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

**FORMAT:** Lecture

**SOSA 2002X/Y.06: The Sociological Perspective: Thinking and Doing Sociology.**
Sociologists are concerned with understanding the social world. They do not rely on preconceived ideas alone to enrich this understanding, but see the need to conduct studies, carry out investigations, make observations, analyze findings, formulate ideas, and construct theories and interpretations about what they find. This class looks at ways sociologists go about their work. What are some of the dominant ways of thinking current in sociology today? What are the relationships between theory and method? What are research priorities? How do sociologists do their research? What are social surveys, interviews, experiments, sociological ideas? What is distinctive about a sociological way of looking at a problem?

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

**FORMAT:** Lecture

**PREREQUISITE:** One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

**SOSA 2003X/Y.06: Social Inequality.**

**PREREQUISITE:** One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

**SOSA 2004X/Y.06: Social Inequality.**

**NOTE:** Students 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 or 1200X/Y.06

**PREREQUISITE:** One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

**PREREQUISITE:** One of SOSA 1000X/Y.06, 1050X/Y.06 or 1200X/Y.06

**SOSA 2100X/Y.06: Environment and Culture.**

**SOSA 2101X/Y.06: Environment and 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

**PREREQUISITE:** One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

**SOSA 2102X/Y.06: Environment and Culture.**

**SOSA 2103X/Y.06: Environment and 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
SOSA 2110X/Y.06: Exploring Canadian Society.

This course examines the family as a cultural, political and economic institution. It questions the familiar. What is the family? Is it universal? How have families changed? Why are families so diverse? Why do people marry? Why do they have children? Why is a woman's work never done? Is the family in a state of crisis? Adopting a comparative perspective, and using concepts from anthropology and sociology, the class addresses these questions in a global context, drawing upon data and examples from Canada and around the world.

NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively. INSTRUCTOR(S): Butler, P.

FORMAT: Lecture

CROSS-LISTING: GWST 2800X/Y.06

SOSA 2190X/Y.06: Comparative Perspectives on Gender.

Applying theoretical perspectives drawn from anthropology and sociology, this class considers the underlying conditions for and consequences of gender inequalities in different historical & cultural contexts. The class begins with an overview of the study of gender relations in anthropology and sociology. Themes around which the class will be organized include the relationship between gender and the following: culture and difference; sexuality and reproduction; labour; gender politics; power relations and political discourse; and gender in the global political economy. Approved with International Development Studies.

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

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06, SOSA 1200X/Y.06

CROSS-LISTING: GSSC 2740X/Y.06

SOSA 2211X/Y.06: Society and the Self.

Groups influence individuals and individuals react to these influences. This is the field of Social Psychology. The processes involved in each person-group relationships are explored in a number of different settings, such as the family, mental hospitals, and universities. The class will focus on a critical analysis of social identity formation.

NOTE: Students 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 2210.03

SOSA 2291X/Y.06: Goblins, Ghosts, Gods, Gurus.

Religion and groups within societies differ in terms of what they 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 the evidence for God? What is the evidence against? What is the difference between the sacred and the profane? The class will address these questions in a comparative perspective, using concepts from anthropology and sociology.

Applying theoretical perspectives drawn from anthropology and sociology, this class considers the underlying conditions for and consequences of gender inequalities in different historical & cultural contexts. The class begins with an overview of the study of gender relations in anthropology and sociology. Themes around which the class will be organized include the relationship between gender and the following: culture and difference; sexuality and reproduction; labour; gender politics; power relations and political discourse; and gender in the global political economy. Approved with International Development Studies.

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

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06, or 1200X/Y.06

CROSS-LISTING: RELS 2291.06
SOSA 2300X/Y.06: Introduction to Social Problems.
The study of social problems uses sociological theory and research to examine the social dynamics and consequences of a variety of contemporary issues. Though the class content will vary year by year, students can expect to deal with social problems such as poverty, drug abuse, gender and race relations, work and alienation, and environmental issues.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Lecture
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

SOSA 2400X/Y.06: Health and Illness Across Cultures.
Every culture has its own concepts of health and nutrition, its own treatments and practices. The strengths and weaknesses of our own system grow clearer when medical anthropologists compare it with that of other societies. This class-specific topics vary from year to year but always include: native theories of the etiology of illness, tricultural versus culture-specific disease syndromes, pregnancy and childbirth in other cultures and our own; unconscious death viewed cross-culturally, the conflict between traditional medical systems and the Western physician and hospital, patients’ expectations and the medical subculture, the physician as secular priest, and food and nutrition across cultures. Approved with International Development Studies.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Lecture
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

SOSA 2401X/Y.06: Food and Eating Across Cultures.
Our bodies determine nutrition, our environments limit what may be available, and our cultures dictate what is 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 food aid, the food aid system, food in contemporary film, food taboos and taboos, animal and human consumption, the ‘right’ to food, and vegans vs. carnivores. Approved with International Development Studies.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Lecture
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

SOSA 2501X/Y.06: Sociology of Health and Illness.
This course provides an introduction to the sociology of health, illness, and healing. We will 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 crises in the Canadian Medicare system. Throughout the course, emphasis will be placed on critical theoretical approaches and concepts used in the field. NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Lecture
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06
EXCLUSION: SOSA 2500.03

SOSA 3002.03: Native Peoples of Canada.
This class uses an ecological perspective to describe the cultures and peoples occupying Canada at the time Europeans came to this continent. As time permits, some ethnohistory and the situation of contemporary Native peoples as 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 2500.03

SOSA 3005.03: Does Industrial Society Have a Future? Knowledge, Work, and Culture in the Contemporary World.
Since the publication of Daniel Bell’s book, The Coming of Postindustrial Society, studies of the economic structure of the advanced societies have addressed the question of the extent to which we are living through a transition to a new, knowledge-driven economy which may be qualitatively distinguished from the system of industrial capitalism which has characterized North America and Western Europe for most of this century. Whether one uses terms like ‘postindustrialism’, ‘postmaterialism’ or ‘postmodernism’, debates have centered on the question of fundamental alternatives in the economic, cultural and political organization of technologically advanced societies. Are we witnessing the creation of an ‘information economy’, are we observing the emergence of a new ‘knowledge class’, which roles by virtue of its educational skills and credentials, is there a new underclass being excluded from paid employment of any form, and is government being privatized to facilitate new forms of global economic integration? Are new types of social movements arising in response to basic changes in our society? This class will address the above questions, with particular emphasis being devoted to discuss issues in contemporary political economy.
FORMAT: Lecture
PREREQUISITE: SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06, or 1200X/Y.06

SOSA 3006.03: Comparative Perspectives on Gender and Work.
This class will use comparative perspectives to explore a range of topics relating to the gendering of work: wage work, household-based labour, the informal sector, masculinity and femininity in the workplace, occupational segregation, employment policies directed at changing the status quo (such as affirmative action, pay equity), and unionization. The context will be the changing global political economy and its consequences for the strategies of different groups (such as nation states, but also trade unions, feminist groups and employer groups). Approved with International Development Studies.
FORMAT: Lecture
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06
CROSS-LISTING: GSTW 3006.03

SOSA 3008.03: Canadian Society and Politics.
This class is an introduction to the anthropology and sociology of contemporary Canada. It will address the question of the extent to which we are living through a transition to a new, knowledge-driven economy which may be qualitatively distinguished from the system of industrial capitalism which has characterized North America and Western Europe for most of this century. Whether one uses terms like ‘postindustrialism’, ‘postmaterialism’ or ‘postmodernism’, debates have centered on the question of fundamental alternatives in the economic, cultural and political organization of technologically advanced societies. Are we witnessing the creation of an ‘information economy’, are we observing the emergence of a new ‘knowledge class’, which roles by virtue of its educational skills and credentials, is there a new underclass being excluded from paid employment of any form, and is government being privatized to facilitate new forms of global economic integration? Are new types of social movements arising in response to basic changes in our society? This class will address the above questions, with particular emphasis being devoted to discuss issues in contemporary political economy.
FORMAT: Lecture
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

SOSA 2110 or another course on Canadian society and/or politics.
SOSA 3009.03: Public Opinion in Canada.
This class will introduce students to the study of public opinion in Canada and impact on informed decision making. In particular, the focus will be upon ideas and issues which have been held by groups and been influenced by the media. The lectures would explore the basis of our knowledge about the formation and change of public opinion relative to other forms of collective behaviour. We will present and analyze data relating to the role of public opinion in explaining and predicting political events. Approved with Canadian Studies.
FORMAT: Lecture
PREREQUISITE: One of SOSA 1000X/Y.06, 1100X/Y.06; or IDIS 2000X/Y.06
SOSA 3013.03: Religion in Contemporary Society.
Religion is alive and well in contemporary society. Some religious organizations are in decline but others appear to be flourishing. How can these tendencies be accounted for? Do we live in a secular age or is that just a flip expression? What does religion mean to people in contemporary society? Is there a search going on for spiritual growth, spiritual awareness, spiritual expression? If so, what forms does this search take? What can we learn by thinking about religion sociologically? What are the trends in religion telling us about the character of late twentieth century society?
FORMAT: Lecture
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06; RELS 1000.06; permission of the instructor
CROSS-LISTING: RELS 303.01
SOSA 3014.03: Rethinking Culture and Class.
Critical cultural studies has become a vigorous focus of interdisciplinary scholarship drawing on the fields of history, anthropology, sociology, geography, and literary criticism. Researchers in all of these areas are reconsidering the significance of symbolic aspects of social life and how the collective experiencing of cultural forms is related to changes in capitalism and modernity. For example, what is the significance of popular music in different class, gender, and ethnic contexts? How do commitments to kin and community relate to expressions of culture and class consciousness? Are boundaries between work and leisure mutable in terms of class, gender and ethnic processes? Approved with International Development Studies.
FORMAT: Lecture
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06
SOSA 3015.03: Popular Memory.
This class considers history-writing as a social and cultural process operating at personal, group and national levels. It examines theoretical, methodological and political questions raised in work on popular memory. Readings and films address the problems of official history, public history (museums, national monuments), history from below, and oral history. Cases will be taken from across the globe. Approved with International Development Studies.
FORMAT: Lecture
PREREQUISITE: SOSA 1000X/Y.06, SOSA 1050X/Y.06, SOSA 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 remedial social conditions leads to changes in social policy. Among the areas treated in depth are crime prevention, the quality of work life, race relations, deviation, and poverty and inequality.
FORMAT: Lecture
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06
SOSA 3060.02: Social Change and Development.
This class considers theories of social change and development; approaches to the analysis of rural and urban livelihoods at the micro level; and the examination of community, class, patronage and gender relations in both their economic and cultural aspects. The constructive uses of social analysis in the support and design of development initiatives are also discussed. Approved with International Development Studies.
FORMAT: Lecture
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06; or IDS 2000X/Y.06
SOSA 3071.03: Human Nature and Anthropology/ Sociology.
Do social anthropology and sociology suffer from “biophobia”? Can evolutionists explain why we feel sexual jealousy or why we tend to follow a dominant leader in times of stress? Can the theories that explain why we have fingerprints 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 biographers vastly exaggerate the extent to which human societies differ from one another. Its perspective and contents include much of what some have categorized as “Human Sociobiology”, “Biosociology”, “Darwinian Anthropology”, “Darwinian Psychology”, and “Darwinian Medicine.”
FORMAT: Lecture
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06; or an introductory class in either Psychology or Biology
SOSA 3091.03: The Sociology of Culture.
Do culture permeate all aspects of social life or are there specialised social domains which are “cultural”? What is the connection between societies and “cultures” and the “culture” of music or art? This course explores the question of how one can sociologically study culture. The course reviews classical and contemporary theoretical approaches to the social production, distribution and reception of culture. Broad themes include the discussion of cultural consumerism, cultural identity, cultural change, and notions of cultural resistance. Specific “cultural objects” of study may include fashion, sport, class, and social problems. The course concludes with analysis of the intersection of the fields of sociology and cultural studies.
FORMAT: Lecture
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06
SOSA 3105.03: Media and Society.
This course provides an introductory overview to the theoretical and practical issues that concern media and society. It examines contemporary theories of mass communications and popular culture and engages the political economy of media, their impact on audiences, and the role they play in the political process.
FORMAT: Lecture
PREREQUISITE: SOSA 1000.06, SOSA 1050.06, SOSA 1100.06, SOSA 1200.06; or permission of instructor
SOSA 3116.03: Issues in Social Research.
This course consists of the intensive examination of a selected area in social research. Since the specific topic which will receive special attention will differ from year to year, students are advised to consult the department prior to registration.
FORMAT: Lecture
PREREQUISITE: One of SOSA 1000X/Y.06, SOSA 1050X/Y.06, SOSA 1100X/Y.06, or SOSA 1200X/Y.06
SOSA 3120.03: Social Conflict.
This class introduces students to the various analytical perspectives sociologists have employed to understand the patterning and consequences of conflict in society. In this regard particular attention is devoted to the functional, coercive, 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.
FORMAT: Lecture
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06
SOSA 3135.03: The Social Organization of Health Care.

The social organization of medicine and the politics of health are examined. Particular attention is paid to environmental and occupational health issues in light of technological and social change. Epidemiological patterns of morbidity and mortality are assessed. Students are responsible for seminar presentations in areas of interest.

FORMAT: Lecture
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

SOSA 3141.03: Sociology of Mental Disorders.

Mental disorders as both a social and sociological problem. Social factors in the definition, incidence, etiology, and treatment of mental disorders are examined. Societal responses to so-called mental illness are reviewed and analyzed from a sociological perspective. Other topics include the social role of the mental patient and the development of mental health policy in Canada.

FORMAT: Lecture
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

SOSA 3143.03: Health, Illness and the World.

Pacing the political economy bases of health and illness in an ethnographic context, this course is concerned with the ways that afflictions of poverty become naturalized as biomedical experiences. Core questions pursued are as follows: 1) how is relative health affected by the world market pressures in diverse global contexts? 2) how do afflictions of poverty become naturalized as biomedical experiences? 3) how do patients and communities activate alternative health infrastructures as they resist their marginalization in neo-liberal political agendas? 4) what kinds of illnesses are characteristic of capitalism and wage labour migration (e.g. HIV/AIDS, SARS)? 5) how have market pressures and profit seeking retarded the progress of scientific inquiry into modern illness? We will elucidate these questions by looking at case studies from Canada, South Africa, Sri Lanka, Spain and Brazil.

FORMAT: Lecture
PREREQUISITE: SOSA 1000X/Y.06, 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'? and (2) how do gender, thus defined and enforced, affect the health, health care, and health work of those defined as men, women, or other? We will consider these questions by examining particular health topics that have a strongly gendered component, such as sexual health, reproductive health, and disability. Throughout the course, we will explore the theoretical perspectives used in the field; the two-sex model of illness; the gendering of particular health problems and health professions; the medicalization of womanhood and, more recently, manhood; and the relationships between gender and other forms of social classification (e.g. race, class, sexual orientation). It is recommended that students take SORA 2051 or SORA 2400 prior to taking this course.

FORMAT: Lecture
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06
CRSB-LISTING G218 3.00

SOSA 3147.03: Social Gerontology.

A general introduction to social gerontology, in which emphasis will be placed upon the historical and philosophical development of the study of aging in Canada, theories of aging, current social and economic programs for the elderly both in Canada and in 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. This Canadian society and provides an understanding of the socio-economic factors relevant to these problems.

FORMAT: Lecture
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06
CROSS-LISTING: HLTH 4900.03

SOSA 3148.03: The Sociology of Addiction: Drugs, Health and Society.

This course examines the concept of addiction from a sociological perspective. The aim is to provide a more complete understanding of how sociological theory can be used to examine addiction - both historically and in contemporary society. We will investigate the social construction of drug use, drug users, and addiction and how our conception of such has been transformed over time. We will also examine the complex interconnections among drugs, addiction, health, law, and culture. Special attention will be given to current information and research on selected forms of addiction.

FORMAT: Lecture
PREREQUISITE: SOSA 1000X.03 and SOSA 1050X.03 or SOSA 1100X.03
SOSA 1200X.03 or SOSA 1100X.03 and SOSA 1100Y.03 or SOSA 1200X.03 and SOSA 1200Y.03

SOSA 3149.03: Childhood in Cross Cultural Perspective.

This course explores childhood as an important reflection of socialization and thus a nexus of cultural and social values, ideas, and histories. In examining pregnancy, birth, infant development and socialization patterns, we ask: What is universal, what is near universal, and what is indisputably variable? The course tries to maintain a balance among 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. Approved with International Development Studies.

FORMAT: Lecture
PREREQUISITE: SOSA 1000X.06, SOSA 1050X.06, SOSA 1100X.06, SOSA 1200X.06

SOSA 3150.03: Sociology and Anthropology of the Body.

This class will consist of a micro-sociological examination of the human body as a socio-cultural construction. Topics include: bodily self image, cultural definitions of physical attractiveness, stigmatization, prosaic behaviorality, non-verbal communications, body hygiene and pollution taboos, and cultural aspects of human reproduction and sexuality. Special attention will be paid to class, gender and ethnicity and their relationship to body politics.

FORMAT: Lecture
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06
CROSS-LISTING: G279 3.00

SOSA 3155.03: Sociology and Anthropology of Emotion.

This class introduces students to a wide variety of literature on emotions and social life. Beginning with classical readings in philosophical psychology, students will move on to review a range of contemporary sociological and anthropological perspectives on the interplay between emotion and society. Emphasizing both theoretical and empirical work, some topics covered by this class include: managing versus accounting for emotion, emotion and the body, emotion and gender the political economy of emotion, emotion and the self, the mass media and emotion, and emotional aspects of self presentation. Special attention will be paid to the interrelationship between emotion, social structure, and cultural belief systems.

FORMAT: Lecture
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

SOSA 3165.03: Peoples and Cultures of the World: Selected Area Studies.

This class examines a specific geographic and/or culture area. The class begins with background material on geography and history. Its focus is on the people themselves, their social organization and economic, economic,
This course consists of an intensive examination of a selected substantive topic within Sociology and Social Anthropology. Since the specific topic or research problem will vary from year to year, students are advised to consult the department prior to registration.

FORMAT: Lecture
PREREQUISITE: One of SOSA 1000/X/0.06, 1050/X/0.06, 1100/X/0.06 or 1200/X/0.06

SOSA 3182.03: Special Topics in Sociology and Social Anthropology.
This course consists of an intensive examination of a selected substantive issue within Sociology and Social Anthropology. Since the specific topic or research problem will vary from year to year, students are advised to consult the department prior to registration.

FORMAT: Lecture
PREREQUISITE: One of SOSA 1000/X/0.06, 1050/X/0.06, 1100/X/0.06 or 1200/X/0.06

SOSA 3183.03: Special Topics in Sociology and Social Anthropology.
This course consists of an intensive examination of a selected substantive issue within Sociology and Social Anthropology. Since the specific topic or research problem will vary from year to year, students are advised to consult the department prior to registration.

FORMAT: Lecture
PREREQUISITE: One of SOSA 1000/X/0.06, 1050/X/0.06, 1100/X/0.06 or 1200/X/0.06

SOSA 3184.03: Special Topics in Sociology and Social Anthropology.
This course consists of an intensive examination of a selected substantive issue within Sociology and Social Anthropology. Since the specific topic or research problem will vary from year to year, students are advised to consult the department prior to registration.

FORMAT: Lecture
PREREQUISITE: One of SOSA 1000/X/0.06, 1050/X/0.06, 1100/X/0.06 or 1200/X/0.06

SOSA 3185.03: Issues in the Study of Indigenous Peoples of North America.
This seminar is concerned with the historical background of the Native-European situation in North America and with issues arising from this background. Students will research issues which are significant to themselves and important to Native groups. Topics covered may vary from year to year, but will normally include a combination of historical issues such as culture change and contemporary issues such as land claims, self-determination and government policy, and social conditions of Natives. Approved with International Development Studies and Law and Society minor.

FORMAT: Lecture
PREREQUISITE: One of SOSA 1000/X/0.06, 1050/X/0.06, 1100/X/0.06 or 1200/X/0.06

SOSA 3186.03: Special Topics in Sociology and Social Anthropology.
This course consists of an intensive examination of a selected substantive issue within Sociology and Social Anthropology. Since the specific topic or research problem will vary from year to year, students are advised to consult the department prior to registration.

FORMAT: Lecture
PREREQUISITE: One of SOSA 1000/X/0.06, 1050/X/0.06, 1100/X/0.06 or 1200/X/0.06

SOSA 3187.03: Special Topics in Sociology and Social Anthropology.
This course consists of an intensive examination of a selected substantive issue within Sociology and Social Anthropology. Since the specific topic or research problem will vary from year to year, students are advised to consult the department prior to registration.

FORMAT: Lecture
PREREQUISITE: One of SOSA 1000/X/0.06, 1050/X/0.06, 1100/X/0.06 or 1200/X/0.06
SOSA 3188.03: Special Topics in Sociology and Social Anthropology.
This course consists of an intensive examination of a selected substantive issue within Sociology and Social Anthropology. Since the specific topic or research problem will vary from year to year, students are advised to consult the department prior to registration.
FORMAT: Lecture
PREREQUISITE: One of SOSA 1000 X/Y.06, 1050 X/Y.06, 1100 X/Y.06 or 1200 X/Y.06

SOSA 3189.03: Special Topics in Sociology and Social Anthropology.
This course consists of an intensive examination of a selected substantive issue within Sociology and Social Anthropology. Since the specific topic or research problem will vary from year to year, students are advised to consult the department prior to registration.
FORMAT: Lecture
PREREQUISITE: One of SOSA 1000 X/Y.06, 1050 X/Y.06, 1100 X/Y.06 or 1200 X/Y.06

SOSA 3190.03: Social Movements.
The general topic of unstructured group activity encompasses phenomena traditionally classified as collective behavior incidents, as well as reformist and revolutionary social movements. Although there is considerable overlap, the collective behavior literature tends to focus on relatively brief and spontaneous activities, such as panics, disasters, and crazes, while work on social movements examines relatively more organized and enduring group activities which still fall outside the realm of normal institutions. This class investigates problems emerging from both areas of concern. Emphasis is given to relevant Canadian materials.
FORMAT: Lecture
PREREQUISITE: One of SOSA 1000 X/Y.06, 1050 X/Y.06, 1100 X/Y.06 or 1200 X/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 issues related to politics and ethnic nationalism suggests the extent to which these categories are both profoundly political and deeply personal. By looking at case studies from Canada and around the world we examine these ideas and their implications. Topics will vary from year to year, but may include Quebec nationalism, multiculturalism, "ethnic" warfare in Rwanda or Bosnia, and race politics. Approved with International Development Studies.
FORMAT: Lecture
PREREQUISITE: One of SOSA 1000 X/Y.06, 1050 X/Y.06, 1100 X/Y.06 or 1200 X/Y.06

SOSA 3211.03: Continuity and Change in Rural Societies.
The majority of the world's population, even today, lives in rural settings and depends upon primary production as the principal source of livelihood. This does not mean, however, that rural life has remained static and unchanging over the centuries. All rural societies, even those remote from centres of world power, have long been caught up in the world economic system and involved, in particular ways, with capitalist relations of production. This class examines continuity and change in a range of rural contexts across several continents including North America, and encourages students to consider the notion of "development" from alternative perspectives. Approved with International Development Studies.
FORMAT: Lecture
PREREQUISITE: One of SOSA 1000 X/Y.06, 1050 X/Y.06, 1100 X/Y.06 or 1200 X/Y.06 or INTD 3205 X/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 1000 X/Y.06, SOSA 1050 X/Y.06, SOSA 1100 X/Y.06, or SOSA 1200 X/Y.06

SOSA 3215.03: Migration and Identity.
This class explores the inter-relatedness 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 shape the boundaries they have crossed, migrants lives are transnational: their ideas of "home" and identity are also reworked as they travel and can be conflicted as their circumstances change. Some writers have concluded contemporary migration is both turbulent and chaotic compared with historical examples. This class begins with review of some historical migration examples and critically reviews how these differ from current globalization flows. However, the main focus is on particular instances of migration as described in ethnographic and sociological case studies. Some key concepts to be discussed in the course are diaspora, transnationalism, and ethnicflows. Approved with International Development Studies.
FORMAT: Lecture
PREREQUISITE: One of SOSA 1000 X/Y.06, 1050 X/Y.06, 1100 X/Y.06 or 1200 X/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 1000 X/Y.06, 1050 X/Y.06, 1100 X/Y.06 or 1200 X/Y.06

SOSA 3225.03: Culture, Rights, and Power.
The class examines the interrelation of culture, rights and power across culturally. It thus considers how the idea of rights can vary across cultures. It also addresses the ways in which rights and relations of power make themselves felt in people's everyday lives. Finally, it considers the variety of experiences and understandings of these issues across societies and social groups. Examples may be drawn from social and cultural groups within or outside of Canada. Approved with International Development Studies and Law and Society minor.
FORMAT: Lecture
PREREQUISITE: One of SOSA 1000 X/Y.06, 1050 X/Y.06, 1100 X/Y.06 or 1200 X/Y.06
CROSS-LISTING: ENVI 5180.03, GEOG 3220.03

SOSA 3228.03: Belief Systems: Symbol, Myth, and Meaning.
Emphasis will be placed upon how belief systems and their symbolic representatives give meaning to the universe and one's place in it. Topics may include the nature of ritual, the structure of myth, religion and healing, magic, sorcery, and witchcraft, and how all these phenomena relate to cultural and social change. Approved with International Development Studies.
FORMAT: Lecture
PREREQUISITE: One of SOSA 1000 X/Y.06, 1050 X/Y.06 or 1200 X/Y.06

SOSA 3231.03: Psychological Anthropology.
This class explores the overlap between psychology and anthropology. Topics include culture and personality, culture and mental health, psychiatry in other cultures, cross-cultural differences in learning, and the

FORMAT: Lecture
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

SOSA 3245.03: Women and Aging
As women grow older, the experience of aging is different. 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 C8500-LINTING, GWST 3801.03, NURS 4370.03

SOSA 3250.03: Beyond Genes and Circuits: The Anthropology and Sociology of Technoscience.
This course uses the tools of the social sciences to understand the cultural and institutional practices and context of science and technology, and of the meanings we confer on them. Technology and science both drive and are driven by socioeconomic and cultural change. Little in our lives is unaffected by "technoscientific": the toys children play with, the scale of habitats and identity, the substances we eat and the entertainments we consume, the gendering of types of work and play, sports, the distribution of our friendships and the sources of our information, the illnesses we get and the treatments they receive, how we make love and how we make war.

FORMAT: Lecture
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06 or permission of the instructor.

SOSA 3275.03: Crime and Public Policy.
This class deals with the dynamics of change in the criminal justice system that reflect three major factors namely social movements (e.g. the victims movement, the women’s movement), social forces (e.g. aging, multiculturalism), and internal processes (e.g. professionalism, rationalization). The class focuses on how outside pressures modify, and are channelled by, the criminal justice system. Approved with Law and Society minor.

FORMAT: Lecture
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

SOSA 3281.03: Youth Crime.
This class deals with criminal offenses committed by young persons. Etiologies drawn from various disciplines are examined and evaluated. A secondary focus concerns the criminal justice system as it applies to young offenders. Approved with Law and Society minor.

FORMAT: Lecture
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

SOSA 3285.03: Sociology of Law.
This course is a sociological examination of law both as a mechanism of social regulation and as a field of knowledge. It explores classical and contemporary theoretical contributions to Sociology of Law. Some specific issues to be analyzed include law and social control, law and social change, social reality of the law, the profession and practice of law, violence against women, and the influence of race, gender and social status in the outcome of legal decisions.

FORMAT: Lecture
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

SOSA 3295.03: Society and the Police.
The police play an increasingly powerful role in the maintenance of social order in contemporary Canadian society. This class introduces students to sociological theory and research on: (a) the role of police in social development and social control; (b) the historical and political development of public policing; (c) the nature and structure of police work; (d) control and accountability; and (e) selected issues in policing such as, policing the family, minorities and the police, community based policing and policy disruption. Approved with Law and Society minor.

FORMAT: Lecture
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

SOSA 3310.03: Indian Society: Change and Continuity.
The objective of this class is to introduce students to the society and culture of India from an interdisciplinary perspective. India presents a society of enormous complexity and an unbroken living civilization. Approved with International Development Studies.

FORMAT: Lecture and Seminar
PREREQUISITE: Second-year Arts and/or Science class
CROSS-LISTING: GWST 3810.03, NURS 4370.03

SOSA 3340.03: History of Sociological Thought.
This class considers the foundations and development of social anthropology. Major theoretical schools and the work of prominent anthropologists in those schools are considered, including Cultural Evolution, Historical Particularism, Functionalism, Culture and Personality, Structuralism, Symbolism, Cultural Materialism, and the directions in which contemporary sociocultural anthropology point.

FORMAT: Lecture
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06; and SOSA 2001X/Y.06 or 2002X/Y.06

SOSA 3401.03: History of Sociological Thought.
Towards the middle of the nineteenth century a novel way of thinking about human existence began to emerge. Primacy was given to the understanding that humans are social beings, their lives and thoughts bound and patterned by their social environments. This approach formed the basis for a new discipline of analysis eventually named Sociology. This class considers some of the main ideas of the earlier contributors to the new way of thinking: Comte, Marx, Durkheim, Weber, Simmel, Mead, Mannheim and, more recently, Parsons and Schutz. Modern sociology rests largely on the intellectual legacy of these thinkers. They raise questions and formulate answers to them which remain relevant to the sociological enterprise today.

FORMAT: Lecture
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06; and SOSA 2001X/Y.06 or 2002X/Y.06

SOSA 3402.03: Figuring Out Society.
This class provides an introduction to issues of research design, including the relationship of theory to the choice of methodology. Students are exposed to basic tools and procedures which will help them to analyze the numerical tables and graphs they may come across in sociological or anthropological journals. Other relevant issues will be included, such as, whether it is possible to achieve scientific objectivity when studying human behaviour. It is assumed students enrolled in this class possess basic computer skills.

FORMAT: Lecture, lab as required
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06; and SOSA 3003X/Y.06 or 3002X/Y.06

SOSA 3403.03: Qualitative and Field Methods.
Research is a craft requiring many skills. This class focuses on skills complementary to those discussed in SOSA 3402.03 (Figuring Out Society). Topics may include: theory and the choice of method; applied social science; field work; ethnography; use of interpreters; interviewing; life histories; note taking; analysis of texts; feminist methodologies.

FORMAT: Lecture, lab as required
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06; and SOSA 3003X/Y.06 or 3002X/Y.06

SOSA 3405.03: Contemporary Social Theory.
A variety of approaches constitute theory in contemporary sociology. Among them are those called interactionist, ethnomethodological, structuralist, critical, feminist, rational choice, and post-modernist. This class considers the contributions of these approaches to the enterprise of modern sociology. What are the main premises of particular sociological theories? What are their implications for the study and understanding of...
the social world? What are the issues that evolve debate between different schools of theory?

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, 1040X/Y.06, 1100X/Y.06 or 1200X/Y.06 and SOSA 2001X/Y.06 or 2002X/Y.06

SOSA 4000X/Y.06: Honours Seminar in Social Anthropology.

This seminar provides an opportunity for students to engage in sustained investigative scholarship through independent research initiative. The first term concentrates on locating the student's work within a broader set of theoretical and methodological debates in the discipline, while the second term is devoted to students' research and writing activities in preparing the thesis required for honours graduation. In the second term, class time is used for students to make "in progress" reports and presentations about their chosen topics. The class carries two separate grades, one for the class and the other for the thesis, appearing on the transcript as "honours qualifying examination" (a University requirement for all honours students-SOSA 1000X/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

PREREQUISITE: Honours registration in Social Anthropology and SOSA 2001 (recommended) or SOSA 2002, and two of SOSA 3400, SOSA 3402 and 3403, or permission of the instructor.

SOSA 4001.03: Quantitative Analysis for the Social Sciences I.

This class will introduce quantitative analysis. It will engage issues of research design, the relationship between samples and populations, statistics and inference, as well as basic tests of statistical significance. The course will also introduce tabular, graphical, and bi-variate linear analysis, using computer software. It will encourage secondary data analysis of available datasets, evaluation of surveys, and develop skills through a series of class projects.

FORMAT: Seminar

PREREQUISITE: SOSA 3402.03 and fourth year Major or Honours standing in Sociology and/or Social Anthropology (SOSA 4000X) or permission of the instructor.

SOSA 4002.03: Quantitative Analysis for the Social Sciences II.

This course will focus on the use of quantitative methods in social science research. It will introduce students to regression techniques and concentrate on the assumptions motivating quantitative analysis. The course will also look at regression diagnostics and critically weigh options available to researchers when "normal" assumptions are broken. The class will be split into lectures and computer labs using statistical software. The labs will apply methods covered in class and explore potential secondary data resources. The class will develop these skills through a series of class projects.

FORMAT: Seminar

PREREQUISITE: SOSA 3402.03, SOSA 4001.03 and fourth year Major or Honours standing in Sociology and/or Social Anthropology (SOSA 4000X) or permission of the instructor.

SOSA 4003.03: Contemporary Perspectives in Ethnography.

Ethnographies and critical writings which grapple with questions of theory and interpretation in a range of contexts - near and far, familiar and strange, local and global - will be examined in this class. Approved with International Development Studies.

FORMAT: Seminar

PREREQUISITE: One of SOSA 1000X/Y.06, 1100X/Y.06, 1100X/Y.06 or 1200X/Y.06, SOSA 2001X/Y.06 or 2002X/Y.06; and fourth year Major or Honours standing in Sociology and/or Social Anthropology.

CROSS-LISTING: SOSA 5003.03

SOSA 4004.03: Issues in Work, Industry and Development.

Consult department for class description.

FORMAT: Seminar

PREREQUISITE: One of SOSA 1000X/Y.06, 1100X/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, 1100X/Y.06 or 1200X/Y.06 and fourth year Major or Honours standing in Sociology and/or Social Anthropology.

SOSA 4006.03: Issues in Health and Illness.

Consult department for class description.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, 1100X/Y.06 or 1200X/Y.06 and fourth year Major or Honours standing in Sociology and/or Social Anthropology.

SOSA 4011.03: Issues in Social Theory.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, 1100X/Y.06, 1100X/Y.06 or 1200X/Y.06 and fourth year Major or Honours standing in Sociology and/or Social Anthropology.

SOSA 4012.03: 4013.03: Issues in Sociology and Social Anthropology.

This seminar consists of an intensive examination of selected substantive issue within Sociology and Social Anthropology. Since the specific topic or research problem which receives special treatment will differ from year to year, students are advised to consult the department prior to registration.

FORMAT: Seminar

PREREQUISITE: One of SOSA 1000X/Y.06, 1100X/Y.06, 1100X/Y.06 or 1200X/Y.06 and fourth year Major or Honours standing in Sociology and/or Social Anthropology.

SOSA 4031.03: Social Policy Research Seminar.

One of the distinctive features of the social sciences has been the use of social research as a basis for the development and reform of social policy. Though the relationship of social research to social policy has changed and evolved with changes in the politics and process of policy making, it still remains a core activity for many social scientists. Using a variety of academic and applied research sources, the seminar will examine the politics of policy research, uses of social research knowledge, policy research models and research strategies and the policy outcomes of social research. In addition to reviewing the critical literature on social policy research, students will do case study analysis of a major policy research project. The course will selectively draw on faculty, government and private sector policy researchers and policy makers to help ground discussion and research in actual policy research experience.

FORMAT: Seminar

PREREQUISITE: One of SOSA 1000X/Y.06, 1100X/Y.06, 1100X/Y.06 or 1200X/Y.06 and fourth year Major or Honours standing in Sociology and/or Social Anthropology.

SOSA 4072.03: Naturalistic Approaches to the Social Sciences.

This seminar explores the implications of a Darwinian perspective for the social sciences. The latter have long followed a species-centric, environmental-deterministic ideology that today requires reconciliation with the enormous advances in recent decades in research and theory that have occurred in evolutionary biology, psychology, ethnology, behavioral ecology and primate behavior. Specific topics may include but will not be limited to biophobia, social/cultural constructionism, morality and ethics, religion, esthetics and literature, evolutionary approaches to feminist
theory, and Darwinian approaches to social problems (including ethnocentrism, racism, sexism, and crime).

FORMAT: Seminar
PREREQUISITE: SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06, or 1200X/Y.06; and fourth year Major or Honours standing in Sociology and/or Social Anthropology.

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 a few years ago a particular form of allegedly immoral and/or unlawful behavior became so widespread as to endanger the very foundation of society. Where such socially shared fears and concerns are exaggerated—a i.e., all out of proportion to the actual threat when judged from a rational or empirical perspective—social scientists refer to them as “moral panics.” This class will apply sociological analysis to documented case studies of such panics, both past and present. Examples would include public anxiety about communist infiltration of the U.S. government in the 1950s; or, more recently, popularized scares over child sexual abuse, satanism, or serial killing. Particular attention will be paid to the social processes that generate, sustain, and erode adherence to such beliefs.

FORMAT: Seminar
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06 and fourth-year Major or Honours standing in Sociology and/or Social Anthropology.

SOSA 4210.03: Tourism and Development.
Tourism is now the most lucrative industry in the world. Around the globe, companies chase the tourist’s dollar offering the best deals on wide range of destinations tailored to a variety of different experiences from sex tourism to eco-tourism. This class will explore the relationship between tourism and development. Topics under discussion will include the definitions of hosts and guests, the commodification of tourist sites and the tourist experience, and the relationship of tourism to sustainability, environmentalism, and globalization. Approved with International Development Studies.

FORMAT: Seminar
PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06 and fourth-year Major or Honours standing in Sociology and/or Social Anthropology.

SOSA 4400X/Y.06: Majors Seminar: Applying Sociology and Social Anthropology Inside, Outside, and Beyond University.
This is a "capstone" class for SOSA majors and double majors in their fourth and final year of undergraduate studies. The class should be especially relevant to students hoping to enter social work, law, business administration, counselling, community organizing, public service, occupational therapy, medicine or other health professions. The primary focus in the first term will be to introduce, reflect upon, and discuss students' university life experiences, vocational plans beyond university, and responsibilities as a citizen in democratic society. Work in the second term of the class will revolve around the choosing, planning, execution, and analysis of an experiential learning project. This project might involve volunteering at a community service agency, serving as a tutor or mentor to first-year Dalhousie students, or doing a piece of applied social research for a campus or community organization. This project will culminate in the preparation and presentation of a major essay outlining what students have learned from this exercise. Throughout the year every effort will be made to improve students' abilities for introspection, written and oral communication, critical thinking, and group leadership.

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

FORMAT: Seminar
PREREQUISITE: SOSA 2000X/Y.06 or 2002X/Y.06 and fourth-year standing in the SOSA 20-credit major/double major program.
EXCLUSION: SOSA 4400X/Y.06, 4500X/Y.06

SOSA 4500X/Y.06: Honours Seminar in Sociology.
This seminar provides an opportunity for students to engage in sustained investigative scholarship through independent research initiative. The first term concentrates on locating the student’s work within a broader set of theoretical and methodological debates in the discipline, while the second term is devoted to students' research and writing activities in preparing the thesis required for honours graduation. In the second term, class time is used for students to make "in progress" reports and presentations about their chosen topics. The class carries two separate grades, one for the class and the other for the thesis, appearing on the transcript as "honours qualifying examination" (a University requirement for all honours students-SOSA 8880).1

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

FORMAT: Seminar
PREREQUISITE: Honours registration in Sociology and SOSA 2002 (recommended) or SOSA 2011 and two of SOSA 3401, SOSA 3432, SOSA 3445 and SOSA 3465, or permission of the instructor.

SOSA 4510.03: 4520.03: Readings in Sociology/Social Anthropology.
In a reading class the student is assigned to a member of staff for regular meetings to discuss readings in a selected area. Papers and research projects are expected.

FORMAT: Individual instruction
PREREQUISITE: Honours registration in Sociology or Social Anthropology, permission of the instructor and permission of the Undergraduate Coordinator.
Spanish

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: SPAN1020/C.06 (or equivalent)
   • 2000 level: SPAN2020/C.06
   • 3000 level: SPAN3010.03, 3020.03, 3030.03 and 3060.03

2. Exam

   A written and oral Examination with a minimum average of B- on each part. Students who fail the Examination on the first attempt will be allowed to take it over after one year. No one is entitled to take the Examination without having done the class work.

   Administration: Please contact the Spanish Department for details.

III. Diplomas of Spanish as a foreign Language (DELEs)

These diplomas were created in 1991 by the Ministry of Education and Culture of Spain, designed and evaluated by the University of Salamanca and administered by the Instituto Cervantes and the Spanish Embassies. They offer an internationally recognized accreditation on the degree of mastery of the Spanish language for citizens of countries where Spanish is not the official language. They test your ability to read, write, speak and understand Spanish. The DELEs are offered on three levels:

1. The Diploma de Español (Nivel Inicial) accredits the sufficient knowledge of the language to be able to cope with a range of situations which require an elementary use of the language.

2. The Diploma de Español (Nivel Intermedio) accredits a sufficient knowledge of the language that allows communication in customary situations of everyday life where specialized use is not required.

3. The Diploma de Español (Nivel Superior) accredits the necessary knowledge of the language as to allow communication in situations which require an advanced use of Spanish and knowledge of its cultural background.

The examinations are offered in about 50 countries at accredited centres around the world. The Department of Spanish at Dalhousie University organizes the examinations every May.

The exam for obtaining the DELEs consists of five tests: reading comprehension, written expression, listening comprehension, grammar and vocabulary, and oral expression. A grade of “apro” (satisfactory) in each of the sections is required to pass the entire exam.

Please contact the Department DELE Co-ordinator for further details. For additional information visit the Embassy of Spain website: http://www.Diplomas.cervantes.es

IV. Degree Programs

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 65 of this calendar.
A. Bachelor of Arts with Honours in Spanish

(Minimum 9 credits in Spanish)

Departmental requirements
Students seeking entrance to the Spanish Honours Program are expected to have at least a general A- average in Spanish.
• Same 4 credits as for a 15-credit BA with Concentration in Spanish
• An additional .5 credit in literature (student must take a course in each of Spanish literature and Spanish-American literature)
• An additional .5 credit in civilization (student must take a course in each of Spanish civilization and Spanish-American civilization)
• 3.5 optional Spanish credits (includes classes in English)
• Honours thesis

B. Bachelor of Arts with Combined Honours

(Combinations 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
- Any other advanced Spanish credits

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
- 200-level SPAN 2020X/Y.06, or equivalent
- 3000 level: SPAN 3001.03 / SPAN 6060.03 / SPAN 3010.03 or SPAN 3015.03 / SPAN 3020.03 or SPAN 3025.03 / .5 credit in Spanish or Spanish-American literature / .5 credit in Spanish or Spanish-American civilization

Notes:
- The “other” classes chosen as electives in the programs outlined above must satisfy general degree requirements.
- Combinations of classes other than those set forth above may be chosen after consultation with the Department Chair.
- A student may, with the permission of the Department, be admitted to a Spanish class at an advanced point because of prior knowledge of the language. Such a student, however, must take the Spanish Placement Test (SPT) in order to find out what course is better suited to his/her needs. Such student must take the same total number of classes as other students in the same program as well, (except he/she may be granted transferable credits in the usual way).
- Substitutions are acceptable with the advice and consent of the Department.

V. Programs and Classes Abroad

A. The Salamanca Program at the Universidad de Salamanca

The Salamanca Program is a special inter-disciplinary program of instruction designed to allow Dalhousie students to undertake both an intensive study of the Spanish language and classes in Spanish culture. Students must have completed SPAN 2020X/Y.06 with at least a standing of B-. The program takes place during the fall, winter, spring or summer term, and is offered at the Universidade 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 Program.

Students must take the equivalent of 3 full classes.

Compulsory classes:
• SPAN 3301.03: Advanced Grammar 1 (1 credit)
• SPAN 3302.03: Advanced Spanish (1 credit)
• Students must also select one half class from each of the following three options:
  Option 1
  • SPAN 3354.03: Conversation & Composition (½ credit)
  • SPAN 3355.03: Spanish History (½ credit)
  • SPAN 3356.03: The Role of Women in Spanish History (½ credit)
  Option 2
  • SPAN 3360.03: Spanish Culture (½ credit)
  • SPAN 3361.03: Spanish & Spanish American Literature (½ credit)
  • SPAN 3362.03: The Arab World in Hispanic Culture (½ credit)
  • SPAN 3363.03: Oral and Written Skills Practicum (½ credit)
  Option 3
  • SPAN 3380.03: Spanish Art (½ credit)
  • SPAN 3381.03: Spanish for Business (½ credit)
  • SPAN 3382.03: Spanish & Spanish American Cinema (½ credit)

B. The Cuba Program at FLACSO/Havana

This program is given by FLACSO/Havana and generally takes place in the fall and winter terms. All class work is conducted in the Spanish language. Students must have completed SPAN 2020X/Y.06 with at least a standing of B-. The program takes place in Havana 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 Program.

Students must take the equivalent of 3 full classes.

Compulsory classes:
• SPAN 3301.03: Spanish Language and Grammar: The Cuban Dialect (1 credit)
• SPAN 3302.03: Social Development in Cuba (½ credit)
• SPAN 3303.03: The Political Economy of Cuba (½ credit)
• SPAN 3304.03: Sustainable Development (Cuba) (½ credit)
• SPAN 3306.06: Field Research Practicum

C. The Mexico Program at the University of Campeche

This program, designed for students with a minimum of two years’ university-level Spanish, is located at the Universidad Autónoma de Campeche, in the state of Campeche, in the south of the Yucatán peninsula, in Mexico. Students must have completed SPAN 2020X/Y.06 with at least a standing of B-. It started in the fall of 1998, and is administered by the university’s Centro de Español y Maya. Students can be located with Mexican families if they desire. They are also encouraged to travel and see the superb Maya architectural sites in the Yucatán region. The city of Campeche, situated on the Caribbean coast, has a population of approximately 190,000. It was founded in 1541. The cities of Hidalgo and Campeche (twinned in the spring of 1998, and there have been several educational, political, and commercial exchanges.
Classes taken at the University of Campeche are:

- SPAN 2010.06: Advanced Grammar I (1 Credit)
- SPAN 2020.06: Advanced Oral Spanish (1 Credit)
- SPAN 2050.03: Mexican Culture I (1 Credit)

D. The Dominican Republic Program at the PUCAMAIMA University

This three credit program is available either in the fall or the winter semesters and takes place at the Pontificia Universidad Católica Madre y Maestra (PUCAMAIMA) located in Santiago de los Caballeros, the second largest city in the country.

Students must have completed SPAN 2020X/Y.06 with at least a standing of B-.

Classes taken at the PUCAMAIMA are:

- SPAN 3010.06: Advanced Grammar I (1 credit)
- SPAN 3020.03: Art and Folklore of the Dominican Republic (½ credit)
- SPAN 3400.03: Latin American Literature (½ credit)
- SPAN 3410.03: Dominican History (½ credit)
- SPAN 3480.03: Dominican Culture (½ credit)

E. Advanced Grammar II.

SPAN 3110.06: Advanced Grammar II.

This class is designed for advanced students who have already completed one such program abroad which included SPAN 3100.06 (Advanced Grammar I), and who are now undertaking another, more advanced class abroad. The skills of Spanish language performance, both active and passive, are practiced and enhanced through various means of instruction in an environment of total immersion.

FORMAT: Lecture

PREREQUISITE: SPAN 3100.06

F. SPAN 3310.06: Cuban Culture and Society.

See class description for INTD 3310 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 best 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 sessions. Pre-registration is required. To find out more about the dates and times and the registration procedures, please consult with the department. Scores from this test are normally available within a day, and are considered valid for up to a year from the date it was taken.

Students who are taking or have taken any language course at Dalhousie do NOT need to take this test.

Not all classes are offered every year. Please consult the current timetable.

SPAN 1010.03: Advanced Beginning Spanish.

For students with some slight prior knowledge of Spanish. Students join, at mid-year, classes of SPAN 1020X/Y.06 already in progress.

FORMAT: Discussion/conversation/tutorial, language lab and computer assisted language learning as needed

PREREQUISITE: Knowledge of Spanish to the equivalent of first half of SPAN 1020X/Y.06.

EXCLUSION: SPAN 1020X/Y.06.

SPAN 1020X/Y.06: Beginning Spanish.

For students wishing to achieve proficiency in both spoken and written Spanish.

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

FORMAT: Discussion/conversation/tutorial, language lab and computer assisted language learning as needed

PREREQUISITE: Open to students with no knowledge or only a slight knowledge of Spanish.

SPAN 2020X/Y.06: Intermediate Spanish.

This class continues the work done in SPAN 1020X or SPAN 1020.06. Supplementary readings as necessary.

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

FORMAT: Discussion/conversation/tutorial, language lab and computer assisted language learning as needed

PREREQUISITE: Spanish 1020X/Y.06 or equivalent

SPAN 2030.03: Integrated Skills.

The objective of this course is to reinforce grammatical concepts through the development of the four language skills in a practical setting. Students enrolled in SPAN 2020X/Y.06 are encouraged to take this class in the same academic year. This course is particularly useful to students planning to take any of our programs abroad. The class will be organized in thematic units in which authentic materials will be used to practice Oral and Written Expression, and Listening and Reading Comprehension, thus activating the mechanisms of language acquisition and integrating students' skills in a cohesive way.

INSTRUCTOR(S): E. Santos-Montero

FORMAT: Lecture/discussion

PREREQUISITE: SPAN 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 area” is recent. This class seeks to examine the historical roots of the conflict from the colonial period until the 1970s. The aim of the class is to provide students with a background knowledge of this area, so that they can better understand current developments there.

INSTRUCTOR(S): J. Kirk

FORMAT: Lecture/discussion, conducted in English

PREREQUISITE: No prerequisite. Open to students in all departments. No knowledge of Spanish necessary

CROSS-LISTING: HST 2303.03

SPAN 2070.03: Area Studies on Mexico and Central America.

Following an examination of the indigenous heritage, and the colonial legacy of the conquistadors, the class deals principally with the contemporary period, examining the Mexican Revolution and its aftermath, the Somosa dynasty, Nicaragua under the Sandinistas, the impact of NAFTA, the “democracy” of Mexico, the U.S. role in the region, the human rights situation in Central America, and probable developments in the region. The course 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: HST 2303.03

SPAN 2100.03: La Civilización de España.

This course 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.

230 Spanish
This class is a continuation of SPAN 2230.03, but may be taken independently of it.

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 1900's, with particular attention being paid to socio-cultural aspects. The objective is to provide students with a background knowledge of this country and its current reality.

INSTRUCTOR(S): J. Kirk
FORMAT: Lecture/discussion, conducted in English
PREREQUISITE: No prerequisites. Open to students in all departments. No knowledge of Spanish necessary
CROSS-LISTING: HIST 1951.03

SPAN 2110.03: The Cuban Cultural Revolution.

Cuba, the only Communist state in the Western Hemisphere, has undergone dramatic political and economic transformation. The Revolution has also brought about changes in education, the arts, the role of women, race relations, and athletics. The class focuses on the problems and achievements of the Revolution; the peculiarities of Communism in a Caribbean society, and its effect on literature and the arts.

INSTRUCTOR(S): J. Kirk
FORMAT: Lecture/discussion, conducted in English
CROSS-LISTING: HIST 2385.03

SPAN 2130.03: Latin American Dictators in the Novel.

The history of Latin America since Independence has been characterized by the rise to power of countless dictators. Some of the best Latin American novels portray these almost mythical figures who to this day wield absolute power in many countries. The class examines the literature and history of this phenomenon with particular attention to the twentieth century, and attempts to discover its roots in militarism, underdevelopment, and imperialism. Open to students in all departments. No knowledge of Spanish necessary

INSTRUCTOR(S): J. Kirk
FORMAT: Lecture/discussion, conducted in English

SPAN 2200.03: La Civilización de Hispanoamérica.

The aim of this class is to provide a basic understanding of this varied and historic area. The class examines the development of Latin America from pre-Columbian times to the Mexican Revolution. It also, with the study of selected texts, examines the way in which the reality of Latin America has shaped a continental cultural identity.

INSTRUCTOR(S): J. Kirk
FORMAT: Lecture, conducted in Spanish
PREREQUISITE: SPAN 2020.06, or the equivalent, or permission of the instructor

SPAN 2230.03: Contemporary Spanish American Prose (in translation), Part I.

This class samples short stories and novels of contemporary prose from throughout Latin America. Included are works by such outstanding experimental writers as Julio Cortázar, Juan Rulfo, Carlos Fuentes, Alejandro Carpentier, García Márquez and José Donoso — authors whose vigorous narrative, technical innovation and synthesis of surrealism, myth, and magical realism evidence not only a "new consciousness" in Latin America, but perhaps a rejuvenation in prose art of global consequence. The class is an introduction to Spanish literature presenting selected works of prose, poetry and drama from Spain. This is a survey of literature from the Middle Ages to the 20th century. Emphasis will be put on the work of the most important authors, and attention will be paid to the social issues which confront the Spanish nation. The class involves group discussion and lectures. The aim of this class is to introduce students to the work of many of the major figures in Spanish literature, opening the way to a deeper study of individual writers. Open to students in all departments except Spanish. No knowledge of Spanish necessary.

INSTRUCTOR(S): M.J. Giménez
FORMAT: Lecture/discussion, conducted in Spanish
PREREQUISITE: SPAN 2200.03 or equivalent fluency in the Spanish language

SPAN 2240.03: Contemporary Spanish American Prose (in translation), Part II.

This class is a continuation of SPAN 2230.03, but may be taken independently of it.

SPAN 2500.03: Introducción a la literatura española.

This class is an introduction to Spanish literature presenting selected works of prose, poetry and drama from Spain. This is a survey of literature from the Middle Ages to the 20th century. Emphasis will be put on the work of the most important authors, and attention will be paid to the social issues which confront the Spanish nation. The class involves group discussion and lectures. The aim of this class is to introduce students to the work of many of the major figures in Spanish literature, opening the way to a deeper study of individual writers. Open to students in all departments except Spanish. No knowledge of Spanish necessary.

INSTRUCTOR(S): M.J. Giménez
FORMAT: Lecture/discussion, conducted in Spanish
PREREQUISITE: SPAN 2020.06, or equivalent fluency in the Spanish language

SPAN 2510.03: Introducción a la literatura Hispanoamericana.

This class introduces students to the work of many of the major figures in contemporary Latin American literature. The class examines the development of Latin American literature from pre-Columbian times to the Mexican Revolution. It also examines the literature and history of this phenomenon with particular attention to the twentieth century, and attempts to discover its roots in militarism, underdevelopment, and imperialism. Open to students in all departments. No knowledge of Spanish necessary

INSTRUCTOR(S): M.J. Giménez
FORMAT: Lecture/discussion, conducted in Spanish
PREREQUISITE: SPAN 2020.06, or equivalent fluency in the Spanish language

SPAN 2510.03: Workshop in Advanced Oral Spanish I.

This class intends to build vocabulary, increase fluency and enhance the style of spoken Spanish through continuous development and intensive use of oral Spanish skills. Students who have participated in any of our semester classes abroad or who have some immersion experience cannot register in this class.

FORMAT: Lecture/discussion, conducted in Spanish
PREREQUISITE: SPAN 2020.06, or equivalent fluency in the Spanish language

SPAN 2510.03: Workshop in Advanced Oral Spanish II.

This class, intended for students who have already participated in any of our programs abroad or who have previous immersion experience, further develops the oral skills and fluency of the students by using a wide array of communicational dynamics. Important will also be given to written and oral expression. Students who completed Workshop in Advanced Oral Spanish I (SPAN 3010.03) can also enroll in this class.

FORMAT: Discussion/presentations, conducted in Spanish
PREREQUISITE: SPAN 3010.03, participation in our semester programs abroad or previous immersion experience
EXCLUSION: Native speakers

SPAN 3020.03: Translation.

Exercises in translation, from Spanish to English.

INSTRUCTOR(S): J. Kirk
FORMAT: Lecture/discussion
PREREQUISITE: SPAN 2020X/Y.06, or equivalent

SPAN 3025.03: Traducción: Inglés-Español.

The objective of this course is to develop basic translation skills through the practice of translating English texts into Spanish. The approach would be methodological and practical: theoretical issues will be discussed to solve translation problems. After establishing the fundamental concepts, the course will progress to examine a series of important aspects of translation: cultural translation; phonic, graphic and prosodic problems; grammatical and lexical issues; language variety in texts, etc. Each aspect will be examined in detail and put into practice in class sessions. Group and class discussions will follow.

The aim of the course is to give students a general view of the mechanics of translation and then encourage the creative aspects of the process.

INSTRUCTOR(S): E. Santos Montero
FORMAT: Lecture/discussion, conducted in Spanish
PREREQUISITE: SPAN 3000.03 or equivalent

Spanish 231
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: España 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., para, para, ser/estar, use of the subjunctive, etc.
INSTRUCTOR(S): D. Rogers
FORMAT: Lecture
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 contrasive 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). Topics covered will include: 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 is designed for advanced students who have taken the available classes at the 2000 level or equivalent. Students will be introduced to a specific area of Spanish literature focusing on the specific context in which novels and other literary works were written.
INSTRUCTOR(S): M. J. Giménez
FORMAT: Lecture/discussion, conducted in Spanish
PREREQUISITE: SPAN 3010.03/3030.03 or equivalent

SPAN 3225.03: Seminario de literatura de la generación del 98.
This class is designed for advanced students who have taken the available classes at the 2000 level or equivalent. Students will be introduced to a specific area of Spanish literature focusing on the specific context in which novels and other literary works were written.
INSTRUCTOR(S): M. J. Giménez
FORMAT: Lecture/discussion, conducted in Spanish
PREREQUISITE: SPAN 3010.03/3030.03

SPAN 3500.03: Literatura española contemporánea.
This class is designed for advanced students who have taken the available classes at the 2000 level or equivalent. Students will be introduced to a specific area of Spanish literature focusing on the specific context in which novels and other literary works were written.
INSTRUCTOR(S): M. J. Giménez
FORMAT: Lecture/discussion, conducted in Spanish
PREREQUISITE: SPAN 3010.03/3030.03 or equivalent

SPAN 3510.03: Literatura Hispanoamericana contemporánea.
A study of representative works.
FORMAT: Lecture/discussion, conducted in Spanish
PREREQUISITE: SPAN 2020 X/Y.06, or equivalent

SPAN 3525.03: Historia e historias: la literatura como alternativa.
This class is designed for advanced students who have taken the available classes at the 2000 level or equivalent. During this course students will explore the relationship between science and literature, especially subversive representations of History in fictional texts during the 20th century. Lectures will be organized on a chronological basis and will cover different Spanish-speaking cultural areas. The aim of this class is to introduce students to a specific area of Hispanic literature focusing on the historic facts included in novels and essays.
INSTRUCTOR(S): M. J. Giménez
FORMAT: Lecture/discussion, conducted in Spanish
PREREQUISITE: SPAN 3010.03/3030.03 or instructor's permission

SPAN 3550.03: Utopía y exilio en la literatura hispano-canadiense.
This class is designed for advanced students who have taken the available classes at the 2000 level or equivalent. The aim of this class is to introduce students to a specific area of literature focusing on two fundamental realities of the 20th century: exile and utopia.
INSTRUCTOR(S): M. J. Giménez
FORMAT: Lecture/discussion, conducted in Spanish
PREREQUISITE: SPAN 3010.03/3030.03 or instructor's permission

SPAN 3800.03: Seminario de cine español.
This class provides students with the basic elements of cinematic language and gives them the analytical tools to critically assess the Spanish film production from the 1950s to the present day. The works of directors such as L. Buñuel, Carlos Saura, Víctor Erice, Mario Camus, Pedro Almodóvar, and others are previously viewed by students and discussed in class.
INSTRUCTOR(S): M. J. Giménez
FORMAT: Lecture/discussion, conducted in Spanish
PREREQUISITE: SPAN 3010.03/3030.03 or previous participation in one of our programs abroad (or instructor's permission)

SPAN 3806.03: Survey of Spanish Film.
This course will provide students with the basic elements of cinematic language and give them the analytical tools to critically assess the Latin American film production emphasizing that of Argentina, Mexico, and Cuba. Films by Eliseo Subias, Fernando Solanas, M.L. Bemberg, Paul Leduc, Tomas Gutiérrez-Aleña, Humberto Solas, and others are previously viewed by the students and discussed in class.
INSTRUCTOR(S): M. J. Giménez
FORMAT: Seminar, conducted in Spanish
PREREQUISITE: THEA 2311 or MSVU Fine 2293 or professor's approval.
EXCLUSION: SPAN 3800.03

SPAN 3810.03: Seminario de cine latinoamericano.
This class provides the student with the basic elements of cinematic language and gives them the analytical tools to critically assess the Latin American film production emphasizing that of Argentina, Mexico, and Cuba. Films by Eliseo Subías, Fernando Solanas, M.L. Bemberg, Paul Leduc, Tomas Gutiérrez-Aleña, Humberto Solas, and others are previously viewed by the students and discussed in class.
Theatre

Location: Dalhousie Arts Centre, Fifth Floor
6101 University Ave.
Halifax, NS B3H 3J5
Telephone: (902) 494-2233
Fax: (902) 494-1499
Website: theatrical.dal.ca

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

Chair
Stackhouse, S. (494-2241)

Undergraduate Advisor
Sorge-English, L. (494-5383)

Professors
Overtree, J.R., BA, MA (UBC), PhD (Calif)
Ferrina, P., MA, Dip. Scenography (Prague)

Associate Professors
Barker, R., BA (King’s), MA (Dal), PhD (Birmingham)
Gantier, J., BA, MA (Ludhiana), PhD (Toronto)
Sorge-English, L., BA (King’s/ Dal), MA (NYU)
Stackhouse, S. (Dal), Dip. (NTSC), Adv. Dip. (CSSD)

Assistant Professors
McClure, R., BA (Queens), BEd (Toronto), MA (Toronto), Dip. (NTSC)
Siebrits, H., BA (PE Technikon, RSA), BFA ( UCLA), MFA (UCLA)

Lecturer
Edgett, K.

Instructor
Krystoff, D., BThee (MBVU), DCS (Dal), MFA (Manitoba)

Special Instructors
MacLennan, B., BA (Dal)
Robb, M., Dip. (Sheridan)
Thomson, L.

I. Introduction
The Dalhousie Theatre Department offers many ways to study the theatre or some aspect of it in other disciplines offered by the university.

1. You can undertake programs that lead to a university degree: an Honours or Combined Honours BA (4 years), a BA with Major (4 years), a General BA (3 years)

2. You can enroll in a Diploma program in Costume Studies (2 years) which combines academic study and research skills with creative design interpretation and applied skills.

3. You can select certain theatre classes to reinforce and complement your studies in other disciplines offered by the university.

4. You can enrol in one class, from a special group, as part-time or extension student.

The degree programs involve a curriculum of Theatre classes and a selection of other classes in different disciplines. The University has Academic Regulations which specify how these programs must be arranged. These regulations are all listed earlier in this Calendar, and prospective students should refer to them to become aware of the opportunities offered. There are a surprising number of different ways to arrange one’s studies; recommended are the paths you can follow if theatre is your primary interest.
Facilities
The Department is located in the theatre wing of the Dalhousie Arts Centre. The Theatre wing is a self-sufficient unit involving one proscenium theatre, two studios, and supporting workshops. Teaching spaces for costume studies are currently located off-campus. The Departmental office is in Room 5-32 of the Arts Centre.

Because of the work involved, some theatre classes have a limited enrolment. All students wishing to take any practical class in Theatre should, therefore, first consult with the department.

Please note: Theatre by its nature requires evening work. Students, especially in acting, scenography, and costume classes, are advised not to undertake other evening commitments.

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

A. BA with Honours in Theatre
1. Theatre Studies
This degree is designed for students who wish to follow a program of theatre studies that keeps the whole of theatre in perspective, is academically-oriented, and serves as a strong foundation for graduate degrees in Theatre and Drama, or as a good preparation for a variety of professional and education degrees. Honours students must maintain at least a B+ average in all of their advanced Theatre classes.

Year 1
- THEA 1000X/Y.06
- 1 other full class in THEA at 1000-level
- 3 full classes in other subjects

Year 2
- THEA 2011.03
- THEA 2012.03
- THEA 2000X/Y.06
- 3 full classes in other subjects

Years 3 and 4
- THEA 3000X/Y.06
- THEA 3000X/Y.06
- THEA 4000X/Y.06
- THEA 4010X/Y.06
- 3 full advanced electives in THEA, at least 1 of which must be either in Acting, Scenography, or Costume Studies
- 1 full advanced class in dramatic literature from another department (ENGL, CLAS, BUS, SPAN, FREN, GERU, etc.)
- 2 full classes in other subjects, including THEA

An additional credit (the "21st credit") consists of fulfilling the function of a dramaturge or assistant director on one of DalTheatre productions.

Note: Applications for Honours in Theatre are not considered by the Department, until the winter term of the student’s third year. Please enquire at the Department for the relevant deadline.

2. Acting
The main objective of the Acting Program is to satisfy the needs of those students who have decided to pursue a career as a performer in the professional theatre. The program is progressive in nature, culminating in a company of student actors who perform in the DalTheatre season in their fourth year. Third year students in the Acting Program may be eligible to participate in the DalTheatre season dependent upon the casting requirements and discretion of the director and the Acting Program faculty. Third year Music and Theatre students may be required to participate, in order to meet their degree requirements, should they advance to that level of study. Students who have not taken the full three years of study together and must, in addition to meeting degree requirements, achieve a B in all Acting Program classes, and, be recommended by the acting faculty in order to advance to the next year’s course of study. The program provides these students with a 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 1000X/Y.06
- 3 full classes in other subjects

Year 2
- THEA 2011.03
- THEA 2012.03
- THEA 2600X/Y.06
- THEA 2610X/Y.06
- THEA 2620X/Y.06
- 1 full elective in other subject

Year 3
- THEA 3600X/Y.06
- THEA 3610X/Y.06
- MUSC 1080X/Y.03
- 1.5 classes in other subjects

Year 4
- THEA 4600X/Y.06
- THEA 4610X/Y.06
- MUSC 1080X/Y.06
- THEA 3900X/Y.06
- 1.5 classes in other subjects (one of these can be in THEA)

Honours Acting students will be awarded the 21st credit for their satisfactory participation in DalTheatre productions.

Note: Applications for Honours in Theatre are not considered by the Department, until the winter term of the student’s third year. Please enquire at the Department for the relevant deadline.

3. Scenography & Technical Scenography
People from very different backgrounds are attracted to the study of scenography. Students with considerable art school or architecture background are offered specially tailored curriculum, and should contact the scenography professor to work out a suitable program of studies in scenography. Students starting with a keen interest and a little formal background in art or architecture are admitted if they meet the university entrance requirements. Honours students must maintain at least a B+ average in all of their advanced Theatre classes.

Year 1
- THEA 1000X/Y.06
- THEA 1000X/Y.06
- 3 full classes in other subjects

Year 2
- THEA 2011.03
- THEA 2012.03
- THEA 2600X/Y.06
- THEA 2700X/Y.06
- 1 full elective in other subject

Year 3
- THEA 3600X/Y.06
- THEA 3610X/Y.06
- MUSC 1080X/Y.06
- 2 classes in other subjects

Year 4
- THEA 3900X/Y.06
- 2 full advanced level electives in theatre
- 2 full classes in other subjects, including up to 1 in theatre
The 21st class in Technical Scenography and Scenography consists of designing either set or lighting for one, or assistant-designing for two, DalTheatre productions.

NOTE: Applications for Honours in Theatre are not considered by the Department, until the winter term of the student’s third year. Please enquire at the Department for the relevant deadline.

NOTE: Interested students, studying Technical Scenography could find occasional, paid employment with Neptune Theatre, the Rebecca Cohn Auditorium and IATSE Local 680 (International Alliance of Theatrical Stage Employees) with whom the Department of Theatre has a close connection.

4. Costume Studies

This program combines the academic study and research skills necessary to the understanding of costume in its broadest context with the creative interpretation of design and the applied skills of the costumer whose goal is to work in the theatre, film, museums, or historical animation. Some classes in Costume Studies are open to general BA students. See individual class listings. Honours students must maintain at least a B+ average in all of their advanced theatre classes.

Year 1

• THEA 1000X/Y.06
• THEA 1400X/Y.06
• 3 full classes in other subjects

Year 2

• THEA 2111.03
• THEA 2122.03
• THEA 2400X/Y.06
• THEA 2405X/Y.06
• THEA 2411.03
• THEA 2415X/Y.03
• 1 full class in other subjects

Year 3

• THEA 3401X/Y.06
• THEA 3402X/Y.06
• THEA 3404X/Y.08
• THEA 3405X/Y.08
• THEA 3450X/Y.03
• THEA 3455.03
• 1 full class in other subjects

Year 4

• THEA 4400X/Y.06
• THEA 4410X.03
• THEA 4412X.05
• TEXL 2000 (NSCAD)
• TEXL 2100 (NSCAD)
• 2 full classes in other subjects

Upon acceptance into their program, students should contact the undergraduate advisor in the Department of Theatre for information on registering for required classes that take place at NSCAD University.

Honours students in Costume Studies will be awarded the 21st credit for a 3-year BA and have, in the two subjects combined, the required distribution of classes.

1. Music and Theatre

In addition to these Combined Honours degrees, the Departments of Theatre and Music also offer a highly specialized 4-year BA with Combined Honours in Music and Theatre which blends the principal classes of the Bachelor of Music concentration in voice with Theatre classes in Acting and Improvisation, Dance and Movement. Students must audition for both the Music and Theatre Departments: a maximum of five students will be selected for entrance into the program each year. The graduate of this program will advance toward a professional career in the performing arts equipped with a solid foundation in academic, vocal, and stage skills.

Students must successfully complete the auditions/entrance tests for the first year of the Music Program, and have an interview with the Theatre Department. Permission to continue in this program is subject to a successful completion of THEA 1800X/Y.06 and the securing of a place in THEA2800X/Y.06.

Students planning to take this program must advise the Theatre Department Student Advisor.

To qualify for graduation a student must participate by having a significant role in at least one staged musical production (other than as an integral part of DalTheatre Productions, or Opera workshop, or as a separate ensemble recital) and also must submit a comprehensive essay on an aspect of Musical Theatre.

NOTE: Students having to withdraw from this Program through failure to achieve the required standards in Theatre classes must re-audition if they wish to complete a Degree Program in Music. Students having to withdraw from this Program through failure to achieve the required standards in Music Classes must re-apply to the Department of Theatre if they wish to complete a degree Program in Theatre.

Year 1

• MUSC 1101X/Y.06
• MUSC 1201.03
• MUSC 1222.01
• MUSC 1270X/Y.03
• MUSC 1272X/Y.03
• THEA 1000X/Y.06
• THEA 1005.06
• Ensemble: Chamber Choir/Opera Workshop

Year 2

• MUSC 2201X/Y.06
• MUSC 2202.03
• MUSC 2203.03
• MUSC 2270.03
• THEA 2800X/Y.06
• THEA 2805X/Y.06
• Ensemble: Chamber Choir/Opera Workshop

Year 3

• MUSC 3101X/Y.06
• MUSC 3102X/Y.06 (THEA 3010X/Y.06)
• THEA 3800X/Y.06
• THEA 3805X/Y.06
• MUSC 3101X/Y.06
• MUSC 3319X/Y.06 (THEA 3010X/Y.06)
• Ensemble: Chamber Choir/Opera Workshop

Year 4

• MUSC 4101X/Y.06
• MUSC 4102.03
• MUSC 4103.03
• MUSC 4105X/Y.06
• MUSC 4106X/Y.06
• 1 required full elective
• Ensemble: Chamber Choir/Opera Workshop

Honours Music and Theatre students will be awarded the 21st credit for their satisfactory participation in DalTheatre productions.
C. 20-credit BA with Major in Theatre

A student may take a 20-credit Major program in Theatre (in Theatre Studies, Acting, Scenography and Technical Scenography) or Costume Studies. Following consultation with the Departmental Undergraduate Advisor. As in the case of a BA with Combined Honours, it is also possible to set up a Double Major in Theatre and another subject. In this case, a student must 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

Years 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

After successful completion of this program, students may upgrade their DCS to a BA in Theatre (Costume Studies). Students pursuing the Diploma in Costume Studies are required to combine the classes in the following manner:

Year 1
- THEA 1450X/Y.06
- THEA 2400X/Y.06
- THEA 2401X/Y.06
- THEA 2402X/Y.06
- THEA 2403X/Y.06
- THEA 3000X (NSCAD)
- THEA 3100X (NSCAD)

Year 2
- THEA 3405X/Y.06
- THEA 3406X/Y.06
- THEA 3408X/Y.06
- THEA 3409X/Y.06
- THEA 3410X/Y.06

III. Class Descriptions

NOTE: Not all classes are offered every year. Please consult the current timetable to determine if these classes are offered in the current year.

THEA 1000X/Y.06: Introduction to Theatre.

The purpose of this class is twofold: first, to introduce students to the study of theatre through analysis of a range of plays related to the DalTheatre season; and second, to instruct students in the methodology of writing in the humanities. Students will be able to address specific problems within their papers and discuss possible questions on an individual basis in writing tutorials. This class fulfills the writing requirement of Dalhousie University and is a prerequisite for all Theatre majors.

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

FORMAT: writing requirement, lecture/tutorial 3 hours

THEA 1050X/Y.06: Introduction to Theatre Organization and Stagecraft.

This class takes the student behind the scenes to understand how a play is brought to life. Scenography is discussed and explored. Students are introduced to construction, properties, sound, lighting and costume for the stage. Here a script is staged, determines how an audience will understand the ideas inherent in the script. Methods and procedures for theatre productions make up the substance of this class. This class is a prerequisite for upper level technical scenography classes. Students are expected to work with power tools and are required to work on one DalTheatre Production, which will include evening and weekend work outside of class time.

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

FORMAT: Lecture 2 hours, lab 4 hours

THEA 1300X/Y.06: Introduction to Film.

This class explores the history and development of film, from its beginnings to the present day. It also covers film genres and history, the component elements of film, and the medium’s impact on 20th-century society. In addition to this, the class instructs students in the methodology of writing in the humanities and fulfills the writing requirement of Dalhousie University.

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

FORMAT: Writing requirement, lecture/tutorial 3 hours

THEA 1450X/Y.06: Introduction to Costume Studies.

This class serves as an introduction to costume in its broadest context, enabling students to acquire a basic understanding of creating costume for the stage. Both modern and historical costume creation techniques are explored and mastered by students in preparation for more advanced study of costume in subsequent years of the Costume Studies Program. This class is a prerequisite for all other Costume Studies classes.

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

FORMAT: Lecture/lab 4.5 hours

THEA 1800X/Y.06: Introduction to Acting and Performance.

This class is designed to provide the beginning acting student with an understanding of what it is to act, and to give some of the basic techniques employed in the education of a stage performer. The basic approach will be practical and experiential, with the learning being focused into three major sections throughout the year: Space, Character, and Action. Students will be required to participate in exercises, which will test and strengthen coordination, focus, communication and teamwork. The focus will be on self-discovery, and working with others to create a safe dynamic environment in which all participants will be free to stretch themselves physically, vocally, artistically, and ignite their imaginations.

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

FORMAT: Lab/seminar 3 hours


This class is designed to provide experience in performances outside the Acting Program. Through practical theatre exercises and performance assignments, students experience and discuss elements which contribute to theatre performance. This class will not serve as a prerequisite to the Acting Program, but is suitable for students having completed THEA 1800 or any student interested in cultivating self-confidence, communication, and performance skills.

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

FORMAT: Lecture/lab 3 hours

RESTRICTION: Students cannot register for THEA 1800 and THEA 2000 at the same time.
THEA 2011.03: Classical Theatre.
This class gives students an opportunity to study dramatic literature, staging practices, and theoretical foundations of the early history of theatre. Specific topics covered include Greek, Roman, and medieval, as well as classical Indian and Japanese theatres. Although there is no formal prerequisite for the class, students should normally be in their second year of study. A background in theatre, history, and/or dramatic literature will be an advantage.
FORMAT: Lecture/seminar 3 hours

THEA 2012.03: Early Modern Theatre.
This class is in a sense the sequel to THEA 2011.03, though that class is not a prerequisite. It aims to study the development of dramatic literature, staging practices, and criticism from the theatres of the Italian Renaissance and of Shakespeare to the final years of European neoclassicism. There is no formal prerequisite, but students should normally be in at least the second year of study. A background in history, theatre and/or dramatic literature will be an advantage.
FORMAT: Lecture/seminar 3 hours

THEA 2020X/Y.06: Jazz Dance I (Spring Session Only).
This is a practical exploration into the Lab 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 3 hours
CROSS-LISTING: MUSC 2130X/Y.06 - Jazz Dance I (spring session only)

THEA 2060X/Y.06: Technical Scenography I.
The theories behind the operation of lighting, sound, construction, and properties, as well as the advances in technology and their expense and adaptability, form part of this class. Lecture periods are concerned with stage management, lighting and sound, construction, properties, and other related topics.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Lecture/Lab 6 hours
PREREQUISITE: THEA 1050X/Y.06
CO-REQUISITE: THEA 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 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.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Lab 6 hours
PREREQUISITE: THEA 1050X/Y.06
CO-REQUISITE: THEA 2060X/Y.06

THEA 2300X/Y.06: Film Study.
See description under THEA 2300X/Y.06. As THEA 2300X/Y.06, this class may be taken as one of the required classes of the Minor in Film Studies. NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

THEA 2310X/Y.06: Film Genres.
This course is designed to give students both a practical and theoretical overview of the dominant film genres and their conventions. The evolution of each genre will be illustrated, from its earliest beginnings to its latest examples. Special attention will be given to the reason behind this evolution, the broader historical context and important facts from film history that explain the apparent changes in particular. Also, a broader theoretical framework will be offered, so that students learn how to define film genres even when they are mixed into a heterogeneous film.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Lecture/seminar

THEA 2311.03: Film Analysis.
This course provides the students with the theoretical instruments which will enable them to analyse a wide array of narrative films. Through readings, lectures and discussions, students will learn about the language of film. Free feature films (viewed by the students outside of class time), each one of them brilliantly illustrating a specific aspect of film narrative and style, will be closely studied in class.
FORMAT: Lecture/discussions
PREREQUISITE: Previous completion of THEA 2300 or equivalent is recommended.

THEA 2312.03: Issues in Film Aesthetics.
This course is an introduction to some of the crucial ethical and aesthetic issues related to the cinematic arts. Through readings, lectures and discussions the course will provide an overview of the varied aesthetic goals of narrative filmmakers as well as some basic instruments to analyse selected documentary, experimental and animated film. Seven films (viewed by the students outside of class time) will be discussed in class.
FORMAT: Lecture/discussion
PREREQUISITE: Previous completion of THEA 2311.03 "Introduction to Film Study" is recommended.

THEA 2313.03: Shakespeare and this Contemporaries on Film.
This course will study the adaptation of Shakespeare and his contemporaries to the medium of cinema, focusing on the differences between theatre and cinema, the process of trial adaptation, the updating of classic story and modern settings, and the close analysis of the performer's choices.
INSTRUCTOR(s): D. Nicol
FORMAT: Lecture and seminar
PREREQUISITE: Experience in Shakespeare at any level OR experience in Film Studies at any level.

THEA 2400X/Y.06: Cave to Cafe: Costume and Identity from Antiquity to 1700.
An introduction to the study of body, social behaviour and its relationship to the development of body coverings, this survey class begins with the earliest Mediterranean cultures, Ancient Egypt, Caria and Rome, and continues through to the end of the seventeenth century. This course may be taken by general BA students, and is also part of the Costume Studies Program.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Lecture/discussion 3 hours
PREREQUISITE: General BA students must have completed the writing requirement.
For BA in Theatre (Costume Studies) students: THEA 1000X/Y.06, THEA 1400X/Y.06
For Diploma in Costume Studies: See Costume Studies class combinations.

THEA 2406X/Y.06: The Aesthetics of Contemporary Dress.
By examining the aesthetics of contemporary dress, this class will enable the student to understand established systems used to create clothing, utilizing body image as principle means. Through the study and application of systematic principles, the student will gain a better understanding of people’s need to define body image in terms of
Communication and evaluation. This class is also part of the Costume Studies Program.

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

FORMAT: Lecture/lab 4.5 hours
PREREQUISITE: For BA in Theatre (Costume Studies) students: THEA 1000X/Y.06, THEA 1450X/Y.06
For Diploma in Costume Studies: See Costume Studies class combinations.

THEA 2411.03: Designers' Language.
This class explores components of costume design, offering a discourse on design languages, colour theory, structure, and decoration as they relate to costumes for theatre. Through lectures and practical applications, the student will learn how to design costumes, choose fabrics, interpret scripts and develop characters, leading to a better understanding of theatrical characterization. This class may be taken by general BA students, and is also a part of the Costume Studies Program.

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 1400/Y.06 to create modern and historical costumes for the stage. In addition, students work on productions in order to understand better the integral role played by costume in staging a play, and in an actor's character development, and body image and representation. Much of the show-related work takes place outside of class time. This class is part of the Costume Studies Program.

FORMAT: Lecture/lab 4.5 hours
PREREQUISITE: For BA in Theatre (Costume Studies) students: THEA 1000X/Y.06, THEA 1450X/Y.06
For Diploma in Costume Studies: See Costume Studies class combinations.

THEA 2700X/Y.06: Scenography I.
This class is designed to give students basic visual judgement and understanding. In the first half, it follows the Bauhaus approach to graphic design but adapts it to the needs of three-dimensional theatre space. In the second half, perspective and colour theory are taught. Throughout the year analysis and criticism of various works are encouraged. The texts followed are Gyorgy Kepes' Language of Vision and Johannes Itten's The Elements of Colour. This class is open to all students.

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

FORMAT: Lecture/lab 6 hours
THEA 2800X/Y.06/ THEA 2810X/Y.06/ THEA 2820X/Y.06: The Discovery Year.
The second year of the Acting Program introduces students to the fundamental principles of acting through improvisation, voice and movement. Emphasis is placed on the discipline and dedication that is the basis for a career in the professional theatre. In addition to meeting degree requirements, students must achieve a B in all Acting/Program classes, and be recommended by the acting faculty in order to advance to the next year's course of study.

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

THEA 2800X/Y.06: Acting II.
The second year of the Acting Program introduces students to classical theatre performance approaches through the exploration of the texts of William Shakespeare. Using his sonnets, soliloquies and scenes, students will work performance class within the author's text and explore characterization, dramatic situations and action, and the interpretation of dramatic text. Emphasis is placed on the need for clarity in expressing and communicating these works and on the dedication to craft and discipline necessary to do so.

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

FORMAT: Lecture/lab 6 hours
PREREQUISITE: THEA 1800X/Y.06/ THEA 2800X/Y.06/ THEA 2810X/Y.06
THEA 2810X/Y.06: Voice and Speech II.
This class focuses on developing the speaking voice. It is an introduction to mind/body/voice awareness, the anatomical and physiological aspects of phonation, and the care of the voice. This introduction includes exploration and drilling of the primary breathing and phonating muscles with the object of releasing the voice and developing an open, flexible sound. Focusing of the mind, alignment of the spine, releasing of unnecessary and habitual tensions, exploration of resonating cavities, pitch, volume/power, and articulation, as well as exploration of a variety of text will all be investigated.

NOTE: Students 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
CON-SUITE: THEA 2800X/Y.06, THEA 2820X/Y.06
THEA 2820X/Y.06: Dance and Movement II.
The class is designed to develop and enhance the acting student's practical knowledge of movement through the discipline of jazz dance. This is manifested through a practical exploration of the Jazz 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/Show 3 hours
PREREQUISITE: THEA 1800X/Y.06 and audition
CON-SUITE: 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 clearly, with clarity and conviction, thereby strengthening his or her presentation skills. This course will be practical in nature. Exercises and explorations will initially be centered 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

THEA 2900X/Y.06: Dramaturgy.
This class involves specific study of dramaturgical practices introduced in the Introduction to Theatre. Plays are read as performance scripts to gain an understanding of the implicit theatrical and social conventions which they contain, and with an eye to connecting scripts from other societies to a contemporary audience. The relationship between theatres and their communities will be examined and students also work actively with the Dalhousie Theatre season of plays.

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

FORMAT: Lecture/seminar 3 hours
PREREQUISITE: THEA 1000X/Y.06 or permission of instructor
THEA 3010X/Y.06: The History of Musical Theatre. A survey of musical theatre history, dramaturgy and production - from its roots in the traditions of European comic opera and the nineteenth century operetta to the works of Lloyd Webber, Sondheim and other present-day writers. See class description for MUSC 3319X/Y.06 in the Music section of this calendar.

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

THEA 3020.06: Jazz Dance II. (Spring Session only).

This is an advanced class in 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)
CROSST-LISTING: MUSC 3310X/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 2800X/Y.06 covering the topics in greater detail.

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

FORMAT: Lecture/lab 6 hours
PREREQUISITE: THEA 2800X/Y.06, THEA 2700X/Y.06
CROSST-LISTING: THEA 3070X/Y.06

THEA 3070X/Y.06: Performance Technology II.

This is an advanced class in production technology. Students work intensively in the areas of: construction, properties, lights and sound, or stage management. Students are required to work on four (4) 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 2800X/Y.06, THEA 2700X/Y.06
CROSST-LISTING: THEA 3080X/Y.06

THEA 3200X/Y.06: The Director in the Theatre.

This class explores the 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 2406X/Y.06 and permission of instructor


This course examines filmmaker David Lynch’s entire body of work, including his theatrically released films, his TV series Twin Peaks, his independently distributed experimental films and his paintings and sculpture. By devoting a full year course to one artist, the course permits exceptionally close analysis of Lynch’s work, his source material and his inspirations.

FORMAT: Lecture and seminar
PREREQUISITE: At least one of the required courses in the Film Minor (THEA 1000, 2011, 2311, 2313) or their equivalents at NSU (FIND J4209). THEA 1000 or THEA 2301 may also be accepted but priority will be given to Film Minor students.

THEA 3330.03: Film Theory I.

This course will survey and discuss the major theories of the twentieth century: from formalism and realism to Lacanian psychoanalysis and post-structuralism, from film semiotics and feminist theory to postmodern debates and approaches which sought to define new terminology and new methodologies for the study of the moving images.

FORMAT: Lecture/Seminar
PREREQUISITE: One of the Film Studies courses (or other exposure to the discipline)

THEA 3331.03: Film Theory II.

This course will survey and discuss the major theories of the twentieth century: from formalism and realism to Lacanian psychoanalysis and post-structuralism, from film semiotics and feminist theory to postmodern debates and approaches which sought to define new terminology and new methodologies for the study of the moving images.

INSTRUCTOR(S): A. Cristiano
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 to re-create costumes of the eighteenth and nineteenth centuries. Primary research forms a significant component of this class. This class is part of the Costume Studies Program.

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

FORMAT: Lecture/lab 4.5 hours
PREREQUISITE: For BA in Theatre (Costume Studies) students: THEA 1000X/Y.06, 1450X/Y.06, 2011X/Y.06, 2012X/Y.06, 2400X/Y.06, 2406X/Y.06, 2411X/Y.06, 2451X/Y.06
For Diploma in Costume Studies See Costume Studies class combinations.
RESTRICTION: Costume Studies degree or diploma students only.

THEA 3406.03: The Aesthetics of Ritual Costume.

This class will examine the role played by men’s and women’s formal attire in theatre and society. The classic suit, military uniforms, and religious dress will be analyzed, compared and contrasted through a variety of historical periods, with a view to gaining a better understanding of people’s need to clothe themselves in formally conventional ways. This class is part of the Costume Studies Program.

FORMAT: Lecture/lab 4.5 hours
PREREQUISITE: For BA in Theatre (Costume Studies) students: THEA 1000X/Y.06, 1450X/Y.06, 2011X/Y.06, 2012X/Y.06, 2400X/Y.06, 2406X/Y.06, 2411X/Y.06, 2451X/Y.06
For Diploma in Costume Studies See Costume Studies class combinations.
RESTRICTION: Costume Studies degree or diploma students only.

THEA 3430.03: Costume in Performance II.

In this class students will demonstrate their fluency in costume creation with design interpretations for theatrical production. Students will examine problems related to costume as an expression and extension of theatrical character development. The Theatre Department productions provide a venue for students to develop interpersonal and technical skills. Students work as an integral part of a team. This class is part of the Costume Studies Program.

FORMAT: Lecture/lab 4.5 hours
PREREQUISITE: For BA in Theatre (Costume Studies) students: THEA 1000X/Y.06, 1450X/Y.06, 2011X/Y.06, 2012X/Y.06, 2400X/Y.06, 2406X/Y.06, 2411X/Y.06, 2451X/Y.06
For Diploma in Costume Studies See Costume Studies class combinations.
RESTRICTION: Costume Studies degree or diploma students only.
THEA 3454.03: Body-Shaping Through Historical Tailoring II.
This class introduces the student to the process of tailoring as it originated in the Renaissance, and its development down to the twentieth century. Emphasis is placed on the process of underpinnings, understructures and the techniques of fitting them in place. This class is part of the Costume Studies Program.
PREREQUISITE: For BA in Theatre (Costume Studies) students: THEA 1000X/Y.06, 1400X/Y.06, 2400X/Y.06, 2411.03, 2415X/Y.03
For Diploma in Costume Studies: See Costume Studies class combinations.
RESTRICTION: Costume Studies degree or diploma students only.
THEA 3455.03: Body-Shaping Through Historical Tailoring I.
The "Systems" of Pattern Drafting from the early nineteenth century to the twentieth century. Utilizing traditional tailoring techniques, the process of professional tailored garments is studied in detail. This class is part of the Costume Studies Program.
FORMAT: Lecture/lab 4.5 hours
PREREQUISITE: For BA in Theatre (Costume Studies) students: THEA 1000X/Y.06, 1400X/Y.06, 2400X/Y.06, 2411.03, 2415X/Y.03
For Diploma in Costume Studies: See Costume Studies class combinations.
RESTRICTION: Costume Studies degree or diploma students only.
THEA 3500X/Y.06: The Modern Theatre.
The modern theatre has been characterized by successive bursts of creative energy and experiment. This class gives an opportunity to study these developments in detail and to examine several important theatrical theories and their application.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Lecture/seminar 3 hours
PREREQUISITE: THEA 2011.03 and THEA 2012.03 or permission of the instructor
THEA 3600X/Y.06: The Playwright in the Theatre.
This class studies the playwright as a vehicle for preserving history, as a literary work. Through weekly written exercises dealing with specific dramatical problems, the craft of play-writing is explored. With this background, the class then writes plays which are then revised, critiqued, and given a public presentation.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Lecture/lab 4 hours
PREREQUISITE: THEA 2000X/Y.06 and permission of the instructor
THEA 3710X/Y.06: Scenography II.
This class is for theatre honours and special scenography students only. It builds on the knowledge gained in the previous class in the field, THEA 2700X/Y.06, as far as visual knowledge is concerned, and from technical knowledge acquired in THEA 2600X/Y.06/THEA 2707X/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 directoral/scenographic relationship. The text followed is "Scenography of Josef Svoboda" by Jarka Burian.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Lecture/lab 6 hours
PREREQUISITE: THEA 2600X/Y.06, 2707X/Y.06, 2011.03, 2012.03, 2700X/Y.06
THEA 3800X/Y.06/ THEA 3810X/Y.06/ THEA 3820X/Y.06: The Transformation Year.
The third year of the Acting Program is structured to build on the knowledge acquired in the previous two years. Students learn how to implement the freedom they have discovered as they gain further understanding of physical, vocal, and imaginative expression. Third-year students may be invited to perform in the Laid Theatre series, depending upon the needs of the plays chosen and the student's readiness for the performance situation as assessed by the faculty. In addition to meeting degree requirements, students must achieve a B in all Acting Program classes, and be recommended by the acting faculty in order to advance to the next year's course of study.
NOTE: Students taking these classes must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
THEA 3800X/Y.06: Acting III.
This class is designed to build upon the creative and imaginative work completed in the first two years of the Acting Program. Students continue to explore personal awareness, physical/vocal expressiveness, and the role that psychology and emotion play in the creation of character and action within scenes. This is achieved by the continued in-depth study and exploration of dramatic texts from various periods and styles of theatre. The students are also introduced to mask work as a tool for exploring character.
NOTE: Students taking these classes must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
PREREQUISITE: THEA 2800X/Y.06, 2810X/Y.06, 2820X/Y.06; and permission of the Acting Faculty.
THEA 3810X/Y.06: Voice and Speech III.
This class is a continuation of 2810X/Y.06. Emphasis is on refining the voice by combining newly developed skills that constitute "good use" of the head, the body, and the breath. The grey and nasal sound of the voice are eliminated. Much of the work involves application to a variety of text. Students take this class in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
PREREQUISITE: THEA 2800X/Y.06, 2810X/Y.06, 2820X/Y.06; and permission of the Department.
THEA 3820X/Y.06: Dance and Movement III.
The class is designed to develop and enhance the student's practical knowledge of movement through the discipline of Jazz Dance. This is manifest through the continued practical exploration of the Jazz Dance Technique. Emphasized are the performer's building blocks: a strong body alignment, a healthy stretching regimen, and an expanding skill repertoire. Emphasis commences 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.
PREREQUISITE: THEA 2800X/Y.06, 2810X/Y.06, and THEA 2820X/Y.06; and permission of the Department.
THEA 3911.03: Gender in Theatre: A Cross-Cultural Survey.
This seminar class examines the roles gender has played in the shaping of world theatre alongside the role the theatre has played in the shaping of various cultural conceptions of gender. By exploring plays and performances from Europe, North America, China, Japan, India, Africa and/or other traditions, we will strive to understand the ways in which various forms of representation reflect their cultures' governing images of masculinity and femininity. In the process, we will interrogate the historical and cultural variability of the notion of "gender" itself. The main objective of the seminar will be to ask how gender determines performers/
choice in various cultures, and to see how gender itself can actually be shaped by performance.

**FORMAT:** Lecture/semiminar 3 hours

**CROSS-LISTING:** GWST 3911.03

**THEA 3912.03: Gender Theory and Contemporary Performance.**

This seminar class offers students an opportunity to encounter some of the most provocative and challenging gender theory of recent years in relation to current performance theory and performance. Students will read considerations of the relationship between gender, performance and identity by such authors as Jacques Lacan, Michel Foucault, Helene Cixous, Julia Kristeva, Judith Butler, Peggy Phelan and Camille Paglia, among others. Alongside these works, we will examine contemporary performances, from the popular (for example, Buffy the Vampire Slayer, Queer as Folk, The Lord of the Rings, and the music videos of Madonna) to the oppositional (for instance, the theatre of Split Britches and Sky Gilbert, the performance art of Diamanda 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).

**FORMAT:** Lecture/semiminar 3 hours plus bi-weekly screenings

**CROSS-LISTING:** GWST 3912.03

**THEA 4400X/Y.06: Dress and Identity: King's Court to Mass Culture, 1700 – Present.**

This is a survey class which traces the development of dress, showing its evolution from the period when the fashion aesthetic was determined by the courts, to the time of the rise of the common man as the arbiter of taste. Emphasis will be placed on dress worn in England and France, but the dress from other countries may be explored as individual topics of research. The social and cultural aspects of dress history, using slides of representative works of art, films and artifices as visual documentation for each period will also be emphasized. This class may be taken by general BA students, and is also part of the Costume Studies Program.

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

**FORMAT:** Lecture 3 hours

**PREREQUISITE:** General BA students must have completed the writing requirement.

For BA in Theatre (Costume Studies) students: THEA 1000X/Y.06, 1450X/Y.05, 2011.03, 2400X/Y.06, 2406X/Y.06, 2411.03, 2451X/Y.03, 3500X/Y.06, 3405X/Y.06, 3408.03, 3450X/Y.06, 3454.03, 3455.03. For Diploma in Costume Studies: See Costume Studies class combinations.

**THEA 4450.03: Costume Technology.**

This class extends the expertise in costume creation developed in THEA 1450X/Y.06, THEA 2451.03 and THEA 3505.03 to examine techniques of fine finish as students prepare their costume masterpieces. This class is part of the Costume Studies Program.

**FORMAT:** Lecture/lab 3 hours

**PREREQUISITE:** For BA in Theatre (Costume Studies) students: THEA 1000X/Y.06, 1450X/Y.05, 2011.03, 2012.03, 2400X/Y.06, 2406X/Y.06, 2411.03, 2451X/Y.03, 3500X/Y.05, 3505X/Y.06, 3405X/Y.06, 3408.03, 3450X/Y.06, 3454.03, 3455.03. For Diploma in Costume Studies: See Costume Studies class combinations.

**RESTRICTION:** Costume Studies degree or diploma students only.

**THEA 4452.03: The Sculpture of Dress.**

Based on abstract principles and muse in creativity, this class examines sculptural forms in a human context to facilitate modern and historical costume design. The student works directly on the human body or mannequin to gain proficiency in modeling textiles to shape costume. This class is part of the Costume Studies Program.

**FORMAT:** Lecture/demonstration/lab 4.5 hours

**PREREQUISITE:** For BA in Theatre (Costume Studies) students: THEA 1000X/Y.06, 1450X/Y.05, 2011.03, 2012.03, 2400X/Y.06, 2406X/Y.06, 2411.03, 2451X/Y.03, 3500X/Y.06, 3405X/Y.06, 3408.03, 3450X/Y.06, 3454.03, 3455.03

For Diploma in Costume Studies: See Costume Studies class combinations.

**RESTRICTION:** Costume Studies degree or diploma students only.

**THEA 4500.03: Colonial Canadian Theatre.**

Early Canadian theatre offers a fascinating example of a colonized nation's struggle to find its own dramatic voice in the face of powerful foreign 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 Dieppe Drama Festival. The class will close with a consideration of the influential Massey Commission and the birth of the Stratford Festival, Canada's first 'world class' theatre. Over the course of the term, special attention will be paid to the development of diverse dramatic traditions in French and English Canada. Drama by representative playwrights will be studied alongside primary sources in Canadian Theatre history to give students an integrated perspective on the complex artistic and political debates that helped to determine the character of performance in this country.

**FORMAT:** Seminar/discussion 3 hours

**THEA 4501.03: Post-Colonial Canadian Theatre.**

This seminar class will examine the ongoing emergence of uniquely Canadian forms of theatre in the years since theMassey Commission asserted the need to foster Canada's national 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, the class offers an opportunity to consider the complex relationship between theatre and national identity: who are 'we' and how might our national theatre express or even shape "us"?

**FORMAT:** Seminar 2 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 length of meetings are decided to meet the needs of the particular topic or project under study.

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

**FORMAT:** Seminar 2 hours

**THEA 4735X/Y.08: Advanced Seminar in Baroque Culture.**

This course offers its students a survey of key aspects of seventeenth and eighteenth-century European history and society along with a first-hand view of some of the most important aspects of baroque style and material culture. The class introduces students to the socio-political conditions that led to the birth of Baroque civilization before entering into an exploration of the court life of seventeenth and eighteenth-century Europe. It then examines the cultural and aesthetic forms most characteristic of this period, with particular emphasis on theatre history and the role of the 'theatrical' in the Baroque arts. As the course proceeds, students will have an opportunity to consider the connections between course material and the evidence of Baroque culture to be found in the Castle Theatre's scenographic machinery, its stock of original scenery and props, and its collection of historical costumes, as well as to witness an experimental Baroque opera performance. Finally, the course will include visits to Prague and other sites of interest to aid students' understanding of the Baroque and its legacy to subsequent periods.

**FORMAT:** Lecture/lab

**PREREQUISITE:** Permission of the Departments of Theatre and History.

**CROSS-LISTING:** HIST 4352.06

**RESTRICTION:** 3rd and 4th year students only.
THEA 4800X/Y.06/4840X/Y.06: The Interpretation and Performance Year.
In the final year of the Acting Program, students' studies are geared toward performance. The company of fourth year Acting Program students will be cast in the DalTheatre season and will receive instruction in specific skills related to each production. Classes are devoted to preparing the students for the transition into the profession.
NOTE: Students taking these classes must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
THEA 4800X/Y.06: Acting IV.
The fourth year acting class is designed to prepare the Acting student for entrance into the world of professional theatre. Major emphasis is placed on audition technique and 'professional deportment.' Students are guided through an in-depth study of the 12 Guideposts as outlined in Michael Shurtleff's text, Audition. A number of professionals may be invited into the classroom to discuss the business of acting. Students will complete the year with a portfolio of suitable audition pieces for use in the professional audition situation. In addition, students are given a chance to practice skills required to give a competitive audition for film/television.
NOTE: Students taking 4800X/Y.06 must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Lecture/lab 15 hours per week, rehearsals week-ends and Saturdays
PREREQUISITE: THEA 3800X/Y.06, 3810X/Y.06, 3820X/Y.06 and permission of the Acting Faculty
CO-REQUISITE: THEA 4800X/Y.06
THEA 4840X/Y.06: Advanced Performance Techniques.
This fourth-year Acting class is intended to provide production-related instruction that will assist the students with developing skills which can be applied in the DalTheatre season of four productions, as well as in the world of the professional theatre. The students will be instructed in four practical modules, one corresponding to each DalTheatre production. These modules will address different aspects of performance such as audition technique, voice and speech, dance and movement, as well as other theatre or performance-related areas such as stage combat or on-camera audition technique. Each module will take place during a six-week period of intensive in-depth study. The selection of particular modules will vary from year to year, depending on the specific needs of the DalTheatre season. This class will not be offered until academic year 2004/05.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Lab/Lecture: 3 hours
PREREQUISITE: THEA 3800X/Y.06, 3810X/Y.06, 3820X/Y.06 and permission of Department
EXCLUSION: THEA 4800X/Y.06, THEA 4820X/Y.06
CO-REQUISITE: THEA 4800X/Y.06
THEA 4921.03: Special Topics II.
In this seminar class, students focus on a particular topic in dramatic literature, film studies, theatre history, dramatic theory, or a related interdisciplinary subject, and investigate it in great detail. The topic is assigned by the Department at the end of the preceding academic year and is then posted at the Department and in the Faculty's timetable.
FORMAT: Seminar 2 hours
THEA 4931.03: Contemporary Theatre.
This course will deal with the most recent developments in theatre, especially with those post-1970's trends that exercise a broad international influence. Each year, our investigation will begin with a brief look at postmodern theatre and cover topics such as performance art, physical, and postdramatic theatre. The main focus of the course, however, will be dictated by what is currently happening on major stages across the world and may significantly change from one year to another. In the interest of a comprehensive and inclusive approach to the subject, both commercial and experimental theatres will be studied, and we will also examine some relevant works of criticism and theory. Since much of the material required for this course is not yet removed enough from our time to be accessible in scholarly literature, the students should be prepared for alternative methods of research.
FORMAT: Lecture/seminar 3 hours
THEA 4932.03: Cross-Cultural Theatres.
In an increasingly global context, radically different traditions of theatre and performance meet one another on a daily basis. Such encounters can be destructive, resulting in the loss or adulteration of vital forms of performance; they can also be constructive, leading to the enrichment of existing theatres and the creation of new ones. In the first half of this seminar class, we will explore the concepts 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 as question as well as through more traditional academic reading and writing. In the second half of the class, we will use theoretical readings and practical exercises to examine models of theatre that explore the potential relationships between such diverse performance traditions. These models may include post-colonial theatre, intercultural theatre, theatre anthropology and developmental theatre, among others. Through these encounters, the class will strive to give students an increased awareness of the multivalent nature of global performance and to open up critical and practical avenues for theatrical and social development.
FORMAT: Lecture/seminar 3 hours
Faculty of Computer Science

Location: Computer Science Building
6050 University Avenue
Halifax, NS, B3H 1W5
Telephone: (902) 494-2893
Fax: (902) 492-567
Website: www.cs.dal.ca

Dean
Shepherd, M., MSc, PhD (Western)

Associate Dean
McAllister, M., BMath (Waterloo), MSc, PhD (UBC)

Administrative Assistant to the Dean
Publicover, A., BSc, BA (Dalhousie), Telephone: (902) 494-1199

Departmental Secretary—Undergraduate
Mahoney, M., Telephone: (902) 494-5702

Departmental Secretary—Multidisciplinary Programs
Bolivar, A., Telephone: (902) 494-2740

Departmental Secretary—Graduate
Teferra, M., Telephone: (902) 494-6438

I. Introduction

Computer Science is a fundamental multi-disciplinary, high-technology discipline. Computer Science forms an integral and indispensable part of higher education. The Faculty of Computer Science provides high-quality education to our students in all areas of Computer Science and Informatics and conducts excellent research in specific areas of Computer Science, emphasizing major research programs with the support and participation of Industry and Government. Our modern award-winning Computer Science building and state-of-the-art equipment permits Computer Science to conduct primary research in Network Centered Computing, Software Engineering, Health Informatics, Data Mining, Human-Computer Interfaces, Visualization, and Privacy and Security.

The Faculty of Computer Science was formed on April 1, 1997, following the amalgamation of the Technical University of Nova Scotia (TUNS) and Dalhousie University. Its members came from the School of Computer Science at TUNS and the Computing Science Division of the Department of Mathematics, Statistics, and Computing Science at Dalhousie.

Significant growth has occurred in our formative early years. Our graduate and undergraduate programs include imaginative multi-disciplinary programs such as Electronic Commerce, Health Informatics, and Bioinformatics. The most up-to-date information on ongoing programs, ongoing curriculum revision, and general information about the Faculty can be found on our website: www.cs.dal.ca.

II. Academic Regulations

In addition to the regulations below, please see the Academic Regulations section of the calendar.

Workload
A normal class load is five classes during each study term.

Course Selection
The content of every course that students take to meet degree requirements must represent new material: students may not take courses whose content is largely repetitive of, or more elementary than, a course taken earlier on the same topic, without permission of the Faculty.

Of the 40 half-credits required to complete any CS undergraduate degree, at least 20 must be taken from Dalhousie University.

Computer courses in other departments
Computer courses offered by other departments (e.g., COMM 1502.03) cannot be taken for credit in the Faculty’s degree programs without explicit permission of the Faculty of Computer Science.

Grades
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 classes.
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 program. A student who fails more than one co-op work term will be dismissed from the co-op program.

An application for readmission to the program may be considered two terms after dismissal. A student who has been dismissed and who has been required to withdraw from the university for one term or more may be readmitted to a program in the Faculty of Computer Science only once. A readmitted student is considered to be on probation.
I. General Interest Classes

The Faculty offers seven classes that should be of interest to students whose major field of study while at Dalhousie will not be Computer Science. They are:

CSCI 1200.03: Introduction to Computing for Non-Majors.
This is a class of technical computer literacy. Students can expect to learn about computers in a general way and how computers affect the way we live and work. Students will be given an opportunity to become familiar with some of the most common and versatile software, spreadsheets and database applications. Other topics will include the use of the internet, creation of web pages, and simple programming concepts.

CSCI 1201.03: Introduction to Multimedia for the Arts.
This is a class on the general concepts of multimedia. Students can expect to learn the principles of graphics, sound, video, animation and scripting with some of the most common and versatile multimedia programs available. Students will also learn how to develop and create an interactive multimedia project. This class is open to Arts students only.

PREREQUISITE: CSCI 1200.03
CSCI 1204.03: Computer Techniques for Health and Life Sciences.
This class introduces computers as practical problem-solving tools in the health and life sciences at the introductory level. Data analysis and visualization techniques are taught using high-level tools such as spreadsheets and Visual Basic for Applications. Basic computer programming concepts are introduced. This course cannot be taken for credit in Computer Science degree programs.
PREREQUISITE: Nova Scotia Pre-Calculus or Calculus Math or equivalent EXCLUSION: CSCI 1100.03, CSCI 1203.03

CSCI 1205.03: Design and Use of Databases.
CSCI 1205 focuses on practical problem-solving by designing and using relational databases. Case studies and popular single-user database products are used to explore basic database concepts. This is an elective course for students outside Computer Science, and may not be taken for credit by Computer Science students.
PREREQUISITE: CSCI 1200.03 or CSCI 1204.03

CSCI 1206.03: Introduction to Website Creation.
This class introduces students to key web concepts and skills for creating and maintaining websites. The class is intended for students with no formal computer training. Topics include introduction to the web, hypertext markup language (HTML), web-page authoring tools, multimedia foundations, dynamic content and website organization and maintenance. This class cannot be taken for credit in a Computer Science degree.

CSCI 1502.03: Core Business Applications.
See the class description for COMM 1502.03 in the Commerce section of the calendar.
CRO85-LISTINGS COMM 1502.03

CSCI 2201.03: Introduction to Information Security.
Information security is becoming increasingly important in today’s networked world, and is impacting every aspect of our lives including finance, healthcare, government, education, arts and entertainment. The objective of this class is to teach the basic principles of information security from the perspective of providing security awareness and its best practices for the real world. Topics include motivation for security, tools and techniques used by adversaries to gather information and launch attacks, Internet security, firewalls, basics of encryption and authentication, virus protection, secure credit card and bank transactions, wireless security, computer forensics, identity theft and protection, anti-phishing and 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 provided by the Faculty of Computer Science.

II. Degree Programs
A. Academic Regulations
For all variations of the Bachelor of Computer Science degree:
• of the 19 half-credit CSCI courses required at all levels, at least 10 must be within the Dalhousie CSCI course offerings, and
• of the 11 half-credit CSCI courses required at the 3000 and 4000 level, at least 6 must be chosen from Dalhousie CSCI course offerings.

B. Bachelor of Computer Science
1. Bachelor of Computer Science
The following regulations apply to students starting the program in September 2005 or after.

Faculty Requirements
2000 Level
• CSCI 1101.03 Computer Science I
• CSCI 1102.03 Computer Science II

2000 Level
• CSCI 2100.03 Communication Skills: Oral and Written
• CSCI 2110.03 Computer Science III
• CSCI 2122.03 Discrete Structures I
• CSCI 2211.03 Computer Organization with Assembly Language
• CSCI 2132.03 Software Development
• CSCI 2140.03 Data and Knowledge Fundamentals

3000 Level
• CSCI 3101.03 Social, Ethical and Professional Issues in Computer Science
• CSCI 3110.03 Design and Analysis of Algorithms I
• CSCI 3120.03 Operating Systems
• CSCI 3130.03 Introduction to Software Engineering
• CSCI 3136.03 Principles of Programming Languages
• CSCI 3171.03 Network Computing

Other Required Classes:
• MATH 1000.03 Differential and Integral Calculus I
• MATH 1010.03 Differential and Integral Calculus II or CSCI 2113.03 Discrete Structures II
• MATH 2006.03 Matrix Theory and Linear Algebra I
• STAT 2000.03 Introduction to Probability and Statistics I
• One full credit or two half credits of a science class with a lab from a list provided by the Faculty of Computer Science
• One full credit to satisfy the writing requirement
• One half-credit class in humanities or social science at or above the 1000 level
• Two half-credit classes in business, science, or engineering at or above the 2000 level
• One business, science, or engineering half-credit class at or above the 2000 level
• Three half-credit electives of computer science at or above the 4000 level
• Two free half-credit electives at or above the 1000 level
• Seven free half-credit electives at or above the 2000 level

Courses of the form CSCI X2XX, where X is any digit, and CSCI 1502.03 may not be counted towards a Bachelor of Computer Science degree.

2. Bachelor of Computer Science with Honours
The purpose of the Honours program is to provide a more challenging degree program that prepares students for graduate school. The program provides greater rigour and more analytic content than the Bachelor of Computer Science degree.

To enter the Honours program a student must consult with the Honours Student Advisor and obtain the approval of the Faculty of Computer Science.

Each computer science class at or above the 3000 level must be passed with a grade of at least 2.0 (C). The cumulative GPA across all courses must be at least 3.0 (B).

The Honours program may be combined with co-op education.

Faculty Requirements
In addition to the normal requirements of the Bachelor of Computer Science degree, class selection must include nine courses chosen as follows, where X is any digit:
• CSCI 2113.03 Discrete Structures II
• One course from the following list:
  • CSCI 4112.03 Theory of Computation
  • CSCI 4113.03 Analysis of Algorithms II
  • CSCI 4115.03 Topics in Graph Theory
  • CSCI 4116.03 Cryptography
• Either one other course from the CSCI 411X.03 group, or a Mathematics course approved by the Honours Advisor.
• One course from each of 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)
Students who meet these requirements and who obtain a GPA of 3.7 (A-) or higher in all computer science courses will receive the degree Bachelor of Computer Science with Honours.

3. Minors for the Bachelor of Computer Science

Students in the Bachelor of Computer Science program may add a Minor in many subjects from the faculties of Arts and Social Sciences, Management, and Science. Minors in the Faculty of Arts and Social Sciences are available in Classics, English, French, German, History, International Development Studies, Music, Philosophy, Political Science, Sociology and Social Anthropology, Spanish, Theatre, Gender and Women’s Studies. The minor in the Faculty of Management is a minor in Business. Minors in the Faculty of Science are available in Biology, Chemistry, Earth Sciences, Economics, Environmental Programs, Mathematics, Physics, Psychology, and Statistics.

Students who are seeking the requirements for a minor in any of the above subject areas should consult the corresponding department’s section of the undergraduate calendar or www.cs.dal.ca. The minor requirements are in addition to the normal Bachelor of Computer Science requirements. Students wishing to pursue a minor in any of these subjects should consult the relevant department and a Faculty of Computer Science academic advisor.

4. Co-operative Education Programs

All programs in Computer Science have a Co-operative Education option. This requires the completion of three Co-op work terms.

The Co-op office receives requests from employers for Co-op placements and advertises these to qualifying students. Students apply for these positions and are interviewed by the employer.

Students interested in the Co-op program should apply to register for CSCI 8890.00 in their second year.

5. Entry Points to Bachelor of Computer Science

There are three main entry points into the Bachelor of Computer Science program:

1. First-Year Entry: Students are advised to apply directly to the Faculty of Computer Science but may take their classes within the BSc first year and transfer to Computer Science at the beginning of their second year.
2. Applicants who already have some credits at the post-secondary level may apply for entry into an accelerated program. If accepted they may be eligible to enter the third year of the program after one year of study.
3. Students who have completed the requirements of the first two years at the Associated Universities will be able to apply for entry into the third year of the program.

Students who wish to transfer to the Bachelor of Computer Science program from other disciplines may be able to do so, but will have to make up any required classes that are missing. See also the Academic Regulations section for the Faculty of Computer Science on page 30.

6. Accreditation and the Profession

Of particular importance to the Faculty is the accreditation of the undergraduate program by the Computer Science Accreditation Council (CSAC), which is responsible for accreditation of computer science programs in Canada. Accreditation provides our graduates with an accelerated path towards achieving the professional designation of Information Systems Professional of Canada (I.S.P.).

The Bachelor of Computer Science, Bachelor of Computer Science with Honours, and Bachelor of Computer Science with Honours and Co-op are accredited by CSAC.

The co-operative program offers work terms to our students, thus providing an additional link between the Faculty and the Profession.

C. Bachelor of Science and Bachelor of Arts with Computer Science

1. Bachelor of Science Major in Computer Science

The Faculty of Computer Science offers a Bachelor of Science degree with a Major in Computer Science. The program of studies is similar to the Bachelor of Computer Science, but with more flexibility in selection of elective classes. The program may be of benefit for students who want to use it as a basis to enter other professional programs such as Education, Medicine, or Law. However, unlike the Bachelor of Computer Science degree, it does not meet CSAC accreditation requirements. Students interested in this degree option will find further information on the Faculty website at www.cs.dal.ca and should consult with a Faculty advisor.

2. Double Majors and Combined Honours

The following degree programs are available to students interested in interdisciplinary studies where the larger number of majors credits is in Computer Science: Bachelor of Science (20-credit) with Double Major, Bachelor of Science (20-credit) with Combined Honours, Bachelor of Arts (20-credit) Double Major and Bachelor of Arts (20-credit) Combined Honours.

Combined Honours

Students interested in taking honour’s in Computer Science and another subject as a combined program should consult the honours advisor through whom a suitable course of study can be arranged.

A combined honour program may be an appropriate choice for many students. If a student is contemplating graduate work, it should be borne in mind that the work in either subject of a combined honours program may be insufficient for entry to a regular graduate program, and that a qualifying year may be necessary.

Students who wish to arrange interdisciplinary programs (with fields such as Mathematics, Physics, Psychology, and others) are invited to discuss their interests with the appropriate department and the Undergraduate Chair of the Faculty of Computer Science.

D. Bachelor of Informatics

A Bachelor of Informatics program is offered with majors in Bioinformatics, Health Informatics, and Software Systems. Consult the regulations on the Bachelor of Informatics on page 252.

E. Software Engineering

A Bachelor of Software Engineering program is offered jointly with the Faculty of Engineering. Completion of any or all software engineering classes offered by the Faculty of Computer Science does not qualify persons to hold the designation “Professional Engineer” as defined by various Provincial Acts governing the Engineering Profession. Students wishing to pursue formal qualifications in Software Engineering should consider the Bachelor of Software Engineering program as described on page 255.

F. Scholarships

Scholarships and bursaries are available to both new and returning students. See the Awards and Financial Aid section of this calendar.

G. Minor in Computer Science for Non-Computer Science Majors

1. Bachelor of Science (BSc)

The Bachelor of Computer Science is available to students registered in the BSc 20-credit major and honours programs offered by the Faculty of Science. The requirements are as for the appropriate program with the completion of the following classes to fulfill the Computer Science Minor:

- CSCI 1100.03
- CSCI 1101.03
- CSCI 2110.03
- CSCI 3132.03
- Two of CSCI 3110.03, CSCI 3120.03, CSCI 3130.03, CSCI 3136.03 and CSCI 3171.03
CSCI 1100.03: Computer Science I.
This class provides a general introduction to computer science and the hardware and software of computers. The main focus is on programming skills in Java and how to apply these skills in solving a variety of problems. Algorithmic concepts are stressed.
PREREQUISITE: Nova Scotia Pre-Calculus or Calculus Math or equivalent
EXCLUSION: CSCI 1000.03
CSCI 1101.03: Computer Science II.
This class is a continuation of CSCI 1100.03. It focuses on Java programming and linear data structures.
PREREQUISITE: CSCI 1100.03
CSCI 1105.03: Introduction to Computer Programming.
See the class description for INFX 1604.05
EXCLUSION: INFX 1600Y/Y.18, CSCI 1100.03
CSCI 1200.03: Introduction to Computing for Non-Majors.
This is a class of technical computer literacy. Students can expect to learn about computers in a general way and how computers affect the way we live and work. Students will be given an opportunity to become familiar with typical applications of software such as word processors, spreadsheets and database applications. Other topics will include the use of the internet, creation of web pages, and simple programming concepts. No previous computer experience is required. This class is open to Arts and Social Sciences and Health Education students only.
NOTE: This class cannot be counted towards the Bachelor of Commerce or a Minor in Business.
FORMAT: Lecture 3 hours, lab 1.5 hours
CROSS-LISTING: ARSC 1600.03
CSCI 1201.03: Introduction to Multimedia for the Arts.
This is a class on the general concepts of multimedia. Students can expect to learn basic principles of multimedia, animation and scripting with some of the most common and versatile multimedia programs available. Students will also learn how to develop and create an interactive multimedia project. This class is open to arts students only.
PREREQUISITE: CSCI 1200.03
CSCI 1204.03: Computer Techniques for Health and Life Sciences.
This class introduces computers as practical problem-solving tools in the health and life sciences at the introductory level. Data analysis and visualization techniques are taught using high-level tools such as spreadsheets and Visual Basic for Applications. Basic computer programming concepts are introduced. This course cannot be taken for credit in Computer Science degree programs.
PREREQUISITE: Nova Scotia Pre-Calculus or Calculus Math or equivalent
EXCLUSION: CSCI 1100.03, CSCI 1202.03
CSCI 1205.03: Design and Use of Databases.
CSCI 1205 focuses on practical problem-solving by designing and using relational databases. Case studies and popular single-user database products are used to explore basic database concepts. This is an elective course for students outside Computer Science, and may not be taken for credit by Computer Science students.
PREREQUISITE: CSCI 1200.03 or CSCI 1204.03
CSCI 1206.03: Introduction to Website Creation.
This class introduces students to key web concepts and skills for creating and maintaining websites. The class is intended for students with no formal computer training. Topics include introduction to the web, hypertext markup language (HTML), web-page authoring tools, multimedia foundations, dynamic content and website organization and maintenance. This class cannot be taken for credit in a Computer Science degree.
CSCI 1502.03: Core Business Applications.
See the class description for COMM 1902.03 in the Commerce section of this calendar.
CROSS-LISTING: COMM 1902.03
CSCI 2100.03: Communication Skills: Oral and Written.
This class is designed to help students become more successful communicators by examining the communication process from both a theoretical and practical viewpoint. Students learn to formulate communication goals, to examine their audience and to deliver accurate, effective messages. Written assignments and oral presentations allow for the development of these skills through practice. Students ultimately learn to communicate effectively and with confidence in a variety of settings. This class is open only 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 2119.03
EXCLUSION: COMM 2701.03, COMM 1701.03, COMM 1702.03
CSCI 2102.03: Initiating the Technology Venture.
This class addresses the practical issues in preparing to venture. It is targeted primarily at students in the Faculties of Computer Science and Management. The class exposes students, through individual and team work, to the issues and challenges of creating new technical ventures. It provides the opportunity to explore and develop venture ideas of interest to the students. The class includes experiential exercises, exposure to subject matter experts, dialogue with practicing entrepreneurs and practical preparation.
PREREQUISITE: Either CSCI 1101 and CSCI 2110 (co-requisite), or COMM 1010 and COMM 2401 (co-requisite), or MGMT 1000 and MGMT 1001, or permission of the instructor.
EXCLUSION: CSCI 2201.00
CSCI 2110.03: Computer Science III.
This course provides a comprehensive introduction to data structures and algorithms, including their design, analysis, and implementation. In discussing design and analysis there is a strong emphasis on abstraction. In discussing implementation, general approaches that are applicable in a wide range of procedural programming languages are emphasized, in addition to a focus on the details of Java implementations. Topics include an introduction to asymptotic analysis and a review of basic data structures (stacks, queues, lists, vectors), trees, priority queues, dictionaries, hashing, search trees, sorting (MergeSort, QuickSort, RadixSort) and sets, and graph (traversal, spanning trees, shortest paths).
PREREQUISITE: CSCI 1101.03
CSCI 2112.03: Discrete Structures I.
See the class description for MATH 2112.03 in the Mathematics section of this calendar.
CROSS-LISTING: MATH 2112.03
CSCI 2113.03: Discrete Structures II.
See the class description for MATH 2113.03 in the Mathematics section of this calendar.
PREREQUISITE: See Mathematics section
CROSS-LISTING: MATH 2113.03
CSCI 2213.03: 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
CROSS-LISTING: CSCI 2113.03 and CSCI 2132.03
CSCI 2120.03: 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 questions 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 object 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 2120.03

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 RCmpSc. or BSc, with a major in Computer Science.
CROSS-LISTING: INF 2601.03

CSCI 3101.03: Social, Ethical and Professional Issues in Computer Science.
Computers can enable people to do things that our present laws and policies were not formulated to cover (hacking, sharing files on the internet, and companies sharing data). In such cases, people need to be able to decide for themselves the best course of action, and defend such decisions. This course aims at developing the ethical reasoning skills and sensibilities that computer professionals will need to make good decisions and to justify them. The course includes a general introduction to ethical issues 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). See the class description of PHYC 3810.03 in the Physics section of this calendar.
PREREQUISITE: Permission of the instructor
CROSS-LISTING: PHYC 3801.03

CSCI 3130.03: Introduction to Software Engineering.
The class examines the processes of software development, from initial planning through implementation and maintenance. A brief survey of available tools and techniques will be presented covering the topics of analysis, planning, estimating, project management, design, testing, and evaluation. Particular emphasis will be given to organizing and planning, team participation and management, top-down design and structure charts, system and information flow diagrams, walk-throughs and peer review, and testing and quality control.
PREREQUISITE: CSCI 2110.03, CSCI 2120.03, 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 2120.03

CSCI 3136.03: Principles of Programming Languages.
This course provides a comparative study of advanced programming language features. Topics include statement types, data types, variable binding and parameter passing mechanisms. Formal methods for syntactic and semantic description of programming languages are examined.
PREREQUISITE: CSCI 2110.03, CSCI 2121.03, and CSCI 2132.03

CSCI 3140.03: Database Management Systems.
The class provides an introduction to Database Management Systems (DBMSs). It covers various topics such as data models, relational algebra and calculus, SQL DB design, query languages, query optimization, concurrency control and recovery. Assignments and projects will require use of a DBMS.
PREREQUISITE: CSCI 2140.03 or INF 2641.03
EXCLUSION: COMM 3556.05
CO-REQUISITE: CSCI 3201.03

CSCI 3160.03: User Interface Design.
This class deals with concepts and techniques underlying the design of interactive systems. Both human factors and the technical methods of user interface design are covered. Students will learn how to apply various techniques through the design, creation, and testing of a prototype system.
PREREQUISITE: CSCI 2110.03 and CSCI 2120.03
CO-REQUISITE: CSCI 2440.03
CSCI 3161.03: Computer Animation.
The course provides students with a practical foundation in high-level computer animation programming. Through the development of a significant project using industry standard graphics libraries, students will learn proven techniques that have become common currency in the field of computer animation.
PREREQUISITE: CSCI 2110.03, CSCI 2132.03 and MATH 2010.03

CSCI 3171.03: Network Computing.
This class covers advanced techniques for the design and analysis of computer networks. It presents a top-down view of the layered architectural elements of communication systems, focusing on the Internet and TCP/IP. Topics include client/server systems, packet switching, protocol stacks, queuing theory, application protocols, socket programming, remote service calls, reliable transport, UDP, TCP, and security.
PREREQUISITE: CSCI 2110.03, CSCI 2132.03 and STAT 2000.03

CSCI 3172.03: Web-Centric Computing.
This class covers a solid group of core WWW technologies and a conceptual framework for understanding the development of the WWW and working with future web technologies. The course explores interactive and non-interactive web applications built using various technologies and architectural models. We explore the significance of web design and programming concepts in terms of accessibility issues both from the perspective of web robots and end-users. Web caching, proxy techniques, and security issues are also discussed.
PREREQUISITE: CSCI 2140 and CSCI 3171 or INFS 2607 and INFS 2601
CROSS-LISTING: CSCI 3171 may be taken as a co-requisite

CSCI 3190.03: Community Outreach.
A project-oriented class where the result of the project is a real-world implementation that meets the requirements of a community group such as a charity, non-profit organization, or educational institution. Students work in teams on the entire application development life cycle from requirements analysis through to maintenance. Lectures cover a range of topics such as practical application of requirements analysis, systems design, and database design methodological skills developed in prerequisite courses or from prior equivalent experience. This course cannot be counted towards a Bachelor of Informatics degree.
PREREQUISITE: All of CSCI 2100.03, CSCI 2132.03, and CSCI 2140.03, or permission of the instructor

CSCI 3191.03: Community Outreach II.
A project-oriented class where the result of the project is a real-world implementation that meets the requirements of a community group such as a charity, non-profit organization, or educational institution. Students work in teams on the entire application development life cycle from requirements analysis through to maintenance. Lectures cover a range of topics such as practical application of requirements analysis, systems design, and database design methodological skills developed in prerequisite courses or from prior equivalent experience. This course cannot be counted towards a Bachelor of Informatics degree.
PREREQUISITE: CSCI 3190.03 or permission of the instructor

CSCI 4112.03: Theory of Computation.
This is a class on formal languages and computational models. Topics covered include finite automata, pushdown automata, Turing machines, undecidability and recursive and recursively enumerable functions. Some applications to computer science are also discussed such as compiler design and text processing.
PREREQUISITE: CSCI 2112.03 and CSCI 3126.03
CROSS-LISTING: MATH 4666.03

CSCI 4113.03: Design and Analysis of Algorithms II.
This course covers advanced techniques for the design and analysis of efficient algorithms. Problems are taken from a wide range of areas including combinatorics, numerical computation, graph algorithms, string matching, approximation algorithms, computational geometry, and NP-Completeness.
PREREQUISITE: CSCI 3110.03
CROSS-LISTING: MATH 4130.03

CSCI 4114.03: Formal Aspects of Software Engineering.
This class deals with formal specifications of software, techniques for verification of computer programs and software testing.
PREREQUISITE: CSCI 3130.03

CSCI 4115.03: Topics in Graph Theory.
See the class description for MATH 415 in the Mathematics section of this calendar.
PREREQUISITE: See Mathematics section
CROSS-LISTING: MATH 4150.03

CSCI 4116.03: Cryptography.
See the class description for MATH 416 in the Mathematics section of this calendar.
PREREQUISITE: See Mathematics section
CROSS-LISTING: MATH 4160.03

CSCI 4121.03: Advanced Computer Architecture.
The class will focus on the basic principles of computer architecture with an emphasis on quantitative analysis of the effect of architectural design decisions on system performance and the price/performance trade-offs necessary in real computer design. This includes instruction set design issues (URS vs. RISC), instruction level parallelism, implementation methods, pipelining, pipeline hazards, interrupts, the relationship with computer 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.
The class will include the following topics: real time executives, architectures for real time systems, design methods, concurrency and synchronization, resource allocation, error handling and safety issues.
PREREQUISITE: CSCI 3120.03, CSCI 3130.03 and permission of the instructor

CSCI 4125.03: Programming for Performance.
This course explores the design, implementation, and evaluation of computer programs for applications in which performance is a central issue. In the sequential computing setting, it explores topics such as profiling, cache effects, I/O performance, floating point issues, compiler directives and performance tuning. In the parallel computing setting it introduces techniques for the design, implementation and evaluation of programs for both Shared Memory Multiprocessors (SMPs) and Distributed Memory Multi-computer architectures will be used as examples, with emphasis on modern RISC processors.
PREREQUISITE: CSCI 3120.03, CSCI 3130.03 and permission of the instructor

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 2132.03, CSCI 2142.03 and CSCI 3136.03

CSCI 4132.03: Personal Software Process.
This class deals with the Personal Software Process, which is designed to control, manage and improve the way individuals produce software.
PREREQUISITE: CSCI 3130.03

CSCI 4133.03: Application Frameworks.
This class examines the theory and practice of modern application frameworks.
PREREQUISITE: CSCI 3132.03

CSCI 4134.03: Software Architecture.
Software Architecture is an important discipline for designers of software systems. It describes the abstractions, classifies the alternatives, enables tool support, and offers guidance about making choices appropriate to the
This course reviews main concepts in data mining and data warehouses.

CSCI 4135.03: Code Optimization and Generation.
Optimization and code generation are significant and complex elements of a modern optimizing compiler. This class covers intermediate representations, code analysis techniques, potential optimizations, code generation, linking, and loading. The course complements, and is independent of, CSCI 4131.03. It is suitable for any fourth year computer science student who is interested in learning what goes on behind the scenes in today's compilers.
PREREQ: CSCI 3120.03 and CSCI 3130.03

CSCI 4136.03: Software Testing and Quality Assurance.
This class addresses systematic testing for software defects. The purpose of this kind of testing is risk reduction. The course explores risks and techniques for reducing them. Topics include software testing processes in practice, including unit, integration and systems level testing as well as exploratory and regression testing; software testing methods and deliverables; software test tools; managing test technology; and other approaches to software quality assurance.
PREREQ: CSCI 2130.03 and CSCI 3130.03

CSCI 4137.03: Software Deployment, Maintenance, and Evolution.
This class addresses issues arising after the Factory Acceptance Test: deployment, field support, and upgrades. Commercial software products (especially product lines) are delivered to many sites in many versions and are subject to an ongoing schedule of enhancements. Enterprise applications with many users must evolve, may run at different sites, and may require different versions. Topics include technical challenges of rollouts, techniques for maintenance and evolution, and technical challenges of upgrading fielded systems.
PREREQ: CSCI 3130.03

CSCI 4138.03: Empirical Performance Modelling.
This class addresses the testing of actual or simulated systems for quantitative measurement and prediction from empirical models. Topics include motivations for quantitative assessment; measures of load and performance; instrumentation and challenges in measuring attributes of software artifacts; design of experiments for efficiently measuring software; and methods for analysis of observed data and interpretation of results.
PREREQ: CSCI 3130.03 and either ENGM 2022.03 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 hyperlink.
PREREQ: CSCI 2130.03 and CSCI 3140.03

CSCI 4142.03: Multimedia Information Systems.
There are three aspects 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.
PREREQ: CSCI 3120.03 or permission of the instructor. Students should be comfortable in a UNIX environment, with a GUI such as XView or tcl/tk, and with C, C++, or Java.

CSCI 4144.03: Introduction to Data Mining and Data Warehousing.
This course reviews main concepts in data mining and data warehouses including objectives, architectures, algorithms, implementations, and applications. The topics covered include operational information process, decision-oriented information process, data warehousing and On-Line Analytical Processing (OLAP), data mining, association rule mining, classification and prediction and clustering. Selected system tools for data mining and data warehousing are introduced.
PREREQ: CSCI 3140.03

CSCI 4150.03: Introduction to Artificial Intelligence.
The course is an introduction to the automation of intelligent capabilities, including knowledge representation and reasoning (search and logical inference), interpreting, behavior modeling and learning. PREREQ: CSCI 2120.03, CSCI 2140.03, CSCI 3130.03, STAT 2060.03, MATH 200.03, and either MATH 1010.03 or CSCI 2130.03. Students must be in fourth year.
EXCL: CSCI 3150.03

CSCI 4154.03: Opponent Modeling for Computer Gaming.
This class introduces and evaluates various techniques used to provide opponent models for non-player characters (NPC) in a cross-section of computer gaming environments. The course makes a critical survey of computer gaming domains and associated requirements and defines the scope of behavioral modeling. Paradigms for modeling NPC behavioral modeling are then introduced, beginning with widely utilized rule-based methods such as finite state machines, fuzzy logic, and expert systems. The concept of probabilistic decision making is then introduced, where this representation acts as a metaphor for incorporating a prior knowledge while giving the NPC variation in play behaviour. Finally, we review the utility of models based on biological metaphors such as neural networks and evolutionary computation, where these models are increasingly used in a wide range of opponent behavioural modeling contexts.
PREREQ: CSCI 2121.03, CSCI 2132.03, CSCI 2140.03, and STAT 2060.03

CSCI 4160.03: Computer Graphics.
This class presents the theory and mathematical algorithms required to develop and build a graphics package. Emphasis is on either two or three dimensions and the transformations and manipulations necessary to load to animation. The design platform and language are left as a student choice to ensure immediate familiarity and future development advantages.
PREREQ: CSCI 2110.03 and CSCI 3130.03
RECOMMENDED: CSCI 2132.03

CSCI 4163.03: Human-Computer Interaction.
Human-computer interaction deals with human-computer communication and how to facilitate it. This class begins with a discussion of information processing characteristics important to human-computer interaction and formal models of human-computer interaction. Subsequent topics include dialogue techniques, response times and display rates, information presentation, interaction devices, computer training, help systems, computer supported cooperative work, information search and visualization, hypermedia, and the world wide web.
PREREQ: CSCI 3130.03 and CSCI 3160.03

CSCI 4165.03: Digital Media.
This class covers technical aspects of digital media. It will include topics relating to the history and human perception of various media types, as well as digital representation, compression and generation. The forms of media to be covered include text, images, 2D animation, video, sound, and 3D graphics and animation.
PREREQ: CSCI 3130.03

CSCI 4171.03: Networks and Communication.
The primary objective of this class is to give the student a comprehensive understanding and specialized knowledge in the field of computer networks and communications. The class teaches through a systems approach to networks by examining the hardware and protocol components that comprise a network. The class also examines the interactions and interdependencies between protocols. Topics covered in this class include network principles and concepts, transmission
principles, network architecture, routing and routing protocols, direct link networks, wireless networks, internetworking, and emerging network technologies.

**PREREQUISITE:** CSCI 2121.03 and CSCI 3171.03

**RECOMMENDED:** CSCI 3171.03

### CSCI 4174.03: Network Security

Security stands out as a critical issue in the design and deployment of information systems in general, and networks in particular. This class will deal with the design of secure information systems with emphasis on secure networking and secure information transfer. It will also include topical and emerging areas in security such as the establishment of an organization-scale security plan and bio-metric identification systems.

**PREREQUISITE:** CSCI 3171.03

### CSCI 4175.03: Distributed Systems

This class extends the notions of control, synchronization, and coordination of resources to multiple hosts across a network. It presents the challenges associated with distributed systems, revives mechanisms such as naming, interprocess communication, RPC/RMI, and coordination mechanisms that are used to offer distributed services, and discusses the operation of existing distributed services.

**PREREQUISITE:** CSCI 3120.03 and CSCI 3171.03

### CSCI 4180.03: Introduction to Computational Biology and Bioinformatics

This course introduces biology-related applications of computer science. No background in biology is assumed. The topics covered include the following: introductory molecular biology and evolution, genomics, similarity and homology, multiple sequence alignments, phylogenetics, structural bioinformatics and gene expression. The emphasis is on the applications of computer science to biology.

**PREREQUISITE:** CSCI 2132 and STAT 2060

### CSCI 4181.03: Bioinformatics Algorithms.

The discipline of bioinformatics applies sophisticated computational and statistical techniques to problems in the biological domain. This course will focus on a few biosequence-related challenges in depth, examining the complexity and efficiency of different approaches, the relationship between statistical optimality and biological reality, and the consistency (or lack thereof) among methods.

**PREREQUISITE:** CSCI 3110 or permission of the instructor

### CSCI 4190.03: Special Topics in Computer Science.

This class examines topics determined by the interests of the students and the instructor.

**PREREQUISITE:** Permission of the instructor

### CSCI 4192.03: Directed Studies

This class is a study of specific academic subject area not covered in another class offered at Dalhousie University, under close supervision of a faculty member. It typically consists of predetermined readings, discussions with the instructor, and a term paper summarizing the studied material. A specific directed studies class must be approved by the undergraduate chair in consultation with the instructor.

**PREREQUISITE:** CSCI 3110, CSCI 3120, CSCI 3130, CSCI 3136, and CSCI 3171

### CSCI 8871.00: Honours Seminar I.

This is the first of two classes through which students complete their Honours Thesis requirements. Honours students in Computer Science must register for this class, normally in the second-last term of study. Faculty members describe available research projects and each student chooses a supervisor and a project, following a timeline specified by the Honours Coordinator. Students perform the background literature review and carry out most or all of their research. Pass/fail grading applies to this class.

**PREREQUISITE:** Permission of the Honours Coordinator

### CSCI 8872.00: Honours Seminar 2.

This is the second of two classes through which students complete their Honours Thesis requirements. Honours students in Computer Science must register for this class, normally in the last term of study. Under the direction of their supervisors, students complete their research, write their Honours Thesis, and give public presentations on their work. Pass/fail grading applies to this class.

**PREREQUISITE:** CSCI 8871.00

### CSCI 8890.00: Co-op Seminar.

Students in the Bachelor of Computer Science Co-operative Education Program must register for this class, which orients students to the co-op system. Pass/fail grading applies to this class.

**PREREQUISITE:** Permission of the Faculty of Computer Science

### CSCI 8891.00: Co-op Work Term I.

This class is the first work term for students in the Bachelor of Computer Science Co-operative Education Program. Pass/fail grading applies to this class.

**PREREQUISITE:** CSCI 8890.00

### CSCI 8892.00: Co-op Work Term 2.

This class is the second work term for students in the Bachelor of Computer Science Co-operative Education Program. Pass/fail grading applies to this class.

**PREREQUISITE:** CSCI 8891.00

### CSCI 8893.00: Co-op Work Term 3.

This class is the third work term for students in the Bachelor of Computer Science Co-operative Education Program. Pass/fail grading applies to this class.

**PREREQUISITE:** CSCI 8892.00
Informatics

I. Introduction
Informatics is the multidisciplinary study of how people transform technology, and how technology transforms us. It lies at the intersection of people, technology and information systems and focuses on the ever expanding relationship between information and the daily lives of real people, both at home and at work. Informatics helps develop new uses for information technology in order to design solutions that reflect the way people create, use and find information, and it takes into account the social, cultural and organizational settings in which these solutions will be used.

Informatics professionals have very diverse jobs. Some typical activities include:

- assess information needs of organizations
- manage information projects
- solve organizational information flow problems
- make software packages talk to each other
- model the information flows among a group of people
- design innovative user interfaces
- track health care resources
- design professional websites
- improve health care information systems
- develop business solutions
- interface next generation devices

This new degree program is offered by the Faculty of Computer Science in collaboration with the Faculty of Arts and Social Sciences, the Faculty of Health Professions, and the Faculty of Science, and offered in partnership with the Faculty of Medicine for the major in Health Informatics. The Bachelor of Informatics learning environment is patterned after the future workplace: you work to find new solutions that reflect the information needs of the real world - socially, culturally, and in real organizations.

In the Bachelor of Informatics you join a team of your fellow students in an exciting new integrated studies program where you see the links between disciplines. Professors from different departments teach as a team. You see the big concepts that unite computer science, math, the humanities, the arts, and the sciences.

II. Degree Programs

A. Bachelor of Informatics

1. Program Structure
Integrated Studies courses are taken by all Bachelor of Informatics students, regardless of major. They account for 20-40% 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 program in year 2 take other specified courses instead of the first year integrated course.

Major courses are traditional courses in your chosen area where you apply information technology. Technology is not used in isolation - the application occurs in the context of a human undertaking, and professionals need to have a deep understanding of that context. You choose a major area of study which is an application area of Information Technology. Currently there is a choice of three majors: Bioinformatics, Health Informatics, and Software Systems. Students should consult with the Faculty of Computer Science for details on other options that are being developed.

Elective courses are any eight courses of your own choosing, although no more than four may be at the 1000 level. The electives allow you to explore possible specializations and to follow personal interests.

The co-operative education program is a mandatory component of the Bachelor of Informatics. Students are required to complete three co-op work terms as part of their bachelor degree.

The co-op office receives requests from employers for co-op placements and advertises these to qualifying students. Students apply for these positions and are interviewed by the employer.

Co-op work terms are scheduled after terms 5, 6 and 7. The normal academic sequence of terms follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
<th>Term 4</th>
<th>Term 5</th>
<th>Term 6</th>
<th>Term 7</th>
<th>Term 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AT1</td>
<td>AT2</td>
<td>FREE</td>
<td>FREE</td>
<td>FREE</td>
<td>FREE</td>
<td>FREE</td>
<td>FREE</td>
</tr>
<tr>
<td>2</td>
<td>AT3</td>
<td>AT4</td>
<td>FREE</td>
<td>FREE</td>
<td>FREE</td>
<td>FREE</td>
<td>FREE</td>
<td>FREE</td>
</tr>
<tr>
<td>3</td>
<td>WT1</td>
<td>AT5</td>
<td>WT2</td>
<td>FREE</td>
<td>AT7</td>
<td>WT3</td>
<td>FREE</td>
<td>FREE</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>FREE</td>
<td>FREE</td>
<td>FREE</td>
<td>FREE</td>
<td>FREE</td>
<td>FREE</td>
<td>FREE</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>WT1</td>
<td>AT7</td>
<td>WT3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. General Requirements
• INFX 1600.03 Introduction to Information Security
• INFX 2401.03 Introduction to Databases
• INFX 3000.03 Project 1
• INFX 3050.03 Project 2
• INFX 3400.03 Software Engineering and Project Management
• INFX 4000.03 Project 3
• INFX 4601.03 Project 4
• CSCI 3160.03 User Interface Design
• CSCI 3172.03 Web-Centric Computing
• HAHP 3100.03 Research Methods (or equivalent)

Each work term includes:
• 6 full credits in credits specified by the major
• 2 full credits of free electives at or above the 1000 level
• 2 full credits of free electives at or above the 2000 level

Completion of these co-op work terms must include:
* Neither CSCI 3391.03 nor CSCI 3391.05 can be counted towards a Bachelor of Informatics degree.

3. Major in Bioinformatics

The Major in Bioinformatics fulfills the general Bachelor of Informatics requirements and must include the following courses:

• BIOL 1011.03 Principles of Biology Part II
• BIOL 2011.03 Genetics and Molecular Biology Application of Probability Theory to Biology
• CSCI 1101.03 Computer Science I
• CSCI 2123.05 Software Development
• CSCI 4180.03 Introduction to Computational Biology and Bioinformatics
• MATH 1000.03 Differential and Integral Calculus I
• MATH 2000.03 Matrix Theory and Linear Algebra I
• STAT 2060.03 Introduction to Probability and Statistics I

One full credit of biology, statistics, mathematics, or computer science classes at or above the 3000 level.

4. Major in Health Informatics

The Major in Health Informatics follows the general Bachelor of Informatics requirements and must include the following courses:

• HAHP 1000.03 Introduction to Health, Health Promotion and Health Professions
• HSHE 4000.03 Canadian Healthcare System
• HINF 1100.03 Introduction to Health Informatics
• HINF 2100.03 Health Information Flow and Management
• HINF 2501.03 Clinical Processes and Decision Making 1
• HINF 2502.03 Clinical Processes and Decision Making 2
• HINF 301.03 Health Data Standards and Terminologies
• HINF 302.03 Medical Coding
• HINF 3000.03 Healthcare Decision Support Systems
• HINF 4010.03 Healthcare Enterprise Information Systems
• HINF 4012.03 Inquiry in Health Informatics
• HSCE 2000.03 Healthcare Ethics
The purpose of HINF 2501 is to enable health informatics students to communicate effectively with clinicians by developing an understanding of the purposes of health care, how clinicians and patients make decisions about care (including diagnostic strategies for common ailments and choosing appropriate treatment options), and how care processes take place in various health care settings. Students will be better able to support clinical decisions through information and technology management when they understand these basic processes.

HINF 2502.03: Clinical Processes and Decision Making 2.
This class is a continuation of HINF 2501.03.
PREREQUISITE: HINF 2501.03

HINF 3101.03: Health Data Standards and Terminologies.
To work with healthcare documentation, health informatics professionals need to know how health data is classified or grouped, and how it is encoded in machine readable representation for electronic manipulation. The purpose of this class is to give students an understanding of how health data is encoded for storage and access, and how messages are designed for various tasks and information systems. Students develop competence in using health data terminologies (vocabularies with examples such as XML, CDA, DICOM, SNOMED, and UMLS).
PREREQUISITE: HINF 2501.03

HINF 3102.03: Medical Coding.
This class familiarizes students with basic medical/health record coding systems and principles for transforming verbal descriptions of disease, injury, and procedures within medical documentation into numeric medical codes. The class introduces students to different medical coding systems, in particular ICD, CPT and HCPCS codes. The class provides the theory of medical classification as well as opportunities to develop practical skills in health record coding. This class also prepares students for health record administration and management tasks.
PREREQUISITE: HINF 2501.03

HINF 3500.03: Healthcare Decision Support Systems.
This class focuses on the organization of information that supports healthcare decision making for care givers/providers, and the electronic systems that provide access to this information. Four kinds of systems are examined: knowledge based systems, evidence based systems, guideline based systems (using primarily clinical practice guidelines or CPGs), and data driven systems. Emphasis is on supporting decision making by providers that is based on best evidence of effectiveness.

HINF 4100.03: Healthcare Enterprise Information Systems.
The objectives of this class is to familiarize students with healthcare enterprise IT systems for patient support; clinical care and decision support; diagnostic processes (e.g. laboratory, diagnostic imaging systems), and administrative processes and decision support. Emphasis on how information flows within and among different systems and how enterprise-wide information systems are integrated for overall decision support are also included.
PREREQUISITE: HINF 2501.03, INFX 2640.03

HINF 4102.03: Inquiry in Health Informatics.
The purpose of this class is to help students to integrate what they have learned to date about health informatics, through independently researching a relevant question of their own design. In this independent learning class, held during the second semester of fourth year, students choose a problem or issue in health informatics to study holistically in a societal context; develop responses; prepare presentations for the class group and write discussion papers. The emphasis is on inquiry, holistic thinking, synthesis, and communication skills.
PREREQUISITE: INF 3090.03

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
Informatics Faculty of Computer Science

management and negotiation. The learning experience includes group projects and activities as well as lectures and labs. Communication skills are strongly emphasized.

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

PREREQUISITE: Registration in the Bachelor of Informatics program or permission of the Director of Informatics

EXCLUSION: INFX 1601.06, INFX 1604.03, CSCI 1100.03, CSCI 2112.03, STAT 1080.03

**INFX 1601X/Y.06: Quantitative Foundations of Informatics.**

This class introduces students to elements of discrete structures, probability, and statistics in preparation for further studies in Informatics. The class is intended for students who are entering the Bachelor of Informatics program in year 2 with advanced standing, and consists of the mathematics component of INFX 1600.

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

PREREQUISITE: Permission of the Director of Informatics

EXCLUSION: INFX 1600.18, CSCI 2112.03, STAT 1080.03

**INFX 1604.03: Introduction to Computer Programming.**

This class gives a general introduction to computers and computer programming using a scripting language such as Python.

CROSS-LISTING: CSCI 1105.03

**INFX 2600X/Y.12: Integrated Informatics Studies: Structures.**

This class explores more advanced topics in informatics by building on the foundations of INFX 1600.

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

PREREQUISITE: INFX 1600.18 or permission of the Director of Informatics

**INFX 2601.03: Introduction to Information Security.**

Information security is becoming increasingly important in today’s networked world, and is impacting every aspect of our lives including finance, healthcare, government, education, arts, and entertainment. The objective of this class is to teach the basic principles of information security from the perspective of providing security awareness and its best practices for the real world. Topics include motivation for security, tools and techniques used by adversaries to gather information and launch attacks, Internet security, firewalls, basics of encryption and authentication, virus protection, secure credit card and bank transactions, wireless security, computer forensics, identity theft and protection, anti-phishing and biometric security. This class is open to any students except those registered in the B.Com.Sc. or the B.Sc. with a major in Computer Science.

CROSS-LISTING: CSCI 2201.03

**INFX 2640.03: Use and Design of Databases.**

This class focuses on practical problem-solving by designing and using relational databases. Case studies and popular single-user database products are used to explore basic database concepts.

**INFX 3600.03: Project 1.**

In this class students work in project teams to solve a practical informatics problem. Team members are drawn from all years of study. The project gives students an opportunity to develop their technical and professional skills.

PREREQUISITE: INFX 2600.12, INFX 2601.03, INFX 2640.03

**INFX 3601.03: Project 2.**

This class is a continuation of 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.

**INFX 3690.03: Research Methods.**

Organizational needs for information may not be known a priori, and may need to be established by surveys. This class prepares students to conduct research requiring measurement, sampling, and data analysis and reporting. It also deals with ethical issues and research design.

**INFX 4600.03: Project 3.**

This class is a continuation of INFX 3601.03

**INFX 4601.03: Project 4.**

This class is a continuation of INFX 4600.03
Software Engineering

I. Introduction

The Bachelor of Software Engineering programme is jointly offered by the Faculty of Computer Science and the Faculty of Engineering.

Software Engineering is about the tools and techniques, theories and practices to make the development, support and evolution of software a viable business.

Software has a role in almost every domain of human endeavor. Software Engineering is not about what the software does - that is the responsibility of the domain - rather software engineering is about how the software should be developed, supported and evolved. This makes Software Engineering quite different from other branches of engineering (e.g. Aeronautical, Petroleum) where the domain of application is central.

While many people with different backgrounds produce software, the study of software engineering concerns how the design, production and support of software can be improved. Moreover, any successful software by definition survives over time, and it is normal for the environment to change during that time, so that well-designed software must meet new expectations, exploit new technology, and satisfy new requirements. Thus for a viable business, good initial design and implementation are not sufficient - better strategies for ongoing maintenance and evolution are also critical.

What does improved and better mean? The practitioner wants to know:

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 elevating 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 this is that software engineering being multidisciplinary is the role that other disciplines play in the process of building and supporting software.

Software development and computer engineering- obviously contribute substantially to the technical base of the Software Engineering 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-operative 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>FT1</td>
</tr>
<tr>
<td>Year 4</td>
<td>WT2</td>
<td>AT7</td>
<td>AT3</td>
</tr>
<tr>
<td>Year 5</td>
<td>AT8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Students who have successfully completed the requirements for the degree of Bachelor of Software Engineering Programme do not follow the Common Year 1 programme outlined in the calendar for the other engineering programmes.

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**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 1100.03</td>
<td>Introduction to Computer Science</td>
</tr>
<tr>
<td>CSCI 1201.03</td>
<td>Computer Organization</td>
</tr>
<tr>
<td>MATH 1000.03</td>
<td>Calculus I</td>
</tr>
<tr>
<td>PHYS 1000.03</td>
<td>Physics I</td>
</tr>
<tr>
<td>STAT 1000.03</td>
<td>Statistical Methods for Engineers</td>
</tr>
</tbody>
</table>

**Year 2**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 2101.03</td>
<td>Data Structures</td>
</tr>
<tr>
<td>CSCI 2201.03</td>
<td>Introduction to Computer Organization</td>
</tr>
<tr>
<td>CSCI 2302.03</td>
<td>Software Development</td>
</tr>
<tr>
<td>CSCI 3101.03</td>
<td>Introduction to Software Engineering</td>
</tr>
<tr>
<td>CSCI 3201.03</td>
<td>Digital Circuits</td>
</tr>
<tr>
<td>CSCI 3301.03</td>
<td>Digital Logic Design</td>
</tr>
</tbody>
</table>

**Year 3**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 3401.03</td>
<td>Programming Languages</td>
</tr>
<tr>
<td>CSCI 3501.03</td>
<td>Computer Architecture</td>
</tr>
<tr>
<td>CSCI 3601.03</td>
<td>Operating Systems</td>
</tr>
<tr>
<td>CSCI 3701.03</td>
<td>Computer Networks</td>
</tr>
<tr>
<td>CSCI 3801.03</td>
<td>Computer Security</td>
</tr>
</tbody>
</table>

**Year 4**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 4101.03</td>
<td>Software Engineering Design</td>
</tr>
<tr>
<td>CSCI 4201.03</td>
<td>Software Engineering Testing</td>
</tr>
<tr>
<td>CSCI 4301.03</td>
<td>Software Engineering Management</td>
</tr>
<tr>
<td>CSCI 4401.03</td>
<td>Software Engineering Economics</td>
</tr>
<tr>
<td>CSCI 4501.03</td>
<td>Software Engineering Law</td>
</tr>
</tbody>
</table>

**Year 5**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 4601.03</td>
<td>Software Engineering Case Studies</td>
</tr>
<tr>
<td>CSCI 4701.03</td>
<td>Software Engineering Research Project</td>
</tr>
<tr>
<td>CSCI 4801.03</td>
<td>Software Engineering Internship</td>
</tr>
<tr>
<td>CSCI 4901.03</td>
<td>Software Engineering Capstone Project</td>
</tr>
</tbody>
</table>

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.

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>FT1</td>
</tr>
<tr>
<td>Year 4</td>
<td>WT2</td>
<td>AT7</td>
<td>AT3</td>
</tr>
<tr>
<td>Year 5</td>
<td>AT8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>--------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECED 2400.03</td>
<td>System Analysis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENGM 2022.03</td>
<td>Eng. Math. For Software Eng</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENGM 2032.03</td>
<td>Applied Probability &amp; Statistics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENGM 2041.03</td>
<td>Linear Algebra</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 2112.03</td>
<td>Discrete Structures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSYO 2130.03</td>
<td>Intro to Cognitive Psych</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Year 3

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 3110.03</td>
<td>Algorithm Analysis</td>
</tr>
<tr>
<td>CSCI 3120.03</td>
<td>Operating Systems</td>
</tr>
<tr>
<td>CSCI 4163.03</td>
<td>Human Computer Interaction</td>
</tr>
<tr>
<td>CPST 3000.03</td>
<td>Communication</td>
</tr>
<tr>
<td>CPST 3020.03</td>
<td>Engineering in Society 1</td>
</tr>
<tr>
<td>ECED 3240.03</td>
<td>Microprocessors</td>
</tr>
<tr>
<td>ECED 3402.03</td>
<td>Real Time Systems</td>
</tr>
<tr>
<td>IENG 3013.03</td>
<td>Analysis and Design of Work</td>
</tr>
<tr>
<td>IENG 3443.03</td>
<td>Quality Control &amp; Reliability</td>
</tr>
<tr>
<td>IENG 4529.03</td>
<td>Industrial &amp; Organizational Psych</td>
</tr>
<tr>
<td>IENG 4547.03</td>
<td>Company Operations &amp; Mgmt</td>
</tr>
<tr>
<td>IENG 4558.03</td>
<td>Project Mgmt &amp; Control</td>
</tr>
</tbody>
</table>

### Year 4

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 4114.03</td>
<td>Formal Aspects of Software Eng</td>
</tr>
<tr>
<td>CSCI 4134.03</td>
<td>Software Architecture</td>
</tr>
<tr>
<td>CPST 3030.03</td>
<td>Engineering in Society 2</td>
</tr>
<tr>
<td>ECED 4404.03</td>
<td>Computer Nets and Comm</td>
</tr>
<tr>
<td>IENG 4574.03</td>
<td>Decision and Risk Analysis</td>
</tr>
<tr>
<td>CSCI 4136.05</td>
<td>Software Testing and Quality Assurance</td>
</tr>
<tr>
<td>CPST 4000.03</td>
<td>Software Processes and Tools</td>
</tr>
<tr>
<td>CSCI 4137.05</td>
<td>Software Deployment, Maintenance, and Evolution</td>
</tr>
<tr>
<td>CSCI 4138.05</td>
<td>Empirical Performance Modeling</td>
</tr>
</tbody>
</table>
Faculty of Engineering

Director, Core Program
Little, T.A., BScEng (UNB), MEng (Memorial), PhD (UNB)
Location: Room 326, Sir James Dunn Building, Halifax, NS B3H 3J5
Telephone: (902) 494-2581/494-2344
Fax: (902) 494-2581

Associate Dean, Graduate Studies and Research
Satish, M.G., BSc, BEng (McGill), MEng, PhD (Concordia), PEng
Location: Room A109, Sexton Campus
Telephone: (902) 494-6199
Fax: (902) 494-2911

Assistant Dean, Student Affairs
Watts, K.C., BSA, MSc (Guelph), PhD (Wat), PEng
Location: Room A109, Sexton Campus
Telephone: (902) 494-6199
Fax: (902) 494-2911

I. Engineering as a Profession

Engineering is an improving profession. Virtually all aspects of modern life are involved with this fascinating discipline. Engineering education at Dalhousie is demanding, because the engineering profession is demanding. Society expects its technical problem solvers to offer answers to some of the most difficult questions around. Questions related to the environment, productivity, information technology, communications, transportation, and more. In general, the engineering enterprise contributes not only to human welfare, but also to the sustainable development of our resources. Engineering education provides great rewards for the engineer of the future. Specifically, there is the personal satisfaction of following a career where one’s personal expertise can benefit fellow humans and contribute to the making of a better world.

The Faculty of Engineering at Dalhousie University prepares its students with the problem-solving skills needed for lifelong exploration in a field that answers some of today’s most pressing concerns. The Faculty of Engineering has an excellent tradition of providing engineering education for students in the Atlantic Provinces that started in 1907 with the founding of the Nova Scotia Technical College. Our graduates occupy many important positions throughout Canada and in many other countries.

The Faculty of Engineering offers undergraduate curricula leading to the degree of Bachelor of Engineering in the following disciplines:
- Biological Engineering
- Chemical Engineering
- Civil Engineering
- Computer Engineering
- Electrical Engineering
- Environmental Engineering
- Industrial Engineering
- Materials Engineering
- Mechanical Engineering
- Mineral Resource Engineering
- Software Engineering

The Bachelor of Software Engineering program is jointly offered by the Faculty of Computer Science and the Faculty of Engineering.

The Faculty also offers a BSc in Food Science, and post-graduate studies at the master's and doctoral level.

The preparation for an engineering career includes both formal academic studies at a university and intensive training in the practice of engineering. A similar pattern is to be found in preparation for careers in medicine or law, and is characteristic of any development of professional competence. The Co-operative Engineering program in the Faculty of Engineering provides a completely integrated pattern of academic study and industrial experience in various phases of engineering with ultimate graduation requiring satisfactory performance in both areas. All programs are offered in a co-operative format. Engineering disciplines offering co-operative programs schedule work periods in industry at various times of the year. This sequencing may vary according to the discipline, details of which are outlined in the curricula in this calendar.

All students in the upper division of the engineering degree program are eligible to apply for the co-op program. Permission to participate in the placement process requires that a student be in good standing, in accordance with University Regulations. Students are also required to complete the Professional Development Workshop at the beginning of the study term preceding the work term. All co-op program students must be properly registered and pay the appropriate co-op program fees. For other regulations pertaining to the co-op program, please refer to the Faculty Working Rules which are available on the web.

The degree program covers almost five calendar years, comprising eight or nine terms (depending on the area of specialization) each consisting of about four months’ duration of university work on campus which are pursued alternately with four-month terms of supervised training in the practical experiences fundamental to the development of the graduate engineer. In a typical program of study, the total time spent in academic study is the same as that encountered in the usual class of four academic years.

Graduation from the University is only the introduction to an engineering career, and the beginning of a lifelong learning experience. After completion of formal studies leading to the Bachelor of Engineering degree, and being admitted as an Engineer in Training (EIT) by an Association of Professional Engineers in Canada, four years of suitable experience are required as a condition of admission to the profession of Engineering.
The practice of engineering is regulated, by statute, in all Canadian provinces and territories. To become a Professional Engineer you must satisfy the requirements of the licensing bodies. These requirements include: a degree from an accredited program, successful completion of a professional practice (law and ethics) examination, and suitable experience. Accreditation of the degree programs by the CEAB is the mechanism by which graduates qualify for registration as Professional Engineers without the need to undertake additional examinations in specific technical subject areas. The B.Eng. programs described in this calendar have been specifically designed to satisfy the criteria of the Profession and are evaluated regularly by the Canadian Engineering Accreditation Board (CEAB) of the Canadian Council of Professional Engineers. The Faculty will not graduate any student who does not meet these requirements because this would jeopardize accreditation for the program. The department responsible for the appropriate program will use these requirements in determining the suitability of student elective class selections. The baccalaureate programs in all disciplines are accredited by the Canadian Engineering Accreditation Board.

II. Degree Programs

A. Undergraduate

1. Engineering

1.a Bachelor of Engineering
Students who have successfully completed the academic study program in any of the disciplines will be granted the degree of Bachelor of Engineering.

1.b Bachelor of Engineering with Distinction
Students who have successfully completed the requirements for the degree of Bachelor of Engineering, and have obtained a Cumulative Grade Point average of at least 3.7, will be granted the degree of Bachelor of Engineering with Distinction.

1.c Bachelor of Engineering with Sexton Distinction
Dr. F.H. Sexton was the President of the Nova Scotia Technical College since its establishment in 1909 until his retirement in 1947. To honour his contributions, the Faculty of Engineering awards the designation of Sexton Distinction to each undergraduate student who has taken a full class load and obtained a Cumulative Grade Point Average of at least 3.85 or higher with no failed marks during their program beginning in Academic Term 5.

1.d Co-operative Program Designation
Students who have successfully completed the requirements for the degree of Bachelor of Engineering and who, in addition, have successfully completed three 4-month work terms, each of a minimum of 14 weeks, with a minimum of 35 hours per week, or equivalent as determined by the Department and the Co-op office, will receive the "Co-operative Program" designation on their degree.

1.e Diploma of Engineering
Students who have successfully completed the academic study program in the first four terms in any of the disciplines will be granted the Diploma of Engineering.

1.f Combined Diploma of Engineering/Bachelor of Science
Students may register in a combined Bachelor of Science/Bachelor of Engineering program. Those who successfully complete the requirements as outlined in the Concurrent Programs sections on page 70 will be awarded the Diploma in Engineering and the 15 credit Bachelor of Science Degree.

2. Software Engineering
Students who have successfully completed the academic study program in this discipline will be granted the degree of Bachelor of Engineering.

3. Food Science
Bachelor of Applied Science
This is a standard 20-credit curriculum. Consult the Food Science and Technology section (page 284).

B. Graduate

1. Master of Applied Science
Students who have successfully completed the class requirements for the degree and who have submitted and defended orally an acceptable thesis, will be awarded the degree of Master of Applied Science.

2. Master of Engineering
Students who have successfully completed the class requirements for the degree and submitted an acceptable project report, will be awarded the degree of Master of Engineering.

3. Masters of Engineering (Internetworking)
This is a ten month plus internship/project interdisciplinary Master’s Degree program focused on the theory and technology of the Internet. This program has been designed to prepare individuals to play an active role in the rapidly expanding field of Internetworking. Students who complete the prescribed ten classes and a project class will be awarded the MEng (Internetworking).

4. Master of Science
Students who have successfully completed the class requirements for the degree in Engineering Mathematics or Food Science and who have submitted and defended orally an acceptable thesis or project report, shall be awarded the degree of Master of Science.

5. Doctor of Philosophy
Students who have successfully completed the class requirements for the PhD degree, passed their comprehensive examination, and submitted and defended orally a satisfactory thesis, will be awarded the degree of Doctor of Philosophy.

288 Faculty of Engineering
Engineering

Location: Room A109, Sexton Campus
Halifax, NS B3H 3J5
Fax: (902) 429-3011
Telephone: (902) 494-2580

Dean
Leon, L.J., BSc, MSc, PhD (Dal), PEng

Associate Dean, Undergraduate Studies and Associated Universities

cyk, J.P., BSc (Eng), EUWEL, MAsc, PhD (TUNS), PEng

Section Location: Room A109, Sexton Campus
Halifax, NS B3H 3J4
Fax: (902) 494-6084
Telephone: (902) 494-6109

Fic: (902) 429-3011

Study: Location: Room 326
Sir James Dunn Building
Halifax, NS B3H 3J5

Fax: (902) 494-2581
Telephone: (902) 494-2581

Associate Dean, Graduate Studies and Research
Satish, M.G., BSc, BEC, Eng (My), MEng, PhD (Concordia), PEng

Region Location: Room A109, Sexton Campus
Halifax, NS B3H 3J4
Fax: (902) 494-3250
Telephone: (902) 494-3249

Assistant Dean, Student Affairs
Watts, K.C., BSA, MSc (Guelph), PhD (Wat), PEng

Region Location: Room 326
Sir James Dunn Building
Halifax, NS B3H 3J5
Fax: (902) 494-6084
Telephone: (902) 494-6084

Assistant Dean, Planning
Kuzak, S.G., BEng, MEng (McGill), PhD (TUNS), PEng

Region Location: Room F214, Sexton Campus
Halifax, NS B3H 3J4
Fax: (902) 494-2581
Telephone: (902) 494-2581

Director, Core Program
Little, T.A., BScEng (UNB), MEng (Memorial), PhD (UNB)

Region Location: Room 326
Sir James Dunn Building
Halifax, NS B3H 3J5
Fax: (902) 494-2581
Telephone: (902) 494-2581

I. Engineering as a Profession

Engineering is an important profession. Virtually all aspects of modern life are involved in 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 society. Engineering education provides great rewards for the engineer of the future. Specifically, there is the personal satisfaction of following a career where one’s personal expertise can benefit fellow humans and contribute to the making of a better world.

The Faculty of Engineering at Dalhousie University prepares its students with the problem-solving skills needed for lifelong exploration in a field that answers some of today’s most pressing concerns. The Faculty of Engineering has an excellent tradition of providing engineering education for students in the Atlantic Provinces that started in 1987 with the founding of the Nova Scotia Technical College. Our graduates occupy many important positions throughout Canada and in many other countries.

The Faculty of Engineering offers undergraduate curricula leading to the degree of Bachelor of Engineering in the following disciplines:

- Biological Engineering
- Chemical Engineering
- Civil Engineering
- Computer Engineering
- Electrical Engineering
- Environmental Engineering
- Industrial Engineering
- Materials Engineering
- Mechanical Engineering
- Mineral Resource Engineering
- Software Engineering

The Bachelor of Software Engineering program is jointly offered by the Faculty of Computer Science and the Faculty of Engineering.

The Faculty also offers a Bachelor of Applied Science in Food Science, and post-graduate studies at the master’s and doctoral level.

The preparation for an engineering career includes both formal academic studies at a university and intensive training in the practice of engineering. A similar pattern is to be found in preparation for careers in medicine or law, and is characteristic of any development of professional competence. The Co-operative Engineering program in the Faculty of Engineering provides a completely integrated pattern of academic study and industrial experience in various phases of engineering with ultimate graduation requiring satisfactory performance in both areas. All programs are offered in a co-operative format. Engineering disciplines offering co-operative programs schedule work periods in industry at various times of the year. This sequencing may vary according to the discipline, details of which are outlined in the curricula in this calendar.

All students in the upper division of the engineering degree program are eligible to apply for the co-op program. Permission to participate in the placement process requires that a student be in good standing, in accordance with University Regulations. Students are also required to complete the Professional Development Workshop at the beginning of the study term preceding the work term. All co-op program students must be properly registered and pay the appropriate co-op program fees. For other regulations pertaining to the co-op program, please refer to the Faculty Working Rules which are available on the web.

The degree program covers almost five calendar years, comprising eight or nine terms (depending on the area of specialization) each consisting of about four months’ duration of university work on campus which are pursued alternately with four-month terms of supervised training in the practical experiences fundamental to the development of the graduate engineer. In a typical program of study, the total time spent in academic study is the same as that encountered in the usual class of four academic years.

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 body. These requirements include a degree from an accredited program, successful completion of a professional practice (law and ethics) examination, and suitable experience. Accreditation of the degree programs by the CEAB is the mechanism by which graduates qualify for registration as Professional Engineers without the need to undertake additional examinations in six specific technical subject areas. The BEng programs described in this calendar have been specifically designed to satisfy the criteria of the Profession and are evaluated regularly by the Canadian Engineering Accreditation Board (CEAB) of the Canadian Council of Professional Engineers. The Faculty will not graduate any student who does not meet these requirements because this would jeopardize accreditation for the program. The department responsible for the appropriate program will use these requirements in determining the suitability of student elective class selections. The baccalaureate programs in all disciplines are accredited by the Canadian Engineering Accreditation Board.

II. The Associated University Program

Students who have completed the degree requirements for a Diploma of Engineering or a Certificate of Applied Science from one of the Associated Universities are admissible to the Upper Division in the Faculty of Engineering. Admission to specific programs is competitive and is based on the students' academic standing. The Associated Universities are:

- Acadia University
- Cape Breton University
- Dalhousie University
- Mount Allison University
- Saint Mary's University
- St. Francis Xavier University
- University of Prince Edward Island
- University of New Brunswick
- University of Newfoundland
- University of Nova Scotia
- University of Saint Mary's
- University of Saskatchewan
- Wilfrid Laurier University
- University of Waterloo
- University of Western Ontario

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' Committee on Engineering Education. The program at each Associated University contains classes fulfilling the minimum entrance requirements established by the Senate of Dalhousie University. Students who complete the applied science or engineering program at an Associated University may receive a Certificate or Diploma and are normally admitted to the program in Biological, Chemical, Civil, Computer, Electrical, Environmental, Industrial, Materials, Mechanical, or Mineral Resource at Dalhousie University without examination. Students should ensure that their class selection at the Associated Universities include the discipline specific classes relevant to their program of choice. Not all Associated Universities offer all discipline specific classes, and students should contact the office of the Associate Dean, Faculty of Engineering at the Stavely location, for details. Students who have completed equivalent university studies elsewhere may also be admitted subject to Dalhousie University Regulations.

Please refer to the Graduate/Professional Calendar for details of graduate programs offered by the Faculty of Engineering.

III. Academic Regulations

Students are reminded that the academic regulations stated in the calendar are abridged for reference. In addition to the Academic Regulations section of this calendar and the regulations stated below, the current Faculty of Engineering Working Rules also apply to all students, and are available to students on the Web.

Classes on Letters of Permission

The academic program for a student will normally contain a maximum of two courses on a letter of permission.

Class Grades

A student must achieve a grade of D or greater in each class of the curriculum and satisfy the regulations set out herein in order to graduate. Where Faculty regulations permit, a student who achieves a grade of FM in a required class may write a supplementary examination to attempt to raise the grade to D or greater. If the grade is not raised to at least D by means of a supplementary examination or if a supplementary examination is not permitted the student must repeat the class. See also Supplements, page 268.

A student is permitted to repeat a failed mandatory class only once. In the case of a failed elective class, a student may choose either to repeat the class or to substitute another elective class in lieu of the failed class. In the case of a substituted class only one such substitution is allowed. A student will be required to withdraw if the grade achieved in the repeated mandatory class or the repeated elective class or the substituted class is less than D.

Readmission After Required Withdrawal

A student who has been required to withdraw only once from the program may apply to be readmitted to the same program after a minimum of eight (8) months from the time of withdrawal, or, such a student may apply to be admitted to a different program starting immediately. Readmission may be granted by the Faculty on the recommendation of the Department concerned. A department may readmit a student who has been required to withdraw, subject to special academic conditions set by the department, which are based on an evaluation of the student's academic record by the department. See also Academic Dismissal, page 39.

Scholarships

Only those students who are registered for a full load of classes as measured by the curriculum of the program concerned will be eligible for scholarships and awards in the Faculty of Engineering.

Supplementary Examinations

Supplementary examinations may be offered to students in order (1) to raise a class grade to at least D, (2) to raise a term GPA to at least C.

In the case of raising the term GPA, the supplementary examination will be offered in a class with a grade lower than C.

A student who is on Academic Dismissal is not eligible to write a supplementary examination.

Only one supplementary examination will be permitted per session. It must be written on the first scheduled date for writing 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 list of those classes will be published early in the term.
The class mark resulting from a supplementary examination will replace the original class mark for all purposes. When a supplementary examination is offered, the mark obtained on the supplementary examination will normally replace the final examination mark in calculating the class grade. See also Supplements, page 260.

Repeating Students
If changes are made in the curriculum, repeating students will be required to satisfy the new curriculum.

Auditing a Class
See definition of “audit student,” page 3.

Students who are registered for a degree in the Faculty must have the approval of the Faculty to audit a class. Such approval can be obtained by submitting a written request to the Dean, who will refer the matter to the Faculty for a decision. Students who are not registering for a degree in the Faculty must obtain the approval of the Department to audit a class.

Medical Notes for Final Examinations
Students whose 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 instead of the value of the missed examination. A detailed description of the content of the medical note is described in Article 16.8 Special Arrangements for Examinations, Tests and Assignments (see Academic Regulations section of this Calendar).

Fees
Information pertaining to fees and expenses is given in the “Fees” section of this Calendar.

Financial Assistance
Information pertaining to Financial Assistance is given in the “Awards and Financial Aid” section of this Calendar.

IV. Undergraduate Programs
A. Bachelor of Engineering

Introduction
The engineering program is designed for students who have completed senior matriculation (Noua Scotia Grade XI) including mathematics, physics, and chemistry, and rank well in their class. Students may be admitted with advanced placement.

At Dalhousie, students benefit from our unique approach to undergraduate engineering education. Renowned for innovation in education, the unique undergraduate engineering curricula at Dalhousie University provide a sound basis in Mathematics and pure Science and in Engineering Science and Design, that are a foundation for success in any engineering career. A substantial part of the work of the first and second years is common to all programs. Many of these classes will change very little over the course of an engineer’s career; they will become a sound basis of life-long learning.

The Faculty of Engineering has five engineering departments and one service department, the Department of Engineering Mathematics and Internetworking. Civil and Resource Engineering administers degree programs in the disciplines of Civil and Mineral Resource Engineering. The Department of Electrical and Computer Engineering administers programs in Electrical and Computer Engineering and the Department of Process Engineering and Applied Science administers degree programs in the disciplines of Biological, Environmental, Chemical, Food Science and Materials. The remaining departments are Industrial Engineering and Mechanical Engineering.

At the end of Year 1, students submit a “Discipline Choice” form indicating the order of their preference of the disciplines. The Faculty of Engineering will inform students who have met the criteria of promotion from Year 1 to Year 2 of their placement in one of the accredited programs. The curriculum for each of the basic programs combines required ‘core’ subjects essential to the field, and ‘elective’ subjects permitting considerable diversity in individual programs of study. An important part of the curriculum is a series of Complementary Studies classes. The curriculum for the first two years of Engineering at Dalhousie is indicated below. Students should refer to the appropriate departmental chapter of the calendar once a field of specialization has been determined for subsequent years.

B. BSc/BEng
Students who meet the admission requirements for the Bachelor of Science program and the Bachelor of Engineering program are eligible to select this concurrent degree option. Students wishing specific advice should consult the Assistant Dean, Faculty of Science and the Associate Dean, Faculty of Engineering. Students accepted will complete the 15-credit BSc and the first two years of engineering studies leading to the Diploma in Engineering (DipEng) concurrently in a period of three calendar years. At the end of the three year period, both the degree and the diploma will be awarded to successful candidates. This opportunity should appeal to students with career objectives in multi-disciplinary fields such as Biomedical Engineering, Environmental Science, or Materials Science among others. It is thus possible to complete the requirements for the Bachelor of Science and Bachelor of Engineering degrees concurrently in a time period of five years in total (or up to six years for Co-op programs).

C. BA/BEng
Students who meet the admission requirements for the Bachelor of Arts program and the Bachelor of Engineering programs are eligible to select this concurrent degree option. Students wishing specific advice should consult the Associate Dean, Faculty of Engineering and the Assistant Dean for the Faculty of Arts and Social Sciences.

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

Students who meet the admission requirements for the Bachelor of Engineering program are eligible to select this concurrent degree option. Students wishing specific advice should consult the Faculty of Engineering (Associate Dean M. E. El-Hawary, or Linda Conrad), and the Assistant Dean for the Faculty of Science.

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

Students who have successfully completed the academic study program in the first four terms in any of the disciplines may be eligible to apply for the Diploma of Engineering. This means a student must have a minimum GPA of 2.0, and have completed, with a minimum grade of D, the required courses as specified in the discipline curriculum.

### Curricula for Terms 1 - 4

<table>
<thead>
<tr>
<th>Term</th>
<th>Fall</th>
<th>Winter</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Biological Engineering</strong></td>
<td>ENGM 3021 Engineering Mathematics III</td>
<td>ENGM 2041 Environmental Engineering</td>
</tr>
<tr>
<td><strong>Chemical Engineering</strong></td>
<td>ENGM 2081 Applied Probability and Statistics</td>
<td>ICCD 2000 Electrical Engineering Design I</td>
</tr>
<tr>
<td><strong>Civil Engineering</strong></td>
<td>ENGM 2020 Fluid Mechanics</td>
<td>ENGM 2020 Fluid Mechanics</td>
</tr>
<tr>
<td><strong>Computer Engineering</strong></td>
<td>ENGM 2020 Fluid Mechanics</td>
<td>ENGM 2020 Fluid Mechanics</td>
</tr>
</tbody>
</table>

#### Biological Engineering
- Principles of Biology
- Organic Chemistry
- Introduction to Physics
- Chemical Engineering
- Biomedical Engineering

#### Chemical Engineering
- Engineering Chemistry
- Engineering Thermodynamics
- Introduction to Physics
- Materials Engineering
- Computer Programming

#### Civil Engineering
- Engineering Design & Graphics
- Environmental Engineering
- Chemical Engineering
- Environmental Science
- Computer Programming

#### Computer Engineering
- Engineering Mathematics
- Engineering Thermodynamics
- Computer Programming
- Information Technology
- Computer Programming

#### Environmental Engineering
- Environmental Science
- Environmental Engineering
- Environmental Science
- Environmental Science
- Environmental Science

#### Mechanical Engineering
- Engine Applications
- Mechanical Design
- Mechanical Design
- Mechanical Design
- Mechanical Design

#### Miners Resource Engineering
- Mining Engineering
- Mining Engineering
- Mining Engineering
- Mining Engineering
- Mining Engineering

#### *Humanities Classes
- Humanities
- Humanities
- Humanities
- Humanities
- Humanities

#### *Writing Classes
- Writing
- Writing
- Writing
- Writing
- Writing
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 program.

Work term employment agreements are between the student and the employer. Dalhousie University is not a party to these agreements and assumes no financial or legal responsibility with regard to events or actions by either party that affect the employment situation for any co-op student (e.g., layoffs, intellectual property issues, confidentiality agreements, strikes, etc.).

Responsibilities of Students

Eligibility

Once accepted into the co-op program according to the requirements of the Engineering Faculty, students will:

• maintain registration as full-time co-operative education students in their program in all terms from point of entry through to the final academic term, and follow the study and work term sequence that corresponds to their programme
• maintain acceptable academic standing according to the regulations of their program
• maintain applicable registration for all work terms
• pay all applicable Co-op fees
• attend the sessions on career development pertaining to their co-op employment in order to have a clear understanding of the process and to acquire job searching skills
• keep the Co-op Office informed of their employment status (e.g., actively seeking employment through the placement process, returning to previous co-op employer, or other situations) at all times
• ensure that their student file is updated and accurate
• refrain from actions either during the placement process or while at work that may have a negative impact on the long-term success of the co-op program

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>
<th>Fall</th>
<th>Winter</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological &amp; Medical</td>
<td>Work</td>
<td>Study</td>
<td>Work</td>
<td>Study</td>
<td>Work</td>
<td>Study</td>
<td>Work</td>
<td>Study</td>
<td>Work</td>
</tr>
<tr>
<td>Chemical</td>
<td>Work</td>
<td>Study</td>
<td>Work</td>
<td>Study</td>
<td>Work</td>
<td>Study</td>
<td>Work</td>
<td>Study</td>
<td>Work</td>
</tr>
<tr>
<td>Electrical &amp; Computer</td>
<td>Work</td>
<td>Study</td>
<td>Work</td>
<td>Study</td>
<td>Work</td>
<td>Study</td>
<td>Work</td>
<td>Study</td>
<td>Work</td>
</tr>
<tr>
<td>Mechanical</td>
<td>Work</td>
<td>Study</td>
<td>Work</td>
<td>Study</td>
<td>Work</td>
<td>Study</td>
<td>Work</td>
<td>Study</td>
<td>Work</td>
</tr>
<tr>
<td>Materials</td>
<td>Work</td>
<td>Study</td>
<td>Work</td>
<td>Study</td>
<td>Work</td>
<td>Study</td>
<td>Work</td>
<td>Study</td>
<td>Work</td>
</tr>
<tr>
<td>Engineering</td>
<td>Work</td>
<td>Study</td>
<td>Work</td>
<td>Study</td>
<td>Work</td>
<td>Study</td>
<td>Work</td>
<td>Study</td>
<td>Work</td>
</tr>
</tbody>
</table>

E. Technical Co-op Program

Co-operative education is based on the principle that an academic program combined with work experience in alternating terms is relevant to, and desirable for, effective professional preparation. Work term employment, which varies from sector to sector and location to location, allows students to acquire experiences in their areas of career interest, while academic terms are devoted primarily to fundamental and theoretical studies. These practical experiences and academic studies complement one another.

The motivation, responsibility, and opportunity for insight gained through co-operative education can be of significant value to the student’s future. The co-operative concept enables those with a career orientation to complement their program in all terms from point of entry through to the final academic term, and during the related work terms, within a structure of organized purpose and serious study.

The Study and Work Sequence

The co-operative system requires students to alternate periods of study with periods of employment. The period of employment is called a work term and is normally four months in length. Some programs combine two or more four-month work terms.

Each academic program has a specific work and study term schedule which is outlined below (see the following study and work sequence chart). Work terms do not begin until third year of the program. All programs and on an academic term rather than a work term to allow for the formal integration of workplace and classroom learning.
• refrain from deliberately misrepresenting themselves in matters pertaining to the co-op programme
• abide by the policies and procedures of their employer as well as the policies and procedures of the University and the Co-op Office
• fulfill the entire time commitment required for each co-operative education work term (normally four consecutive months)
• attempt to resolve any difficulties which arise during the work term with the employer
• contact the Co-op Office prior to making any decision affecting their employer and/or employment
• ensure that their employer completes a “Co-operative Student Performance Evaluation” form prior to the end of the work term in order to receive a passing grade for the work term (a work term evaluation is required for every work term undertaken by the student)
• inform the Co-op Office of their intentions for the next scheduled work term (returning to previous employer, participating in co-op interview process, arranging own position, graduating, etc.) by the end of the first week of lectures.

Work Evaluation
Students are required to submit the following items for each work term:
1. A work term report
2. Monthly experience records
3. A performance appraisal completed by the supervisor
4. Other requirements as determined by individual academic programs.

Students must achieve a satisfactory grade for each item in order to achieve a passing grade for the work term. Students receive a pass/fail grade for work terms. The grades are assessed and submitted by the Faculty Co-op Advisor.

The specific guidelines for each of these items are available from a variety of sources including the Co-op Office and program websites.

Graduation
In order to complete successfully the requirements for graduation with a “Co-operative Education” designation on their degree, students will complete the minimum number of credited work terms (see Study and Work Sequence table).

V. Class Descriptions

CHEE 2404.03: Industrial Chemistry.
This class reviews chemical knowledge as applied to the industrial chemical process industries, with particular emphasis on Canadian applications. An examination of the relationships between kinetics, thermodynamics, unit operations and process design is made.
FORMAT: Lecture 3 hours, lab 3 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 the fundamental properties of multiphase systems: phase equilibrium, vapour pressure, phase rule, Raoult’s and Henry’s Laws, and colligative properties. Emphasis is placed on developing problem solving skills.
FORMAT: Lecture 3 hours, tutorial 2 hours.

ECED 2000.03: Electric Circuits.
This is an introductory class in electric circuit analysis. The material covered starts with a review of the fundamental circuit variables such as voltage, current, charge, power and energy. Kirchhoff’s laws are introduced and developed into node and loop analysis techniques.

Terminal behavior and circuit equivalence including Thevenin and Norton circuits are covered. Analysis with controlled sources and energy storage elements is developed including steady state and transient response for first order networks. Phasors and sinusoidal steady state are introduced. Students are introduced to circuit simulation tools such as pspice.
FORMAT: Lecture 3 hours, lab 3 hours.

PREREQUISITE: MATH 1000, PHYC 1001/1002.

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.
PREREQUISITE: ECED 2000.03.

ECED 2200.03: Digital Circuits.
This class includes an introduction to: Boolean algebra, encoders, decoders, shift registers, asynchronous and synchronous counters, together with timing considerations. Design of asynchronous circuits, synchronous sequential circuits, and finite state machines, is covered. Karnaugh mapping techniques and state tables and diagrams are taught. Programmable logic is introduced. Contemporary computer-aided design and analysis software is used throughout the class.
FORMAT: Lecture 3 hours, lab 3 hours.

ECED 2400.03: System Analysis.
Requirement analysis, specifications, concepts of transforming an ill-defined problem into a set of specifications. Functional decomposition and data dictionaries. Top-down structured and object-oriented analysis techniques. Laboratory and assignment work will address the analysis of relatively complicated systems using the different techniques.
FORMAT: Lecture 3 hours, lab 2 hours.

PREREQUISITE: ECED 2000.03.

ECED 2900.03: Electrical Engineering Design I.
This class will cover aspects of design methodology in electrical engineering. Issues addressed include: the engineering design method covering design overview, problem decomposition, solving & planning, decision support techniques; uncertainty and time management; analysis and synthesis for implementation, technical design, design evaluation, prototype construction and evaluation technical design rules, design heuristics, testability, manufacturability, and troubleshooting; project reports; and ethics in design including the employee's dilemma, the value of written records, and reporting problems.
FORMAT: Lecture 2 hours, lab 3 hours.
PREREQUISITE: I.CED 2200/2203.

ENGI 1000.00: Engineering Fundamentals.
An introduction to the variety of disciplines of engineering. Introduction to the engineering profession. Academic regulations for engineering. Introduction to engineering ethics and professional responsibility, study skills, examination skills, writing and presentation skills.

ENGI 1100.03: Engineering Design & Graphics I.
The object of the class is to provide students with conceptual design experience, team work experience, and computer drafting experience; develop the following skills: engineering free-hand sketching, 3-D visualization, and reading of engineering drawings. An integral part of the class is Design Project, focused on design as the essence of engineering, the process of design and reporting.
FORMAT: Lecture 3 hours, lab 3 hours.

ENGI 1400.03: Mechanics I.
Stresses teaches the concepts of force, movement, and equilibrium. Topics include a review of the laws of motion, vector algebra, position and force vectors, moments of forces, couple moments, and equilibrium of 2- and 3-dimensional bodies. Structural applications such as 2-dimensional trusses,
frames and simple machines, and shear forces and bending moments in beams are presented. Coulomb friction, centroids and centres of mass, and area moments and products of inertia are also included.  

FORMAT: Lecture 3 hours, lab 3 hours  
PREREQUISITE: MATH 1000.03  
EXCLUSION: ENGI 1120.03

ENGI 2200.03: Mechanics of Materials.  
This class is an introduction to the study of stress, strain and deformation of a solid body which is subjected to static forces. Topics considered include: definitions and transformation relations for stresses and strains, principal stresses and strains, Mohr’s circle for stress and strain, strain gauges, mechanical properties of materials and failure theories, axial and torsional loading applications, bending of beams with symmetrical cross-section, combined static loading, thin-walled pressure vessels and column action.  
PREREQUISITE: ENGI 1400.03; MATH 1010.03  
EXCLUSION: ENGI 2301.03

ENGI 2300.03: Fluid Mechanics.  
This introductory class comprises the study of fluid properties, fluids at rest and in motion. Dimensional analysis is introduced. The fundamental flow-governing equations (conservation of mass, momentum and energy) are derived and applied to a selection of engineering problems. Incompressible viscous flow through pipes is also presented.  
PREREQUISITE: ENGI 1400.03, MATH 1010.03  
EXCLUSION: ENGI 2341.03

ENGI 2400.03: Mechanics II.  
This second class in Engineering Mechanics considers the kinematics and kinetics of a single particle and a single rigid body. The class builds on the concepts introduced in ENGI 1400.03 (Mechanics I). Both vector and scalar methods are used. Topics include kinematics of a particle, kinetics of a particle, kinetics of a rigid body in plane motion, and plane kinetics of a rigid body.  
FORMAT: Lecture 3 hours, lab/tutorial 3 hours  
PREREQUISITE: ENGI 1400.03, ENGM 2041.03; MATH 1010.03  
EXCLUSION: ENGI 2222.03

ENGI 2800.03: Engineering Thermodynamics I.  
Fundamental definitions and concepts are reviewed. Engineering analysis of properties, heat, work and systems is carried out. The zeroth, first, and second laws are presented. Ideal gases and mixtures, real gases, liquid-vapour relations, availability, irreversibility, entropy concepts, and flow in nozzles and diffusers is examined. Gas and vapour power cycles are studied with emphasis on cycle analysis.  
FORMAT: Lecture 3 hours, lab 3 hours  
PREREQUISITE: ENGI 1400.03, CHEM 1021.03, CHEM 1022.03; MATH 1010.03

ENGM 2021.03: Engineering Mathematics III.  
This class covers first order linear and non-linear differential equations, differential equations of higher order with constant coefficients, applications to Engineering problems, Laplace transforms, periodic functions, applications of Laplace transforms to linear systems, Fourier Series, the line spectrum.  
FORMAT: Lecture 3 hours, lab 2 hours  
PREREQUISITE: ENGM 1011.03 and ENGM 1012.03 or MATH 1000.03 and MATH 1010.03

The topics covered include probability laws and the interpretation of numerical data, probability distributions and probability densities, functions of random variables, joint distributions, inferences concerning mean and variance, tests of hypotheses, and introduction to linear regression. The class emphasizes engineering applications and makes extensive use of statistical computer packages.  
FORMAT: Lecture 3 hours, lab 2 hours  
PREREQUISITE: ENGM 1011.03 and ENGM 1012.03 or MATH 1000.03 and MATH 1010.03

ENGM 2041.03: Applied Linear Algebra.  
This class covers geometric vectors in three dimensions, dot product, cross product, line and planes, complex numbers, systems of linear equations, matrix algebra, matrix inverse, determinants, Cramer’s rule, space curves, arclength, curvature, functions of several variables, partial derivatives, implicit functions, constrained and unconstrained extrema, multiple integrals, surface area and volume, scalar and vector fields, line integrals, gradient, divergence and curl.  
FORMAT: Lecture 4 hours, lab 1 hour  
PREREQUISITE: ENGM 1011.03 and ENGM 1012.03 or MATH 1000.03 and MATH 1010.03

ENGM 2062.03: Engineering Mathematics IVa.  
This class covers geometric vectors in three dimensions, dot product, cross product, line, and planes, complex numbers, systems of linear equations, matrix algebra, matrix inverse, determinants, Cramer’s rule, space curves, arclength, curvature, functions of several variables, partial derivatives, implicit functions, constrained and unconstrained extrema, multiple integrals, surface area and volume, scalar and vector fields, line integrals, gradient, divergence and curl.  
FORMAT: Lecture 3 hours, lab 2 hours  
PREREQUISITE: ENGM 1011.03 and ENGM 1012.03 or MATH 1000.03 and MATH 1010.03

ENGM 2081.03: Computer Programming.  
This class covers fundamental programming principles including flow control, modularity, and structured programming. The student will implement significant programs in the C language to solve engineering problems.  
FORMAT: Lecture 3 hours, lab 2 hours  
PREREQUISITE: ENGM 1011.03 and ENGM 1012.03 or MATH 1000.03 and MATH 1010.03

ENGM 2262.03: Engineering Mathematics IVb.  
This class covers space curves, arclength, curvature, functions of several variables, partial derivatives, implicit functions, constrained and unconstrained extrema, multiple integrals, line, surface, and volume integrals, change of variables in multiple integrals, scalar and vector fields, gradient, divergence and curl, Stokes Theorem, the Divergence Theorem, and applications to heat flows, electrostatics and fluid flow.  
FORMAT: Lecture 3 hours, lab 2 hours  
PREREQUISITE: ENGM 1011.03 and ENGM 1012.03 or MATH 1000.03 and MATH 1010.03

ENGM 2282.03: Data Structures and Numerical Methods.  
This class introduces the student to system analysis, and software design/development techniques. Topics covered include objects, stacks, queues, multiple linked lists, searching and sorting algorithms, and their implementation in the C++ programming language. The students use linear algebra and numerical methods in engineering examples while learning to implement properly structured solutions.  
FORMAT: Lecture 3 hours, lab 2 hours  
PREREQUISITE: ENGM 2041.03, ENGM 2081.03

IENG 2005.03: Engineering Economics.  
This class is designed to provide students with the fundamentals of Engineering Economics. Engineers must function as managers in the real world of decision making where the criteria include not only technological excellence, but cost. Time value of money, project screening, and a variety of discounting analysis techniques are learned. We must know when to repair or when to replace, when to make and when to buy. Taxes and inflation can also have significant impact on the viability of projects. This class is designed to introduce students to these fundamentals, and apply them through the use of software and projects.  
FORMAT: Lecture 3 hours, lab 1 hour  
PREREQUISITE: ENGM 1011.03 and ENGM 1012.03 or MATH 1000.03 and MATH 1010.03

MECH 2100.03: Engineering Design and Graphics II.  
This class provides a project-based exercise in the engineering design process. Students work in teams and as individuals on defined projects which utilize knowledge and skills in graphics, statics, computing, and mechanics of materials. The projects encompass conceptual design,
detailed analysis, engineering drawings, experimentation, physical model fabrication, laboratory testing, and preparation of professional reports.

**FORMAT:** Lecture 3 hours, lab/tutorial 2 hours

**PREREQUISITE:** ENGI 1100.03, ENGI 1400.03, ENGI 2200.03 and ENGM 2081.03

**EXCLUSION:** ENGI 2101.03

### CPST Series: Complementary Studies Classes

#### CPST 2000.03: Technical Communications

The class deals with several aspects of professional activity including the preparation of technical memos, letters and reports. Topics include professional associations, the relationship of engineers to society and the subject of engineering societies and their work in publications, codes and standards. Guest lecturers are invited to participate in discussions. Throughout the class students practice their writing skills by submitting assignments which are marked for clarity, style and presentation as well as for proper English.

**FORMAT:** Lecture 3 hours, tutorial 1 hour

**PREREQUISITE:** Engineering Approved Writing class

#### CPST 3020.03: Engineering in Society I.

This class contains three modules. The first module introduces the historical impact of major technological and engineering achievements on human society. A diverse set of case studies from major engineering disciplines is included. Students are expected to research and report on impact of technology topics that are related to their field of study. The second module gives an overview of important aspects of the practice of the engineering profession with emphasis on ethical issues. Topics discussed include professionalism, ethical theories, and ethical problem solving techniques. The module considers applications, and codes of ethics of major engineering societies. The third module introduces the subject of law in its relation to the practice of engineering. Consideration is given to the promotion, organization and financing of engineering affairs, through the legal entities of partnership and companies. The sources and operation of law are considered with reference to the practice of professional engineering contracts.

**FORMAT:** Lecture 3 hours

#### CPST 3030.03: Engineering in Society II.

The class provides an overview of the concepts and interrelationships among sustainable development, environmental stewardship and public health and safety in relation to engineering practice. These concepts will be examined through historical examples and current theory and practice of the engineering profession. Lectures and discussion will consider global ecosystem functions, human interactions with the environment, methods of reducing human impacts; methods of achieving sustainability, engineering challenges to enhance sustainable development; and factors that influence occupational health and safety from engineering and management viewpoints. Students will be exposed to management methods and tools such as environmental auditing, ISO 14000, risk analysis and WHMIS and will be expected to consider class topics in relation to their own area of engineering specialization.

**FORMAT:** Lecture 3 hours

### IDIS Series: Interdisciplinary Studies Classes

#### IDIS 2000.03: Fundamentals of Environmental Engineering

The class will focus on sources of environmental pollutants, the effects of pollutants on living and non-living systems, and the processes by which pollutants are generated or by which their effects can be minimized or remediated. Lectures are supplemented by tutorials which include guest speakers, case studies and field trips.

**FORMAT:** Lecture 3 hours, lab 2 hours

**PREREQUISITE:** CHEM 1021.03, CHEM 1022.03

**CROSS-LISTING:** ENVE 3000.03

#### IDIS 4000.03: Engineering Entrepreneurship

This course is an introduction to business planning and strategy in start-up and early stage technology-driven businesses. The course addresses all functional activities in a typical business enterprise including: finance, marketing, production and human resource management. Business analysis and planning skills are developed and students are introduced to new business paradigms in the global, digital economy.
Biological Engineering

Location: N Building, Sexton Campus
1360 Barrington St.
Halifax, NS B3J 1Z1
Telephone: (902) 494-3275
Fax: (902) 423-2423
Email: bio.engineering@dal.ca
Dean
Leon, L.J., BSc, MSc, PhD (Dal), PEng
Department Head, Process Engineering and Applied Science
Pegg, M.J., BSc, PhD (Leeds), PEng
Undergraduate Program Co-ordinator
Ghanem, A., BScEng (UNB), PhD (Cornell), PEng

I. Introduction
Biological Engineering occupies a unique position in the engineering professions in applying the principles of engineering to the biological world. Biological Engineers are involved in many areas in which the principles of engineering are applied to bio-systems, such as: bioprocessing, environment, food biotechnology and biomedical.

The curriculum in Biological Engineering is tailored to providing an education across many fields of engineering and their application to the biotechnology and the agri-food industries. As a result, co-op students and graduates are to be found in a very wide range of professional jobs in both the public and private sectors. In the public sector, Bio-Engineers are employed in the federal and provincial departments of agriculture and management of technical operations and sales.

In the private sector, Bio-Engineers are graduates are to be found in a very wide range of professional jobs in both biotechnology and the agri-food industries. As a result, co-op students and education across many fields of engineering and their application to the market.

II. Curriculum and course descriptions
Refer to Sections IIA and IIB, Biological Engineering Program, in the Process Engineering and Applied Science section of this calendar, pages 297 and 300.

III. Co-operative program and schedule
Refer to Section I. Technical Co-op Program, in the Engineering section of this calendar page 263.

IV. Admissions
The entrance requirement to the Biological Engineering program is a successful completion of the first year engineering at a recognized university. Students who have completed two or more years of university studies will be considered for admission on the basis of transfer of credits.

Chemical Engineering

Location: 1360 Barrington St, Sexton Campus
Halifax, NS B3J 1Z1
Telephone: (902) 494-3633
Fax: (902) 494-7639
Dean
Leon, L.J., BSc, MSc, PhD (Dal), PEng
Department Head, Process Engineering and Applied Science
Pegg, M.J., BSc, PhD (Leeds), PEng
Undergraduate Program Co-ordinator
Yuet, P.K., BEng (TUNS), MSc (Queen's), PhD (MIT), PEng

I. Introduction
The Chemical Engineering program prepares students for careers in the chemical and process industries and in a variety of related fields. These encompass, among others, the traditional areas of environmental control, plastics and polymers, pulp and paper, instrumentation and process control, petrochemicals, petroleum and natural gas processing, and energy conversion and utilization, as well as the growing fields of biotechnology, food processing, composite materials, corrosion and protective coatings, and manufacture of microelectronic components.

The curriculum is designed to provide the student with a broad background in the underlying sciences of Chemistry, Physics and Mathematics. This is then combined with a detailed knowledge of engineering principles and practice, along with a good appreciation of social and economic factors. Through understanding of the principles is accomplished through lecture, tutorial and laboratory activities, and extensive use is made of departmental computing facilities. Laboratory involvement is considered an important component of the students' education. Emphasis in the laboratory is placed on team work and on the development of problem-identification and problem-solving skills. The Department stresses the preparation of students for independent work and the development of interpersonal skills necessary for professional engineers. Elective classes provide the student with the opportunity to obtain additional training in one of the following areas: analysis and process design, biotechnology, environment, energy resources and utilization, and research and development.

In the later academic terms, students have an opportunity to work under conditions similar to those encountered in consulting and engineering organizations, particularly in the computer-aided-design and process design classes. They may also undertake a thesis project involving original research activities under the guidance of a faculty member or an industrial supervisor.

Research opportunities leading to the Master’s and Doctorate degrees are offered in a wide range of topics within the Department as well as in conjunction with other departments and a number of research centres on the campus. Detailed information regarding the graduate program can be obtained from the Department.

Students have the option of joining either the co-op or non co-op undergraduate programs or doing an internship.
II. Curriculum and course descriptions
Refer to sections III and BIII, Chemical Engineering Programs in the Process Engineering and Applied Science section of this calendar, page 296.

III. Co-operative program and schedule
Refer to section E, Technical Co-op Program, in the Engineering section of this calendar page 263.

IV. Admissions
Admission requirements are those specified by the Faculty of Engineering.
CHEE 2420.03 (Fundamentals of Chemical Engineering) must be completed prior to admission into Term 5. Students are strongly advised to complete CHEE 2404.03 (Industrial Chemistry) prior to Term 5.

Civil and Resource Engineering
Location: "D" Building, Room D215
1360 Barrington St.
Halifax, NS B3J 1Z1
Telephone: (902) 494-3960
Fax: (902) 494-3108
Email: civil.resource@dal.ca
Website: http://civilandresource.engineering.dal.ca

Dean
Leon, L.J., BSc, MSc, PhD (Dal), PEng

Department Head
Zou, D.H., BSc (CUMT, China), PhD (UBC), PEng

Professors
Ali, N.A., BSc (Baghdad), MSc, PhD (N. Carolina State), PEng
(Undergraduate Program Co-ordinator, Civil Engineering)
Gagnon, G.A., BScE (Guelph), PhD (Waterloo), PEng
Islam, M.R., Dip. Ing (Algoma), MSc, PhD (Alberta)
Rockwell, M.C., BEng (Pitts), MEng, PhD (UBC), PEng
Satish, M.G., BSc, BEng (Mc.Gill), MEng, PhD (Concordia), PEng
Taber, J.F., BEng, MScE, PhD (TUNS), PEng
Trottier, J.F., BScA, PhD (Laval), PEng
Zou, D.H., BSc (CUMT, China), PhD (UBC), PEng

Associate Professors
Hansen, D., BScE (Carleton), MScE (UBC), PhD (WOU) (Undergraduate Program Co-ordinator, Mineral Resource Engineering)
Hill, J.D., BSc, MScE (Acadia), PhD (Waterloo) (Coordinator, Graduate Program)
Liu, Y., BScE, MScE (Carleton), PhD (UBC), PEng (Co-op Advisor)
Newhook, J.P., BEng, MEng, PhD (TUNS), PEng

Assistant Professors
Flint, I.M., BSc, BASc, MASc (Toronto), PhD (UBC)
Thorburn, J., BSc (UNB), MSc (Alberta), PhD (Dal), PEng
Walsh, M.E., BEng, MScE (McGill), PhD (Dal), PEng

Adjunct Professors
Akhavi, M.S., BSc, MSc (Colorado), PhD (Iowa)
Butt, S.D., BEng, MSc (McGill), PhD (Queen’s), PEng
El-Jabi, N., BSc, MEng (Sherbrooke), MScE, PhD (McGill, Polytechnique), PEng
Sastry, V.V.R.N., BE (Osmania), ME (IS Bangalore), PhD (TUNS), PEng

Adjunct Associate Professors
Forrester, D.J., BSc, PhD (Nottingham), PEng
Kasemoto, J.T., BEng (Kinki), MEng (Alberta), MBA (Ottawa)
Kenny, Shawn, BEng, MEng (UNB), PhD (Dal)
Pegg, N., BSc (Carleton), MScE (UBC), PhD (TUNS), PEng

Adjunct Assistant Professors
Carrara, D., BSc, MSc (Moncton), PhD (Dal), PEng
Forgeron, D., BEng (TUNS), PhD (Dal)
Gibson, M., BA (Sheffield), MSc, PhD (Strathclyde)
Limaye, V., BE (Baroda), MSc, PhD (Dal), PEng
Morcos, G., BEng, MScE (Cairo), PhD (Concordia), PEng
I. Introduction
The Department of Civil and Resource Engineering consists of the Civil Engineering Program and the Mineral Resource Engineering Program. The Department currently offers two accredited professional degree programs:

- BEng in Civil Engineering, co-op and non-co-op programs;
- BEng in Mineral Resource Engineering, co-op and non co-op programs.

For additional information on these programs and the nature of the engineering studies involved, the reader is referred to individual program listings in the Faculty of Engineering section of this calendar.

II. Program Guides

A. Civil Engineering Program

Year 1 and 2 follow the program that is outlined in the ‘Faculty of Engineering’ section of this calendar. The two Options mentioned above contain a strong common core in those aspects of engineering considered to be crucial for all civil engineering baccalaureates, irrespective of specialization. Term 3 is the same for both Options. In Terms 6, 7 and 8 students will have the opportunity to select some courses from a list of technical electives based on their specific interests in focus areas of civil engineering.

1. Infrastructure Option, Non Co-op Program

Year 3, Term 5 (Fall)

- CIVL 4124.005 Surveying Field School
- CIVL 4301.03 Soil Mechanics
- CIVL 4390.03 Hydraulics
- CIVL 4501.03 Structural Systems I – Form and Analysis
- CIVL 4525.03 Water Quality and Treatment
- CIVL 4705.03 Introduction to Geology for Engineers

Year 3, Term 6 (Winter)

- CIVL 4300.03 Transportation Engineering
- CIVL 4350.03 Engineering Hydrology
- CIVL 4430.03 Water Quality and Treatment
- CIVL 4440.03 Water and Wastewater Treatment
- CIVL 4500.03 Special Topics in Structural Systems
- CIVL 4525.03 Design of Steel Structures
- CPST 4300.03 Engineering in Society I

Year 4, Term 7 (Fall)

- CIVL 4400.03 Water and Wastewater Treatment
- CIVL 4500.03 Special Topics in Structural Systems
- MINE 3600.03 Petroleum Engineering

2. Infrastructure Option, Co-op Program

Year 3, Term 5 (Fall)

- CIVL 4124.005 Surveying Field School
- CIVL 4301.03 Soil Mechanics
- CIVL 4390.03 Hydraulics
- CIVL 4500.03 Structural Systems I – Form and Analysis
- CIVL 4570.03 Mechanics of Structural Materials and Components
- CIVL 4525.03 Water Quality and Treatment
- CIVL 4725.03 Construction Planning

Year 4, Term 8 (Winter)

- CIVL 4515.03 Reinforced Concrete Design
- CIVL 4601.05 Senior Project I
- CPST 4300.03 Engineering in Society II

Technical Electives*

- CIVL 4900.03 Transportation Systems
- CIVL 4350.03 Engineering Hydrology
- CIVL 4430.03 Water Quality and Treatment
- CIVL 4440.03 Water and Wastewater Treatment
- CIVL 4500.03 Special Topics in Structural Systems
- MINE 3600.03 Petroleum Engineering

*total number of technical electives for terms 7 and 8 must equal five.

Year 5, Term 7 (Fall)

- CIVL 4110.03 Geotechnical Engineering
- CIVL 4525.03 Design of Steel Structures
- CIVL 4602.025 Senior Project II
- CPST 4300.03 Engineering in Society II

Technical Electives*

- CIVL 4200.03 Transportation Systems
- CIVL 4350.03 Engineering Hydrology
- CIVL 4430.03 Water Quality and Treatment
- CIVL 4440.03 Construction Planning
- CIVL 4500.03 Special Topics in Structural Systems
- MINE 3600.03 Petroleum Engineering

*total number of technical electives for terms 7 and 8 must equal five.

Year 6, Term 6 (Winter)

- CIVL 4110.03 Geotechnical Engineering
- CIVL 4525.03 Design of Steel Structures
- CIVL 4602.025 Senior Project II
- CPST 4300.03 Engineering in Society II

Technical Electives*

- CIVL 4900.03 Transportation Systems
- CIVL 4350.03 Engineering Hydrology
- CIVL 4430.03 Water Quality and Treatment
- CIVL 4440.03 Water and Wastewater Treatment
- CIVL 4500.03 Special Topics in Structural Systems
- MINE 3600.03 Petroleum Engineering

*total number of technical electives for terms 7 and 8 must equal five.

3. Earth and Environment Option, Non-Co-op Program

Year 3, Term 5 (Fall)

- CIVL 4124.005 Surveying Field School
- CIVL 4301.03 Soil Mechanics
- CIVL 4390.03 Hydraulics
- CIVL 4500.03 Structural Systems I – Form and Analysis
- CIVL 4570.03 Mechanics of Structural Materials and Components
- CIVL 4525.03 Construction Planning
- CIVL 4725.03 Construction Planning

Year 3, Term 6 (Winter)

- CIVL 4300.03 Transportation Engineering
- CIVL 4350.03 Engineering Hydrology
- CIVL 4430.03 Water Quality and Treatment
- CIVL 4440.03 Water and Wastewater Treatment
- CIVL 4500.03 Special Topics in Structural Systems
- MINE 3600.03 Petroleum Engineering

Technical Electives*

- CIVL 4900.03 Transportation Systems
- CIVL 4350.03 Engineering Hydrology
- CIVL 4430.03 Water Quality and Treatment
- CIVL 4440.03 Water and Wastewater Treatment
- CIVL 4500.03 Special Topics in Structural Systems
- MINE 3600.03 Petroleum Engineering

*total number of technical electives for terms 7 and 8 must equal five.

Year 4, Term 7 (Fall)

- CIVL 4515.03 Reinforced Concrete Design
- CIVL 4601.05 Senior Project I
- CPST 4300.03 Engineering in Society II

Technical Electives*

- CIVL 4200.03 Transportation Systems
- CIVL 4350.03 Engineering Hydrology
- CIVL 4430.03 Water Quality and Treatment
- CIVL 4440.03 Construction Planning
- CIVL 4500.03 Special Topics in Structural Systems
- MINE 3600.03 Petroleum Engineering

*total number of technical electives for terms 7 and 8 must equal five.
<table>
<thead>
<tr>
<th>Year 4, Term 7 (Fall)</th>
<th>Year 5, Term 8 (Winter)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEE 4772.03 Environmental Assessment and Management</td>
<td>Technical Electives*</td>
</tr>
<tr>
<td>CIVL 4411.03 Engineering Hydrogeology</td>
<td>• CIVL 4111.03 Geotechnical Engineering</td>
</tr>
<tr>
<td>CIVL 4802.025 Senior Project II</td>
<td>• CIVL 4220.03 Transportation Systems</td>
</tr>
<tr>
<td>CPST 3030.03 Engineering in Society II</td>
<td>• CIVL 4319.03 Form and Process in Alluvial Channels</td>
</tr>
<tr>
<td>CIVL 4440.03 Solid Waste and Landfill Engineering</td>
<td>• CIVL 4830.03 Applied Geometrics</td>
</tr>
<tr>
<td>MINE 4820.03 Petroleum Engineering</td>
<td>• ENG M 6675.03 Risk Assessment &amp; Management</td>
</tr>
<tr>
<td>CIVL 4872.03 Air Pollution Control</td>
<td>• ENV E 3251.03 Environmental and Industrial Microbiology</td>
</tr>
<tr>
<td>CIVL 4319.03 Geotechnical Engineering</td>
<td>*Total number of technical electives for terms 7 and 8 must equal 5.0.</td>
</tr>
<tr>
<td>CIVL 4220.03 Transportation Systems</td>
<td><strong>NOTES:</strong></td>
</tr>
<tr>
<td>CIVL 4319.03 Engineering Process in Alluvial Channels</td>
<td>1. One or more graduate classes may be included as technical electives in</td>
</tr>
<tr>
<td>CIVL 4830.03 Applied Geometrics</td>
<td>Term 6; however, permission of the instructor and Department is</td>
</tr>
<tr>
<td>ENV M 6675.03 Risk Assessment &amp; Management</td>
<td>required in order to register for such classes.</td>
</tr>
<tr>
<td>ENV E 3251.03 Environmental and Industrial Microbiology</td>
<td>2. Not all of the technical elective classes will be offered each year.</td>
</tr>
<tr>
<td>MINE 4714.03 Computer-Aided Mine Planning</td>
<td>3. Many classes have pre-requisites (see section IV following); if it is felt,</td>
</tr>
<tr>
<td>MINE 4712.03 Mineral Economics</td>
<td>however, that an equivalent course of study has been taken, a waiver of</td>
</tr>
<tr>
<td>MINE 4711.03 Mine Ventilation and Environment Control</td>
<td>the pre-requisite requirement can be sought from the instructor.</td>
</tr>
<tr>
<td>CPST 3030.03 Engineering in Society II</td>
<td>4. Some classes have co-requisites. A co-requisite can also be completed</td>
</tr>
<tr>
<td>CIVL 4411.03 Engineering Hydrogeology</td>
<td>before the class in question instead of being done concurrently.</td>
</tr>
<tr>
<td>CIVL 4802.025 Senior Project II</td>
<td>5. Technical Electives are course codes only. Not all are available each</td>
</tr>
<tr>
<td>CPST 3030.03 Engineering in Society II</td>
<td>year. Students must register for current year's classes even if they were</td>
</tr>
<tr>
<td>CIVL 4440.03 Solid Waste and Landfill Engineering</td>
<td>offered in previous year.</td>
</tr>
<tr>
<td>MINE 3620.03 Petroleum Engineering</td>
<td>6. Schedule dates are subject to change; please refer to the current</td>
</tr>
<tr>
<td>1 Technical Elective from:</td>
<td>Academic Calendar.</td>
</tr>
<tr>
<td>• CIVL 4460.03 Solid Waste and Landfill Engineering</td>
<td><strong>B. Mineral Resource Engineering Program</strong></td>
</tr>
<tr>
<td>• MINE 3620.03 Petroleum Engineering</td>
<td>Year 1 follows the common program outlined in the Engineering section of</td>
</tr>
<tr>
<td>Year 4, Term 8 (Winter)</td>
<td>this calendar.</td>
</tr>
<tr>
<td>CIVL 4460.03 Solid Waste and Landfill Engineering</td>
<td><strong>Year 2, Term 3 (Fall)</strong></td>
</tr>
<tr>
<td>CIVL 4802.025 Senior Project II</td>
<td>• ENGE 2000.03 Electric Circuits</td>
</tr>
<tr>
<td>CPST 3030.03 Engineering in Society II</td>
<td>• ENG 220.03 Mechanics of Materials</td>
</tr>
<tr>
<td>Technical Electives*</td>
<td>• ENGE 2260.03 Engineering Thermodynamics I</td>
</tr>
<tr>
<td>• CHEE 4772.03 Environmental Assessment and Management</td>
<td>• ENG M 2021.03 Engineering Mathematics III</td>
</tr>
<tr>
<td>• MINE 3620.03 Petroleum Engineering</td>
<td>• ENG M 2051.03 Computer Programming</td>
</tr>
<tr>
<td>Technical Electives*</td>
<td>• Humanities I</td>
</tr>
<tr>
<td>• MINE 4714.03 Computer-Aided Mine Planning</td>
<td><strong>Year 2, Term 4 (Winter)</strong></td>
</tr>
<tr>
<td>• MINE 4712.03 Mineral Economics</td>
<td>• CPST 3000.03 Technical Communications</td>
</tr>
<tr>
<td>• MINE 4711.03 Mine Ventilation and Environment Control</td>
<td>• ENG 230.03 Fluid Mechanics</td>
</tr>
<tr>
<td>• MINE 4705.03 Mining Geology I</td>
<td>• ENG 240.03 Mechanics II</td>
</tr>
<tr>
<td>• CPST 3030.03 Engineering in Society II</td>
<td>• ENG M 2022.03 Engineering Probability &amp; Statistics</td>
</tr>
<tr>
<td>• CIVL 4460.03 Solid Waste and Landfill Engineering</td>
<td>• ENG M 2062.03 Engineering Mathematics IV (a)</td>
</tr>
<tr>
<td>• MINE 3620.03 Petroleum Engineering</td>
<td>• ENG 2053.03 Engineering Economics</td>
</tr>
<tr>
<td><strong>4. Earth and Environment Option, Co-op Program</strong></td>
<td>Year 3, Term 5 (Fall)</td>
</tr>
<tr>
<td>Year 3, Term 5 (Fall)</td>
<td>• CIVL 0124.03 Surveying Field School</td>
</tr>
<tr>
<td>• MINE 3620.03 Petroleum Engineering</td>
<td>• CIVL 3101.03 Soil Mechanics I</td>
</tr>
<tr>
<td>• MINE 4714.03 Computer-Aided Mine Planning</td>
<td>• CPST 3000.03 Technical Communications</td>
</tr>
<tr>
<td>• MINE 4712.03 Mineral Economics</td>
<td>• CIVL 3030.03 Solid Waste and Landfill Engineering</td>
</tr>
<tr>
<td>• MINE 4711.03 Mine Ventilation and Environment Control</td>
<td>• CIVL 3050.03 Introduction to Geology for Engineers</td>
</tr>
<tr>
<td>• MINE 4705.03 Mining Geology I</td>
<td>Year 3, Term 6 (Winter)</td>
</tr>
<tr>
<td>• CPST 3030.03 Engineering in Society II</td>
<td>• CIVL 3101.03 Soil Mechanics I</td>
</tr>
<tr>
<td>Year 4, Term 8 (Winter)</td>
<td>• CIVL 3030.03 Solid Waste and Landfill Engineering</td>
</tr>
<tr>
<td>Technical Electives*</td>
<td>• CPST 3000.03 Technical Communications</td>
</tr>
<tr>
<td>• CHEE 4772.03 Environmental Assessment and Management</td>
<td>• CIVL 3050.03 Introduction to Geology for Engineers</td>
</tr>
<tr>
<td>• MINE 4714.03 Computer-Aided Mine Planning</td>
<td>• CPST 3030.03 Engineering in Society II</td>
</tr>
<tr>
<td>Year 3, Term 5 (Fall)</td>
<td>• MINE 3620.03 Petroleum Engineering</td>
</tr>
<tr>
<td>• MINE 4712.03 Mineral Economics</td>
<td>• CIVL 3050.03 Introduction to Geology for Engineers</td>
</tr>
<tr>
<td>• MINE 4711.03 Mine Ventilation and Environment Control</td>
<td>• MINE 3620.03 Petroleum Engineering</td>
</tr>
<tr>
<td>• MINE 4705.03 Mining Geology I</td>
<td><strong>Year 3, Term 6 (Winter)</strong></td>
</tr>
<tr>
<td>• CPST 3030.03 Engineering in Society II</td>
<td>• IENG 2000.03 Engineering Economics</td>
</tr>
<tr>
<td>• CIVL 3101.03 Soil Mechanics I</td>
<td>• MINE 3530.03 Mineral Processing</td>
</tr>
<tr>
<td>• CIVL 3101.03 Surveying Field School</td>
<td>Year 3, Term 6 (Winter)</td>
</tr>
<tr>
<td>• CIVL 3030.03 Solid Waste and Landfill Engineering</td>
<td>• CPST 3030.03 Technical Communications</td>
</tr>
<tr>
<td>• CIVL 3050.03 Introduction to Geology for Engineers</td>
<td>• MINE 3620.03 Petroleum Engineering</td>
</tr>
<tr>
<td>• CPST 3030.03 Engineering in Society II</td>
<td>• CIVL 3050.03 Introduction to Geology for Engineers</td>
</tr>
<tr>
<td>Technical Electives*</td>
<td>• MINE 3620.03 Petroleum Engineering</td>
</tr>
<tr>
<td>• CIVL 4460.03 Solid Waste and Landfill Engineering</td>
<td>• CIVL 3050.03 Introduction to Geology for Engineers</td>
</tr>
<tr>
<td>• MINE 3620.03 Petroleum Engineering</td>
<td>• CIVL 3050.03 Introduction to Geology for Engineers</td>
</tr>
<tr>
<td>1 Technical Elective from:</td>
<td>• MINE 3620.03 Petroleum Engineering</td>
</tr>
<tr>
<td>• CIVL 4460.03 Solid Waste and Landfill Engineering</td>
<td><strong>Year 3, Work Term 1 (Summer)</strong></td>
</tr>
<tr>
<td>• MINE 3620.03 Petroleum Engineering</td>
<td>Year 4, Term 7 (Winter)</td>
</tr>
<tr>
<td>Year 4, Term 8 (Winter)</td>
<td>• CPST 3000.03 Engineering in Society II</td>
</tr>
<tr>
<td>Technical Electives*</td>
<td>• MINE 4703.03 Mining Geology II</td>
</tr>
<tr>
<td>• CIVL 4460.03 Solid Waste and Landfill Engineering</td>
<td>• MINE 4713.03 Mine Ventilation and Environment Control</td>
</tr>
<tr>
<td>• MINE 3620.03 Petroleum Engineering</td>
<td>• MINE 4723.03 Mineral Economics</td>
</tr>
<tr>
<td>Technical Electives*</td>
<td>• MINE 4743.03 Computer-Aided Mine Planning</td>
</tr>
<tr>
<td>• CHEE 4772.03 Environmental Assessment and Management</td>
<td>One of:</td>
</tr>
<tr>
<td>• MINE 4710.03 Mine Excavation Systems (required for mining option)</td>
<td><strong>Year 4, Work Term 2 (Fall)</strong></td>
</tr>
<tr>
<td>• MINE 4714.03 Computer-Aided Mine Planning</td>
<td><strong>NOTES:</strong></td>
</tr>
<tr>
<td>• CIVL 4411.03 Engineering Hydrogeology</td>
<td>1. One or more graduate classes may be included as technical electives in</td>
</tr>
<tr>
<td>• CIVL 4802.025 Senior Project II</td>
<td>Term 6; however, permission of the instructor and Department is</td>
</tr>
<tr>
<td>• CPST 3030.03 Engineering in Society II</td>
<td>required in order to register for such classes.</td>
</tr>
<tr>
<td>• CIVL 4460.03 Solid Waste and Landfill Engineering</td>
<td>2. Not all of the technical elective classes will be offered each year.</td>
</tr>
<tr>
<td>• MINE 3620.03 Petroleum Engineering</td>
<td>3. Many classes have pre-requisites (see section IV following); if it is felt,</td>
</tr>
<tr>
<td><strong>1 Technical Elective from:</strong></td>
<td>however, that an equivalent course of study has been taken, a waiver of</td>
</tr>
<tr>
<td>• CIVL 4460.03 Solid Waste and Landfill Engineering</td>
<td>the pre-requisite requirement can be sought from the instructor.</td>
</tr>
<tr>
<td>• MINE 3620.03 Petroleum Engineering</td>
<td>4. Some classes have co-requisites. A co-requisite can also be completed</td>
</tr>
<tr>
<td>Year 5, Term 7 (Fall)</td>
<td>before the class in question instead of being done concurrently.</td>
</tr>
<tr>
<td>Technical Electives*</td>
<td>5. Technical Electives are course codes only. Not all are available each</td>
</tr>
<tr>
<td>• CIVL 4411.03 Engineering Hydrogeology</td>
<td>year. Students must register for current year's classes even if they were</td>
</tr>
<tr>
<td>• CIVL 4802.025 Senior Project II</td>
<td>offered in previous year.</td>
</tr>
<tr>
<td>• CPST 3030.03 Engineering in Society II</td>
<td>6. Schedule dates are subject to change; please refer to the current</td>
</tr>
<tr>
<td>• CHEE 4772.03 Environmental Assessment and Management</td>
<td>Academic Calendar.</td>
</tr>
</tbody>
</table>

270 Civil and Resource Engineering
• MENE 4621.03 Petroleum Reservoir Engineering (required for petroleum option)

Year 4, Work Term 3 (Summer)

Year 5, Term 8 (Fall)
• MATE 3500.03 Materials Engineering
• MINE 4611.03 Senior Design Project
• MINE 4612.03 Mine Production Engineering
• Take two technical electives, including at least one MINE class

Technical Electives
• BKE 3212.03 Measurement and Analysis
• CHEE 4772.03 Environment Assessment Management
• CIVL 4411.03 Geotechnical Engineering
• CIVL 4603.03 Applied Geomatics
• MINE 4601.03 Advanced Topics in Rock Mechanics
• MINE 4613.03 Mining and the Environment
• MINE 4616.03 Mining Engineering Project
• MINE 4620.03 Surface Mine Slope-Stability
• MINE 4622.03 Advanced Petroleum Engineering
• MINE 4623.03 Oilfield Drilling and Production
• MINE 4600.03 Advanced Mineral Processing
• MINE 4601.03 Coal Processing
• MINE 4620.03 Flocculation
• Other approved class

III. Class Descriptions

A. Civil Engineering Series

CIVL 0124.005: Surveying Field School
The purpose of this field school is to teach students how to operate surveying equipment and expose them to the various applications of engineering surveys in the civil and mining engineering disciplines. Employers expect graduates to have a good understanding of modern land-surveying procedures and instrumentation. This four-day field school will expose students to both optical and digital methods of surveying.
FORMAT: Lab 32 hours

CIVL 3101.03: Soil Mechanics I
This class is concerned with the physical and mechanical properties of soils. It includes topics of soil chemistry and soil fabric, soil classification, compaction, hydraulic conductivity, one-dimensional and two-dimensional seepage, soil compressibility, time dependent deformation of soils, and shear strength behaviour of soils. Laboratory sessions involve experimentally evaluating the engineering properties of several different soil types and the application of these results to engineering problems.
FORMAT: Lecture 3 hours, lab 1 hour; tutorial 1 hour
PREREQUISITE: ENGR 2200.03, ENGR 2300.03
EXCLUSION: CIVL 3300.03
CO-REQUISITE: MINE 3900.03

CIVL 3200.03: Transportation Engineering
This class commences with an introduction to Transportation Engineering in the context of planning, design and operations of urban and rural systems. The class also provides an introduction to route location with special emphasis on Canadian standards and specifications. It also includes detailed study of road design elements, vehicle motion, vehicle/ pavement interaction, and principles of roadway capacity.
FORMAT: Lecture 3 hours, lab 2 hours
CO-REQUISITE: CIVL 0124.005

CIVL 3300.03: Hydraulics
Fluid mechanics principles are applied to practical hydraulic problems involving flow in closed conduits and in open channels. Topics in pipe flow include losses in pipes, pipes in series and parallel, and network analysis. Topics in open channel flow dealt with classification of flows, open channels and their properties, energy and momentum principles, uniform flow, design of re-creatable and non-recreatable channels, and gradually varied flow. These aspects are explained in lectures and validated by laboratory measurements and demonstrations.
FORMAT: Lecture 3 hours, lab 3 hours
PREREQUISITE: ENCI 2300.03

CIVL 3310.03: Engineering Hydrology
The emphasis in this class is on quantitatively describing the physical processes in the hydrologic cycle. Such processes include precipitation, evaporation, infiltration, groundwater movement, surface runoff, as well as lake/reservoir routing effects. A working rainfall-runoff model is developed, and by convolution is used to produce a design hydrograph, so as to determine the appropriate size of a detention pond. Statistical hydrology and some hydrology are also discussed.
FORMAT: Lecture 3 hours, lab 2 hours
PREREQUISITE: ENCI 2800.03, ENCM 2101.03, ENCM 2102.03, CIVL 3300.03, MINE 3900.03

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 1010.03, CHEM 1012.03 and CHEM 1022.03, ENGR 2300.03
EXCLUSION: CIVL 3450.03

CIVL 3505.03: Structural Systems I: Form and Analysis
This class covers the calculation of elastic deformations for statically determinate structures and various methods for analyzing statically indeterminate structures including the slope deflection method, the moment distribution method and the stiffness method with matrix analysis. The application of matrix analysis in computer modeling using a typical commercially available structural analysis program will be studied. Also, approximate methods for indeterminate structures and influence lines for moving loads will be introduced.
FORMAT: Lecture 3 hours, tutorial 2 hours
PREREQUISITE: ENGR 1400.03, ENGR 2200.03
EXCLUSION: CIVL 3300.03, CIVL 3310.03

CIVL 3515.03: Structural Systems II: Loads and Behaviour
The objective of the class is to provide students with a solid background in the fundamentals of structural design used for typical civil engineering structures such as trusses, building frames and floor systems. The background and application of the National Building Code of Canada provisions for structural design will be emphasized. The student will be able to state basic tension, compression and flexural elements using steel, concrete and timber, for representative structures.
FORMAT: Lecture 3 hours, lab 2 hours
PREREQUISITE: CIVL 3050.03, CIVL 3300.03, CIVL 3725.03
EXCLUSION: CIVL 3300.03, CIVL 3310.03

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, tension, 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: ENGR 1400.03, ENGR 2200.03, ENGR 2400.03, ENCM 2262.03, MATH 2000.03
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 is 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
PREREQUISITE: CIVL 3700.03, CIVL 4700.03

CIVL 3740.03: Computations and Systems Modeling.
This class introduces the application of various computational methods for solving a range of practical problems in civil engineering. Basic numerical methods for solving algebraic equations, non-linear and eigenvalue problems, as well as numerical differentiation and integration are introduced. Curve-fitting and non-linear regression techniques are presented. Computational tools such as MATLAB, MathCad, Excel, and Mathematica are introduced and used to analyze structural stability, the behaviour of space-frames, dynamics, vibrations, and other topics of interest in infrastructure systems.

FORMAT: Lecture 3 hours, lab 2 hours
PREREQUISITE: ENGM 2602.03, ENGM 2601.03
EXCLUSION: CIVL 4200.03

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-line interaction, and design/analysis of natural cuts, embankments, and earth dams. The application of these design/analysis to particular infrastructure and environmental structures are emphasized in the laboratory sessions.

FORMAT: Lecture 3 hours, lab 2 hours
PREREQUISITE: CIVL 3103.03
EXCLUSION: CIVL 4100.03

CIVL 4200.03: Transportation Systems.
This class covers urban transportation planning, transportation demand and supply, transportation management. The environmental impact of transportation systems such as noise and air pollution will be examined. Methods to measure, predict, and evaluate impact of transportation modes will be covered.

FORMAT: Lecture 3 hours, lab 2 hours
PREREQUISITE: CIVL 3300.03

CIVL 4250.03: Highway Engineering.
This class provides introduction to the design, selection, location and design emphasis on Canadian standards and road design elements. It includes a surveying workshop. The purpose of workshop is to expose students to operation and application of surveying instrumentation. It includes topics of vertical and horizontal curves, roadway design elements and classification, road sections design and specifics of highway materials and pavement design.

FORMAT: Lecture 3 hours, lab 2 hours
PREREQUISITE: CIVL 3300.03

CIVL 4350.03: Hydrographic 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 and rock-fill dams), overflow and chute spillways with 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 their applications will be discussed. Regular lectures and tutorial sessions will be supplemented with expert speakers from the industry and field trips.

FORMAT: Lecture 3 hours, lab 3 hours
PREREQUISITE: CIVL 3300.03

CIVL 4359.03: Form and Process in Alluvial Channels.
This class will consider various aspects of fluvial geomorphology from a civil engineering point-of-view. This will include discussion of hydraulic roughness laws, sediment transport, and quantitative estimates of channel roughness, regime concepts for artificial and natural rivers, uses of boundary shear stress and unit stream power in bed-load estimations, the hydraulics and statistics of suspended sediment, numerical versus physical modelling, and a review of case histories of responses of rivers to human activity. The hydraulics of fish habitat assessment is also considered. The application of HEC-RAS to a brook is also part of the class.

FORMAT: Lecture 3 hours, lab 2 hours
PREREQUISITE: CIVL 3300.03 and CIVL 3610.03 (minimum), CIVL 4510.03 (preferable)
CROSS-LISTING: CIVL 6399.03
EXCLUSION: CIVL 6410.03

CIVL 4410.03: Engineering Hydrogeology.
This relatively quantitative introduction to hydrogeology brings with it a review of key definitions and hydraulic principles pertaining to flow through geological porous media. The course 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 chemistries of both natural and contaminated systems.

FORMAT: Lecture 3 hours, lab 2 hours
PREREQUISITE: CIVL 3300.03, CIVL 3110.03, ENGM 2621.03
EXCLUSION: CIVL 4410.03

CIVL 4431.03: Water Distribution and Sewerage Systems.
This class provides introduction to municipal engineering concerns with the hydraulic and hydrologic bases 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 3100.03, 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 national wastewater treatment plants are included.

FORMAT: Lecture 3 hours, lab 2 hours
PREREQUISITE: CIVL 3450.03

CIVL 4460.03: Solid Waste & Landfill Engineering.
This class provides 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 3100.03
CO-REQUISITE: CIVL 3450.03

CIVL 4515.03: Reinforced Concrete Design.
This class will provide students with a basic understanding of the behaviour and analysis of reinforced concrete as a structural material, elementary skills and concepts necessary for designing a variety of common structural elements, and appropriate analysis techniques and code approximations. Current design code provisions related to flexure, shear and compression members will be reviewed leading to practical design examples for one-way floor systems, columns, footings, and cantilever retaining walls.

FORMAT: Lecture 3 hours, lab 2 hour
PREREQUISITE: CIVL 3150.03, CIVL 3715.03, CIVL 3725.03
EXCLUSION: CIVL 3520.03, CIVL 4510.03
CIVL 4525.03: Design of Steel Structures.
This introductory design class emphasizes the behaviour and design of steel members resisting tensile, compressive, and flexural loads and simple connections of these elements. Members subject to combined loading will also be studied. Upon 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 trusses, arches, bridges, towers, and submarines.

PREQUISITE: CIVL 3505.03, CIVL 3515.03, CIVL 3705.03, CIVL 3740.03
EXCLUSION: CIVL 4520.03
FORMAT: Lecture 3 hours, lab 2 hours
EXCLUSION: CIVL 4540.03

CIVL 4510.03: 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 balanced set of one and three-dimensional stress deformation problems under static and dynamic loading systems that are of specific interest to structural engineers.

FORMAT: Lecture 3 hours, lab 2 hours
EXCLUSION: CIVL 3505.03, CIVL 3515.03, CIVL 3705.03, CIVL 3740.03

CIVL 4701.03: Civil Engineering Project.
The class objective is to provide experience in the application of engineering principles to the solution of specific civil engineering problems. Students are required to prepare a formal report and make an oral presentation of their project. It is expected that the project be started in the second-to-last academic term and finished in the last academic term. Students will gain practical experience in all aspects of project preparation and execution.

EXCLUSION: CIVL 4700.03

FORMAT: Lecture 3 hours, lab 2 hours
EXCLUSION: CIVL 4520.03

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.

PREQUISITE: CIVL 4801.025
EXCLUSION: CIVL 4700.03

CIVL 4803.03: Senior Project II.

CIVL 4830.03: Applied Geometrics.
The class covers principles of geomatics utilizing exercises to show applications of the use of Global Positioning Systems (GPS) and Geographical Information Systems (GIS) technologies in engineering projects. Concepts of GPS such as data collection, processing and integration are discussed. GIS tools are used to acquire existing data sets, to merge GPS observations with these data, and to produce maps and to perform common, as well as more complex, analyses on a prototype GIS.

FORMAT: Lecture 2 hours, lab 3 hours
EXCLUSION: CIVL 3524.001

B. Mineral Resource Engineering Series

MINE 3500.03: Introduction to Geology for Engineers.
This class deals with the fundamental principles of geology. Topics include mineralogy, rock-forming processes, weathering, erosion, groundwater, glaciation, mass wasting, running water, deserts, shorelines, geologic structures, tectonism, and Earth's interior. The links between geology, engineering, and the environment are explored through case studies. Laboratory exercises covering the identification and interpretation of minerals, rocks, landforms (using topographic maps and remote sensing images) and geologic map structures are an important part of the class.

FORMAT: Lecture 3 hours, lab 3 hours

MINE 3520.03: Introductory Mining Engineering.
This class is an introduction to the mineral industry and mining engineering. Emphasis is placed on unit operations, equipment and surface and underground mining methods. Summaries of the natural and global mineral industries, innovative technologies and practices, and the relationships between mining and mineral processing are included.

FORMAT: Lecture 3 hours, lab 3 hours, lab 4 hours
EXCLUSION: MINE 3510.03

MINE 3530.03: Mineral Processing.
This class is concerned with the principles of unit operations employed in the physical processing of minerals: examination of mineral characteristics and separation methods that are used, liberation of minerals, crushing, grinding, screening and classification. Mineral separation methods include gravity, dense medium, magnetic and high tension separation, flotation and selective flocculation. Laboratory tests, their interpretations, and assessment of separation performance are covered.

FORMAT: Lecture 3 hours, lab 3 hours
EXCLUSION: MINE 3510.03

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.  
The class covers the topics of mineralogy, geologic structure, petrology of igneous, sedimentary and metamorphic rocks and tectonic processes. Emphasis is placed on the relationships between these topics and mineral 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 are introduced. Design, classification systems and failure criteria for rock mass are described. The principles of engineering design for underground and surface mines are covered. Stereographic projections and numerical methods are used to analyze surface and underground rock stability. Rock mechanics instrumentation is discussed. Laboratory sessions cover sample preparation and rock testing.  
FORMAT: Lecture 3 hours, lab 3 hours  
PREREQUISITE: MINE 3605.03

MINE 3612.03: Rock Penetration and Fragmentation.  
This class presents the principles and theories of rock drilling and blasting in both underground and surface mining applications. It covers the properties of explosives and the principles for selection of explosives for different situations. The transportation methods, loading techniques and priming procedures for explosives are discussed. Current trends in drilling and blasting practices are considered as well as controlled blasting and blast monitoring methods. State-of-the-art techniques in rock penetration and fragmentation are presented.  
FORMAT: Lecture 3 hours

MINE 3620.03: Petroleum Engineering.  
This class is designed to provide a comprehensive overview of the engineering aspects of the petroleum industry. Similarities between mining and petroleum engineering are stressed. Major topics cover well planning, rotary drilling techniques, drilling optimization, well cementing, well completion, and production methods. Equipment selection and design procedures for each unit operation.  
FORMAT: Lecture 3 hours, lab 2 hours  
PREREQUISITE: MINE 3500.03

MINE 4705.03: Mining Geology II.  
The physical characteristics and origin of the main types of ore deposits are covered. Individual deposits are described in terms of their mineralogy, rock types, structures and geologic factors affecting mining engineering. Laboratory sessions and assignments concentrate on the theoretical and practical aspects of ore deposits using hand specimen petrography, maps, sections, structure contours, and reserve modeling. Assignments reading and a term project are important components of the course.  
FORMAT: Lecture 3 hours, lab 3 hours  
EXCLUSION: MINE 4814.03

MINE 4710.03: Mine Excavation Systems.  
This class deals with several specialized mining topics related to mine excavation including mine drainage in underground and surface operations, tunneling and shaft sinking equipment and techniques, mining related soil mechanics, pressure grouting, ground freezing and mine backfilling.  
FORMAT: Lecture 3 hours, lab 2 hours

MINE 4711.03: Mine Ventilation and Environment Control.  
This class presents the main principles of total mine air conditioning: air quality, air quantity, and temperature-humidity control in underground mines. Health hazards such as mine dusts, gases, radiation, and heat stress are discussed. Design of airflows in single openings, circuit analysis, and ventilation network design are studied using manual and computer based techniques. Temperature-humidity control systems design is discussed. Mine illumination and noise control are studied as part of the total mine environment.  
FORMAT: Lecture 3 hours, lab 2 hours

MINE 4712.03: Mineral Economics.  
This class applies the economic concept of a free enterprise system to evaluate the investment risk factors in the mineral industry. The major subjects discussed are mineral commodity economics, economic and political trends, mineral policy, marketing of mineral commodities, price mechanisms, mine project evaluation, feasibility studies, and mine financing. A term report is assigned to each student to conduct a mineral economic analysis.  
FORMAT: Lecture 2 hours, lab 2 hours

MINE 4714.03: Computer-Aided Mine Planning.  
This class deals with planning and design of underground and surface mining operations, long and short-term mine production, planning and project planning and execution. Students are familiarized with computer-aided mine planning through the application of software in CAD. Computer experience is gained in the use of commercially available software for geological data analysis, mineral resource modeling, mine design and valuation.  
FORMAT: Lecture 3 hours, lab 2 hours

MINE 4801.03: Advanced Topics in Rock Mechanics.  
This class deals with several specific topics in rock mechanics related to ground stability control in surface and underground mines. It covers ground failure, ground movement monitoring, in-situ stress management, application of numerical modeling methods, and back-analysis techniques in mining engineering. Theory and state-of-the-art of relevant techniques are discussed. Case studies are introduced to discuss practical problems.  
FORMAT: Lecture 2 hours, lab 3 hours  
PREREQUISITE: MINE3612.03 or permission by instructor

MINE 4811.03: Senior Design Project.  
This design project incorporates previous and concurrent coursework in the Mining Engineering curriculum. The project scope can include feasibility studies, mine planning and design, mineral processing design and petroleum design. All projects will incorporate technical design components as well as economic analysis and valuation. Individual supervision of students is provided. Students will have to submit project proposals, regular progress reports, and a final project report and presentation. Wherever feasible, project development, supervision and evaluation will be done in collaboration with industry representatives.  
FORMAT: Lecture 2 hours, lab 3 hours  
PREREQUISITE: Completion of all classes except the final academic term of the Mining Resource Engineering Program  
EXCLUSION: MINE 4810.03

MINE 4812.03: Mine Production Engineering.  
The topics covered in this class are engineering and management techniques to increase mine productivity, operating units problems analysis, production scheduling and optimization; material movement modelling, and mine maintenance. The tutorial includes computer applications in mine production and class discussions of case studies. Each student is required to solve problems and produce a term project using computer simulation programs.  
FORMAT: Lecture 2 hours, lab 3 hours

MINE 4815.03: Mining and the Environment.  
This class covers environmental practices, problems and solutions in the mineral industry. Topics include regulations, reclamation, mine closure, acid rock drainage, surface subsidence, nuclear waste disposal and coal mine explosions. Case studies are used to highlight these topics. Class participation is emphasized through oral and written presentations.  
FORMAT: Lecture 3 hours, lab 2 hours  
PREREQUISITE: MINE 3500.03
MINE 4816.03: Mining Engineering Project.
This project allows interested students to investigate a mining topic, which may also be oriented towards geology, mineral processing, environmental issues, or petroleum engineering. The topic must be original and acceptable to the department. A detailed written report of the investigation is required, which is evaluated by two professionals, one of whom is the student advisor.
FORMAT: Lab 5 hours

MINE 4817.03: Mineral Resource Engineering Seminar.
At each session students give prepared addresses on subjects related to developments on mining engineering topics that are of common interest to the members of the group. Careful selection of subject matter and adequate preparation is required. The use of proper English expression is stressed. Constructive criticism is offered by the staff and discussion by the students is encouraged.
FORMAT: Lecture 2 hours

MINE 4818.03: Mine Waste Management.
This class provides general understanding of the relationship between planning, technical requirements and design of safe, economical and environmentally acceptable mine waste disposal sites. A major portion of the class is devoted to site selection, waste disposal methods and design procedures for waste disposal sites. Monitoring techniques of waste water quality are discussed along with efficient treatment for environmental control. Other topics include acid mine drainage, site reclamation and alternative options to mineral waste disposal.
FORMAT: Lecture 2 hours, lab 3 hours

MINE 4820.03: Surface Mine Slope Stability.
This class deals with the fundamentals of slope stability analysis in surface mining. A brief discussion is first given to field data collection and the mechanism of slope failure. Various techniques for solving slope problems encountered in the mining industry are then introduced, including plane failures, wedge failures, toppling, and rotational failure.
FORMAT: Lecture 2 hours, lab 3 hours
PREREQUISITE: MINE 3611.03, MINE 3510.03

MINE 4821.03: Petroleum Reservoir Engineering.
This class discusses the theory and calculations in petroleum reservoir engineering. Major topics include petroleum composition, formation, migration and trapping mechanisms, classification and properties of reservoir rocks and fluids, fluid flow through porous media, phase behaviour diagrams, reservoir energy and recovery mechanisms, reservoir evaluation, as well as geological and reservoir considerations in drilling and production engineering. An introduction to petroleum exploration methods, and data interpretation techniques is also included.
FORMAT: Lecture 3 hours, lab 3 hours
PREREQUISITE: MINE 3502.03, MINE 3615.03

MINE 4822.03: Advanced Petroleum Engineering.
This class is an advanced study of petroleum reservoir engineering, drilling and development. Topics include analysis and prediction of oil and gas reservoir performance under a variety of production methods, theory and practice of well testing and pressure analysis techniques, well planning, drilling optimisation, enhanced recovery mechanisms, displacement theory and modelling. Students will have to complete a term project dealing with one of these topics.
FORMAT: Lecture 3 hours, lab 2 hours
PREREQUISITE: MINE 3620.03, MINE 4821.03
CROSS-LISTING: MINE 6009.03

MINE 4823.03: Offshore Drilling and Production.
This class is oriented toward the practical applications of offshore drilling, production and completion technology in the ocean environment. Emphasis is placed on the types, applications and limitations of offshore rigs, platforms and subsea production systems. The technical aspects of offshore islands, breakwaters, safety and fire protection, loading and transportation systems are also covered. The decision making process based on economics and developing technology regarding offshore field development and production is presented as a case study.
FORMAT: Lecture 3 hours, lab 2 hours
PREREQUISITE: MINE 3620.03, MINE 4821.03
CROSS-LISTING: MINE 6009.03

MINE 4830.03: Advanced Mineral Processing.
The objective of this class is to teach how unit operations of mineral processing may be integrated into overall plant operation. The topics covered 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 concentration, basic principles of mineral processing plant design and development of a process flow sheet of a plant based on laboratory test work.
FORMAT: Lecture 2 hours, lab 3 hours
PREREQUISITE: MINE 3530.03

MINE 4831.03: Coal Processing.
This class offers detailed study of coal cleaning processes and is intended for students with a special interest in the field. The topics covered are: properties of coal, size reduction, screening, jigs, dense medium baths and cyclones, Dyna-sifts, and Vorey separators, water-only cyclones, shaking tables, spirals, flotation, split conditioning, oil agglomeration, selective flocculation, dry concentration, sulphur reduction, desulfurization, 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, frothers, activators and depressants; modulation of collectors; froth stability; fines entrainment in froth lamellae; flotation kinetics; flotation machines; flotation of sulphides, oxides, silicates and nonmetallic minerals, and flotation circuit design.
FORMAT: Lecture 2 hours, lab 3 hours

MINE 4833.03: Coal Process Engineering.
This course provides an introduction to the engineering aspects of coal processing and the production of coke, briquets, and other coal-based products. It covers the principles of coal preparation, including size reduction, screening, jigs, dense medium baths and cyclones, cleaning, and selective flotation. The class is designed for students with a special interest in the field. The topics covered include 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 concentration, basic principles of mineral processing plant design and development of a process flow sheet of a plant based on laboratory test work.
FORMAT: Lecture 2 hours, lab 3 hours
PREREQUISITE: MINE 3530.03

MINE 4834.03: Advanced Coal Process Engineering.
This class is an advanced study of petroleum reservoir engineering, drilling and development. Topics include analysis and prediction of oil and gas reservoir performance under a variety of production methods, theory and practice of well testing and pressure analysis techniques, well planning, drilling optimisation, enhanced recovery mechanisms, displacement theory and modelling. Students will have to complete a term project dealing with one of these topics.
FORMAT: Lecture 3 hours, lab 2 hours
PREREQUISITE: MINE 3620.03, MINE 4821.03
CROSS-LISTING: MINE 6009.03

MINE 4835.03: Offshore Drilling and Production.
This class is oriented toward the practical applications of offshore drilling, production and completion technology in the ocean environment. Emphasis is placed on the types, applications and limitations of offshore rigs, platforms and subsea production systems. The technical aspects of offshore islands, breakwaters, safety and fire protection, loading and transportation systems are also covered. The decision making process based on economics and developing technology regarding offshore field development and production is presented as a case study.
FORMAT: Lecture 3 hours, lab 2 hours
PREREQUISITE: MINE 3620.03, MINE 4821.03
CROSS-LISTING: MINE 6009.03

MINE 4836.03: 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 covered 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 concentration, basic principles of mineral processing plant design and development of a process flow sheet of a plant based on laboratory test work.
FORMAT: Lecture 2 hours, lab 3 hours
PREREQUISITE: MINE 3530.03

MINE 4837.03: Coal Process Engineering.
This class provides an introduction to the engineering aspects of coal processing and the production of coke, briquets, and other coal-based products. It covers the principles of coal preparation, including size reduction, screening, jigs, dense medium baths and cyclones, cleaning, and selective flotation. The class is designed for students with a special interest in the field. The topics covered include 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 concentration, basic principles of mineral processing plant design and development of a process flow sheet of a plant based on laboratory test work.
FORMAT: Lecture 2 hours, lab 3 hours
PREREQUISITE: MINE 3530.03

MINE 4838.03: Advanced Coal Process Engineering.
This class is an advanced study of petroleum reservoir engineering, drilling and development. Topics include analysis and prediction of oil and gas reservoir performance under a variety of production methods, theory and practice of well testing and pressure analysis techniques, well planning, drilling optimisation, enhanced recovery mechanisms, displacement theory and modelling. Students will have to complete a term project dealing with one of these topics.
FORMAT: Lecture 3 hours, lab 2 hours
PREREQUISITE: MINE 3620.03, MINE 4821.03
CROSS-LISTING: MINE 6009.03

MINE 4839.03: Offshore Drilling and Production.
This class is oriented toward the practical applications of offshore drilling, production and completion technology in the ocean environment. Emphasis is placed on the types, applications and limitations of offshore rigs, platforms and subsea production systems. The technical aspects of offshore islands, breakwaters, safety and fire protection, loading and transportation systems are also covered. The decision making process based on economics and developing technology regarding offshore field development and production is presented as a case study.
FORMAT: Lecture 3 hours, lab 2 hours
PREREQUISITE: MINE 3620.03, MINE 4821.03
CROSS-LISTING: MINE 6009.03
Civil Engineering

Locations: 1360 Barrington St., 1515, Sexton Campus
Halifax, N.S. B3J 1Z1
Telephone: (902) 494-3960
Fax: (902) 494-3108
Email: civil.engineering@dal.ca

Dean
Leon, L. J., BSc, MSc, PhD (Dal), PEng
Department Head, Civil and Resource Engineering
Zou, D.H., BSc (CUMT, China), PhD (UBC), PEng
Undergraduate Program Co-ordinator
Ali, N.A., BSc (Baghdad), MSc, PhD (N.Carolina State), PEng

I. Introduction

Civil engineering deals with the design, construction, and maintenance of the infrastructure of human civilization. Civil engineers are engaged in addressing two fundamental questions. First, how do we protect our society and its infrastructure from the impacts of the natural environment? Second, what are the impacts of society and its infrastructure on our natural environment? The infrastructure considered may be at the feasibility or the design stage, or already in existence.

First, humans need protection from the elements to thrive on this planet. With the growth of 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 to the environment and to our own health are minimized, or perhaps even nullified? Nature metes out drought and heat, floods and freezing temperatures. How can we prepare society for such eventualities? The fact that our water and other planetary resources are also finite, can be badly or well-managed, and have been abused in the past all raise additional questions and endeavours that come under the purview of civil engineering. That the undergraduate civil engineering program at Dalhousie University has two options (the Infrastructure Option and Earth & Environment Option) is a reflection of the long-standing relevance and importance of the role of civil engineers in addressing the above questions.

Although civil engineering is only one among many engineering disciplines available at Dalhousie, as an applied science it is characterised by exceptional technical diversity, great breadth and depth of subject matter, and a propensity for proactively addressing the practical needs of society. It is therefore natural that a B.Eng. in civil engineering is an excellent way to start "life in the universe". It is often used by our graduates as a launching pad for post-graduate studies in very diverse realms of study. Civil engineers are found in all levels of government, in private consulting companies, in public utilities, in global enterprises, and in a wide range of fields that has included technology management, business administration, and even biomedical engineering. In 2002 the Canadian Council of Professional Engineers reported that more than 20% of Canada's engineers were civil engineers.

The Department of Civil Engineering has about 60 graduate students. They are involved in a wide-range of projects that will affect engineering practice. Our experienced and diversely-trained faculty members therefore have many research outcomes upon which they can draw when coming to the classroom or the laboratory and in doing so are eminently able to keep the undergraduate program current and modern.

A. Infrastructure Option

In this option, the following aspects of civil engineering are emphasized: structural engineering and design, materials of construction (steel, concrete, timber, masonry, asphalt, fibre reinforced polymers), transportation engineering, construction management, and soil mechanics.

B. Earth and Environment Option

In this option the following aspects of civil engineering receive some emphasis: environmental engineering, water and wastewater treatment, water resources and hydrogeology, geo-environmental engineering, and waste management.

II. Curriculum and course descriptions

Refer to sections IIA and IIIA, Civil Engineering Program, in the Civil and Resource Engineering section of this calendar, pages 269 and 271.
I. Introduction

No other branch of engineering can claim to have such an impact on modern society as Electrical & Computer Engineering. The ease, speed and precision by which electrical energy and electrical signals can be transmitted, transformed and controlled has influenced not only daily life of people, but has also changed the course of many other disciplines. Over only a few decades, Electrical & Computer Engineering has grown to a multi-branch discipline with significant applications in the areas of power systems, communication systems, microelectronics, photonics, and computers. This rapid growth, coupled with major advances in technology and material science, has made the field very dynamic, and poses a challenge to the student, to the educator and to the practicing Electrical & Computer Engineer for the breadth of its activities.

The Electrical and Computer Engineering curricula is based on the physical and mathematical principles which constitute the unchanging foundation of the discipline, followed by classes which apply these principles to various specialized application areas.

In the final year of the electrical engineering program, a number of technical elective classes are provided to enable the student to obtain a deeper, more detailed understanding of current technology in a field of interest. Technical electives may also be chosen from listed classes offered by other Departments. Also during the final year the students, usually in teams of two, work on a project requiring the application of knowledge to a realistic engineering problem. The projects are submitted by professionals in local industrial and research facilities who then provide supervision in conjunction with an assigned Faculty Advisor. Laboratory sessions form an integral part of most Electrical & Computer Engineering classes. These sessions are conducted in laboratories housed in C Building.

II. Degree Programs

A. Electrical Engineering Program

Year 1 follows the common program outlined in the Engineering section of this calendar.

Year 2, Term 3 (Fall)
- EECD 2000.03 Electric Circuits
- ECD 2200.03 Digital Circuits
- ENGM 2800.03 Engineering Thermodynamics I
- ECD 2400.03 Engineering Mathematics III
- ECD 2401.03 Applied Linear Algebra
- ECD 2402.03 Computer Programming

Year 2, Term 1 (Winter)
- CFSE 2000.03 Technical Communications
- ECD 2001.03 Circuit Analysis
- ECD 2200.03 Electrical Engineering Design I
- ECD 2502.03 Applied Probability & Statistics
- ECD 2602.03 Engineering Mathematics IV (b)
- ECD 2602.03 Data Structures and Numerical Methods

Year 3, Term 5 (Fall)
- ECD 3200.03 Networks & Systems
- ECD 3100.03 Electromechanics
- ECD 3200.03 Introduction to Electronics
- ECD 3300.03 Electromagnetic Fields
- ECD 3500.03 Signal Analysis
- ECD 3600.03 Electrical Materials

Year 3, Work Term 1 (Winter)

Year 3, Term 6 (Summer)
- ECD 3101.03 Power Systems I
- ECD 3200.03 Analog Electronics
- ECD 3202.03 Instrumentation
- ECD 3204.03 Microprocessors
- ECD 3305.03 Analog Communications
- ECD 3900.03 Electrical Engineering Design II
Year 4, Work Term 2 (Fall)

Year 4, Term 7 (Winter)
- CPST 3020.03 Engineering in Society II
- ECED 4401.03 Electromagnetic Waves & Propagation
- ECED 4402.03 Digital Signal Processing
- ECED 4403.03 Digital Communications
- ECED 4600.03 Modern Control Systems
- IENG 2005.03 Engineering Economics

Year 4, Term 8 (Spring)
- CPST 3020.03 Engineering in Society II
- ECED 4601.03 Digital Control Systems
- ECED 4602.03 Senior Year Project
- IENG 2005.03 Engineering Economics
- TE

Year 4, Work Term 3 (Summer)

C. Cooperative Education Program Sequencing

The schedule for the cooperative education program includes eight academic terms (AT) and three work-terms (WT), as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>AT</th>
<th>Term</th>
<th>Fall</th>
<th>Winter</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3</td>
<td>AT3</td>
<td>FREE</td>
<td>AT4</td>
<td>FREE</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>AT5</td>
<td>AT6</td>
<td>AT7</td>
<td>AT8</td>
</tr>
</tbody>
</table>

D. Technical Electives

- ECED 4071.03 Analog Filter Design
- ECED 4092.03 MOS Switched-Capacitor Circuits
- ECED 4130.03 Electric Power Systems II
- ECED 4140.03 Power Systems II
- ECED 4200.03 IC Design and Fabrication
- ECED 4301.03 Optical Electronics
- ECED 4402.03 Technology and Applications of Fiber Optics
- ECED 4403.03 Communications Electronics
- ECED 4504.03 Digital Transmission Theory
- ECED 4700.03 Biomedical Engineering

III. Class Descriptions

ECED 2000.03: Electric Circuits.
This course is an introductory level in electric circuit analysis. The material covered starts with a review of the fundamental circuit variables such as voltage, current, charge, power, and energy. Kirchhoff's laws are introduced and developed into node and loop analysis techniques. Terminal behavior and circuit equivalence including Thevenin and Norton circuits are covered. Analysis with controlled sources and energy storage elements is developed including steady state and transient response for first order networks. Phasors and sinusoidal steady state are introduced. Students are introduced to circuit simulation tools such as pSpice.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: MATH 1010.03, PHYC 1100.06

ECED 2001.03: Circuit Analysis.
This course covers advanced circuit analysis techniques, starting with sinusoidal excitation. The concepts of phasors and complex impedance are fully developed. Mutual inductance and magnetically coupled coils are used to introduce transformer 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 and developed into node and loop analysis techniques. Asynchronous and synchronous sequential circuits, and finite state machines, is covered. Karnaugh mapping techniques and state tables and diagrams are taught. Programmable logic is introduced. Contemporary computer aided design and analysis software is used throughout the class.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: ECED 2000.03

ECED 2200.03: Digital Circuits.
This course 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. Programming 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.
This course is an introduction to the fundamental concepts of system analysis, including Fourier transforms, Laplace transforms, and state-space methods. The concepts of feedback and control are introduced and developed into node and loop analysis techniques. Advanced circuit analysis techniques, starting with sinusoidal excitation, are covered.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: ECED 2001.03
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 hierarchies, testability, manufacturability, and troubleshooting; project reports; and ethics in design including the engineer’s dilemma, the value of written records, and reporting problems.
FORMAT: Lecture 2 hours, lab 1/2 hours
PREREQUISITE: ECED 2000.03, ECED 2200.03

ECED 3003.03: Networks & Systems.
This class provides the basic networks and systems analysis skills required in subsequent classes in the Electrical and Computer Engineering program. It covers topics such as signals and systems modeling concepts; applications of Laplace transform in network analysis, Bode plots, block diagrams; state-variable analysis; generalized two-port parameters; properties and analysis of linear time-invariant (LTI) systems; the convolution integral and Eigenfunction and Eigenvalues of LTI systems.
FORMAT: Lecture 3 hours, lab 1/2 hours
PREREQUISITE: ECED 3300.03, ENC 2021.03

ECED 3100.03: Electromagnetics.
This class covers the principles of electromagnetic-energy conversion and electric motors. A review of magnetic field behavior leads to magnetic circuit calculations and permanent magnet circuit behavior. Energy balance principles are used to develop force and torque relationships for many electromechanical applications including relays, motor movements and motor operation. Basic principles of motor operation such as rotating magnetic fields, efficiency and machine ratings are given as a prelude to and motor operation. Emphasis is placed on motor control and application.
FORMAT: Lecture 3 hours, lab 1/2 hours
PREREQUISITE: ECED 2000.03

ECED 3101.03: Power Systems I.
This class examines the development of the models of each of the components making up a power system including transformer behavior (power, control and instrument transformers), synchronous machine behavior (armature, field, transient, and salient pole theory) and transmission line behavior (lumped and distributed parameter). For unit normalization is covered. The equipment models are compiled to present network models that can be used to study power system operation. Load flow is discussed as well as fault estimation and circuit protection.
FORMAT: Lecture 3 hours, lab 1/2 hours
PREREQUISITE: ECED 3200.03, ECED 3001.03

ECED 3201.03: Introduction to Electronics.
The class gives an introduction to semiconductors physics. The theory of operation of semiconductor diodes, bipolar junction transistors (BJTs), and junction and metal oxide field effect transistors (MOSFETs), is covered in detail. The analysis and design of diode, BJT, and MOSFET circuits is covered including voltage multipliers, voltage regulators and low frequency small signal amplifiers. Contemporary computer aided design and analysis software is applied to the aforementioned circuits.
FORMAT: Lecture 3 hours, lab 1/2 hours
PREREQUISITE: ECED 3003.03, ECED 3001.03

ECED 3202.03: Analog Electronics.
The class covers the behavior of real op-amps, BJTs and FETs in high-frequency and multistage applications. Topics include linear and non-linear op-amp circuits; current mirrors, active loads and biasing; multistage amplifier design; feedback in amplifiers; high-frequency narrow-band amplifier tuning; coupling and matching; crystal, resonant, phase-shift and relaxation oscillators; waveform generation; class A, AB, B, C and D power amplifiers; voltage regulator design; busbar design; design of MOSFET motor control circuits and pulse-width modulators. In addition, filtering, noise and distortion are introduced.
FORMAT: Lecture 3 hours, lab 1/2 hours
PREREQUISITE: ECED 3001.03, ECED 3300.03

ECED 3203.03: Instrumentation.
This class covers the principles of instrumentation systems and practices. Topics covered include: accuracy, precision, resolution and linearity, noise and noise sources, noise equivalent bandwidth, signal conditioning and low level measurement technique, quantization, sampling, shielding and grounding.
FORMAT: Lecture 3 hours, lab 1/2 hours
PREREQUISITE: ECED 3200.03

ECED 3204.03: Microprocessors.
This class introduces the currently available microprocessor system. Topics include microcontrollers as a type of microprocessor, microprocessor architecture, address, data and control buses, allocation of external memory modules, use of decoders, latches, flip-flops and other elements of a microprocessor system, CPU bus cycle, cycle-by-cycle execution, timing diagrams, I/O methods, I/O allocation, asynchronous serial communication, RS-232 standard, parallel port interfacings, handshaking protocols, timers, timer functions, interrupts, interrupt priority, assembly programming, software development and debugging.
FORMAT: Lecture 3 hours, lab 1/2 hours
PREREQUISITE: ECED 3200.03

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 electromagnetics is developed, and magnetostatics will lead to Maxwell’s equations. The theory developed is applied to calculating circuit parameters such as inductance, capacitance, and inductance for any electronic or magnetic structure.
FORMAT: Lecture 3 hours, lab 1/2 hours
PREREQUISITE: ECED 3300.03

ECED 3400.03: Microcomputer Systems.
This class introduces the fundamental of microprocessors and microcomputer systems for Computer Engineers. Topics include microcomputer structure and operation, software tools, assembly language programming, interfacing design, device design and programming, and interrupts.
FORMAT: Lecture 3 hours, lab 1/2 hours
PREREQUISITE: ECED 2400.03

ECED 3403.03: Computer Architecture.
This class deals with controllers, processor instruction sets, and memory systems. The student will study design methods, implementation techniques, modelling techniques, and performance analysis. Reduced instruction set architectures (RISC), pipelining, pipeline hazards, and their implementation for modern high speed applications will be studied. The student project will require a team to design and implement (or simulate) a RISC architecture.
FORMAT: Lecture 3 hours, lab 2 hours
PREREQUISITE: ECED 3400.03

ECED 3500.03: Signal Analysis.
Transformation theory and frequency domain representation of continuous-time signals including Fourier series, Fourier transform and Laplace transformation. Discrete-time signals, sampling theorem, aliasing and frequency domain representation of discontinuous signals including the z-transformation. Introduction to communication systems, exponential and sinusoidal amplitude modulation.
FORMAT: Lecture 3 hours, lab 1/2 hours
PREREQUISITE: ECED 2001.03, ENC 2021.03

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 those techniques, the principle of operation of a phase locked loop, and the principle of frequency division multiplexing. Standard AM and FM radio and TV systems are discussed.

**FORMAT:** Lecture 3 hours, lab 2 hours

**PREREQUISITE:** ECED 3901.03

**ECED 3800.03: Electrical Materials.**

This class deals with the understanding and application of electronic materials used by electrical engineers. The class will begin by introducing Schrödinger’s equation in context with understanding the electronic transport properties of semiconductor and metals. The concept of holes, effective mass, polarization, optical absorption, dielectric breakdown, and lasers will be developed. The properties and characteristics of pn junctions, dielectrics, magnetic materials, optical materials, and pn light detectors will be introduced.

**FORMAT:** Lecture 3 hours, lab 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 3900.03

**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 Monolithic MOS switched-capacitor filters is also introduced.

**FORMAT:** Lecture 3 hours, lab 2 hours

**PREREQUISITE:** ECED 3003.03 and ICED 3202.03

**ECED 4082.03: MOS Switched-Capacitor Circuits.**

Metal-oxide-semiconductor (MOS) switched-capacitor (SC) techniques are the foundation 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, Parametric-capacities, systematics 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 3301.03

**ECED 4140.03: Power Systems III.**

The class covers topics such as load curves and forecasting, characteristics and peak demand forecasting, weather-load models, discounted multiple regression and 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 MOS transistors is reviewed. Processing technologies such as diffusion, ion implantation, and etching are presented with an emphasis on CMOS circuit fabrication. Electrical and physical characteristics of circuits and clocking and I/O structures are studied. System design of FPLAs, adders, counters, ROM, and RAM will be examined. Extensive use of CAD tools will give the student hands-on experience with systems typically used in industry.

**FORMAT:** Lecture 3 hours, lab 2 hours

**PREREQUISITE:** ECED 3200.03 and ICED 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 cut-off frequencies.

**FORMAT:** Lecture 3 hours, lab 2 hours

**PREREQUISITE:** ICED 3300.03

**ECED 4350.03: Optical Electronics.**

This class deals with the fundamentals of generation and detection of light in semiconductor materials as they pertain to optoelectronic devices such as light emitting diodes, laser diodes, photo detectors, and optocouplers. Major topics include: review of semiconductor properties, photo detectors such as PIN photodiodes and avalanche photodiodes (APDs), spontaneous emission and injection luminescence in light emitting diodes (LEDs) and stimulated emission and optical gain in laser diodes (LDs). Typical materials, structures, characteristics and parameters of these devices are discussed with relation to various applications in fiber optics, sensing and consumer products.

**FORMAT:** Lecture 3 hours, lab 2 hours

**ECED 4402.03: Real Time Systems.**

This class reviews system analysis and design techniques and then addresses real time implementation methods. Real time operating system (RTOS) requirements are covered. Topics include message queuing, resource sharing, priority assignments, event flags, interrupts, memory allocation, and typical RTOS configurations. Examples in engineering and networking will be discussed. A significant implementation Design and implementation project will be undertaken.

**FORMAT:** Lecture 3 hours, lab 2 hours

**PREREQUISITE:** ENGG 2282.03, ECED 3402.03 and CSCT 3210.03

**ECED 4404.03: Computer Networks & Communications.**

Network architecture and topology, ISO, physical and data link layers, LANS, ATM, routing, quality of service, and emerging technologies. The laboratory and assignments will require implementation of network software and evaluation of current technologies.

**FORMAT:** Lecture 3 hours, lab 2 hours

**PREREQUISITE:** ICED 3493.03

**ECED 4421.03: Technology and Applications of Fiber Optics.**

This class deals with the basic principles and applications of optical fiber communications. Major topics include ray theory and electromagnetic modes in optical fiber waveguides, step-index and graded-index multimode and single-mode fibers, transmission characteristics of optical fibers such as attenuation (absorption, scattering, bending), dispersion (multimode, waveguide, material, profile), and polarization (random, preserved); optical fiber communication systems (transmitter, receiver, digital and analog system design); advanced systems; new communications applications.

**FORMAT:** Lecture 3 hours, lab 2 hours
ECED 4460.03: Communications Electronics.
This class provides an introduction to the theory and design of electronic circuits for communications systems. Topics include: the realization of passive components for high frequency applications; small signal amplifier design and characterization employing s-parameter techniques; large signal circuit design realization and analysis employing volterra series and harmonic balance nonlinear analysis procedure; the realization and characterization of non-linear circuits as high efficiency power amplifiers, oscillators, frequency converters, and modulator/demodulator subsystems; the integration of appropriate subsystems into analog and digital terrestrial and space borne radio communication systems.
FORMAT: Lecture 3 hours, lab/tut 2 hours
PREREQUISITE: ECED 3202.03, ECED 4301.03

ECED 4502.03: Digital Signal Processing.
This class introduces the basics of filtering and analysis of discrete time signals and systems. The synthesis and implementation of analog filters is covered. 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 are introduced.
FORMAT: Lecture 3 hours, lab/tut 2 hours
PREREQUISITE: ECED 3500.03

ECED 4503.03: Digital Communications Systems.
This is an introductory class in the theory and practice of digital communications with emphasis on the system side of a digital generation of communication systems. It starts with the fundamentals of digital communication technologies. Then, access, transport, and signaling standards in modern telecommunication systems are introduced. In particular, ISDN and residential broadband access alternatives are discussed. The digital hierarchy in SONET/SDH, the frame relay and ATM protocols are among the subjects covered. Wireless standards for cellular and satellite systems are considered and emerging personal communication services are introduced.
FORMAT: Lecture 3 hours, lab/tut 3 hours
PREREQUISITE: ECED 3500.03 and ECED 3501.03

ECED 4504.03: Digital Transmission Theory.
Topics covered will include detailed analysis of channel and source coding techniques with derivation of bit error rates for various modulation schemes and power-bandwidth efficiency trade-offs. Design of optimum receivers is examined. Coding gains of error control coding schemes are calculated. Power Spectral Density of communications waveforms is presented. Channel coding and performance degradations are discussed. Information Theory issues are examined. Teletraffic analysis is presented for both circuit and packet switched networks.
FORMAT: Lecture 3 hours, lab/tut 2 hours

ECED 4600.03: Modern Control Systems.
This class deals with control systems analysis and design aspects. Techniques for analyzing the performance of analog systems are introduced. Emphasis is on the use of the Laplace transform and state space techniques in evaluating system performance indicators including its stability. Tools introduced include frequency response methods, and the root locus. Practical examples involving design of controllers for small systems to achieve desired response are discussed.
FORMAT: Lecture 3 hours, lab/tut 2 hours
PREREQUISITE: ECED 3003.03

ECED 4601.03: Digital Control Systems.
This class deals with digital control systems analysis and design aspects. Techniques for analyzing the performance of sampled data systems are introduced. Emphasis is on the use of the Z-transform in evaluating system performance indicators including its stability. Tools introduced include frequency response methods, and the root locus. Practical examples involving design of controllers for digital control systems to achieve desired response are discussed.
FORMAT: Lecture 3 hours, lab 2 hours
PREREQUISITE: ECED 3003.03

ECED 4760.03: Biomedical Engineering.
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

**ENGM 2011.03: 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

**ENGM 2012.03: Applied Probability and Statistics.**
The topics covered include probability laws and the interpretation of numerical data, probability distributions and probability densities, functions of random variables, joint distributions, inferences concerning mean and variance, tests of hypotheses, and introduction to linear regression. The class emphasizes engineering applications and makes extensive use of statistical computer packages.

**FORMAT:** Lecture 3 hours, lab 2 hours

**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, space curves, arc length, curvature, functions of several variables, partial derivatives, implicit functions, constrained and unconstrained extrema, multiple integrals, surface area and volume, scalar and vector fields, line integrals, gradient, divergence and curl.

**FORMAT:** Lecture 4 hours, lab 1 hour

**ENGM 2062.03: Engineering Mathematics IVa.**
This class covers geometric vectors in three dimensions, dot product, cross product, lines and planes, complex numbers, systems of linear equations, matrix algebra, matrix inverse, rank, determinants, Cramer’s rule, space curves, arc length, curvature, functions of several variables, partial derivatives, implicit functions, constrained and unconstrained extrema, multiple integrals, surface area and volume, scalar and vector fields, line integrals, gradient, divergence and curl.

**FORMAT:** Lecture 3 hours, lab 2 hours

**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
ENGM 2262.03: Engineering Mathematics IVb.
This class covers space curves, arclength, curvature, functions of several variables, partial derivatives, implicit functions, constrained and unconstrained extrema, multiple integrals, line, surface, and volume integrals, change of variables in multiple integrals, scalar and vector fields, gradient, divergence and curl, Stokes Theorem, the Divergence Theorem, and applications to heat flow, electrostatics and fluid flow.
FORMAT: Lecture 3 hours, lab 2 hours
PREREQUISITE: ENGM 1011.03 and ENGM 1012.03 or MATH 1001.03 and MATH 1010.03

ENGM 2282.03: Data Structures and Numerical Methods.
This class introduces the student to system analysis, and software techniques. Topics covered include objects, stacks, queues, multiple linked lists, searching and sorting algorithms, and their implementation in the C++ programming language. The students use linear algebra and numerical methods in engineering examples while learning to implement properly structured solutions.
FORMAT: Lecture 3 hours, lab 2 hours
PREREQUISITE: ENGM 2041.03, ENGM 2081.03

ENGM 3032.03: Applied Statistics.
This class deals with some statistical techniques and their application to engineering problems. Topics included are: review of statistical inference, linear regression and correlation, analysis of variance, the design of experiments and nonparametric statistical methods.
FORMAT: Lecture 3 hours, lab 2 hours
PREREQUISITE: ENGM 2032.03

ENGM 3052.03: Applied Numerical Methods.
This class provides an introduction to Numerical Analysis with emphasis on solution of Engineering problems. The class covers the following topics: a brief review of Computer Programming; concepts of software engineering; approximations and errors; roots of linear and non-linear equations; LU decomposition; Singular value decomposition; condition number; curve fitting; numerical differentiation and integration; and numerical solution of ordinary differential equations.
FORMAT: Lecture 3 hours, lab 2 hours
PREREQUISITE: ENGM 2041.03, ENGM 2081.03

ENGM 3271.03: Engineering Mathematics V.
This class has three parts. The first is complex analysis, including the residue theorem and its applications. The second part concerns transform theory including Fourier Series, Fourier Transform, the frequency domain representation of signals, impulse response, and transfer function. The third part concerns partial differential equations including the classification of equations and boundary conditions, separation of variables, the wave equation, Laplace’s equation, and applications to electrical engineering problems.
FORMAT: Lecture 3 hours, lab 2 hours
PREREQUISITE: ENGM 2031.03, ENGM 2041.03, ENGM 2262.03, ENGM 2081.03

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 2031.03, 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 2032.03

ENGM 4675.03: Risk Assessment and Management.
This class introduces the risk assessment and system reliability methodologies, from classical event trees to simulation. Examples of risk-based decision making analyses will be covered, ranging from oil exploration to environmental site remediation. The student will carry out a risk assessment involving design decisions on a project of their own choosing.
FORMAT: Lecture 3 hours, lab 2 hours
PREREQUISITE: ENGM 2032.03

ENGM 4680.03: Ecosystem Modelling of Marine and Freshwater Environments.
Students develop and apply mathematical models of marine and freshwater ecosystems to study biological production, biogeochemical cycling etc. Lectures provide theoretical background for coupling nutrient cycling etc. 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 program is intended to satisfy the needs of interested students and the environmental industry. The curriculum is designed to train professionals in multidisciplinary approaches to environmentally-based design, waste management, water and soil quality, energy conservation and renewables, and air quality.

Sustainable environmental approaches to production and management systems will continue to be required by industry, government and the consulting sector at the provincial, regional, national and international level. Challenging Environmental Engineering careers are found in government departments such as Natural Resources, Environment, environmental consulting companies, provincial and national manufacturers of environmental and energy efficient products, in national and international petroleum companies and power utilities, and research and development work, as all students have to do individual research projects, which are often done in conjunction with their own active research programs or with industry participation. The students have a number of career paths including positions with the food and allied industry practices in food production. The specialized core classes in Food Science are taken during the program's third and fourth year, where students are studying in depth the chemistry, physics, biochemistry, 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, which are often done in conjunction with their own active research programs or with industry participation. The students have a number of career paths including positions with the food and allied industry.

II. Curriculum and course descriptions
Refer to sections II.C and II.D, Environmental Engineering, Program, in the Process Engineering and Applied Science section of this calendar, page 296.

III. Co-operative program and schedule
Refer to section I. Technical Co-op Program, in the Engineering section of this calendar, page 263.

IV. Admissions
- Students who have successfully completed first year engineering at a recognized university will be eligible for admission in Year II of the Environmental Engineering program.
- Students who have completed a first year science program will be considered for admission into Environmental Engineering.
- Students who have completed two or more years of university studies will be considered for admission on the basis of transfer of credits.

Food Science

I. Introduction
Food Science is a discipline that combines a basic knowledge of science and engineering principles in the study of food products and preservation technologies. Food scientists have training in and employ the principles of the basic sciences such as physics, mathematics, chemistry, biology, biochemistry, and microbiology. Food Science is the application of the basic sciences and engineering to food processing, preservation and safety.

Dalhousie's BASc degree in Food Science is a four year program consisting of 20 credits or 120 credit hours. During the first two years of the program, students study the basic sciences necessary for advanced understanding of all areas of Food Science. The first and second year students take introductory classes in Food Science which explore core concepts and industry practices in food production. The specialized core classes in Food Science are taken during the program's third and fourth year, where students study in depth the chemistry, physics, biochemistry, 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, which are often done in conjunction with their own active research programs or with industry participation. The students have a number of career paths including positions with the food and allied industry.

II. Program and structure
The first and second year students take introductory classes in Food Science which explore core concepts and industry practices in food production. The specialized core classes in Food Science are taken during the program's third and fourth year, where students study in depth the chemistry, physics, biochemistry, 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, which are often done in conjunction with their own active research programs or with industry participation. The students have a number of career paths including positions with the food and allied industry.

III. Admissions
Students graduating with the BASc Food Science degree have a number of options open to them. These options include obtaining a job practising food science or pursuing graduate-studies to the Masters or Doctorate levels at Dalhousie University or another university. The food industry is the second largest employer in Canada and the largest manufacturing industry in the world. A food scientist with a BASc degree may choose from a variety of career paths including positions with the food and allied industries, government, education and research institutions, non-governmental organizations, and international development agencies. Graduates find work in food and beverage product and process development, food inspection and regulation, quality assurance, technical and research services, management, marketing and sales. Job prospects are numerous and continue to grow as demands for safe, wholesome and appealing food products increase.
II. Curriculum and course descriptions
Refer to sections IID and IID, Food Science Program, in the Process Engineering and Applied Science section of this calendar, page 296.

III. Admissions
Students from Canadian High schools are recommended to take the following subjects in high school: Precalculus Math and English and two or more of Physics, Chemistry, Food Science or Biology. The admission requirements are the same as for admission to the Bachelor of Science program. Many of our students have traditionally been transfer students. Please contact the program chair for advice on this matter.

Industrial Engineering

Location: 5289 Monto St., Room 208, Sexton Campus
Halifax, NS B3J 1B6

Telephone: (902) 494-3281
Fax: (902) 420-7858
Email: industrial.engineering@dal.ca
Website: www.ie.dal.ca

Dean
Leon, L.J., BSc, MSc, PhD (Dal), PEng

Department Head (Acting)
Gunn, E.A., BSc (M&A), MA (Dal), PhD (Toronto), PEng

Professors
Gunn, E.A., BSc (M&A), MA (Dal), PhD (Toronto), PEng
He, Q.-M., BSc, PhD (China), PhD (Waterloo) (Graduate Advisor)

Part-time Professors
Barzilai, J., BSc, MSc, DSc (Technion)
Sandblom, C.-L., Fil.Kand., Fil.Mag. (Lund), PhD (Birg)

Associate Professors
Blake, J. T., BASc, PhD (Toronto), PEng (Undergraduate Program Coordinator)
Cyron, J.P., BSc (Eng) (LW), MSc, PhD (TUNS), PEng
Pelot, R.P., BASc (Ottawa), MASc (Alberta), PhD (Waterloo), PEng (Co-Op Advisor)
Veelkasten, U., IE (IT-BHU), MS (Clemson), PhD (Purdue), PEng

Assistant Professors
Diallo, C., BEng, MSc, PhD (Laval)
MacDonald, C. A., BEng (TUNS), PhD (Dal), PEng

Adjunct Professors
Cormier, C., BSc (U de M), MSc, PhD (TUNS)
Eiselt, H.A., Dr-Ing (Kassel), Dr-Ing (Göttingen)
Millar, H., BSc (UW), MSc, PhD (TUNS), PEng
Wormald, B.M., BSc, PhD (Dal), PEng
Yang, T., BEng (Tsinghua), MEng, PhD (Toronto), PEng

Adjunct Associate Professors
Black, N., BA (Waterloo), MSc (TUNS), PhD (UNB), PEng
Li, H., BSc (China), PhD (NC-State)
MacKee, K., BMath, MSc, PhD (Waterloo)

I. Introduction
Industrial Engineers design systems to enable people and society to improve productivity, efficiency, effectiveness and quality. All engineers work at planning, designing, implementing and controlling the systems that enable people to use technology. The systems that industrial engineers design are broad and are characterized by a need to integrate both the physical and decision making capabilities of humans with all other aspects of the system design. Problems range from the design of a work method and work-station, to the design of a factory layout and methods of controlling the flow of materials on the factory floor, to the design of an overall corporate plan involving materials procurement, production, inventory and distribution. The idea of a factory is also extended to include communications systems, systems, energy systems, health care systems, municipal systems, transportation systems; in fact all the systems that are essential to the functioning of modern society. To facilitate effective decision making and achieve high performance in areas such as scheduling, inventory and quality control, industrial engineers are often required to design and implement computer based information systems.
Students begin the Industrial Engineering program with a background in engineering fundamentals studied during their initial two years. In the latter portion of the IE program, they are introduced to the fundamental approaches of work design and operations research, while at the same time enhancing their mathematical and computer background.

Later, more advanced modeling approaches are examined together with classes more directly related to the management process. Production scheduling, inventory control, quality management and plant layout are studied, as are the factors which influence human performance. Students are provided with the opportunity to study such areas as manufacturing, service systems, or maintenance through the Department’s elective class offerings.

In their final year, all students undertake a major project. Projects are drawn from companies or institutions outside the University and are treated as a consulting assignment. The students are evaluated based upon their ability to achieve an innovative solution by drawing upon the analytical skills developed throughout their program of studies. The projects, of course, satisfy the practical requirements of the client.

Job opportunities for industrial engineers are both challenging and widely based. Former graduates are currently practising industrial engineering in all types of work activity ranging from semiconductor manufacturing and airlines, to utilities and hospitals. Invariably, the work assigned is original in its nature, demanding that the industrial engineer be creative in applying his or her many abilities to achieve the best solution. Managers require such results if they are to keep their costs under control in this increasingly competitive world. This requirement will sustain the high analytical skills developed throughout their program of studies. They are only required to take the humanities class in Year 2. Students are only required to complete two of ENGM 2800.03 Engineering Thermodynamics I, ENGI 2300.03 Fluid Mechanics, ENGI 2400.03 Mechanics II, or ECED 2200.03 Digital Circuits.

Year 3, Term 5 (Fall)
- ENGM 3809.03 Computational Methods and Algorithms for IE
- ENGI 3311.03 Modelling and Design of Industrial Systems
- ENGI 3312.03 Analysis and Design of Work
- ENGI 3316.03 Design of Information Management Systems
- IENG 3344.03 Operations Research: Linear Models

Year 3, Term 6 (Winter)
- Work Term 1

Year 3, Term 7 (Summer)
- IENG 3303.03 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 4432.03 Facilities Design
- IENG 4445.03 Design of Inventory and Production Systems
- MICH 4380.03 Mechanical Design

Year 4, Term 10 (Summer)
- Work Term 3

Year 5, Term 11 (Fall)
- IENG 4520.03 Industrial and Organizational Psychology
- IENG 4541.03 Industrial Engineering Design Project I
- IE Elective
- IE Elective
- IE Elective

Year 5, Term 12 (Winter)
- IENG 4547.03 Company Operations and Management
- IENG 4548.03 Industrial Engineering Design Project II
- IE Elective
- IE Elective
- IE Elective

Industrial Engineering Electives
- IENG 4544.03 Routing and Scheduling
- IENG 4550.03 Project Management and Control
- IENG 4562.03 Maintenance Engineering and Management
- IENG 4564.03 Design and Optimization of Service Systems
- IENG 4571.03 Computer Integrated Manufacturing Systems
- IENG 4573.03 Industrial Biomechanics
- IENG 4574.03 Decision and Risk Analysis
- IENG 4575.03 Stochastic Processes and Queuing
- IENG 4579.03 Organizational Aspects of Quality Management
- IENG 4579.03 Supply Chain Management
- IENG 4580.03 Modelling and Performance Analysis of Computer Networks
III. Class Descriptions

IENG 2005.03: Engineering Economics.
This class is designed to provide students with the fundamentals of Engineering Economics. Engineers must function as managers in the real world of decision making where the criteria include not only technological excellence, but cost. Time value of money, project screening, and a variety of discounting analysis techniques are learned. We must know when to repair or when to replace, when to make and when to buy. Taxes and inflation can also have significant impact on the viability of projects. This class is designed to introduce students to these fundamentals, and apply them through the use of software and projects.
FORMAT: Lecture 3 hours, lab 1 hour

IENG 3305.03: Computational Methods and Algorithms for IE.
An overview of advanced programming methods is presented with an introduction to algorithms used in industrial engineering applications. Topics covered include sorting, searching, data structures, shortest paths, random number generation, simulated annealing, matrix operators, curve fitting and geometric algorithms. Algorithms for solving several classes of equations are considered. Techniques for sorting and debugging large programs, and controlling numerical errors are taught. The C programming language will be used for implementation.
FORMAT: Lecture 3 hours, lab 2 hours PREREQUISITE: ENGM 2081.03

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 workstation design and tool design, graphical techniques of work methods analysis, operations analysis, time study, performance analysis, evaluation of computer work measurement, job evaluation and wage payments.
FORMAT: Lecture 3 hours, lab 3 hours PREREQUISITE: ENGM 2082.03

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 1 hour

IENG 3316.03: Design of Information Management Systems.
Techniques used in the design of information management systems to support decision making are taught. This includes the principles of systems analysis, software engineering and requirements analysis. The design of relational database systems, user interfaces and documentation are covered. Current technologies for computer hardware, software, networking and communications are reviewed. Students are taught how to program database applications in a fourth generation environment.
Software development projects will be assigned.
FORMAT: Lecture 3 hours, lab 2 hours EXCLUSION: IENG 3321.03

IENG 3321.03: Manufacturing Processes and Materials.
The course includes properties of manufacturing materials, cutting and forming, traditional and non-traditional machining processes, welding and computer integrated manufacturing (CIM). Theoretical background is provided that includes equilibrium diagrams, heat treatment, tool life and wear, and dimensioning and tolerance analysis. There will be lab experiments, video presentations and manufacturing plant visits.
FORMAT: Lecture 3 hours, lab 2 hours

IENG 3334.03: Industrial Statistics.
The course 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 EXCLUSION: IENG 2082.03

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. Formalization, solution algorithms, and applications of several problem classes are presented including network models and integer programs. Through a class project, students are introduced to the process of developing an optimization model, including the ideas of database, matrix generators, and report writers.
FORMAT: Lecture 3 hours, lab 3 hours PREREQUISITE: ENGM 2082.03, ENGM 2202.03 EXCLUSION: IENG 3345.03

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 evaluated through a term project.
FORMAT: Lecture, Lab PREREQUISITE: ENGM 2082.03 EXCLUSION: IENG 3343.03

IENG 3347.03: Ergonomics and Safety Engineering.
The course deals with those aspects of the design and use of machines which are influenced by the human operator. The ways of designing human/machine systems, displays, controls, the workplace, manual materials handling systems, hand tools and the work environment are considered so as to match functionally 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 3 hours EXCLUSION: IENG 3334.03

IENG 4432.03: Simulation of Industrial Systems.
This course covers discrete event systems simulation. Model development includes validation and verification methods, the generation of pseudo-random numbers from continuous and discrete distributions, selection of probability distributions and variance reduction techniques. Statistical output analysis and inference are studied for effective interpretation of results. Applications in areas such as manufacturing, service operations, project management and system design are reviewed. Simulation software is used throughout the course.
FORMAT: Lecture 3 hours, lab 2 hours PREREQUISITE: IENG 3305.03, IENG 3334.03, IENG 3345.03 EXCLUSION: IENG 3432.03
IENG 4443.03: Quality Control and Reliability.
This class evaluates aspects of production to ensure that products meet specifications. Statistical quality control, which is used to determine process capability and to detect process changes, involves the design and use of different types of control charts. Sampling inspection, which is used to separate good lots from poor lots, covers the design of sampling plans. Reliability is concerned with the design of products and reliability testing.
FORMAT: 1 lecture 3 hours.
PREREQUISITE: ENGM 2032.03, IENG 3344.03
EXCLUSION: IENG 3445.03

IENG 4445.03: Facilities Design.
The class deals with the principles, concepts and methods of plant layout and materials handling for the optimum design of a facility. The topics include information requirements for facility design, conventional and newer quantitative techniques for analyzing material flow, facilities location, space determination, computerized plant layout techniques, the unit load concept, materials handling equipment selection and automatic storage and retrieval systems. A project involves facilities design for the manufacture and assembly of a mechanical device.
FORMAT: Lecture 3 hours, lab 2 hours.
PREREQUISITE: IENG 3313.03
EXCLUSION: IENG 3446.03

This course introduces students to the use of operations research models and methodologies to optimize the design, development and operation of engineered systems. The objectives of this course are to provide students with the tools and skills to solve a variety of linear and non-linear models and the ability to recognize how such models can be applied in a wide variety of engineering disciplines. Topics to be covered include linear programming, integer programming, network models, decision analysis, dynamic programming, queuing models, and non-linear optimization. Applications will focus on diverse areas of engineering including mining, transportation, and environmental management.
PREREQUISITE: ENGM 2032.03, IENG 3313.03, IENG 3344.03, IENG 3445.03
EXCLUSION: IENG 3446.03

IENG 4529.03: Industrial and Organizational Psychology.
Individual behavior 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 explored. 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 II.
In this class the students work in pairs on an actual industrial engineering design problem from an organization outside the university. The problem may be in a manufacturing plant, a consulting firm, or a service industry.
The ability to solve problems and communicate with the client organizations and with professional Industrial Engineers is stressed. Students are required to maintain a professional log, to prepare an interim report and to demonstrate their presentation skills.
FORMAT: Lab 6 hours.
PREREQUISITE: Completion of all classes except those in the last two academic terms of the Industrial Engineering Program.

IENG 4544.03: Routing and Scheduling.
Optimization techniques for solving vehicle routing and scheduling problems are covered. Elementary concepts and notation for graphs, networks, maps and geographic information systems (GIS) are presented. Specific issues include NP-Complete problems, shortest paths and traveling salesperson problems. Vehicle routing and scheduling with capacity constraints, time windows, pick-up and delivery constraints are also discussed. Applications in manufacturing and transportation are reviewed.
FORMAT: Lecture 3 hours, lab 2 hours.
PREREQUISITE: IENG 3305.03, IENG 3344.03

IENG 4547.03: Company Operations and Management.
The purpose of this class is to introduce the student to the management and operation of large and small businesses. Topics include the business environment in Canada, entrepreneurship, small business startup and financing, organizational theory, management cycle, managing projects, human resources, industrial relations, management finance, marketing and sales. A term project is an integral part of this class.
FORMAT: Lecture 3 hours, lab 2 hours

IENG 4548.03: Systems Engineering.
This class places the industrial engineering viewpoint in the context of systems theory. The class begins with an introduction to the general concepts of systems and then examines classical linear systems theory as applied traditionally in engineering. It is shown how industrial engineering design can be viewed as a control system problem. The concepts of systems engineering are 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 4445.03

IENG 4551.03: Industrial Engineering Design Project I.
This class is a continuation of the earlier industrial engineering design project. The orientation leans heavily towards the application of more innovative solutions to the industrial problem already worked upon with the idea of making some worthwhile contribution to the advancement of the application of industrial techniques in the solution of real industrial problems. Successful completion of the class requires a high-caliber final report and oral presentation.
FORMAT: Lab 6 hours.
PREREQUISITE: IENG 4541.03

IENG 4553.03: Project Management and Control.
This class identifies the common aspects and peculiarities of projects and then illustrates the applications of analytical approaches to meet the challenges of achieving effective project management. The following topics are covered: feasibility studies, project planning, cost estimation, bidding, use of professional engineering and other types of consultants, organization and control, resource allocation and project life cycle concepts. The role of the professional engineer in society and the impact that engineering in all its forms makes on the environmental, social, economic and cultural aspirations of society are discussed.
FORMAT: Lecture 3 hours, lab 2 hours.
IENG 4562.03: Maintenance Engineering and Management.
The class deals with basic maintenance systems of equipment and buildings, maintenance job planning and scheduling, maintenance work measurement/universal maintenance standard (UMS), breakdown versus preventive maintenance, total productive maintenance (TPM), budgets and cost control, computerized maintenance management information system, reliability measurement based on the Weibull distribution, maintainability measures and managing maintenance.
FORMAT: Lecture 3 hours, lab 2 hours
PREREQUISITE: ENGM 2032.03, IENG 2005.03

IENG 4564.03: Design and Optimization of Service Systems.
This class will focus on the design of systems in Canada’s largest industry: health care. Throughout the class, examples drawn from health care will be used to illustrate how industrial engineering techniques can be applied in a wide variety of settings. Topics to be discussed include capacity planning, service distribution, quality, decision analysis, scheduling, and waiting line models.
FORMAT: Lecture 3 hours, lab 2 hours
PREREQUISITE: IENG 3311.03

IENG 4571.03: Computer Integrated Manufacturing Systems.
Techniques are introduced for the analysis and design of computer integrated manufacturing systems. The architecture of CIM systems is discussed, including machining stations, material handling, robotics, computer control and information systems. Specific topics include manufacturing simulation, automated material handling, warehouse management, robotics, manufacturing planning and control, just-in-time systems, group technology, cellular manufacturing, flexible manufacturing systems, concurrent engineering, computer aided process planning, and information system design.
FORMAT: Lecture 3 hours, lab 2 hours
PREREQUISITE: IENG 3321.03, IENG 4432.03

IENG 4573.03: Industrial Biomechanics.
The class primarily deals with the functioning of the structural elements of the human body and the effects of external and internal forces on the body. Due emphasis is given to the biomechanical approach to job design. This takes into account human motor capabilities and limitations, work physiology, task demands, equipment and workplace characteristics in an integrated manner. Use of bioinstrumentation and applications of biomechanics in work, industry, and rehabilitation are discussed.
FORMAT: Lecture 3 hours, lab 2 hours

IENG 4574.03: Decision and Risk Analysis.
This class teaches the principles and applications of decision analysis. The cognitive processes involved with information acquisition, judgement, value assessment, and decision-making are presented. Methods for coping with decision-making problems, 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: IENG 3321.03, IENG 4452.03

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 4503.03, 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 4423.03
I. Introduction

Metals and materials are found in every aspect of society today. Materials have always been central to the advancement of civilization so it is not surprising that entire eras are named after them (bronze age, iron age). The importance of developing new, advanced materials is truly a global issue with societal demands for things such as more fuel efficient vehicles and faster computer processors reaching all time highs. Materials Engineers are the driving force behind such developments, having an unsurpassed understanding of the respective structure, properties and processing of materials. Consequently, graduates are employed in practically all industries. Principals amongst these are primary metal production, automotive, aerospace, government research establishments and consulting firms. Literally all graduates find immediate employment - historically, over 70% have secured full time positions before the start of their final academic term. These niche individuals are highly respected within the companies that they work for and many advance into upper managerial and executive positions.

The program has been designed to give students extensive coverage of this highly unique field which in itself is very broad. The principal branches of Materials Engineering in which students receive instruction include (i) Extractive Processing of Materials, (ii) Structure of Materials, and (iii) Mechanical Properties and Testing of Materials; usually the graduating engineer chooses to specialize in one of these three. Students learn about all of the major classes of materials including metals, ceramics, polymers, and composites - graduates are true “Materials Experts.” In doing so, the respective curricula are designed to provide in-depth knowledge of engineering and more importantly, extensive coverage of discipline-specific areas. Students' understanding of the field is further accentuated by the fact that average class sizes are on the order of 20 to 25 students ensuring each an exceptional level of attention from faculty members and one on one interaction.

II. Curriculum and course descriptions

Refer to sections IIE and IIIE, Materials Engineering Program, in the Process Engineering and Applied Science section of this calendar, page 296.

III. Co-operative program and schedule

Refer to section F. Technical Co-op Program, in the Engineering section of this calendar page 263.
I. Introduction

Mechanical Engineering covers a very broad field of professional activity in such areas as land, sea, air, and space transportation; primary and secondary manufacturing industries; energy supply; conversion and utilization; environmental control; and industrial management. In these areas, the Mechanical Engineer may become involved with design, construction, operation, development, research, planning, sales and management.

The curriculum is designed to develop an understanding of the fundamental principles of Mechanical Engineering through lecture, tutorial, and laboratory activities. Well-instrumented laboratories in thermofluids, energy conversion, stress analysis, vibrations, and control systems provide experience in measurements and applications, to ensure a thorough understanding and appreciation of the subject matter. Classes in mathematics, and various non-technical subjects are offered to broaden the student’s outlook and understanding of the profession.

Laboratory involvement is considered an important component of mechanical engineering students’ education. Emphasis in the laboratory is placed on project work in which design, development and testing are combined in term projects. The laboratory facilities include extensive equipment which is available for use by both undergraduate and graduate students. Measurement techniques and interpretation of test data are emphasized in the laboratories which include several testing machines, photelastic equipment and strain gage facilities. The control systems laboratories include hydraulic, pneumatic and electronic control systems and components. Several test cells are available for engine testing and a well instrumented, low turbulence wind tunnel is available.

Most undergraduate laboratories use high-speed PC-based digital data acquisition and control systems with graphical interfaces for lab experiments and computations, and the Department has several advanced computer graphics systems.

A design project is an integral part of the senior year curriculum. This involves the student in the original design of a machine or system. Generally, the material learned in several classes must be applied in an imaginative way to achieve the required objective. Non-credit machine-shop practice classes are available to aid the design and construction of projects. Many design projects are sponsored by industry. Most projects involve hardware, typically result in construction and testing of prototypes.

Postgraduate studies in the Department are concentrated in the areas of stress analysis, heat transfer, multi-phase flow, and thermal power, dynamics of rotating machines, robotics, MEMS and computer aided design and manufacturing. Research and project master’s degrees as well as the doctoral degree are offered.

II. Program Guide

Mechanical Engineering offers two versions of the BEng Program:

1. Co-op Program which is completed over nine academic terms
2. Eight-Term Program which is completed over eight academic terms

Students who choose to follow the Eight-Term Program could still fulfill the co-op requirements by securing a 12- or 16-month internship position beginning at the end of the winter term of Year 3. However, they should understand that they would be doing this on an “on-own” basis (see the “Co-operative Engineering Program” section of this calendar). Essentially this means that they must find their own co-op position subject to approval by the co-op advisor of the department. Students not interested in doing this, can graduate a year earlier (see schedule below), but they must opt out of the co-op program.

A. Co-op Program

Year 1 follows the common program outlined in the Engineering section of this calendar.

Year 2, Term 3 (Fall)
- ELEC 2000.03 Electric Circuits
- ENG 2200.03 Mechanics of Materials
• ENGI 2800.03 Engineering Thermodynamics I
• ENGM 2081.03 Computer Programming
• Humanities I

Year 2, Term 4 (Winter)
• ENGI 2501.03 Fluid Mechanics
• ENGI 2601.03 Mechanics II
• ENGM 2022.03 Applied Probability & Statistics
• MECH 2010.03 Engineering Design and Graphics II
• Humanities II

Year 3, Term 5 (Fall)
• ENGI 2300.03 Fluid Mechanics
• ENGM 2032.03 Applied Probability & Statistics
• MECH 2100.03 Design and Graphics II
• Humanities II

Year 3, Work Term 1 (Winter)

Year 3, Term 6 (Summer)
• ENGM 2021.03 Engineering Mathematics III
• ENGM 2081.03 Computer Programming
• Humanities I

Year 4, Work Term 2 (Fall)

Year 4, Term 7 (Winter)
• CPST 2003.03 Technical Communication
• ENGM 3361.03 Vector Calculus & PDE
• MECH 3010.03 Machine Design I
• MECH 3300.03 Fluid Dynamics
• MECH 3500.03 Dynamics of Machines

Year 4, Work Term 3 (Summer)

Year 5, Term 8 (Winter)

C. Technical Elective Choices
• MECH 4000.03 Manufacturing
• MECH 4400.03 Principles of Marine Craft Design
• MECH 4440.03 Mechanotronics
• MECH 4480.03 Marine Craft Design and Construction
• MECH 4521.03 Design Project I
• MECH 4540.03 Applied Aerodynamics
• MECH 4560.03 Space Systems
• MECH 4631.03 CAD/CAM
• MECH 4638.03 Computer Aided Toler. & Dimensioning
• MECH 4640.03 Robotics
• MECH 4650.03 Biomechanical Engineering
• MECH 4652.03 Kinematics of Human Motion
• MECH 4660.03 Finite Element Method in Mechanical Design
• MECH 4680.03 Energy from Renewable Resources
• MECH 4690.03 Steam Plant Engineering
• MECH 4700.03 Heat Transfer I
• MECH 4710.03 Heat Transfer II
• MECH 4720.03 Heat Transfer III
• MECH 4730.03 Heat Transfer IV

D. Service Class
For Biological and Industrial Engineering Programs:
• MECH 4530.03 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, computer, and mechanics of materials. The projects encompass conceptual design, detailed analysis, engineering drawings, experimentation, physical model fabrication, laboratory testing, and preparation of professional reports. FORMAT: Lecture 3 hours, lab/tutorial 2 hours
PREREQUISITE: ENGI 2800.03, ENGI 1490.03, ENGI 2230.03 and ENGM 2080.03
EXCLUSION: ENG 2101.03

MECH 3010.03: Machine Design I.
(Design for Reliability)
The application of basic concepts of strength of materials to machine design including design concepts, stress, and theories of failure is developed. Topics include: load analysis, materials, static stresses, strain and deflection, failure, impact, fatigue, surface damage. Applications include: screw fastenings, springs.
FORMAT: Lecture 3 hours, lab/tutorial 2 hours
PREREQUISITE: MECH 2100.03 and ENGI 2400.03

MECH 3020.03: Machine Design II.
(Machine Components)
The use of engineering principles in the design of machine components is developed. Topics include: lubrication and sliding bearings, roller bearings, spur gears, helical, bevel and worm gears, shafts, clutches and brakes, power transmissions such as belts, chains and hydrodynamic 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 2100.03 and ENGI 2800.03

MECH 3500.03: Dynamics of Machines.
The class focuses on design of mechanisms, their motion, static and dynamic loads, and power transmission. It includes planar and spatial 4- and 6-bar linkages, cam mechanisms, gear trains, rotor systems, and mechanisms for machine tool inversion, transformation, and synthesis are used for design of new mechanisms. Graphical, analytical, computer, and physical modeling techniques are used. Many real life mechanisms are analyzed.
FORMAT: Lecture 3 hours, lab/tutorial 2 hours
PREREQUISITE: ENGI 2300.03 and ENGI 2800.03

MECH 3700.03: Heat Transfer I.
This class is an introduction to the three modes of heat transfer: conduction, convection, and radiation. Topics covered in conduction include steady-state conduction, one and two dimensions. In convection heat transfer forced internal and external flows are examined. Some basic concepts of natural convection are introduced. The fundamentals of radiant heat transfer are covered, including solar radiation and radiative heat transfer between simple geometric objects.
FORMAT: Lecture 3 hours, lab/tutorial 2 hours
PREREQUISITE: MECH 2400.03 and ENGI 2300.03

MECH 3800.03: Engineering Thermodynamics II.
This class is a continuation of Engineering Thermodynamics I. The basic thermodynamic laws and principles are applied to various engineering problems, with emphasis on non-reacting mixtures, psychrometry, combustion processes, ortho-ly of formation, chemical equilibrium, compressible flow, expansion and compression processes, vapor compression and absorption refrigeration, and heat pumps. Laboratory section includes experiments in psychrometric processes, reciprocating compressors, and vapor refrigeration cycles.
FORMAT: Lecture 3 hours, lab/tutorial 2 hours
PREREQUISITE: MECH 2800.03 and ENG 2200.03

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: MECH 1300.03 or MECH 3100.03

MECH 4000.03: Manufacturing.
The class starts with a manufacturing process overview and a detailed process study in the following areas: material assembly, machining, injection molding, thermoforming and casting. A relationship between process and design is examined and design for manufacturing methodologies is introduced. Quality control and quality assurance issues are overviewed. The principles of cell design for assembly and machining are introduced and part redesign for process and system is studied.
FORMAT: Lecture 3 hours, lab/tutorial 2 hours
PREREQUISITE: MECH 1300.03 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 include a detailed report with calculations, drawings, possibly a model and a verbal presentation.
FORMAT: Lecture 3 hours, lab/tutorial 2 hours
PREREQUISITE: MECH 4000.03

MECH 4020.03: Design Project II.
This class is a continuation of Design Project 1 leading to a final report and formal presentation. The presentation will be made to fellow students and departmental staff members prior to the last day of lectures.
FORMAT: Lecture 3 hours, lab/tutorial 2 hours
PREREQUISITE: MECH 4010.03

MECH 4300.03: Stress Analysis.
Class topics include: general state of stress, equilibrium equations, stress-strain-temperature relations, plasticity, material properties, and methods of analysis. The stress concentrations in engine components are overviewed. The principles of cell design for assembly and machining are overviewed. The principles of cell design for assembly and machining are overviewed.
FORMAT: Lecture 3 hours, lab/tutorial 2 hours
PREREQUISITE: MECH 3300.03

MECH 4300.03: Mechanical Design.
This class deals with design of mechanical 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 in design 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
PREREQUISITE: MECH 4300.03

MECH 4430.03: Turbomachines.
Various types of turbomachinery, 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 turbomachinery and their characteristics. Emphasis is placed on practical design and performance aspects.
FORMAT: Lecture 2 hours, lab/tutorial 3 hours
MECH 4400.03: 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; directional stability and control and wave theory and motion in waves.

FORMAT: Lab 3 hours
PREREQUISITE: MECH 3800.03

MECH 4443.03: Mechatronics. This class deals with the integration of mechanical, electrical, computer and control engineering which is increasingly becoming an important part of engineering design. Topics include Mechanical and Electrical Actuation Systems, Sensors, and Signal Conditioning, Microprocessors and Programming and Control. A major part of the course is project-based enabling students to apply the concepts studied in the course.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours
PREREQUISITE: MECH 3400.03 and MECH 3200.03
EXCLUSION: BOE 4312.03

MECH 4500.03: Marine Craft Design and Construction. This class deals with design and construction methods for marine craft. Each student completes a preliminary design of a small marine vessel. Topics include engineering and economic principles governing selection of dimensions and coefficients for marine craft, computer-aided design, design and generation of hull forms, performance and operability in the ocean environment, construction methods for glass fibre, wood, aluminum and steel marine craft, and structural analysis and design.

FORMAT: Lab 3 hours
PREREQUISITE: MECH 4440.03 or instructor's consent

MECH 4500.03: Vibrations. Single and multiple degree of freedom lumped parameter systems subjected to harmonic and transient excitation are examined. Analytical as well as numerical solutions are covered. Vibrations of continuous systems such as beams, bars and plates are introduced. Laboratory experiments deal with vibration of lumped parameter physical models as well as vibrations of rotating machinery. Vibration control in industrial applications is emphasized and the effects of whole body vibration on humans is treated as a safety issue.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours
PREREQUISITE: MECH 3500.03, MECH 3000.03

MECH 4521.03: Applied Dynamics. This class begins with a review of planar kinematics and kinematics of rigid bodies. These concepts are extended to kinematics and kinematics of rigid bodies undergoing general three dimensional motion. Euler's Equations are applied to a wide range of engineering problems including vehicular and gyroscopic dynamics. Energy methods for bodies undergoing three dimensional motion are applied to multi-degree-of-freedom systems. Single degree-of-freedom systems subjected to random and shock inputs are analyzed.

FORMAT: Lecture 2 hours, lab/tutorial 3 hours
CROSS-LISTING: MECH 5521.03

MECH 4540.03: Aerodynamics. The class deals with the fundamentals of aerodynamics and the theory of flight. Material covered includes: the standard atmosphere; airflow coefficients and section properties; finite wings and induced drag; airplane performance - power required, rate of climb, range and endurance; basics of stability and control.

FORMAT: Lab 2-3 hours, lab/tutorial 3 hours

MECH 4560.03: Space Systems. The class deals with the engineering design and analysis of space systems and their interrelationships. Topics include orbital mechanics, satellite perturbations, satellite actuator and sensor systems, satellite access and coverage.

FORMAT: Lecture 3 hours, tutorial 2 hours

PREREQUISITE: Approval of instructor
CROSS-LISTING: MECH 6560.03

MECH 4600.03: Engineering Measurements. The static and dynamic characteristics of first and second order transducers and measurement systems are examined. The experimental versus theoretical approach to engineering problems is studied. Topics include data acquisition, analysis, and presentation, including the probabilistic nature of engineering measurements. The class is laboratory intensive covering measurements of force, strain, temperature, pressure, velocity, and fluid flow. Computers are used extensively in the laboratory experiments.

FORMAT: Lecture 3 hours, lab/tutorial 3 hours
PREREQUISITE: ENG 2152.03

MECH 4631.03: CAD/CAM - Computer Aided Design/Computer Aided Manufacturing. The student is introduced to the concept of automation with application to design, production, and manufacturing systems. The use of digital computers is considered in design, including peripheral equipment and types of languages. Other topics include computer 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 3200.03 or MECH 4300.03

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, parts assembly, quality control and application of statistical and probabilistic methods. Biweekly assignments require use of Auto-CAD, interactive computer programs for geometrical dimensioning/tolerancing, and a Supervised Machine Learning project using ANSYS. AUTOCAD. FORMAT: Lecture 3 hours, lab/tutorial 3 hours
PREREQUISITE: MECH 4300.03, MECH 3010.03, completed or concurrently taking Auto-CAD class offered by the Dalhousie authorized Auto-CAD Training Centre

MECH 4640.03: Robotics. The prime objective of the class is to provide a survey of the state-of-the-art in robotics. A large portion of the class is focused on the robot hardware. However, robots in an inherently interdisciplinary field and the class will also involve robotics control and application. Topics covered include kinematics, dynamics and control of the robot arm and grippers, drives, robot position measuring systems, external sensors and feeding, storage, changing position and clamping devices, all of which, together with the robot itself, constitute a "robotized" workplace.

FORMAT: Lecture 3 hours, lab/tutorial 3 hours
CROSS-LISTING: BOE 4401.03

MECH 4650.03: Biomechanical Engineering. Engineering analysis of biological systems provides novel insight into evolutionary design of animals and plants and into the intelligent design of medical devices. This class examines the structure and function of the cardiac, vascular, 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, orthopedics, and rehabilitation. Emphasis is 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 joint replacement design.

PREREQUISITE: Permission of instructor

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. Stressors in one- and two-dimensional trusses, beams, axisymmetric solids, and plates are considered. Finite element program is introduced and used in the class assignments.

FORMAT: Lecture 2 hours, lab/tutorial 3 hours

PREREQUISITE: ENGI 2200.03

CROSS-LISTING: MECH 6660.03

MECH 4810.03: Energy Conversion Systems.  
Application of basic principles of thermodynamics, fluid mechanics and heat transfer to the analysis and synthesis of energy conversion systems are studied. Primary energy sources and global energy demand are examined. Principles of conventional methods, thermal systems, fuel types, combustors, and gas turbines, initial planning of a hydroelectric power plant, selection of turbines and other components, nuclear fission and fusion, clean energy production, and environmental aspects of energy production are covered.

FORMAT: Lecture 3 hours, lab/tutorial 3 hours

PREREQUISITE: MECH 3800.03, ENG 2400.03, MECH 3300.03, MECH 3500.03

MECH 4820.03: Energy from Renewable Resources.  
The class concentrates on the theoretical and practical aspects of solar, wind, tidal and wave sources of energy with particular emphasis on their applicability 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 3800.03

MECH 4830.03: Reciprocating Internal-Combustion Engines.  
The major topics of this class are basic engine types, test methods and pressure measurements, combustion, ideal cycles and model processes, equilibrium charts, fuel specifications and tests, engine knock, exhaust analysis, fuel systems, ignition systems, engine performance and supercharger matching. Hands-on laboratory work is an integral part of this class.

FORMAT: Lecture 2 hours, lab/tutorial 3 hours

PREREQUISITE: MECH 3800.03

MECH 4840.03: Steam Plant Engineering.  
This class aims to provide basic fundamental and practical information to engineering students to design and operate thermal power plants. The following topics are covered: classification of steam generators; comparison of water tube and fire tube boilers; energy sources nuclear and fossil fuel; fuels and combustion; thermal analysis of furnaces, superheaters, economizers, and air pre-heaters; boiler efficiency calculations; description of different types of heat exchangers; evaporators and condensers; steam generation systems; Palventad, Cyclopean, Fluidized beds; auxiliary equipment (fans, stacks); control systems; cooling system design; environmental considerations.

PREREQUISITE: MECH 2880.03

MECH 4851.03: Heating, Ventilating and Air Conditioning.  
This is an introduction to the design of thermal systems for indoor climate control. The major topics include: human comfort requirements, outdoor climate variables, heating and dehumidification loads, cooling and dehumidification loads, ventilation requirements and criteria, central system types and selection, energy sources and costs, piping, pumps, ducts, fans, and control systems. Computer programs will be introduced for design calculations involving heating and cooling load, piping, ducting and energy consumption.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

PREREQUISITE: MECH 3800.03

MECH 4900.03: Systems II.  
Response characteristics of open loop and feedback control systems are studied. Various controller types and their uses are analyzed. Techniques such as root-locus diagrams and Bode & Nichols plots are used for stability and performance evaluation. Digital simulations and experiments on computer-based control systems are done in the laboratory portion.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

PREREQUISITE: MECH 3900.03

MECH 4950.03: Advanced Control Engineering.  
The class follows on from MECH 3900.03 and 4900.03 – Systems I and II, with the objective of continuing to develop the students’ capabilities in system simulation and feedback/feedforward control-system design and implementation. Topics include: system parameter identification, control-system hardware, computer-based control systems, design techniques for multi-input multi-output systems, and adaptive control. The class is supported by computer-based simulation activities and design procedures, and by hands-on laboratory experience.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

PREREQUISITE: MECH 4900.03, or approval of Instructor

CROSS-LISTING: MECH 6950.03

MECH 4960.03: Computational Methods in Engineering.  
The class presents basic computer methods of application of mathematical tools to solve engineering problems. Numerical methods such as finite differences, series expansions, and numerical integration are introduced. Applications 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 Program concentrates on the technical, environmental and economic aspects of the extraction and processing of the Earth's mineral resources. Students can pursue options in mineral resource engineering, petroleum engineering and mineral processing.

The main employers for Mineral Resource Engineering graduates are the mineral resource industries, oil and gas industries, financial and government institutions, consulting companies, mining equipment manufacturers and dealerships, marketing mine service companies, mineral investment and financial institutions, and research and teaching institutions. The development of an analytical attitude, team work and communication skills are important aims of the Mineral Resource Engineering Program. Participation in field trips to mining and petroleum operations in the Maritime region is a degree requirement and each student is required to share costs.

Opportunity also exists to continue in the MASc, MEng, and PhD programs for those who would like to specialize in areas of Mineral Resource and Petroleum Engineering at Dalhousie.

II. Curriculum and course descriptions

Refer to sections IIB and IIIB, Mineral Resource Engineering Programs, in the Civil and Resource Engineering section of this calendar, page 268.

Dean
Leon, L.J., BSc, MSc, PhD (Dal), PEng

Department Head, Civil and Resource Engineering
Zou, D.G., BSc (CUMT, China), PhD (UBC) PEng

Undergraduate Program Co-ordinator
Hill, J.D., BSc, MSc (Acadia), PhD (UWO)

Annual Report

The Mineral Resource Engineering Program serves the needs of industry by providing graduates with skills and knowledge in 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, teamwork and communication skills are important aims of the Mineral Resource Engineering Program. Participation in field trips to mining and petroleum operations in the Maritime region is a degree requirement and each student is required to share costs.

Opportunity also exists to continue in the MASc, MEng and PhD programs for those who would like to specialize in areas of Mineral Resource and Petroleum Engineering at Dalhousie.

II. Curriculum and course descriptions

Refer to sections IIB and IIIB, Mineral Resource Engineering Programs, in the Civil and Resource Engineering section of this calendar, page 268.
Adjunct Professors

A. Biological Engineering

As can be seen from the syllabus of classes noted below, students in Biological Engineering can choose one of the following four emphases: Agricultural Engineering, Aquacultural Engineering, Biomedical and Robotics, or Food and Bioprocess Engineering. As indicated in the syllabus, the Agricultural and Aquacultural Engineering emphases are given in conjunction with the Nova Scotia Agricultural College (NSAC), in Truro, NS. This gives greater breadth of training in Agriculture and Aquaculture and allows the students to benefit from the expertise and specialized equipment at the Nova Scotia Agricultural College. Year 1 follows the common program outlined in the Engineering section of this calendar.

Year 2—Term 3 (Fall)

- BIOE 1011.03 Principles of General Biology
- ECED 2000.03 Electric Circuits
- ENGI 2200.03 Mechanics II
- ENGI 2300.03 Fluid Mechanics
- ENGI 2400.03 Mechanics I
- IENG 2005.03 Engineering Economics
- IENG 2030.03 Applied Probability & Statistics
- IENG 2035.03 Operations Research Methods for Systems Engineering

Year 3—Term 5 (Fall)

- BIOE 3001.03 Design Project for Biosystems Engineers I
- CHEM 3441.03 Organic Chemistry
- CPST 3020.03 Technical Communications
- CPST 3030.03 Engineering in Society I
- ENGM 3053.03 Numerical Methods and Linear Algebra
- ENGM 3210.03 Computer Programming

Year 3—Term 6 (Winter)

- BIOE 3321.03 Properties of Biological Materials
- CPST 3100.03 Engineering in Society II
- ENGM 3361.03 Engineering Mathematics IV
- ENVE 3301.03 Fundamentals of Environmental Engineering
- ENVE 3351.03 Environmental & Industrial Microbiology

Year 4—Term 7 (Fall)

- BIOE 4302.03 Design Project for Biosystems Engineers II
- ENGI 4300.03 Robotics
- ENGI 4310.03 Microcomputer Interfacing
- ENGI 4311.03 Design of Biomedical Devices
- ENGI 4312.03 Industrial Safety and Loss Management
- IENG 4500.03 Operations Research Methods for Systems Engineering
- Technical Elective 1

Year 4—Term 8 (Winter)

- BIOE 4313.03 Technical Elective 2
- ENGI 4314.03 Technical Elective 3
- ENGI 4315.03 Technical Elective 4
- ENGI 4316.03 Technical Elective 5

Technical Electives

- BIOE 4411.03 Robotics
- BIOE 4412.03 Microcomputer Interfacing
- BIOE 4413.03 Design of Biomedical Devices
- BIOE 4414.03 Industrial Safety and Loss Management
- BIOE 4415.03 Food Science for Engineers
- BIOE 4416.03 Bioprocess Engineering

II. Program Guides

A. Biological Engineering

As can be seen from the syllabus of classes noted below, students in Biological Engineering can choose one of the following four emphases: Agricultural Engineering, Aquacultural Engineering, Biomedical and Robotics, or Food and Bioprocess Engineering. As indicated in the syllabus, the Agricultural and Aquacultural Engineering emphases are given in conjunction with the Nova Scotia Agricultural College (NSAC), in Truro, NS. This gives greater breadth of training in Agriculture and Aquaculture and allows the students to benefit from the expertise and specialized equipment at the Nova Scotia Agricultural College. Year 1 follows the common program outlined in the Engineering section of this calendar.

Year 2—Term 3 (Fall)

- BIOE 1011.03 Principles of General Biology
- ECED 2000.03 Electric Circuits
- ENGI 2200.03 Mechanics II
- ENGI 2300.03 Fluid Mechanics
- ENGI 2400.03 Mechanics I
- IENG 2005.03 Engineering Economics
- IENG 2030.03 Applied Probability & Statistics
- IENG 2035.03 Operations Research Methods for Systems Engineering

Year 3—Term 5 (Fall)

- BIOE 3001.03 Design Project for Biosystems Engineers I
- CHEM 3441.03 Organic Chemistry
- CPST 3020.03 Technical Communications
- CPST 3030.03 Engineering in Society I
- ENGM 3053.03 Numerical Methods and Linear Algebra
- ENGM 3210.03 Computer Programming

Year 3—Term 6 (Winter)

- BIOE 3321.03 Properties of Biological Materials
- CPST 3100.03 Engineering in Society II
- ENGM 3361.03 Engineering Mathematics IV
- ENVE 3301.03 Fundamentals of Environmental Engineering
- ENVE 3351.03 Environmental & Industrial Microbiology

Year 4—Term 7 (Fall)

- BIOE 4302.03 Design Project for Biosystems Engineers II
- ENGI 4300.03 Robotics
- ENGI 4310.03 Microcomputer Interfacing
- ENGI 4311.03 Design of Biomedical Devices
- ENGI 4312.03 Industrial Safety and Loss Management
- IENG 4500.03 Operations Research Methods for Systems Engineering
- Technical Elective 1

Year 4—Term 8 (Winter)

- BIOE 4313.03 Technical Elective 2
- ENGI 4314.03 Technical Elective 3
- ENGI 4315.03 Technical Elective 4
- ENGI 4316.03 Technical Elective 5

Technical Electives

- BIOE 4411.03 Robotics
- BIOE 4412.03 Microcomputer Interfacing
- BIOE 4413.03 Design of Biomedical Devices
- BIOE 4414.03 Industrial Safety and Loss Management
- BIOE 4415.03 Food Science for Engineers
- BIOE 4416.03 Bioprocess Engineering

II. Program Guides

A. Biological Engineering

As can be seen from the syllabus of classes noted below, students in Biological Engineering can choose one of the following four emphases: Agricultural Engineering, Aquacultural Engineering, Biomedical and Robotics, or Food and Bioprocess Engineering. As indicated in the syllabus, the Agricultural and Aquacultural Engineering emphases are given in conjunction with the Nova Scotia Agricultural College (NSAC), in Truro, NS. This gives greater breadth of training in Agriculture and Aquaculture and allows the students to benefit from the expertise and specialized equipment at the Nova Scotia Agricultural College. Year 1 follows the common program outlined in the Engineering section of this calendar.

Year 2—Term 3 (Fall)

- BIOE 1011.03 Principles of General Biology
- ECED 2000.03 Electric Circuits
- ENGI 2200.03 Mechanics II
- ENGI 2300.03 Fluid Mechanics
- ENGI 2400.03 Mechanics I
- IENG 2005.03 Engineering Economics
- IENG 2030.03 Applied Probability & Statistics
- IENG 2035.03 Operations Research Methods for Systems Engineering

Year 3—Term 5 (Fall)

- BIOE 3001.03 Design Project for Biosystems Engineers I
- CHEM 3441.03 Organic Chemistry
- CPST 3020.03 Technical Communications
- CPST 3030.03 Engineering in Society I
- ENGM 3053.03 Numerical Methods and Linear Algebra
- ENGM 3210.03 Computer Programming

Year 3—Term 6 (Winter)

- BIOE 3321.03 Properties of Biological Materials
- CPST 3100.03 Engineering in Society II
- ENGM 3361.03 Engineering Mathematics IV
- ENVE 3301.03 Fundamentals of Environmental Engineering
- ENVE 3351.03 Environmental & Industrial Microbiology

Year 4—Term 7 (Fall)

- BIOE 4302.03 Design Project for Biosystems Engineers II
- ENGI 4300.03 Robotics
- ENGI 4310.03 Microcomputer Interfacing
- ENGI 4311.03 Design of Biomedical Devices
- ENGI 4312.03 Industrial Safety and Loss Management
- IENG 4500.03 Operations Research Methods for Systems Engineering
- Technical Elective 1

Year 4—Term 8 (Winter)

- BIOE 4313.03 Technical Elective 2
- ENGI 4314.03 Technical Elective 3
- ENGI 4315.03 Technical Elective 4
- ENGI 4316.03 Technical Elective 5

Technical Electives

- BIOE 4411.03 Robotics
- BIOE 4412.03 Microcomputer Interfacing
- BIOE 4413.03 Design of Biomedical Devices
- BIOE 4414.03 Industrial Safety and Loss Management
- BIOE 4415.03 Food Science for Engineers
- BIOE 4416.03 Bioprocess Engineering
# Process Engineering and Applied Science

## Technical Electives
This list is not exhaustive, nor does it imply that each course will be offered every year. Students should check with the Undergraduate Program Co-ordinator.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROE.4512.03</td>
<td>Food Engineering</td>
</tr>
<tr>
<td>ROE.4591.03</td>
<td>Polymer Biomaterials</td>
</tr>
<tr>
<td>ICED.4740.03</td>
<td>Biomedical Engineering</td>
</tr>
<tr>
<td>HENG.3508.03</td>
<td>Ergonomics and Safety Engineering</td>
</tr>
<tr>
<td>IENG.4573.03</td>
<td>Industrial Biomechanics</td>
</tr>
<tr>
<td>MECH.4652.03</td>
<td>Biomechanical Engineering</td>
</tr>
</tbody>
</table>

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 course program outlined in the Engineering section of this calendar.

#### Year 2, Term 3 (Fall)
- ICED.2000.03 Electric Circuits
- ENG.2001.03 Engineering Thermodynamics
- ENGM.2201.03 Engineering Mathematics III
- ENGM.2081.03 Computer Programming
- ENVE.2000.03 Fundamentals of Environmental Engineering

#### Year 2, Term 4 (Winter)
- CHEE.2443.03 Industrial Chemistry
- CHEE.2420.03 Fundamentals of Chemical Engineering
- CHEM.2441.03 Organic Chemistry
- ENG.2094.03 Fluid Mechanics
- ENGM.2032.03 Applied Probability & Statistics

#### Year 3, Work Term 1 (Fall)
- ENGM.3361.03 Engineering Mathematics IVc
- ENVE.3461.03 Environmental Measurements and Analysis
- ENVE.3251.03 Environmental & Industrial Microbiology
- ENVE.3000.03 Fundamentals of Environmental Engineering
- CPST.2000.03 Technical Communications

#### Year 3, Term 5 (Winter)
- CHEE.3550.03 Process Dynamics & Control
- CHEE.3544.03 Computer-Aided Process Design
- CHEE.3530.03 Chemical Engineering Thermodynamics
- CHEE.3525.03 Separation Processes
- CHEE.3522.03 Mechanical Unit Operations

#### Year 3, Work Term 2 (Summer)
- CHEM.2441.03 Organic Chemistry
- BIOL.1010.03 Principles of Biology I
- IENG.4574.03 Decision and Risk Analysis
- IENG.4558.03 Project Management and Control
- IENG.4547.03 Industrial and Organizational Psychology
- IENG.4529.03 Industrial Engineering
- FOSC.4081.03 Brewing Science

#### Year 4, Term 6 (Fall)
- CHEE.4740.03 Chemical Reaction Engineering
- CHEE.4720.03 Process Modelling, Simulation & Control
- CHEE.4773.03 Industrial Safety & Loss Management
- CHEE.4651.03 Energy from Renewable Resources
- CHEE.4601.03 Steam Plant Engineering

These are also a number of graduate courses that students have taken, mainly in Chemical Engineering, Biomedical Engineering, and Petroleum Engineering.

#### Notes:
1. Seniors may take a postgraduate class as a Technical elective with the approval of the Undergraduate Program Co-ordinator and the professor offering the class.
2. Not all technical electives are available each year and other elective classes may be available. Please check with the department prior to registration.

### Non-Co-op Program

Non-co-op students take the same academic program as the co-op students; however, Term 5 may be taken before Term 6 if desired. In this way, the program can be done in a total of four years.

#### C. Environmental Engineering

During their senior year, Environmental Engineering students can specialize in one or more of the following areas: Air Quality and Pollution Control, Energy and the Environment, Soil and Water Quality and Management, and Waste Utilization and Management.

Year 1 follows the common program outlined in the Engineering section of this calendar.

#### Year 2—Term 3 (Fall)
- BIOL.1010.03 Principles of Biology I
- ICED.2000.03 Electric Circuits
- ENGM.2201.03 Engineering Mathematics III (Differential Equations)
- ENGM.2081.03 Computer Programming
- ERTH.1080.03 Geology I

#### Year 2—Term 4 (Winter)
- BIOL.1011.03 Principles of Biology II
- CHEM.2441.03 Organic Chemistry
- ENG.2300.03 Fluid Mechanics
- ENGM.2010.03 Applied Probability & Statistics
- ERTH.1080.03 Geology II OR Environmental Science Elective
- IENG.4505.03 Engineering Economics

#### Year 3—Term 5 (Fall)
- ROE.3221.03 Applied Thermodynamics
- CPST.2000.03 Technical Communications
- ENGE.3005.03 Environmental Science Elective
- ENGE.3215.03 Environmental & Industrial Microbiology
- ENGE.3461.03 Environmental Measurements and Analysis
- ENGM.3505.03 Engineering Mathematics IV
Year 3 – Term 6 (Winter)

- BOE 3325.01  Heat & Mass Transfer
- CPSC 3020.01  Engineering in Society I
- ENVE 3412.03  Energy and Environment
- ENVE 3432.03  Waste Management
- ENVE 3452.03  Soil and Water Conservation Engineering
- ENGM 3352.03  Numerical Methods and Linear Algebra

Year 4 – Terms 7 & 8

- CHE 4773.03  Industrial Safety & Loss Management
- CVTL 4401.03  Water and Wastewater Treatment
- ENVE 4401.03  Design Project for Environmental Engineers I
- ENVE 4402.03  Design Project for Environmental Engineers II
- ENVE 4411.03  Indoor Environment Control & Air Quality
- ENVE 4421.03  Biogeochemistry & Bioremediation
- ENVE 4723.03  Environmental Assessment and Management
- IENG 4901.03  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 4351.03  Biosys Beef Engineering
- CHE 4872.03  Air Pollution Control
- CIVL 4501.03  Water Quality and Treatment
- ENVE 4603.03  Small Watershed Hydrology
- ENVE 4612.03  Waste Disposal and Utilization
- ENVE 4621.03  Atmospheric Air Quality
- ENVE 4641.03  Contaminant Fate & Transport
- ENVE 4651.03  Solar Energy Utilization
- ENGM 5022.03  Applied Statistics I
- ENGM 5075.03  Risk Assessment & Management OR
- IENG 4974.03  Decision and Risk Analysis
- MINE 4013.03  Mining and the Environment
- MINE 4168.03  Mine Waste Management

Notes:

1. Technical classes from other departments may be selected subject to availability and the approval by the departments concerned.
2. Technical electives in any one year will depend on demand and staff availability.

D. Food Science

This is a 20-credit curriculum leading to the BASc degree in Food Science. Degree programs should be planned in consultation with the program chair or another faculty advisor. Please note that students wishing to include Food Science courses in other programs 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 1020.03  General Chemistry II
- ENVE 1001.03  Concepts of Food Science
- MATH 1001.03  Differential and Integral Calculus I
- MATH 1011.03  Differential and Integral Calculus II
- Writing Class
- Elective

Year 2

- BOE 2040.03  Diversity of Microorganisms OR
- MIRC 2103.03  Introduction to Microbiology and Immunology
- BIC 2201.03  Introductory Biochemistry
- CHEM 2201.03  Introductory Analytical Chemistry
- CHEM 2441.03  Foundations of Organic and Biological Chemistry
- ENVE 2101.03  Food Commodities
- PHYS 1100/Y.06  Physics I: Mechanics And Astronomy
- PHYS 1100/Y.08  Introduction to Physics
- STAT 1090.03  Introductory Statistics for Science and Health Sciences
- Elective

Year 3

- BOE 3011.03  Principles of Food Engineering
- CPSC 2001.03  Technical Communication
- FOSC 3210.03  Food Chemistry
- FOSC 3220.03  Food Quality Assurance
- FOSC 3270.03  Food Processing
- FOSC 3090.03  Food Microbiology
- HPRO 2250.03  Human Nutrition
- Elective

Year 4

- FOSC 4030.03  Food Product Development
- FOSC 4041.03  Food Safety and Biotechnology
- FOSC 4250.03  Food Product Development Project (or FOSC 4750/Y.06)
- FOSC 4590/Y.06  Seminar in Food Science
- FOSC 4750/Y.06  Food Science Research Project (or FOSC 4250.03)

Writing classes

The following classes meet the requirement for the writing credit: CLAS 1000.06, CLAS 1010.06, CLAS 1100.06, ENGL 1090.06, FOSC 1020.06, FBHL 1010.06, POLI 1103.06, RUSN 1200.06 and RUSN 1201.06, THEA 1000.06, THEA 1500.06 and completion of the Dalhousie Integrated Science Program (DISP), SCIE 1501.27, SCIE 1502.21, SCIE 1504.27, SCIE 1510.33

Overview of Minimum Elective Requirements

1. One full credit in the language/humanities or social sciences subject area.
2. One half credit as a technical elective from the Faculty of Engineering.
3. Remaining electives (7-8 half credits) are free.

Examples of Electives

- ANAT 1010.03  Basic Human Anatomy
- IENG 2081.03  Introduction to Biochemistry Laboratory
- BOE 3220.03  Biological Chemistry
- BIOC 3400.03  Nuclear Acid Biochemistry & Molecular Biology
- BOE 3221.03  Applied Thermodynamics
- BOE 3241.03  Industrial Biotechnology
- BOE 3252.03  Properties of Biomaterials
- BOE 4071.03  Genomics and Molecular Biology
- BOE 4074.03  Introduction to Animal Nutrition
- CHEE 2451.03  Fundamentals of Chemical Engineering
- CHEM 2310.03  Physical Chemistry for the Life Sciences
- CVTL 4345.03  Water Quality and Treatment
- CPSC 3020.03  Engineering in Society I
- CPSC 3030.03  Engineering in Society II
- FOSC 4081.03  Food Safety and Biotechnology
- CPST 3000.03  Technical Communication
- PHYS 1100.06  Human Physiology
- STAT 2800.03  Statistical Methods for Data Analysis and Inference

E. Materials Engineering

Year 1 follows the common program outlined in the Engineering section of this calendar.

Year 2, Term 3 (Fall)

- IENG 2081.03  Electric Circuits
- ENGI 2200.03  Mechanics of Materials
- ENGL 2900.03  Engineering Thermodynamics I
- ENGM 2201.03  Engineering Mathematics III
- ENGM 2208.03  Computer Programming
1. Program Entrance Requirements

To be eligible to enter the Combined BEng/MASc Program, a student must be able to demonstrate an overall average of 70% based on the subjects in the first three academic terms of the Materials Engineering Program. The same criteria and conditions as for the BEng program will apply.

2. Financial Support

Students are normally required to maintain a minimum 70% average in order to continue with their studies. Otherwise, financial assistance will be considerably reduced. Part of the financial assistance is derived from money obtained to further specific research objectives on which the student is expected to work for his or her Master’s Thesis. The remainder of the financial support is normally derived from assigned duties as Part-Time Teaching Assistants. A class work Master’s Program (BEng) can be followed but the amount of financial assistance will be considerably reduced.

3. Maintenance of Standing

In order to retain standing in the Combined BEng/MASc Program, students must continue to maintain an academic average of 70%. 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 70%, he/she may be eligible to pursue graduate studies in the department.

4. Scholarships

Students in the Combined BEng/MASc Program are encouraged to apply for the usual scholarships and bursaries in order to partially augment the financial support received. Contact the Department for details.

5. Combined BEng/MASc Scheduling

The combined BEng/MASc Degree follows the program as indicated for the BEng with the addition of one work term and two academic terms as follows:

Year 5, Work Term 1 (Summer)

Year 5, Term 8 (Fall)

Yes 5, Term 9 (Winter) (BEng/MASc; Optional for BEng)

Year 5, Term 10 (Fall) (BEng/MASc; Optional for BEng)

Year 6, Term 11 (Winter) (BEng/MASc; Optional for BEng)

6. Technical Electives

Choose 3:

MECH 4330.03 Mechanical Design
MATL 4802.03 Electrochemical Processing of Materials
MATL 4805.03 Particulates in Materials Engineering
MATL 4810.03 Iron and Steel Production
MATL 4820.03 Non-Hardening Alloys
MATL 4826.03 Industrial Metallurgy
MATL 4827.03 Solidification and Casting
MATL 4830.03 Physical Metallurgy and Ceramics
MINE 4850.03 Advanced Mineral Processing

Technical electives from other departments may be selected subject to availability and the approval by the departments concerned. Not all technical electives will be offered every year.

III. Class Descriptions

A. Biological Engineering Series

BIOE 3051.03: Principles of Food Engineering.

This class presents principles of engineering and applications to food processing unit operations. This class is intended for primarily food science majors, and other non-engineering students. Topics covered are units and dimensions, unit operations in food processing, material balance, thermodynamics and energy balance, fluid flow, heat transfer, and mass transfer. FORMAT: Lecture 3 hours, lab 2 hours

BIOE 3211.03: Measurement and Analysis.

The objectives of this class are to cover the principles of measurement with emphasis on data collection, communications, and analysis. Instrumentation terminology and fundamentals of data analysis are emphasized in lectures and laboratory exercises. A term project is assigned which has the students specifying, designing, and building a data collection, presentation, and analysis system. This project includes sensor.
selection; design of signal conditioning; implementation of data acquisition and communications hardware and software, and analysis and presentation of the data.

**INSTRUCTORS:** K. Wilkie

**FORMAT:** Lecture 3 hours, Lab 3 hrs

**PREREQUISITE:** ECED 2000.03 and ENGM 2032.03, or the equivalents

**BIOE 3212.03: Measurement and Analysis.**

The objective of this class is to cover the principles of measurement with emphasis on data collection, communications, and analysis. Instrumentation terminology and fundamentals of data analysis are emphasized in lectures and laboratory exercises. A term project is assigned which has the students specifying, designing, and building a data collection, presentation, and analysis system. This project includes sensor selection; design of signal conditioning; implementation of data acquisition and communications hardware and software, and analysis and presentation of the data.

**FORMAT:** Lecture 3 hours, lab 3 hours

**PREREQUISITE:** ECED 2000.03 and ENGM 2032.03 or equivalent

**BIOE 3221.03: Applied Thermodynamics.**

The objective of this class is to introduce fundamental concepts and engineering applications of thermodynamics relevant to biological systems. Topics covered include the first and second laws of thermodynamics, entropy, availability, psychrometrics, chemical reactions and phase equilibrium.

**FORMAT:** Lecture 3 hours, lab 2 hours

**PREREQUISITE:** One class (3 credits) in differential and integral calculus and general chemistry

**BIOE 3241.03: Industrial Biotechnology.**

The objective of this class is to introduce principles of biochemistry, biochemical engineering and industrial and environmental applications of microbiology of interest to engineers. Topics covered include chemistry of biological molecules, microbial stoichiometry and energetics, coordination of microbial activity, enzyme and microbial kinetics, and applied microbiology topics such as production of microbial biomass, aerobic and anaerobic fermentation, and bioremediation.

**FORMAT:** Lecture 3 hours, lab 3 hours

**PREREQUISITE:** BIOE 3251.03 or equivalent and CHEM 2241.03

**BIOE 3252.03: Heat and Mass Transfer.**

The objective of this class is to introduce the fundamentals of heat and mass transfer of relevance to biosystems and environmental engineering. Topics covered include steady state conduction in one dimension, conduction in multi-dimensional, unsteady state conditions, convective heat transfer (forced and natural), molecular mass diffusion and convective mass transfer. Radiative heat transfer and transport processes in the atmosphere are also introduced.

**FORMAT:** Lecture 3 hours, lab 2 hours

**PREREQUISITE:** ENG 2300.03, ENGM 2211.03 and one class in Thermodynamics

**BIOE 3312.03: Measurement and Control.**

The objective of this class is to cover the principles of instrumentation and to introduce the subject of automatic controls. Instrumentation terminology and fundamentals of experimental data analysis are emphasized in lectures and laboratory exercises. Measurement of variables such as pressure, flow, temperature, humidity, displacement, force and acceleration are discussed. Automatic controls are introduced from an applied point of view. Control topics covered include, on-off control using programmable logic controllers and proportional-integral-derivative control.

**FORMAT:** Lecture 3 hours, lab 3 hours

**PREREQUISITE:** ECED 2000.03

**BIOE 3321.03: Properties of Biological Materials.**

This class provides a knowledge of the physical properties of biological materials and methods for assessing such properties. Understanding and assessment of biological material properties are important to areas such as Biomedical Engineering, Food Science, Bioprocess Engineering, and Biotechnology. Topics will include mechanical properties, rheology, thermal properties, electrical properties, optical and other physical characteristics. The associated lab will feature examples from Biomedical Engineering, Food Science, Bioprocess Engineering and Biotechnology of measurement techniques used to evaluate related properties discussed in class.

**FORMAT:** Lecture 2 hours, lab 3 hours

**PREREQUISITE:** PHYC 1100.06 and CHEM 1021.03 and CHEM 1022.03 or the equivalents

**BIOE 3342.03: Industrial Biotechnology.**

This course introduces students to industrial applications of biotechnology. Basic biochemistry and molecular biology are covered in addition to stoichiometry and kinetics for bioprocesses. Modern tools and approaches of biotechnology are presented, followed by application of biotechnology to diverse areas (e.g. the environment, medicine, agriculture, pharmaceutical and food processing industries). This course is suitable for engineering/science students who may wish to pursue employment in the biotechnology sector with little/no prior knowledge of biotechnology or genetic engineering.

**FORMAT:** Lecture 3 hours, lab 3 hours

**PREREQUISITE:** CHEM 2241.03

**EXCLUSION:** BIOE 3241.03

**BIOE 4011.03: Robotics.**

See class description for MECH 4601.03 in the Mechanical Engineering section of this calendar.

**BIOE 4011.03: 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 labor, 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 fertilized 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: solid transport (screw conveyors, bucket elevators, belt conveyors, pneumatic conveyors, refrigeration).

**FORMAT:** Lecture 3 hours, lab 3 hours

**BIOE 4131.03: Drainage and Irrigation.**

This class emphasizes the design of drainage and irrigation systems. Introductory material includes basic hydrology, soil-water-crop relationships and an overview of the theory of confined, unconfined and unsaturated flow of water in soil. Drainage design includes the planning and selection of the most appropriate system and detailed consideration of the design and implementation of surface and subsurface systems. Irrigation design emphasizes supplemental irrigation and includes: crop requirements, water supply and conveyance, and surface, sprinkler, and drip applications.

**FORMAT:** Lecture 3 hours, lab 4 hours

**BIOE 4151.03: Aquatic Environment.**

Engineering principles are studied in context of requirements for environmental management of intensive aquacultures of fish, molluscs, crustaceans, and marine plants of commercial importance. Topics in water habitat management will be emphasized including: water properties in...
both fresh and salt water systems, water quality and water purification, fluid dynamics and statics, and control of the aquatic environment. FORMAT: Lecture 3 hours, lab 3 hours

BIOE 4161.03: Aquatic Engineering. Support facilities, equipment and systems for aquaculture operations will be examined. Topics studied will include: selection of component materials and structures suitable for confinement, protection, and support of aquaculture species; selection and application of mechanical/electrical support equipment such as pumps, systems, feeders, aerators, water heating systems, waste management systems and monitoring equipment; and engineering aspects of facilities for harvesting, handling, processing, packaging, and preservation of aquatic production. FORMAT: Lecture 3 hours, lab 3 hours

BIOE 4171.03: Physiology of Aquatic Animals. The form, function, physiological integration, and behaviour of major types of aquatic animals are considered. Emphasis is placed on classes of organisms, using commercially important species as primary examples. FORMAT: Lecture 3 hours, lab 3 hours

BIOE 4301.03: Design Project for Biosystems Engineers I. The objective of the class is to provide students with first hand experience in applying engineering design principles and practices to solve specific problems in the biological world. Students are expected to display a high level of initiative and ingenuity in carrying the project through its various design stages. FORMAT: Lecture 1 hour, lab 3 hours

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: Senior students only

BIOE 4312.03: Microcomputer Interfacing. This class integrates instrumentation, control and microcomputers to illustrate the formulation and utilization of measurement and control systems. The control is discussed and the components of a microprocessor-based system are presented. Input/output techniques are employed in terms of interfacing of measurement and control hardware to the microcomputer. Topics covered include analog to digital conversion, digital to analog conversion and digital proportional-integral-derivative control. FORMAT: Lecture 3 hours, lab 3 hours PREREQUISITE: BIOE 4301.03

BIOE 4322.03: Aquacultural Engineering. The general types of aquacultural engineering systems are discussed along with the feeding,-moving, and protection systems of fresh and salt water systems. The cultivation species of fish, 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

BIOE 4330.03: Thermal Environmental Control. The class deals with the design of heating, ventilating, air conditioning and lighting systems for controlled environments such as plant and animal production units and modified atmosphere storages. Topics covered include: animal shelters, greenhouses, horticultural crop storages and rural housing. Methods of energy conservation and recovery are discussed. Completion of an assigned term project is a part of this class. FORMAT: Lecture 3 hours, lab 3 hours PREREQUISITE: BIOE 3252.03 or equivalent

BIOE 4331.03: Design of Biomachines. This class extends the design and analysis of machines to components such as belts, gears, vane sprockets, 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: MECH 4330.03

BIOE 4341.03: Food Science for Engineers. This class introduces the fundamental chemical, nutritional and microbiological aspects of food processing. Emphasis is placed on food quality, deterioration and principles of its preservation. Topics covered include: constituents of food (properties, significance, and nutritive aspects); factors related to quality and deterioration; fats and oils; food additives; and the requirements for food preservation, packaging and storage. FORMAT: Lecture 2 hours, lab 3 hours PREREQUISITE: BIOE 3251.03

BIOE 4351.03: Bioprocess Engineering. This class focuses on the process design of unit operations involved in bioprocessing. Topics include fluid flow and mixing, transport phenomena in bioprocess systems, design and analysis of biological reactors, and bioseparation processes. Examples encompass various areas of bioprocessing, Simulation of a bioprocess is demonstrated using a software package. FORMAT: Lecture 3 hours, lab 2 hours PREREQUISITE: BIOE 3251.03 or equivalent

BIOE 4352.03: Food Engineering. This class focuses on the process design of unit operations in food processing, preservation, packaging and storage. Topics include mass and energy balances, reaction kinetics modelling, size reduction, emulsification, food dehydration, packaging and storage, extraction processes, freezing and thawing, evaporation and freeze concentration, crystallization, thermal processes, sterilization and microwave heating. As a term project, a food process is simulated using a software package. FORMAT: Lecture 3 hours, lab 2 hours PREREQUISITE: BIOE 3252.03 or equivalent

BIOE 4391.03: Polymeric Biomaterials. 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 structure, properties (chemical, physical, mechanical), synthesis, and interactions with the human body. The design and application of polymeric materials in tissues engineering, drug delivery, and prosthetics will also be discussed using specific examples including: blood vessel replacement, artificial pancreas, skin substitutes, and nerve regeneration. FORMAT: 3 lecture hours PREREQUISITE: PHYS 1403, Y.06 and CHEM 1012.03 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...
This class introduces the subject of chemical reaction engineering. Emphasis is placed on developing problem solving skills. 

**CHEE 3522.03: Mechanical Unit Operations.**
This class introduces the student to the principles and practices involved in contacting, conveying, separating and storing single and multiphase systems. It includes the flow of incompressible and compressible fluids in conduits and past immersed bodies, as well as the transportation, metering, and mixing of fluids. Unit operations involved in the contacting and separation of phases, such as filtration, sedimentation and crystallization, are also studied.

**CHEE 3525.03: Separation Processes.**
This class provides an introduction to cascade theory and develops fundamentals for design and analysis of staged operations such as leaching, liquid-liquid extraction and distillation. Topics include single-stage operations, multi-stage, counter-current cascade with and without reflux, and binary and multi-component distillation.

**CHEE 3530.03: Chemical Engineering Thermodynamics.**
The class deals with theory and practical problems 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 class also deals with thermophysical properties of pure liquids, properties of solutions, and a comprehensive study of vapour-liquid equilibrium and equilibrium constants in chemical reactions.

**CHEE 3544.03: Computer-Aided Process Design.**
The class aims to develop the student's abilities in the synthesis of processing elements into an integrated plant that is capable of achieving a prescribed goal. Various design projects are undertaken to emphasize process selection and economic evaluation, and detailed design of process equipment as well as optimization of processing subsystems such as distillation systems.

**CHEE 3560.03: Process Dynamics and Control.**
This class is an introduction to the principles of chemical process systems. The operations of control systems are examined. The design of control systems is based on the analysis of process dynamics and operational characteristics.

**CHEE 3624.03: Heat Transfer.**
This class deals mainly with theories of heat transfer and their applications. The class includes heat transfer by steady and unsteady conduction in solids, convection heat transfer and an introduction to radiation heat transfer. Evaporation and design of heat exchangers are also discussed.

**CHEE 3634.03: Chemical Reaction Engineering.**
This class introduces the subject of chemical reaction engineering. Classical reaction kinetics, the conversion of rates, mechanisms, temperature effects and multiple reactions are studied. The concepts of batch, continuous stirred-tank and plug flow reactors are introduced for the ideal case. Non-isothermal reactors and non-ideal flow are considered in the design of chemical reactor systems. Heterogeneous reactors and catalysis are also discussed. Emphasis is placed on computational techniques for reactor problem solutions.

**CHEE 4720.03: Unit Operations Laboratory.**
In this class, students apply the principles of Unit Operations in the laboratory using pilot scale equipment. An emphasis is placed on experimental planning, analysis and reporting.

**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.

**CHEE 4741.03: Process and Plant Design I.**
This class aims to develop the student's abilities in the synthesis of processing elements into an integrated plant that is capable of achieving a prescribed goal. Various design projects are undertaken to emphasize process selection and economic evaluation, and detailed design of process equipment as well as optimization of processing subsystems such as distillation systems.

**CHEE 4752.03: Process Modelling, Simulation & Control.**
This class deals with formulation of mathematical models describing the dynamic behaviour of chemical processes. Numerical methods for analyzing the dynamic response of lumped parameter and distributed parameter systems on digital computers are presented. Frequency response techniques are used to analyze and design control systems. Design methods for control of processes with dead time, inverse response and those requiring control of more than one variable are discussed.

**CHEE 4760.03: Fundamentals of Combustion.**
This class is an introduction to the principles of combustion processes. The properties of premixed gas flames are examined. Diffusion flames and the burning of liquid and solid fuels are studied. Ignition phenomena and spontaneous combustion, with particular reference to safety in the chemical process industries, are examined.

**CHEE 4772.03: Environmental Assessment and Management.**
This class examines the ecological impacts of human activities with regard to water, air and soil pollution. Ecological theory and practice are reviewed and methods of environmental regulation and management considered in the light of the concepts of sustainability and maintenance of biodiversity. Lectures will include presentations by government and corporate regulators and managers. Tutorials will be devoted to the preparation and presentation of hypothetical environmental impact statements and assessments.
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; emergency preparedness and standards; hazard identification; safe process design; inspection and investigation processes; measurement, evaluation and audits of OH&S program elements; legislation. FORMAT: Lecture 3 hours, tutorial 2 hours EXCLUSION: CHEE 4791.03
CHEE 4791.03: Research Project I.
The class objective is to provide experience in the application of engineering principles to the solution of a specific problem in Chemical Engineering. A research project is chosen in collaboration with a particular faculty member. The student then prepares a work plan, carries out a literature search pertinent to the problem, designs and experimental setup, if needed, and arranges for the acquisition of necessary equipment. Interim and final progress reports are required in both written and oral formats. FORMAT: Lecture 2 hours, lab 3 hours PREREQUISITE: CHEE 2422.03

CHEE 4842.03: Process and Plant Design II.
This class is a continuation of Process and Plant Design I, but emphasizes the synthesis of whole systems. Design projects cover process identification and selection, material and energy balance, system sensitivity to various parameters and preliminary process optimization, design and specification of processing units, plant layout, costing and economic evaluation. FORMAT: Lecture 2 hours, lab 3 hours PREREQUISITE: CHEE 2422.03

CHEE 4854.03: Computer Process Control.
This class deals with digital computer control of chemical processes. Methods for analyzing and designing control systems using a transform approach are covered. Experience is provided in the use of currently popular control methods, such as model predictive control. An introduction is given for other advanced control techniques, such as adaptive control, optimal control and stochastic control. FORMAT: Lecture 2 hours, lab 3 hours PREREQUISITE: CHEE 4752.03 or instructor’s permission

CHEE 4856.03: Process Optimization.
The class deals with the study and application of optimization techniques to engineering problems, with particular emphasis on chemical processes. Topics include analytical and numerical techniques for optimization of single and multi-dimensional problems, linear programming, nonlinear programming and dynamic programming. The class employs available computer software and student-developed programs to solve problems. FORMAT: Lecture 2 hours, lab 3 hours PREREQUISITE: CHEE 2422.03

CHEE 4862.03: Fundamentals of Combustion Engineering.
In this class, the principles of combustion processes (studied in Fundamentals of Combustion) are applied to industrial applications. The properties of solid, liquid and gaseous fuels are discussed. Various burner systems and the importance of combustion aerodynamics in boilers, furnaces and kilns are studied. The method of determining boiler and furnace efficiency and an introduction to pollution control are presented. FORMAT: Lecture 2 hours, lab 3 hours PREREQUISITE: CHEE 4791.03

CHEE 4872.03: Air Pollution Control.
This class deals with air pollution from the standpoint of its generation and control, measurement of pollutant concentrations, and dispersion calculations. Both gaseous and particulate matter emitted from combustion and industrial sources are considered. Other aspects of air pollution such as urban smog, acid rain and the greenhouse effect and possible remedial measures are also discussed. FORMAT: Lecture 2 hours, tutorial 3 hours PREREQUISITE: CHEE 2422.03

CHEE 4892.03: Research Project II.
This class is a continuation of Research Project I. The student conducts the planned research work, and submits the data obtained and a term project in which the findings. Written and oral progress reports are required at mid-term. A written report and an oral examination are required at the end of the term. FORMAT: Lecture 2 hours, lab 3 hours EXCLUSION: CHEE 4791.03

C. Environmental Engineering Series

ENVE 3000.03: Fundamentals of Environmental Engineering.
The class will focus on sources of environmental pollutants, the effects of pollutants on living and non-living systems, and the processes by which pollutants are generated or by which their effects can be minimized or remediated. Lectures are supplemented by tutorials which include guest speakers, case studies and field trips. FORMAT: Lecture 3 hours, lab 2 hours PREREQUISITE: CHEE 4891.03 CROSS-LISTING: IDBS 2000.03

ENVE 3251.03: Environmental and Industrial Microbiology.
The principles of microbial communities are applied to biological systems. Emphasis is placed on microbial populations in air, soil and water. Further investigation includes microorganisms found in food, aquaculture and mining industries. Applications of microbial ecology to agriculture, industry, biotechnology and environment are examined. FORMAT: Lecture 3 hours, lab 3 hours PREREQUISITE: BIOL 1000X/Y.06 or equivalent

ENVE 3412.03: Energy and Environment.
This class deals with energy sources and consumption in various systems. Energy conservation and utilization of renewable energy sources are emphasized. Environmental impacts of energy development and consumption are examined. To acquire self study skills and develop oral and written communication skills, each student will undertake a term project in which the environmental impact of energy utilization and/or conservation in a particular system is examined. Students are expected to carry out a literature search on the subject. A written and an oral presentation are required. FORMAT: Lecture 2 hours, lab 3 hours PREREQUISITE: ENG 2800.03 or BIOS 3211.03

ENVE 3432.03: Waste Management.
The class deals with sources of pollution and their effects on air, water, and soil qualities. The physical, chemical and biological treatment processes of various types of waste are discussed in relation to pollution control. Physical, chemical and microbiological analyses of various types of wastes are done in the laboratory periods. This class includes a term project, field trips, and seminars. FORMAT: Lecture 3 hours, lab 3 hours PREREQUISITE: CHEE 3000.03

ENVE 3452.03: 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 flood hydrograph, flood routing, porous media flow and soil erosion prediction techniques are presented. Environmental considerations of structures used to control flood flows which are discussed include terraces, chutes, drop inlets, grassed waterways, curvlets and small earth dams. An earth dam design project extends over the class duration. FORMAT: Lecture 4 hours, lab 2 hours PREREQUISITE: ENG 2300.03, IDBS 2000.03
ENVE 3461.03: Environmental Measurement and Analysis.

The objectives of this class are to cover the principles of measurement with emphasis on collection and analysis of environmental data. A case study format is followed with the students specifying, designing and building an environmental data collection, presentation, and analysis system. The project includes sensor selection, design of signal conditioning, implementation of data acquisition and communications; hardware and software, and importation, analysis and presentation of the information of using commercially available software such as spreadsheets.

FORMAT: Lecture 1 hour, lab 3 hours
PREREQUISITE: EEDD 2000.03 and ENGM 2032.03

ENVE 4000.03: Small Watershed Hydrology.

Following an overview of the nature of hydrologic data and models, emphasis is placed on deterministic mathematical modelling of component processes and the synthesis of complete hydrographs. Components examined include precipitation, infiltration, evapotranspiration, surface and subsurface flow. The structure and application of selected current models are presented.

PREREQUISITE: A first class in engineering hydraulics and microcomputer experience

ENVE 4401.03: Design Project for Environmental Engineers I.

The objective of the class is to provide students with first hand experience in applying engineering design principles, biogeochemical analysis and environmental assessment techniques to the solution of specific environmental problems related to air, soil and water pollution control. Students are expected to display a high level of initiative and ingenuity in carrying out the project.

FORMAT: Lecture 1 hour, lab 5 hours
PREREQUISITE: Senior students only

ENVE 4402.03: Design Project for Environmental Engineers II.

This is a continuation of ENVE 4401 leading to a final presentation in both oral and written format.

FORMAT: Lecture 1 hour, lab 5 hours
PREREQUISITE: BIOE 4401.03

ENVE 4411.03: Indoor Environment Control and Air Quality.

The class deals with the design of heating, ventilating, and air conditioning systems for controlled environment facilities such as animal housing, residential and commercial buildings. Indoor air quality for humans and animals is discussed in relation to current methods of environmental control and energy conservation in buildings. Completion of an assigned term project is a part of this class.

FORMAT: Lecture 3 hours, lab 3 hours
PREREQUISITE: BIOE 3522.03 or equivalent

ENVE 4421.03: Biogeochemistry and Bioremediation.

Following an overview of fresh water and ocean geochemistry, the primary production and nutrient cycles in rivers, lakes and the ocean are studied. Soil types and their impact on the ecosystem and remedial measures are investigated. Design and maintenance of wetlands as treatment systems are presented. The sources of environmental pollutants and the health, environmental, and socio-economic implications of pollutants are studied. The application of various bioremediation technologies to restore contaminated sites is discussed.

FORMAT: Lecture 3 hours, lab 2 hours
PREREQUISITE: BIOE 3521.03 and ENVE 3441.03

ENVE 4612.03: Waste Disposal and Utilization.

The physical, chemical and biological properties of liquid and solid wastes are discussed and related to current handling and disposal methods. Solution to problems of pumping liquid waste, leachate design and holding facilities are presented. Methods of land application of wastes are compared based on pollution problems and fertilizer issues. Technological advances of utilization of wastes for the production of compost, single cell protein, alcohol, fertilizer, biogas, and chemicals are discussed. The class includes a term project, field trips, and seminars.

FORMAT: Lecture 3 hours, lab 3 hours
PREREQUISITE: BIOE 3522.03 or equivalent

ENVE 4641.03: Contaminant Fate and Transport.

This course focuses on the qualitative 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 will be covered. A 3 day lab will be held at the beginning of the semester, in which students will gain experience in sample collection and analysis, and in characterization of transport processes in terrestrial and aquatic environments.

FORMAT: Lecture
PREREQUISITE: ENVE 3402.00, CIVL 3310.00, ENVE 3000.03/ CIVL 3450.03, ENGM 3352.03, CIVL 4720.03

ENVE 4691.03: Solar Energy Utilization.

This course is designed 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, and related systems. A design project on the application of solar energy in residential, industrial or agricultural sector is required.

FORMAT: Lecture 3 hours, lab 3 hours
PREREQUISITE: BIOE 3522.03 or equivalent

ENVE 4772.03: Environmental Assessment and Management.

This class examines the ecological impacts of human activities with regard to water, air and soil pollution. Ecological theory and practice are reviewed and methods of environmental regulation and management considered in the light of the concepts of sustainability and maintenance of biodiversity. Lectures will include presentations by government and corporate regulators and managers. Tutorials will be devoted to the preparation and presentation of hypothetical environmental impact statements and assessments.

FORMAT: Lecture 3 hours, tutorial 1 hour
CROS6-11T14X, CHES 4772.03

D. Food Science Series

FOSC 1000.03: Concepts in Food Science.

This class will present an overview of the discipline of Food Science and Food Processing. The overview will include discussions of topics such as food processing, food preservation and safety, seafood processing, quality assurance, and food packaging. Selected food processing operations will also be discussed in greater detail. Food safety issues such as food infection and intoxication and HACCP will be introduced.

FORMAT: Lecture 3 hours, lab 3 hours
PREREQUISITE: BIOC 1011.03, BIOC 1011.03

FOSC 2010.03: Food Commodities.

This class will study the basic scientific principles underlying the processing of varying food commodities. General preservation methods such as freezing, dehydration, thermal processing, irradiation and microwave heating and their applicability to various foods will be examined during lectures and tours to industrial food processing plants. The practices of food manufacturing, preservation, distribution, and marketing of food materials will be related to basic food science principles.

FORMAT: Lecture 3 hours, lab 3 hours

FOSC 3010.03: Food Chemistry.

This class will examine the molecular behaviour of basic constituents common to food products and relate this behaviour to the structure and properties of food constituents. Topics covered will include water, carbohydrates, proteins and lipids and micro nutrients such as vitamins and minerals, pigments and flavors. Chemical processes such as...
PREREQUISITE: FOSC 3020.03 or CHEM 2201.03
FORMAT: Lecture 2 hours, lab 3 hours
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

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 haze stability will be discussed. STRUCTURE: Lecture 3 hours, lab 3 hours
PREREQUISITE: FOSC 3080.03 or permission from the instructor

FOSC 4091.03: Food Safety and Biotechnology.
This course will teach students biological aspects of safety in our food and water supply. The course is divided into three modules: (1) Introduction to molecular biology and biotechnology methods used to detect disease causing microorganisms, create genetically modified organisms and manipulate food related organisms, (2) Food hygiene and sanitation, and (3) Current issues in public health and safety of our food and drinking water supply. STRUCTURE: Lecture 3 hours, lab 3 hours
PREREQUISITE: FOSC 3080.03 or permission from the instructor
EXCLUSION: FOSC 4090.03

FOSC 4250.03: Food Product Development Project.
The objective of this class is to provide the student with experience in the application of food product development techniques. The student will be expected to develop a novel food product from initial stages through to pilot plant trials and shelf life evaluation. A final report and presentation will be required. STRUCTURE: Lecture 2 hours, lab 3 hours
PREREQUISITE: FOSC 4090.03
EXCLUSION: FOSC 4750.03

FOSC 4500X/Y.03: Seminar in Food Science.
The objective of this class is to allow the student to gain experience in verbal and written presentation of selected food science topics. Students will be encouraged to select topics which reflect their academic and food industry experience. Oral presentations and written reports will be required. NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
STRUCTURE: Lecture 1 hour
PREREQUISITE: FOSC 4750.03, Y.06 or FOSC 4250.03

FOSC 4750X/Y.06: Food Science Research Project.
The objective of this class is to provide experience in the application of Food Science principles to an academic or industrial research question or problem. The project will be chosen in conjunction with a supervising faculty member. The student will then devise and follow a work plan and write a project report. A critical statistical evaluation of the findings are an inherent part of this class. NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
STRUCTURE: Lecture 2 hours, lab 3 hours
PREREQUISITE: FOSC 3010.03, FOSC 3020.03, FOSC 3030.03, FOSC 3080.03, FOSC 3090.03, FOSC 4080.03, FOSC 4090.03
EXCLUSION: FOSC 4250.03

E. Materials Engineering Series

MATL 3500.03: Materials Engineering.
This course correlates properties of engineering materials with their structure. Laboratory objectives include preparation of reports in publication format and illustration of lecture material. Basic concepts of crystallography, chemical bonding and binary phase diagrams are introduced. These are used to describe properties of metallic and nonmetallic materials and how these may be controlled by engineers. Materials discussed include ferrous and nonferrous metals and alloys, ceramics, composites and semiconductors. STRUCTURE: Lecture 3 hours, lab 3 hours
MATL 3510.03: Extraction of Materials.
The lecture portion of this class covers the fundamental principles involved in the high temperature extraction of materials from their ores. Lectured interspersions of the equipment involved in operations such as roasting, smelting and refining and the application of these operations to the production of iron and steel and the more common nonferrous metals. The laboratory portion of this class consists of practice in stoichiometric mass balance and thermchemical calculations of common pyrometallurgical processes for extracting materials. FORMAT: Lecture 2 hours, lab 3 hours.

MATL 3601.03: Structure of Materials.
This class presents the following topics: the electronic structure of materials, fundamentals of crystallography, electron motion in the space lattice, introduction to composites, X-ray diffraction and X-ray diffraction techniques, and the crystal structure of crystalline materials. Typical binary phase diagrams are discussed from the structural point of view. Laboratory experiments include preparation and evaluation of X-ray films and diffractometer charts, structural investigation of binary alloys, and crystalline size structure. FORMAT: Lecture 2 hours, lab 3 hours PREREQUISITE: MATL 3501.03

MATL 3611.03: Corrosion and Degradation of Materials.
This class covers the basic theories of corrosion and their application to its prevention. It includes a description of corrosion testing methods, failure of materials arising from corrosion processes and design factors affecting corrosion. Laboratory experiments are used to illustrate the processes involved in degradation of materials. FORMAT: Lecture 2 hours, lab 2 hours.

MATL 3612.03: Thermodynamics of Materials.
The class covers the application of thermodynamic concepts such as entropy, enthalpy, free energy, and activities and phase diagram relations, to the understanding of high temperature reactions in chemical processing of materials. The application of computer programs to the analysis of chemical reactions is discussed. Problems and solutions 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. Information in metals, 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. Solidification is examined to describe work hardening and precipitation hardening. Laboratory exercises illustrate lecture material and provide experience in metallurgy. FORMAT: Lecture 3 hours, lab 3 hours PREREQUISITE: MATL 3501.03

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 rework 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, refractories, 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 in chosen in collaboration with a particular faculty member. The student then prepare 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 planed research work, analyses the data obtained and critically evaluates the findings. Oral progress reports are required. A written report and an oral presentation are required at the end of the term. FORMAT: Lab 6 hours.

MATL 4714.03: Hydrometallurgy.
Lectures cover the principles of hydrometallurgy including leaching processes, solvent purification and metal recovery methods. The laboratory experiments are designed to illustrate the main principles covered in the lecture periods. FORMAT: Lecture 2 hours, lab 2 hours.

MATL 4722.03: Ferrous Alloys and Joining of Materials.
The class reviews the iron-carbon system, including the transformation products of austenite, alloying elements and combined thermal mechanical treatments. Specific classes of steels, ranging from the simple plain carbon steels to the duplessi stainless steels, are considered. The class also discusses the fusion welding of a representative selection of steels. Fusion welding process variables are studied with the metallurgy of the solid metal and the heat-affected zone. FORMAT: Lecture 3 hours, lab 2 hours.

MATL 4802.03: Metallurgical Process Design.
This class focuses on the design of new metallurgical plants, processes and products based on knowledge acquired in previous core classes. Material and heat balances, metal economics, design and optimization aspects are covered. Groups of students undertake design projects aiming at modernization of existing plants or establishing new plants operating on new technology. Emphasis is placed on process selection and economic evaluation. Detailed process designs are prepared and computerized design programs are used to optimize the processing units. FORMAT: Lecture 2 hours, lab 3 hours.

MATL 4805.03: Electrochemical Processing of Materials.
The class discusses principles of electrochemistry and electrochemical engineering as they apply to the design of processes for the production of materials. The theory and application of various electrochemical techniques such as electrodialysis, electrorefining, electromachining, electroforming, and fused-salt electroylysis are included. A brief overview of the development of electrochemical sensors and devices using solid state electrolytes is provided. Surface modification by electrochemical means is also discussed. FORMAT: Lecture 2 hours, lab 3 hours CRINOS-Listing: MATL 6805.03

MATL 4806.03: Particulates in Materials Engineering.
The class covers the production, 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 CRINOS-Listing: MATL 6806.03

MATL 4813.03: Iron and Steel Production.
This class discusses factors affecting the global iron and steel industry with particular reference to Canadian participation. These factors include the supply of raw materials, new technology, environmental concerns and economics. The future of any metallurgical industry is influenced by many concerns, not all of which are technical. FORMAT: Lecture 2 hours, lab 3 hours PREREQUISITE: MATL 3510.03
Software Engineering

I. Introduction

The Bachelor of Software Engineering programme is jointly offered by the Faculty of Computer Science and the Faculty of Engineering.

Software Engineering is about the tools and techniques, theories and practices to make the development, support and evolution of software a viable business.

Software has a role in almost every domain of human endeavor. Software Engineering is not about what the software does - that is the responsibility of the domain - rather software engineering is about how the software should be developed, supported and evolved. This makes Software Engineering quite different from other branches of engineering (e.g. Aeronautical, Petroleum) where the domain of application is central.

While many people with different backgrounds produce software, the study of software engineering concerns how the design, production and support of software can be improved. Moreover, any successful software by definition survives over time, and it is normal for the environment to change during that time, so that well-designed software must meet new expectations, exploit new technology, and satisfy new requirements. Thus for a viable business, good initial design and implementation are not sufficient - better strategies for ongoing maintenance and evolution are also critical.

What does improved and better mean? The practitioner wants to know:

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 is 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 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>AT7</td>
<td>AT8</td>
<td>WT2</td>
</tr>
</tbody>
</table>

AT = Academic study term
WT = Co-op Workterm

C. Software Engineering Programme

As can be seen from the syllabus of classes below, the Software
Engineering programme does not follow the common Year 1 programme
outlined in the calendar for the other engineering programmes.

Year 1

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 100.03</td>
<td>Writing class X/Y</td>
</tr>
<tr>
<td>CSCI 110.03</td>
<td>Programming 1</td>
</tr>
<tr>
<td>CSCI 110.05</td>
<td>Programming 2</td>
</tr>
<tr>
<td>ENGI 110.03</td>
<td>Eng Design &amp; Graphics</td>
</tr>
<tr>
<td>ENGI 205.03</td>
<td>Engineering Economics</td>
</tr>
<tr>
<td>MATH 1000.03</td>
<td>Calculus 1</td>
</tr>
<tr>
<td>MATH 1010.03</td>
<td>Calculus 2</td>
</tr>
<tr>
<td>PSYC 1100.X/Y</td>
<td>Intro to Physics</td>
</tr>
<tr>
<td>PSYO 3000.X/Y</td>
<td>Intro to Psychology</td>
</tr>
</tbody>
</table>

Year 2

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 211.03</td>
<td>Data Structures</td>
</tr>
<tr>
<td>CSCI 221.03</td>
<td>Intro Computer Org</td>
</tr>
<tr>
<td>CSCI 233.03</td>
<td>Software Development</td>
</tr>
</tbody>
</table>

Intro to Software Eng
Electric Circuits
Digital Circuits
System Analysis
Eng. Math. For Software Eng
Applied Probability & Statistics
Linear Algebra
Discrete Structures
Intro to Cognitive Psych
Algorithm Analysis
Operating Systems
Human Computer Interaction
Communication
Engineering in Society 1
Microprocessors
Real Time Systems
Analysis and Design of Work
Quality Control & Reliability
Industrial & Organizational Psych
Company Operations & Mgmt
Project Mgmt & Control
Formal Aspects of Software Eng
Software Architecture
Engineering in Society 2
Computer Nets and Comm
Decision and Risk Analysis
Software Engineering Project
Software Testing and Quality Assurance
Software Processes and Tools
Software Deployment, Maintenance, and Evolution
Empirical Performance Modeling
Faculty of Health Professions

I. Introduction
The Faculty of Health Professions consists of the School of Health and Human Performance, School of Health Services Administration, School of Human Communication Disorders, School of Social Work, School of Nursing, School of Occupational Therapy, School of Physiotherapy, College of Pharmacy, and the School of Health Sciences. The various undergraduate programs, including the Diploma in Disability Management, are described in the College, School, and other program sections of this Calendar. Details of the graduate programs in the Clinical Management, are described in the College, School, and other program sections of the University Calendar of the Faculty of Graduate Studies. 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 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 above module information for students prior to each module. An information desk will be available on site. Check Website for location www.dal.ca/ip.
Student Disclosure of Health Information

Faculty of Health Professions

Students registered in this Faculty are encouraged to inform both the School/College and the field work learning sites if they have a health concern that has the potential to compromise client, student and/or agency personnel safety and/or has the potential for limiting their ability to learn and perform their role as learner.

For the purposes of this policy, the term health concern refers to any cognitive, affective, and/or physical health problem, injury, or condition that may place the student and/or others at risk and/or inhibit the student’s learning ability and performance.

A. Guidelines for Disclosure

The student has the right to decide if disclosure of health information is appropriate. The method, timing, and extent of the disclosure is at the student’s discretion (for consultation options, see below). Early disclosure of the following information regarding the health concern may be helpful to students in the academic and/or field work sites.

To disclose this information:

1. Clearly describe the nature of the health concern and the potential limitations with regard to the learning tasks expected in either the academic or field work site. Appropriate verification of the information may be required.

2. List any adaptations, modifications, and/or safety procedures that may be required in planning the student’s learning experiences in either setting.

3. Provide clear and appropriate advice regarding the management of this health concern.

If the disclosure of health information in field work and/or academic sites produces difficulties, students are encouraged to report these difficulties immediately to the appropriate person(s) within both the field work site and/or within their educational program (see below). Discrimination in any form will not be tolerated.

Students are advised to make the initial contact with the person with whom they are most comfortable from the lists below. These individuals would be available for consultation/advocacy:

- Academic/Faculty advisor
- Field work coordinator(s)
- Director of the School or College where student is enrolled
- Dean of the Faculty of Health Professions
- Advisor to Students with Disabilities, Dalhousie University
- Dalhousie/King’s Association of Students with Disabilities
- Human Rights Commissioner

College of Pharmacy

- Preceptor
- Site coordinator
- Externship administrator

School of Nursing

- Clinical instructor
- Class professor
- Associate Director, Undergraduate Student Affairs
- Nurse Practitioner/Arctic Nursing Program Coordinator

School of Occupational Therapy

- Preceptor
- Field site director
- Provincial or Atlantic Region fieldwork education coordinators

School of Physiotherapy

- Clinical supervisor
- Facility clinical coordinator
- Provincial coordinator

School of Social Work

- Agency field instructor
- Program coordinator
- Faculty field instructor

Health Services Administration

- Preceptor

Human Communication Disorders

- Clinical Educator

Health and Human Performance

- Associate Director, Undergraduate Studies

QEII - Dalhousie School of Health Sciences

- Clinical Education Coordinator
Disability Management

Location: Rooms 100, 422 University Ave.
Halifax, NS B3H 1X1
Telephone: (902) 494-2950
Fax: (902) 494-3025
Email: disability.management@dal.ca
Website: www.dal.ca/ddm
Dean
Webster, William G., PhD
Academic Director
McCorm, F., BRec MA, PhD
Program Coordinator
Murphy, J., BComm

I. Introduction
The Faculty of Health Professions offers a range of diploma and degreeearning programs for health professionals, including programs for rehabilitation practitioners. Dalhousie’s expertise within the health professions, and its understanding of occupation and rehabilitation offers academic guidance and training of professionals in injury prevention and disability management.

The diploma program is built around the philosophy of disability management and early assistance as the most effective means by which to assist injured and ill individuals to attain their maximum level of functioning and ability to return to work. Disability management is designed to benefit injured workers through its participatory and proactive problem-solving process incorporating strategies that ensure workers timely and safe return to work. All classes in the diploma program are offered via distance learning technology.

A. Purpose of Program
The Diploma Program in Disability Management addresses specific goals and objectives for education of disability managers who desire a more extensive background in understanding injury, its impact and recovery processes. In addition, the program responds to changes in workplace health & safety programs, in legislation, regulations, and practices, and in changes in the health system in general. While the main paradigm of the program is grounded in the health, rather than the medical model, its conceptual basis has roots in health and medical sciences, the social sciences, and the physical sciences as related to ergonomics and human kinetics.

The goal of the Diploma Program in Disability Management is preparation of Disability Management team members who: provide effective, efficient and safe co-ordination of services; facilitate a team-oriented approach; convey understanding of the health impacts of injury; convey an understanding of the impact of injury on work; develop decision-making skills, and develop management skills. Prospective students in the Disability Management Diploma program must be presently working for a Canadian Workers Compensation Board, or performing similar work with a public or private agency dealing with the return to work process for injured workers. Students who do not meet this criteria may be eligible for the Diploma in Disability Management Mentorship Program. For more information regarding the DDM Mentorship Program, please consult the DDM Website: www.dal.ca/ddm.

B. What is Disability Management
Returning to work for injured workers can be influenced by many medical, physical and psychological factors that may impede recovery. There is the belief that the needs of workers and their employers are central to the disability management process, and workers must play an active role. A requirement in the worker-centered process is the need to ensure that all the facts about injuries/illnesses, treatments, and entitlements are known to these injured workers and that clear decision-making is exercised by all parties to ensure both continuity in the return to work process and establishment of trusting relationships among injured workers, their employers, and the disability management team.

C. Career Opportunities
An exemplary program in Disability Management will assist Disability Managers to reduce the human, social and economic costs of disability to workers and employers on a national scale. Students and graduates of the DDM Program typically work as Disability Managers, Return to Work Facilitators, and Vocational Rehabilitation Consultants.

D. Learning Principles for Program Development and Delivery.
In order for program graduates to achieve the intended learning outcomes, learning will be applied around the following Adult Education Principles. Learning activities in classes will reflect the disability management philosophy and be integrated throughout the program with a case-oriented approach to problem-solving. Assessment of learning will include non-traditional examination approaches and activities will stimulate critical discourse which combines practical situation analysis against learned theories, concepts, and frameworks. Learning activities will foster personal growth through critical reflection of student’s attitudes and decision-making patterns.

II. Regulations
Students registered in the Diploma Program in Disability Management (DDM) are bound by the University and Faculty regulations in the same manner as all Dalhousie students. The University and Faculty of Health Professions (FHP) regulations are found in the University Regulations section of the Dalhousie University Calendar. Academic regulations are found in the Academic Regulations section of the Calendar. It is the responsibility of each DDM student to become familiar with both the University and FHP regulations.

Please make note of the “Guide to Responsible Computing” found in the University Regulations section of the Dalhousie Calendar. Because of the distance learning component of the Disability Management Diploma Program, students should pay particular attention to regulations designed to respect the rights of computer users.

A. Class Grades
The minimum passing grade for all DDM classes is 80%. A class may be repeated once only, with a maximum of 2 repeated classes allowed in the entire DDM program. A student who fails the same class twice will be required to withdraw from the DDM program.

B. Appeals
On occasion, conflict or disagreement on final grades or evaluative procedures may arise. All students are expected to familiarize themselves with the processes available to them for academic appeals. Timeliness is of the essence for presentation and consideration of all appeals and, in all instances, the first level of appeal will be at the informal level.

Formal appeals of a final grade or a procedural problem must follow the regulations as stated in the University Calendar and such appeals will only be considered after failure to resolve the issue at the informal level has occurred. Students who do not follow these procedures will automatically forfeit their right to further consideration of their appeal and the original decision will remain in effect.

Informal Process
In each instance, the student and instructor, with guidance from the DDM Academic Director, are expected to attempt to resolve the matter informally within 15 days of the matter giving rise to the appeal.
Formal Process
If the matter cannot be resolved informally, the student may initiate a formal appeal by following the procedures set down in the University Calendar (see Regulation 16.7 of the Academic Regulations section for the Faculty of Health Professions appeals process). For students registered in the DDMM program, the first step in a formal appeal involves the matter being sent to the DDMM Academic Director who will present the appeal to an appeals committee (Committee on Studies) or the DDMM program Advisory Board. Failure to resolve the matter at this level will lead to a formal appeal with the Faculty of Health Professions Committee on Studies (see Academic Regulations).

Note that both the Dalhousie University Calendar and the Faculty of Health Professions policies appear on the Dalhousie University website: http://www.registrar.dal.ca/calendar/ugrad/.

III. Diploma Requirements
Students must complete all ten half credits however may choose between DISM 4060 and DISM 4070.

IV. Class Descriptions

DISM 3010.03: Introduction to Occupation and Disability Management
Provides a primary introduction to the full program. It asks the following questions in seeking to understand the meaning and importance of occupation to individuals. What is occupation? What is the meaning of occupation? What is the meaning of work injury and loss of occupation? It also explores: What is disability management? What are some of the professional and ethical issues, as well as the philosophy, roles, conceptual framework for program? What are levels of disability management in organizational systems, injury prevention, and on-site management?
FORMAT: Distance Education
RESTRICTION: Restricted to Disability Management students

DISM 3020.03: Workers and the Work Environment.
This course identifies what is normal human function in the workplace in relation to occupational health and injury prevention. The class looks at normal human function in work processes, ergonomic support, Health and Safety Acts, injury prevention in the workplace, occupation health, organization of the workplace, and interpersonal factors.
FORMAT: Distance Education
RESTRICTION: Restricted to Disability Management students

DISM 3030.03: Understanding Occupational Injury and Disability.
In this class learners gain an Understanding of Occupational Injury and Disability by examining mechanisms and processes involved when injury does occur, that either allow for recovery and return to work, or precipitate a further decline into impairment, disability or handicapping processes. Topics addressed are: mechanisms of injury, recovery processes, impairment, disability, handicap, types of physical injuries, mental disorder/disabilities, and occupational illness.
FORMAT: Distance Education
RESTRICTION: Restricted to Disability Management students

DISM 3040.03: Occupational Assessment.
Following an Introduction to Occupational Assessment, learners will be given the opportunity to build skills around carrying out Occupational Assessment based on existing data and using a case study approach. Case studies will assist students in using existing data, coordinating information, worker participation, employer participation, communications/collaboration, and issues and self-reflection on difficult cases.
FORMAT: Distance Education
RESTRICTION: Restricted to Disability Management students

DISM 4010.03: Return to Work Planning and Communication.
This course will consider processes including factors that create resistance among workers. Introduction to return to work planning and communication processes in understanding resistance and compliance/motivation in workers.
FORMAT: Distance Education

DISM 4020.03: Referral, Co-ordination and Follow-up.
This course provides an opportunity to build on competencies and utilize health professionals and other services to assist the injured worker to return to employment. This looks at team building, group dynamics, utilization of 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/or may need to be applied in actual return to work situations with modifications made to the job-related activity and/or the workplace. Topics include functional restoration programs & work conditioning, workplace modification, ease-back programs, work hardening, employer responsibility.
FORMAT: Distance Education
RESTRICTION: Restricted to Disability Management students

DISM 4040.03: Strategies for Alternative Work and Prevention.
In situations where return to a worker’s former occupation is impossible, learners will identify strategies to assist the client. Such strategies include dealing with issues of job loss, vocational rehabilitation and employment for persons with disabilities. Students will look at prevention strategies in dealing with job loss, vocational rehabilitation, employment for persons with disabilities, meaningful occupation, case closure, and prevention strategies within systems, structures and organizations.
FORMAT: Distance Education
RESTRICTION: Restricted to Disability Management students

DISM 4050.03: Psycho-social issues in Disability Management.
Many complex psycho-social issues involve the injured worker’s family, community and employer dynamics. Topics which will be studied in-depth towards the end of the program include: family, community and unemployed persons, psycho-social dynamics, employer dynamics, employer/employee relationships, societal trends, dependence and disability categorizations, and medical authorization.
FORMAT: Distance Education
RESTRICTION: Restricted to Disability Management students

DISM 4060.03: Program Evaluation in Disability Management.
The principal objective of this course is to prepare the student to be an informed participant in, and consumer of, program evaluations. This includes the ability to contribute as a stakeholder or sponsor representative to the effective design of a program evaluation. It also involves development of the knowledge required to be an informed consumer of evaluation reports, to be able to interpret and apply assessment outcomes and recommendations, and to recognize when inadequate methodologies have been employed and identify the resulting limitations of the findings.
FORMAT: Distance Education
RESTRICTION: Restricted to Disability Management students

DISM 4070.03: Disability Management of Mental Health Issues in the Workplace.
This course is aimed at enhancing the learner’s understanding of the impact of mental illness on the individual and the workplace, and the intervention strategies designed to facilitate the return to work process.
FORMAT: Distance Education
RESTRICTION: Restricted to Disability Management students
Health Sciences

Faculty of Health Professions
314 Health Sciences
• Respiratory Therapy
• Radiological Technology
• Nuclear Medicine Technology
• Medical Laboratory Technology (Post-Diploma Only)
• Diagnostic Medical Ultrasound
• Diagnostic Cytology

The program offers education in six professional streams: also a post-diploma offering for practising professionals.

I. Bachelor of Health Science Degree Program

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 27, 2008.

Dalhousie University confers a Diploma in Health Science (for Diagnostic Cytology, Diagnostic Medical Ultrasound, and Respiratory Therapy only) and a Bachelor of Health Science (Specific Discipline) degree. The programs leading to these credentials are accredited. The University does not determine eligibility for certification/registry exams. Rather, through accreditation, the University ensures that graduates of its programs meet the eligibility criteria set by the professional associations. Diagnostic Cytology, Diagnostic Medical Ultrasound (General, Cardiac and Vascular), Nuclear Medicine and Radiological Technology are accredited by The Canadian Medical Association. Respiratory Therapy is accredited by The Council on Accreditation for Respiratory Therapy Education.

A. For the professions of Diagnostic Cytology, Diagnostic Medical Ultrasound, and Respiratory Therapy

Students are eligible to write the certification/registry exam upon successful completion of Year 3, when all requirements for a diploma exit have been met. They are eligible even if they choose not to exit with a diploma. Students should check with faculty concerning examination dates.

Following degree completion, students in Diagnostic Medical Ultrasound may be eligible to write certification/registry exams in the specialized areas of cardiac and vascular sonography.

B. For the professions of Nuclear Medicine Technology and Radiological Technology

Students are eligible to write the CAMRT certification exam upon successful completion of the Bachelor of Health Science degree.

II. The Professions

Diagnostic Cytology

A cytotechnologist is a health professional who specializes in detecting and diagnosing cancer at a cellular level. A cytotechnologist requires expertise and precise diagnostic skills to identify and accurately evaluate minute changes within cells to provide a diagnosis. A cytotechnologist integrates scientific knowledge, cellular morphology and clinical history to formulate a cytological report. The cytotechnologist must be comfortable with using a compound microscope as this is how s/he must spend a great portion of their day. The cytotechnologist has limited patient contact, but must communicate effectively with other health care professionals in discussing results, procedures and/or policies and practices.

Diagnostic Medical Ultrasound

The Diagnostic Medical Sonographer utilizes high frequency sound waves, specialized equipment, and other diagnostic techniques to collect detailed information on the anatomical, physiological and pathological state of the patient. This health professional is able to produce and evaluate ultrasound images and related data that are used by specialized physicians to render a medical diagnosis. Sonographers typically provide technical expertise in abdomen, superficial structures, obstetrics/gynecology, vascular and cardiac applications.

Nuclear Medicine Technology

A nuclear medicine technologist is a health professional responsible for performing diagnostic and therapeutic nuclear medicine procedures. The technologist administers radiopharmaceuticals to the patient most often by way of an intravenous injection while adhering to proper drug preparation techniques, radiation protection guidelines and patient care practices.

Sessional Lecturers

Bafort, C.
Chapman, J.
Hedden, M.
Morrison, D.
Prole, C.
Surette, J.

Dean

Webster, William G., PhD

Director

Hubert, J., BA, MA, PhD

Administrative Staff

Burnes, L., Administrator
Mohawk, A., Clinical Coordinator

Assistant Professors

Gilbert, R., BSc, MSc, PhD (Dal)
Hubert, J., BA, MA, PhD (Dal)

Adjunct Lecturers

Chauvier, S.
Foder, K.
Gillis, C.
Guin, C.
Hirtle, C.
MacDonald, B.
Mardell, R.
McLarrie, P.
Manoe, P.
Murphy, C.
Peek, M.
Scott, T.
Sharp, R.
Smith, J.
Spurr, K.

Facility of Health Professions

314 Health Sciences
The technologist operates a variety of radiation detection equipment, row of which is the gamma camera, in order to provide an assessment of the composition of the radiopharmaceutical within the patient. By using various computer programs, the technologist analyses 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 quality control procedures 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-pulmonary 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 manipulation. 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, routine testing and evaluation of respiratory equipment. The therapist must be able to provide competent assistance in cardio-pulmonary research.

III. Pre-Enrolment Requirements

Immunization (current detailed version of policy can be found at www.dal.ca/shs (Clinical Education))

1. It is a regulation of the Faculty of Health Professions and affiliated health care agencies that all students must be immunized. This has been instituted to protect patients as well as to protect students and employees.

2. Upon entering the program students must show certification for current immune status against tetanus, diphtheria, polio, measles, mumps, rubella, hepatitis B, varicella (chickenpox). Evidence of tuberculin testing ( Mantoux — two-step method) must also be shown. It is also recommended that students be immunized for influenza on an annual basis.

3. The Hepatitis-B vaccination is required for all students. It is a series of three injections the second and third shots are administered one month and six months after the first injection. The vaccination lasts for several years. This cost (approximately $90.00, subject to change) must be paid by the student. The School of Health Sciences arranges for a clinic where Hepatitis-B immunization shots are administered by University Health Services nurses. Information regarding these clinics and payment will be mailed to all students prior to the beginning of each academic year.

BLS-HCP Certification

• All BSc students must show proof of BLS-HCP current certification prior to entry into the program. BLS-HCP must be recertified bi-annually.

First Aid Certification

• All BSc students must show proof of Standard First Aid current certification prior to entry into the program. Standard First Aid must be recertified bi-annually.

IV. Additional Costs

There are additional costs associated with all professional streams of the BSc program, including but not limited to Standard First Aid and BLS-HCP certification, immunization, uniforms, membership in professional associations, equipment, fees for writing registry exams and travel to clinical sites. These additional costs are the responsibility of the student. A detailed list is available from the School.

V. Intellectual, Emotional & Physical Demands

The health professions included in the Bachelor of Health Science program are intellectually, emotionally and physically demanding. It is important that students become familiar with the profession before entering the program so that they are able to function at an acceptable standard. It is common to have to lift and move heavy equipment, position patients, wear lead aprons, manipulate valves and levers on equipment, remain on your feet for extended periods of time and move frequently from one clinical area to another. It is also common to have to view information displayed on computer monitors or on slides under a microscope. It might be necessary to distinguish fine gradations of colour and to respond to alarms and buzzers. There may be emergency situations that arise in the health care setting that require students to respond immediately. Shift work may be required, including rotating 12-hour shifts. Latex gloves are in wide use and chemicals are used in a variety of settings. Refer to www.dal.ca/shs (Admissions) for Statements of Fitness required for each profession. Students who have concerns about fitness should contact the School for further information.

VI. Program Outline

Four-Year Entry-Level Program

The curriculum is comprised of 4 years of full-time study with each year including core, interdisciplinary, discipline-specific, health professional and basic science classes. Fourth-year BSc students must meet the School’s clinical skills maintenance requirements and complete the “Record of Clinical Practise for Year 4” each term, until the fourth-year coursework is completed. Students should contact the School for full details.

Diagnostic Cytology

<table>
<thead>
<tr>
<th>Year</th>
<th>Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>HSC 100.03, HSC 103.03, BIOC 1420.03, CHRM 1410.03</td>
</tr>
<tr>
<td>Year 2</td>
<td>DCYT 100.03, DCYT 1010.03, HSC 1000.03, BIOC 1020.03, STAT 1060.03, Elective (3 credit hours)</td>
</tr>
<tr>
<td>Year 3</td>
<td>HSC 1010.03, DCYT 150.05, DCYT 1040.03, BIOC 2010.03, HSC 2020.03, MRT 1110.03, Elective (3 credit hours)</td>
</tr>
<tr>
<td>Year 4</td>
<td>BIOC 2020.03, DCYT 2004X/V.06, DCYT 2010.03, HSC 3000.03, HSC 3010.03, HESA 4000.03, HSC 4000.03, DCYT 2500.03</td>
</tr>
</tbody>
</table>

The technologist operates a variety of radiation detection equipment, row of which is the gamma camera, in order to provide an assessment of the composition 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.
Health Sciences
Faculty of Health Professions

Year 1
• BIOL 3024.03
• BIOL 3430.03
• DCYT 3000.03
• DCYT 3010.03
• DCYT 3200.03
• DCYT 3210.03
• DCYT 3220.03
• DCYT 3230.03
• DCYT 3240.03
• DCYT 3500.03

Year 2
• Required:
• HSCE 4030.03
• Choose 9 credit hours:
• HSCE 4200.03
• HLTH 4040.03
• HSCE 4220.03
• Approved elective (3 credit hours)

Year 3
• Required:
• HSCE 4030.03
• Choose 9 credit hours:
• HSCE 4200.03
• HLTH 4040.03
• HSCE 4220.03
• Approved elective (3 credit hours)

Year 4
• Required:
• HSCE 4030.03
• Choose 18 credit hours:
• HSCE 4030.03
• HSCE 4222.03
• 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
• PHYC 1300X/Y.06
• DMUT 1500.03

Year 2
• DMUT 2000.03
• DMUT 2010.03
• DMUT 2020.03
• HSCE 2000.03
• STAT 1060.03
• HSCE 2010.03
• NUMT 1000.03
• NUMT 1020.03
• NUMT 2500.03

Year 3
• HSCE 3000.03
• NUMT 3000.03
• NUMT 3020.03
• NUMT 3200.03
• NUMT 3210.03
• NUMT 3220.03
• NUMT 3230.03
• HSCE 4000.03
• HSCE 4003.03
• Elective (3 credit hours)
• HSCE 3500.03

Year 4
• Required:
• NUMT 3210.03
• NUMT 3240.03
• NUMT 4201.03
• NUMT 4220.03
• Approved elective (3 credit hours)

Nuclear Medicine Technology

Year 1
• HSCE 1000.03
• HSCE 1010.03
• HSCE 1020.03
• HSCE 1030.03
• HSCE 2020.03
• HSCE 2030.03
• NUMT 1000.03
• NUMT 1020.03
• PHYC 1300X/Y.06

Year 2
• CHEM 1410.03
• HSCE 2400.03
• HSCE 2500.03
• HSCE 2600.03
• HSCE 2700.03
• HSCE 3000.03
• HSCE 3100.03
• HSCE 3500.03

Year 3
• HSCE 3600.03
• HSCE 3700.03
• HSCE 3800.03
• HSCE 3900.03
• HSCE 4000.03
• Elective (3 credit hours)

Year 4
• Required:
• NUMT 3210.03
• NUMT 3240.03
• NUMT 4201.03
• NUMT 4220.03
• Approved elective (3 credit hours)
Choose 9 credit hours:
- NUMT 4100.06
- HESA 4001.03
- HESA 4003.03
- HESA 4004.03
- HESA 4005.03
- HESA 4006.03
- HPRO 3350.03
- HPRO 3345.03
- HPRO 3397.03
- HPRO 2361.03/LEIS 2361.03
- Approved elective (3 credit hours)

Radiological Technology
Year 1
- HSCE 1000.03
- HSCE 1010.03
- HSCE 1020.03
- HSCE 1030.03
- PHYC 1300X/Y.06
- RADT 1000.03
- RADT 1010.03
- RADT 1020.03
- Elective (3 credit hours)
- RADT 1500.03

Year 2
- HSCE 2000.03
- HSCE 2010.03
- HSCE 2020.03
- HSCE 2030.03
- HSCE 2040.03
- RADT 2000.03
- RADT 2010.03
- RADT 2020.03
- Elective (3 credit hours)
- RADT 3500.03

Year 3
- HSCE 3000X/Y.06
- STAT 3010.03
- HSCE 3020.03
- HSCE 3030.03
- HSCE 3040.03
- Elective (9 credit hours)

Year 4
- Required:
  - HSCE 4030.03
  - HESA 4000.03
  - HSCE 4200.03
  - Elective (3 credit hours)
  - RADT 4000.12
  - HPRO 3345.03
  - HPRO 3397.03
  - HPRO 2361.03/LEIS 2361.03
  - Approved elective (3 credit hours)

Respiratory Therapy
Year 1
- HSCE 1000.03
- HSCE 1010.03
- HSCE 1020.03
- HSCE 1030.03
- Elective (3 credit hours)
- STAT 1060.03

Year 2
- HSCE 2000.03
- HSCE 2010.03
- HSCE 2020.03
- HSCE 2030.03
- HSCE 2040.03
- STAT 3010.03
- Elective (3 credit hours)
- RADT 2500.03

Year 3
- HSCE 3000.03
- HSCE 3010.03
- RADT 3000.03
- RADT 3010.03
- RADT 3210.03
- RADT 3220.03
- RADT 3240.06
- HESA 4000.03
- HESA 4001.03
- HESA 4003.03
- HESA 4004.03
- HESA 4005.03
- HESA 4006.03
- HESA 4007.03
- HESA 4400.03
- HPRO 3350.03
- HPRO 3345.03
- HPRO 3397.03
- HPRO 2361.03/LEIS 2361.03
- Approved elective (3 credit hours)

Year 4
- Required:
  - HSCE 4030.03
  - HESA 4000.03
  - HSCE 4200.03
  - Elective (3 credit hours)
  - RADT 4000.12
  - HPRO 3345.03
  - HPRO 3397.03
  - HPRO 2361.03/LEIS 2361.03
  - Approved elective (3 credit hours)

BHSc Degree Completion Program
This program requires 5 full credits (30 credit hours) of university study. It is available only to students who have successfully completed the Dalhousie diploma portion of the BHSc degree program in the professional stream for which you are applying.

For Admission Requirements see page 14 of the calendar under Faculty of Health Professions, School of Health Sciences (BHSc Degree Completion Program).
Post Diploma Program

The School of Health Sciences offers a post diploma program leading to a Bachelor of Health Science in any of: Diagnostic Cytology, Diagnostic Medical Ultrasound, Medical Laboratory Technology, Nuclear Medicine Technology, Radiological Technology and Respiratory Therapy. The program has been developed to meet the needs of practicing technologists, sonographers and therapists who have expressed an interest in the opportunity to complete a baccalaureate degree as a means of pursuing life long learning and increasing career opportunities.

Through a guided selection process, students will choose courses that contribute to their professional growth and interest. Students will be provided the opportunity to broaden their knowledge and scope of the Canadian healthcare system as well as enhance leadership abilities and to equip themselves for participation in a rapidly changing health care environment.

The post-diploma BFHC curriculum is equivalent to 2 years of full time university study (60 credit hours). Courses may be completed in the sequence best suited for the student; however, attention must be paid to the course pre-requisites. To accommodate the working professional the post diploma program is available on a full time or part-time basis and most of the courses are delivered via BLS. There are university regulations concerning the maximum length of time allowed for degree completion. Refer to Academic Regulation 15.3 (Duration of Undergraduate Studies).

Required Courses (50 credit hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT 1000.03</td>
<td>Introductory Statistics for Science and Health Sciences</td>
</tr>
<tr>
<td>HSCE 1000.03</td>
<td>Introduction to Health Professional Practice</td>
</tr>
<tr>
<td>HSCE 2001.03</td>
<td>Health Care Ethics</td>
</tr>
<tr>
<td>HSCE 3000.03</td>
<td>Culture, Diversity and Health</td>
</tr>
<tr>
<td>HSCE 3010.03</td>
<td>Introduction to Research Methods</td>
</tr>
<tr>
<td>HSCE 4000.03</td>
<td>Leadership in Healthcare</td>
</tr>
<tr>
<td>HESA 4002.03</td>
<td>Canadian Health Care Delivery</td>
</tr>
<tr>
<td>HSCE 4200.03</td>
<td>Foundations in Clinical and Professional Education</td>
</tr>
<tr>
<td>HLTH 4040.03</td>
<td>Health Law for Non-Lawyers</td>
</tr>
<tr>
<td>HSCE 4220.03</td>
<td>Critical Research Evaluation</td>
</tr>
</tbody>
</table>

Electives (30 credit hours)

Students may choose electives from the Pre-Approved list but are not limited to this list. Contact the Post Diploma Advisor or visit the School website at www.dal.ca/shs.

Anaesthesia Assistant Certificate

Fourth year and post-diploma students in Respiratory Therapy may now complete a 21 credit hour Anaesthesia Assistant program leading to an Anaesthesia Assistant Certificate. Working Respiratory Therapists who meet post-diploma entrance requirements may also complete the certificate as a stand-alone credential. The 21 credit hour certificate requires successful completion of:

- RADT 4010.03: Anaesthesia and Related Equipment
- RADT 4002.03: Anaesthesia Medication Delivery
- RADT 4003.03: Clinical Anaesthesia
- RADT 4004.03: Specialty Practice

Students enrolled in this program must meet School Standards regarding BLS-HCP certification and Standard First Aid. They must also be certified in ACLS.

Contact the School for further details.

VII. Regulations

All students are required to observe the University Regulations and Academic Regulations as described in this calendar.

A. Academic

Workload

The normal workload is five (5) credits per year (30 credit hours) during the regular academic session (September - April). In addition, a 10-week clinical practicum worth one half-credit (3 credit hours) takes place in May - June following Years 1, 2, and 3 of the BFHC program.

<table>
<thead>
<tr>
<th>Term</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall Term</td>
<td>15</td>
</tr>
<tr>
<td>Winter Term</td>
<td>15</td>
</tr>
<tr>
<td>Spring Term</td>
<td>30</td>
</tr>
</tbody>
</table>

Normally, only a full-time course of study (30 credit hours during the regular academic session and a 3 credit-hour practicum in the May-June time period) can be taken in the last three years of the 4-year entry-level program. Interruption of studies will only be granted for leave of absence or voluntary withdrawal. The fourth year can be pursued on a part-time basis, subject to Academic Regulation 15.2, which regulates duration of undergraduate studies.

It is the responsibility of each individual student to ensure she/he is enrolled in the courses required to complete the BFHC program of study. Therefore students are expected to meet with their academic advisors to seek counselling in this regard, to ensure that course selections and course load are appropriate, and will not cause difficulties later on in the program.

The BFHC post-diploma program is available on a part-time basis.

Permission to carry more than a normal workload

A workload exceeding these credit hours in any given term will be considered an Overload.

- Students who wish to take on an overload must have the approval of the School of Health Sciences Committee on Studies. Any student applying for an increased workload (overload) must apply at least 4 weeks in advance of the start of the semester or year in question.
- In their request, students should include their reasons for seeking an overload and include supporting arguments and evidence, such as their academic record and any other relevant considerations.
- Applications from students who give good reasons for wishing to take an overload will be considered. The Committee on Studies will consult with the 4th Year Academic Advisor on overload requests pertaining to fourth year studies. However, in accordance with Academic Regulation 3.1.3 - such permission will not normally be granted to any student in the first year of study, or to any student who, in the preceding academic term, obtained a grade point average of less than 3.0.
- During Clinical Practicum and/or Clinical Education Courses no additional courses will be permitted without prior approval from the Committee on Studies.
- Such requests require student completion of a waiver of Academic Regulation Application, available from the Administrator, School of Health Sciences, or the Registrar’s Office.
- Students who exceed the normal workload per academic term without Committee on Studies approval, will be required to withdraw from the course.

Attendance at Classes

Regular and punctual attendance at classes is required; students are expected to notify instructors if they are going to miss a class. When the work of a student becomes unsatisfactory or attendance is irregular, the student may be required to withdraw from the school.

Grade Requirements

A student must receive a grade of C in each course with a course number in the School of Health Sciences (HSCE, DCYT, MDLT, NUMT, MCDT, RADT, RSPT) in order for that course:

- to be considered as a prerequisite for another class
- to be counted as a credit towards the Bachelor of Health Science or Diploma in Health Science
- to be considered as a prerequisite for another class

Since most professional 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 are reminded of Academic Regulations 18, 19.2 and 20.2 governing good standing, probation and academic dismissal.
Grade Point Average
A description of the grade point average (GPA) is found in Regulation 17.1 in the Dalhousie Undergraduate Calendar. The grade scale and definitions are found in Regulation 17.1.

Grading of Clinical Courses
Clinical education and specialty practice courses are graded on a letter grade basis. Students who have been removed from any course due to 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 PM (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:
- repeatedly attended class
- participated in class/lab
- demonstrated effort in understanding course content
- sought additional assistance from faculty when appropriate
- demonstrated accountability regarding meeting deadlines and completing course requirements
- demonstrated professional conduct in the lab setting (if applicable) and the classroom
- demonstrated a basic understanding of principles relevant to clinical practice
- participated in respectful interactions with faculty, classmates, and preceptors
- adhered to University, Faculty, School, and course policies

Rationale: There is an expectation that students conduct themselves in an accountable and responsible manner, and demonstrate professional behavior. This is directly related to the behavior appropriate for a health professional.

No more than two (2) supplementals are allowed per course.

Voluntary Withdrawal
Students who voluntarily withdraw from the School of Health Sciences, having satisfactorily completed courses toward the BHSc (specific discipline) degree, with the intention of returning at a later date are advised that re-acceptance is contingent upon there being an available place.

Leave of Absence
1. Students who apply for a leave of absence (LOA) from their program of study must do so in writing to the School of Health Sciences Committee on Studies. If possible, such applications should be made in advance of the term or year for which a LOA is being requested.
2. A request for Leave of Absence may be for a duration of 1 term to a maximum of one year in length. Students are eligible for a maximum of one such leave for the duration of their program.
3. Following approval of the application for LOA, the Committee on Studies will notify the following individuals:
   a) The student;
   b) Dalhousie University Registrar’s Office;
   c) Students Services office at the School; and
   d) Student’s academic advisor
4. Students may apply to return to the program prior to the designated end of the LOA. At the time students return to the program, the LOA is considered ended.
5. At least two to three months prior to returning to the program, students granted LOA will inform the following, in writing, of their intent to resume their studies:
   a) Chair, Committee on Studies;
   b) Student’s academic advisor
   c) Students Services office at the School;

6. The Chair of the Committee on Studies will notify the Dalhousie Registrar’s Office and the Student Services office at the School of the student’s planned re-entry to the program.
7. It is important to note that for the duration of a leave of absence, the clock stops on the six-year rule for discipline-specific courses, and the ten-year rule for all other courses.
8. No academic credit will be granted towards BHSc course requirements for work completed at another institution during a LOA.
9. If a leave of absence is granted, students must ensure they formally withdraw from courses in accordance with Dalhousie University regulations.
10. Students on approved leave of absence will be considered in absence from regular academic programming, and therefore not a student at Dalhousie University, until such time that they reactivate their student status through the Registrar’s Office.

Appeal
Students who wish to appeal a decision based on school or university regulations should consult the Chair of the Committee on Studies concerning the correct procedure. Contact the School office for complete terms of reference for the Committee on Studies and the application regarding academic appeals.

VIII. Clinical Education Components of Health Sciences
Health Sciences education encompasses a broad spectrum of learning experiences that together prepare caring, competent and ethical practitioners able to function in a rapidly changing health care environment. The BHSc program is delivered through an integrated curriculum and students receive clinical education logically sequenced within core, interdisciplinary, discipline-specific, and clinical education courses and clinical 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 program is mandatory. Clinical practice and clinical education courses are required courses in the program of study and it is not possible to exercise the diploma exit option or to receive a BHSc degree without successfully completing these courses. In addition, each of the clinical experiences is a prerequisite for further progress in the program. Course outlines provide specific information about criteria for successful completion and opportunities for remediation.

Two elements of clinical education are:
1. Clinical Practicum
The program includes three clinical 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 program, the expected learning outcomes of their professional stream, and the availability of appropriate sites. Clinical placements will be arranged by the Clinical Coordinator for the School of Health Sciences. Students are assigned to clinical sites located within the Halifax region, throughout the Atlantic provinces, and in various sites across Canada. All experiences related to clinical placement are the responsibility of the student. Students are assigned in a clinical setting during the eight-to-ten consecutive weeks, and are supervised by faculty and/or preceptors. The normal student/preceptor ratio is one-to-one. Evaluation may include, but is not limited to, assessment of skills competencies, demonstration of professional behavior, and integration of theory to practice. Students monitor their personal and professional growth through introspection and reflection by maintaining journals.


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 Haliburton in order to meet their clinical learning objectives. Preceptors supervise and guide students through this period of study and skills practice. Faculty continue to support students by facilitating seminars/tutorials, conducting assessments, providing constructive feedback and structuring learning experiences to further develop critical reasoning skills. Medical specialists and practitioners may be invited to share their expertise with students. There may be interprofessional learning experiences designed to enhance students’ understanding of the team approach to health care. Evaluation methods may include, but are not limited to, a written examination to assess knowledge of subject matter, and practical assessments to confirm that clinical skills and professional behaviour are readily applied at the expected level of performance. Clinical Education Courses are taken in Year 3 at all programs. In addition, Clinical Education Courses are a required part of the Year 4 curriculum for students in Nuclear Medicine Technology and Radiological Technology.

IX. Class Descriptions

DCYT 1000.03: Diagnostic Cytology Laboratory Applications

This course provides a comprehensive study of topics relevant to the Diagnostic Cytology laboratory. Safety, collection of specimens, interpretation of clinical data, cytotechnical techniques, and specimen processing are examined. Topics such as quality assurance, fixation and transportation of biological specimens, record keeping and organization of the Diagnostic Cytology laboratory will be discussed. Laboratory sessions will demonstrate the techniques required to prepare, and process a specimen adequate for cyologic diagnosis. In this context, emphasis will be placed on safe professional practice and the delivery of care.

FORMAT: Lecture 3 hours, lab 2 hours
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Cytology

DCYT 1010.03: Gynecological Cytopathology I

This course is designed to provide the foundation of gynecological cytopathology. The student consolidates cytologic concepts and microscopy skills necessary to render an accurate cyologic diagnosis. Students are required to diagnose gynecological cases ranging from normal to malignant. Students are expected to work under direct supervision, assume responsibility for their actions and decisions and to interact effectively with peers, technologists, supervisors and medical staff.

FORMAT: Full-time rotations in clinical settings.
PREREQUISITE: BSCI 1010.03 OR BSCI 1020.03 and DCYT 1010 and HSCE 1020, and HSCE 1030

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Cytology

DCYT 1500.03: Laboratory and Clinical Gynecological Applications I

This clinical practicum enables the student to integrate theoretical knowledge with application to specimen procurement and normal gynecological diagnoses. The student consolidates concepts, techniques and knowledge required to perform skills introduced in DCYT 1000.03, HSCE 1000.03. Students are expected to work under direct supervision, assume responsibility for their actions and decisions and to interact effectively with peers, technologists, supervisors and medical staff.

FORMAT: Full-time rotations in clinical settings.
PREREQUISITE: BSCI 1010.03 OR BSCI 1020.03 and DCYT 1010 and HSCE 1020, and HSCE 1030

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Cytology.

DCYT 2010.03: Pathology and Histopathology for Diagnostic Cytology

This course provides a basic understanding of the disease process at the tissue level. It provides the appropriate information that will allow a student to appreciate and to orient themselves about the origin of the cells. In the General Pathology component, topics covered include cell injury and adaptation, inflammation and repair, disorders of growth, fluid and hemodynamic arrangements, neoplasia, environmental and nutritional diseases, microbiology and cancer. The System 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 students 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 cyologic concepts and microscopy skills necessary to render an accurate cyologic diagnosis. Students are required to diagnose gynecological cases ranging from normal to malignant. Students are expected to assume responsibility for their actions and decisions and to interact effectively with patients, peers, technologists, supervisors and medical staff.

FORMAT: Full-time rotations in clinical settings.
PREREQUISITE: DCYT 2000.03, DCYT 2010.03
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Cytology

DCYT 3000.03: Non-Gynecological Cytopathology I

This course provides a high level of study of non-gynecological cytopathology. The purpose of the course is to introduce and develop the diagnostic skills required to integrate, interpret and evaluate the cellular morphology of normal, benign and malignant processes of the female reproductive tract. Students will be introduced to the cellular morphology, nomenclature and diagnostic application of abnormal and malignant disease processes of the female reproductive tract. Emphasis will be placed on the critical evaluation of pathologic and cytologic characteristics. The student will be placed in a simulated environment where diagnosis and reporting will be the focus. This environment provides an opportunity for active learning, feedback, communication between student and faculty as well as self evaluation. The course further allows students to maintain their professional practice in the role of respect towards the patient.

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

FORMAT: Lecture 3 hours, labs 3 hours
PREREQUISITE: DCYT 1500.03

RESTRICTION: Restricted to 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 the female reproductive tract. Students will be introduced to the cellular morphology, nomenclature and diagnostic application of abnormal and malignant disease processes of the female reproductive tract. Emphasis will be placed on the critical evaluation of pathologic and cytologic characteristics. The student will be placed in a simulated environment where diagnosis and reporting will be the focus. This environment provides an opportunity for active learning, feedback, communication between student and faculty as well as self evaluation. The course further allows students to maintain their professional practice in the role of respect towards the patient.

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

FORMAT: Lecture 3 hours, labs 3 hours
PREREQUISITE: DCYT 1500.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Cytology
DCYT 3010.03: Non-Gynecological Cytopathology II.
This course provides a high level of study of non-gynecological cytopathology and reflects the content provided in DCYT 3000.03. The purpose of the course is to introduce and develop the diagnostic skills required to integrate, interpret and evaluate the cellular morphology of normal, benign and malignant processes of non-gynecological specimens with particular emphasis on Fine Needle Aspiration Biopsy (FNAB) cytology. Students will be introduced to the cellular morphology, nomenclature and diagnostic application of all disease processes diagnosed cytopathologically from all body sites external to the female reproductive tract. Emphasis will be placed on the critical evaluation of pathologic and cytologic characteristics. The students are placed in a simulated environment where diagnosis and reporting will be the focus. This environment provides an opportunity for active learning, feedback, communication between student and faculty as well as self-evaluation. The course further allows students to maintain their professional practice in the role of respect towards the patient.
PREREQUISITE: DCYT 2500.03
FORMAT: Lecture 3 hours, lab 2 hours.

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Cytology.

DCYT 3020.03: Issues and Trends in Cytopathology.
Diagnostic cytology as a specialty of pathology and medicine will be scientifically analyzed. A critical appraisal of the literature relevant to advances in the detection and treatment of cancer will be conducted. Adjuvant techniques and practices will be evaluated. Emphasis will be placed on the understanding and application of research methodology. Research findings will be presented in oral and written format.
FORMAT: Lecture 3 hours.
PREREQUISITE: DCYT 3000.03, DCYT 3010.03, DCYT 3200.03, BCRIL 3345.03
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Cytology.

DCYT 3200.03: Diagnostic Gynecological Cytology Application I.
This third year course is a 3.0 credit hour gynecological clinical education course. This will provide an opportunity for students to further their abilities, formulate decisions and implement diagnostic expertise in relation to gynecological clinical competencies. This provides an opportunity to implement and further 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 70% of that of an entry-level diagnostic cytotechnologist.
PREREQUISITE: DCYT 2500.03
FORMAT: Full time clinical rotation
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Cytology.

DCYT 3210.03: Diagnostic Gynecological Cytology Application II.
This third year course is a 3.0 credit hour gynecological clinical education course. This will provide an opportunity for students to further their abilities, formulate decisions and implement diagnostic expertise in relation to gynecological clinical competencies. This provides an opportunity to implement and further build upon knowledge and experience with application to diagnosis gained in DCYT 3210.03. Under supervision, students assume responsibility and build their case load to approximately 90% of that of an entry-level diagnostic cytotechnologist.
PREREQUISITE: DCYT 3200.03
FORMAT: Full time clinical rotation
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Cytology.

DCYT 3220.03: 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 3220.03 and DCYT 3210.03. Under supervision, students assume responsibility and build their case load to approximately 80% of that of an entry-level diagnostic cytotechnologist.
PREREQUISITE: DCYT 3210.03
FORMAT: Full time clinical rotation
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Cytology.

DCYT 3230.03: Diagnostic Non-Gynecological Cytology Application II.
This third year course is a 3.0 credit hour non-gynecological clinical education course. This will provide an opportunity for students to further their abilities, formulate decisions and implement diagnostic expertise in relation to non-gynecological clinical competencies. This provides an opportunity to implement and further build upon knowledge and experience with application to diagnosis gained in DCYT 3230.03. Under supervision, students assume responsibility and build their case load to approximately 80% of that of an entry-level diagnostic cytotechnologist.
PREREQUISITE: DCYT 3220.03 and DCYT 3210.03
FORMAT: Full time clinical rotation
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Cytology.

DCYT 3500.03: Gynecological and Non-Gynecological Clinical Applications - Practicum III.
This clinical practicum provides the student with an opportunity to integrate the theoretical knowledge and application of cytopathologic diagnoses to gynecologic and non-gynecologic sites. The purpose of this practicum is to further develop the diagnostic skills required to integrate, interpret and evaluate the cellular morphology of normal, benign and malignant gynecological and non-gynecological disease processes. Emphasis will be placed on the critical evaluation of pathologic and cytologic morphology while continuing to meet the objectives set by the School. The course will further allow the student to maintain their professional practice in the role of respect towards the patient.
PREREQUISITE: DCYT 3240.03, DCYT 3230.03, DCYT 3220.03
FORMAT: Full time rotations in clinical settings.

DCYT 4000.12/4100.06: Specialty Practice I/Specialty Practice II.
Specialty practice affords students the opportunity to attain additional competence and knowledge in a specialty practice area. There are three components to specialty practice: clinical, contextual and theoretical. This course can be six or twelve credit hours depending on the nature of the specialty practice. Specialty practice is arranged through consultation with the fourth year/post diploma advisor.
PREREQUISITE: DCYT 3500.03 for entry level students; Post diploma students must consult with the post diploma advisor to ensure the necessary prerequisites have been met.

RESTRICTION: Restricted to Bachelor of Health Science students in DCYT. Enrolment may be limited due to clinical site availability.

DMUT 1000.03: Fundamentals of Sonography I.
This course provides a general overview of organs and structures within the abdominopelvic cavity which are fundamental to sonography. It includes concepts of relational sectional anatomy and basic ultrasound scanning principles. Also included is an historical perspective and discussions involving the national Code of Ethics for the profession of Diagnostic Medical Ultrasound.
FORMAT: Lecture 3 hours, lab 3 hours

DMUT 1010.03: Principles and Instrumentation of Diagnostic Medical Ultrasound I.
This course provides the student with the basic knowledge of the physical principles of ultrasound. It examines how diagnostic ultrasound works (how it is generated and how it interacts with tissues). Also covered in this class is the instrumentation used to transmit, receive and present echo information and the application of these to the practice of Diagnostic Medical Ultrasound.
FORMAT: Lecture 3 hours

DMUT 1020.03: Fundamentals of Sonography II.
This course provides a general overview of the normal sonoanatomic appearance of organs and structures of the abdominopelvic cavity which are fundamental to sonography. Where applicable, the sonoanatomic application and normal variants of specific organs and structures within the abdominopelvic cavity are also discussed. Included are reference charts highlighting other common diagnostic tests, normal measurements, and laboratory values associated with each organ and structure of interest.
FORMAT: Lecture 3 hours, lab 3 hours

DMUT 1500.03: Clinical Practicum I in Diagnostic Medical Ultrasound.
This clinical practicum introduces students to Diagnostic Medical Ultrasound. Within the Diagnostic Imaging Department, students will develop a knowledge of departmental procedures, an ability to interpret and utilize requisitions and demonstrate proficiency in equipment selection and instrumentation. Students will develop clinical skills in performing abdominal and pelvic ultrasound examinations. Students will apply health professional practice skills when interacting with patients and health care professionals.
FORMAT: Full-time rotations in clinical settings

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, sonoanagnostic presentation, differential diagnosis and treatment modalities will be examined. Documented ultrasound images with their associated pathology will be challenged, analyzed, and reviewed in a simulated clinical laboratory environment. This simulated environment will further provide an opportunity for students to integrate their knowledge of anatomy and pathology to formulate sonographic scanning strategies.
FORMAT: Lecture 3 hours; lab 3 hours

DMUT 2010.03: Sonography in Obstetrics and Gynecology I.
This course focuses on the normal structure, development, and pathologies of the female genitourinary system in non-gravid and gravid states. Sonographic scanning techniques, presentation and documentation of normal (first and second trimester) obstetrical; abnormal (first trimester) obstetrical and normal and abnormal gynecological ultrasound examinations are covered.
FORMAT: Lecture 3 hours

DMUT 2020.03: Principles and Instrumentation of Diagnostic Medical Ultrasound II.
This course builds on knowledge and experience gained in DMUT 1010. This course provides the student with principles and instrumentation of continuous-wave/ pulsed-wave Doppler spectral analysis and color-flow imaging. Imaging artifacts, quality assurance, and bioeffects/safety are investigated thoroughly. Application of this knowledge and the development of skills and competence needed in the clinical practice of Diagnostic Medical Ultrasound will be included in this class.
FORMAT: Lecture 3 hours

DMUT 2030.03: Sonography of the Abdomen/ Superficial Structures II.
This is the second of three courses related to Abdomen and Superficial Structures. The course will focus on the pathology of the pancreas, adrenals, retroperitoneum, urinary tract, thyroid and parathyroid glands. Echogenicity, incidence, laboratory testing, sonoanagnostic presentation, differential diagnosis and treatment modalities related to these body systems will be examined. Students will be challenged to analyze, formulate sonographic scanning strategies, and diagnose appropriately relevant pathology viewed in a hospital clinical environment. The course will provide students with the opportunity to integrate skills and concepts learned in previous courses and continue development of professional skills in Diagnostic Medical Ultrasound.
FORMAT: Lecture 3 hours, lab 3 hours

DMUT 2500.03: Clinical Practicum II in Diagnostic Medical Ultrasound.
Practicum II provides students with the opportunity to continue skill development in abdominal and pelvic ultrasound examinations including the recognition, identification and documentation of pathologies. In addition, students will develop clinical skills in performing first and second trimester obstetrical ultrasound examinations. This clinical practicum requires the student to travel to clinical sites outside the Haliburton Regional Municipality. Students will be responsible for travel and accommodation arrangements.
FORMAT: Full-time rotations in clinical settings

DMUT 3000.03: Sonography in Obstetrics and Gynecology II.
This course provides a comprehensive study of the normal and abnormal second and third trimester ultrasound examinations. Critical evaluation of fetal pathologies and sonoanagnostic characteristics associated with these
pathologies will be fully explored. Maternal complications associated with pregnancy and antenatal testing will also be covered.

**DMUT 3010.03: Sonography of Abdomen/ Superficial Structures II.**

The second year clinical course DMUT 3010. Abdomen and Superficial Structures II, focuses on abdominal pathology of the lymphatic system, spleen, gastrointestinal tract and organs of the male reproductive system, retroperitoneal, abdominal Doppler, musculoskeletal, extranational, cerebral vascular and lower extremity versus ultrasound. This course will prepare the student for a more advanced level of study and clinical practice in ultrasound interventional biopsy, aspiration techniques and procedures. An integration of previously acquired knowledge and clinical skills will be applied to a more advanced level of theoretical and clinical application using Doppler ultrasound technology.

**DMUT 3200.03: Abdominal Imaging.**

This clinical course allows the student to integrate and consolidate knowledge, concepts and skills developed and maintained from previous courses. The expectation is that the student will be able to recognize, identify and document normal and abnormal sonographic images of the abdomen under indirect supervision. This experience will enhance the student’s ability to make independent decisions and to critically evaluate images of abdominal organs and related structures. Students are expected to assume responsibility for their actions and decisions. Students are expected to interact effectively with patients and all health care team professionals while maintaining accepted professional practice standards in an ultrasound environment.

**DMUT 3210.03: Obstetrical Imaging.**

Building on experience developed in Clinical Practicum II and knowledge and concepts learned in Sonography in Obstetrics and Gynecology I and II, this obstetrical ultrasound clinical course enhances the student’s ability to recognize, identify and document normal and abnormal obstetrical ultrasound examinations. This course provides the opportunity to reflect on their 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 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 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 4020.03: Cardiac Ultrasound.
This course builds on knowledge and experience gained in DMUT 2020 (Principles and Instrumentation of Diagnostic Medical Ultrasound II) and HSCE 3000.03: Culture, Diversity and Health. This course provides a comprehensive study of the normal and abnormal cardiac ultrasound examinations. The student will review anatomy and physiology and hemodynamics of the heart and relate theory to echocardiography. General principles of cardiac ultrasound, normal echo examination techniques and standard views will be covered including: two-dimensional, M-mode and Doppler. Clinical indications for echocardiography examinations will be covered as well as congenital and acquired cardiac disease processes evaluated with echocardiography.
FORMAT: Online delivery via BLS
PREREQUISITE: DMUT 3000.03
RESTRICTION: Restricted to Bachelor of Health Sciences students in the professional stream of Diagnostic Medical Ultrasound. Post diploma students by permission of instructor

HSCE 1000.03: Foundations of Health Care Practice.
This course introduces students in the five BHSc professions to the Canadian Health Care System and the role of the health professional within that system. The course compares the Canadian system to systems from other countries and covers diverse health care models such as primary care, palliative care, long term care, etc. The role of the health professional is explored through the study of professionalism, scope of practice, and risk management in an interprofessional context. The course will allow students the opportunity to develop/improve essential skills to help them study and work in a multi-disciplinary system including critical thinking, writing skills, communication and teamwork.
FORMAT: Lecture 3 hours
PREREQUISITE: HSCE 1000.03
RESTRICTION: Restricted to Bachelor of Health Science students or by permission of instructor

HSCE 1010.03: Clinical Skills for Health Sciences.
This course will further the students’ understanding of working within a health care environment as they learn the skills required to provide patient-centered care. The course provides academic knowledge and laboratory experiences for students to develop clinical skills essential in all five professional streams of the BHSc program.
FORMAT: Lecture 3 hours, lab 1.5 hours
PREREQUISITE: HSCE 1000.03 and one discipline specific course
RESTRICTION: Restricted to Bachelor of Health Science students or by permission of instructor

HSCE 1020.03: Human Anatomy and Physiology I.
This course, which is along with HSCE 1030, is designed to provide the student with an understanding of the cellular, organ, and system levels of organization of the human body. It includes a comprehensive study of the facts pertaining to the covering, support and movement of the human body. Topics covered will include: organization of the body, the integumentary, skeletal and muscular systems.
FORMAT: Lecture 3 hours, PBL tutorials 2 hours
EXCLUSION: ANAT 1000.03, ANAT 1020.03, PHYS 1000.06, PHYS 1030.06
RESTRICTION: Restricted to Bachelor of Health Science students, or by permission of the instructor

HSCE 1030.03: Human Anatomy and Physiology II.
This course studies the systems that serve in maintaining the human body and ensuring its continuity. Topics covered will include: cardiovascular, immune, respiratory, digestive, urinary and reproductive systems. This course will provide students with an appreciation of the complexities of the human body and function, and the set stage for understanding the integration of organ system functions.
FORMAT: Lecture 3 hours, PBL tutorials 2 hours
PREREQUISITE: HSCE 1020.03
EXCLUSION: ANAT 1000.03, ANAT 2020.03, PHYS 1000.06, PHYS 1010.06
RESTRICTION: Restricted to Bachelor of Health Science students or by permission of instructor

HSCE 2000.03: Health Care Ethics.
This is an introductory course in health care ethics. Students will be provided with an overview of moral theory and principles, a chance to reflect upon and discuss contemporary ethical issues in health care, and an opportunity to acquire the conceptual and practical tools required to make competent ethical decisions in their own practice. Teaching methods will include lecture, group instruction and case analysis.
FORMAT: Lecture 3 hours
PREREQUISITE: HSCE 1000.03
RESTRICTION: Restricted to Bachelor of Health Science students; other health professions students with permission of instructor

HSCE 2010.03: Digital Imaging.
This course provides an overview of computer basics, digital file structure, digital imaging principles and their applications in medical technology, magnetic resonance imaging, nuclear medicine technology, and diagnostic medical ultrasound. The principles of image distribution by Teleradiology and Picture Archiving Communication Systems are also provided. The class operates as a distance education class using BLS, with materials being distributed via the Internet. In-person tutorial sessions are scheduled throughout the term.
FORMAT: Online delivery via BLS, in-person tutorial sessions
PREREQUISITE: RADT 1000.03 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 explore radiation interaction with matter in relation to attenuation, absorption and dosemetry. X-ray production, as well as emission and motion 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
PREREQUISITE: PHYC 1300.03
RESTRICTION: Restricted to students enrolled in the Bachelor of Health Science, students in the professional streams of Nuclear Medicine Technology and Radiological Technology programs

HSCE 2030.03: Radiation Biology and Protection.
This course provides a theoretical overview of the biophysical effects of radiation. This knowledge is linked to radiation physics principles as applied to the practice of medical radiation technology. Current regulations regarding the practice of radiation technology will be presented. Emphasis will be placed on practical means of radiation protection for the technologist, the patient and the general public.
FORMAT: Lecture, student presentations, assignments, team projects
PREREQUISITE: HSCE 2020.03
RESTRICTION: Restricted to Bachelor of Health Science students in the professional streams of Nuclear Medicine Technology and Radiological Technology

HSCE 2040.03: Pathophysiology for Health Sciences.
This course is intended to provide a concentrated study of the biological and behavioural interactions of the human body in disease. Emphasis will be placed on the examination of the Pathophysiology of diseases prevalent in Canada. This class will examine various therapeutic strategies used in treating these diseases and their implications for patient care.
FORMAT: Lecture 3 hours
PREREQUISITE: HSCE 1020.03, HSCE 1030.03
RESTRICTION: Restricted to Bachelor of Health Science 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 Sciences practitioners role and practice in health care environments. The emphasis is on understanding the issues, collaborating with those involved, and building
individual and group capacities to enhance and promote the health and well-being of specific populations.

FORMAT: Online delivery via BLS

RESTRICTION: Restricted to Bachelor of Health Science students; other Health Professions students with permission of the instructor

HSCE 3010.03: Introduction to Health Research

This course is designed to help students make sense of the research they can be expected to encounter in their professional practices. By focusing on the role of research in contemporary health professional practice this course will provide the student with a sound basis in the principles underlying research theory, measurement issues, experimental, exploratory and descriptive research designs, data analysis and communication skills.

FORMAT: Lecture 3 hours

PREREQUISITE: HSCE 1000.03

EXCLUSION: HAHP 3000.03

RESTRICTION: Restricted to Bachelor of Health Science students; other Health Professional students with permission of instructor

HSCE 3600.01: Clinical Elective

This elective is available for visiting students only, in the health professions of diagnostic medical ultrasound, diagnostic cytology, nuclear medicine technology, radiological technology, or respiratory therapy. Contact department for details.

HSCE 4030.03: Leadership in Health Care

This course will consider various elements of leadership in a complex, multi-professional and rapidly changing health care system and will enable students to assess and strengthen their own leadership style. An understanding of current trends and issues in health care will provide a basis for the development of leadership skills. Critical thinking, decision-making processes and other leadership behaviours will be examined.

FORMAT: Online delivery via BLS

RESTRICTION: Restricted to Bachelor of Health Science students; other Health professions students with permission of instructor

HSCE 4040.03: Independent Study

This course will allow students to carry out an independent study or complete a project related to health sciences. Facilitation is provided by faculty or a course supervisor and is dependent upon the nature of the course of study. Students wishing to pursue HSCE 4040.03 must consult with the fourth year advisor and is dependent upon the nature of the course of study.

RESTRICTION: Restricted to Bachelor of Health Science students; other post diploma students must consult with the post diploma advisor.

NUMT 1000.03: Fundamentals of Nuclear Medicine

This course is designed to provide the student with an introduction to Nuclear Medicine technology. The course is divided into six sections. Concepts taught will include radioactivity and its impact on nuclear medicine, detectors used in measuring radiation, an introduction to scintillation detectors, gamma camera as well as radiopharmaceuticals and basic imaging techniques.

FORMAT: Online delivery via BLS

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

NUMT 1010.03: Nuclear Medicine Instrumentation I

This course will provide students with the knowledge of the principles and operation of a gamma camera including acquisition parameters, image manipulation and quantitation. The theory and practice of Single Photon Emission Computed Tomography (SPECT) will be explored in detail. Course content also will include computed tomography (CT) and SPECT/CT instrumentation.

FORMAT: Lecture 3 hours, lab 3 hours. Online delivery via BLS (some content and supplemental material)

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

NUMT 1020.03: Nuclear Medicine Clinical Procedures I

This course will focus on methods and techniques employed in the Nuclear Medicine Department. Students will develop knowledge of departmental procedures and demonstrate health professional practice skills when interacting with patients and health care professionals. Emphasis will be placed on development of clinical skills in skeletal, genitourinary and tumor/inflammatory systems. Students will also have the opportunity to perform images, evaluation, patient management/care, quality control and instrumentation checks.

FORMAT: Full-time rotations in clinical settings

PREREQUISITE: NUMT 1000.03, HSCE 1000.03, HSCE 2020.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

NUMT 1500.03: Nuclear Medicine Clinical Practicum I

This clinical practicum introduces students to Nuclear Medicine and the Diagnostic Imaging Department. Students will develop knowledge of departmental procedures and demonstrate health professional practice skills when interacting with patients and health care professionals. Emphasis will be placed on development of clinical skills in skeletal, genitourinary and tumor/inflammatory systems. Students will also have the opportunity to perform images, evaluation, patient management/care, quality control and instrumentation checks.

FORMAT: On line delivery via BLS

PREREQUISITE: HAHP 3000 or HSCE 3010 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 offers the opportunity to obtain 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. Six-credit hour and twelve credit hours requires 440 clinical hours. Specialty Practice is arranged through consultation with the fourth year post diploma advisor.

RESTRICTION: Restricted to MDLS students, MELS. Enrollment may be limited due to clinical site availability.

NUMT 1000.03: Fundamentals of Nuclear Medicine

This course is designed to provide the student with an introduction to Nuclear Medicine technology. The course is divided into six sections. Concepts taught will include radioactivity and its impact on nuclear medicine, detectors used in measuring radiation, an introduction to scintillation detectors, gamma camera as well as radiopharmaceuticals and basic imaging techniques.

FORMAT: Online delivery via BLS

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

NUMT 1010.03: Nuclear Medicine Instrumentation I

This course will provide students with the knowledge of the principles and operation of a gamma camera including acquisition parameters, image manipulation and quantitation. The theory and practice of Single Photon Emission Computed Tomography (SPECT) will be explored in detail. Course content also will include computed tomography (CT) and SPECT/CT instrumentation.

FORMAT: Lecture 3 hours, lab 3 hours. Online delivery via BLS (some content and supplemental material)

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

NUMT 1020.03: Nuclear Medicine Clinical Procedures I

This course will focus on methods and techniques employed in the Nuclear Medicine Department. Students will develop knowledge of departmental procedures and demonstrate health professional practice skills when interacting with patients and health care professionals. Emphasis will be placed on development of clinical skills in skeletal, genitourinary and tumor/inflammatory systems. Students will also have the opportunity to perform images, evaluation, patient management/care, quality control and instrumentation checks.

FORMAT: Full-time rotations in clinical settings

PREREQUISITE: NUMT 1000.03, HSCE 1000.03, HSCE 2020.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

NUMT 1500.03: Nuclear Medicine Clinical Practicum I

This clinical practicum introduces students to Nuclear Medicine and the Diagnostic Imaging Department. Students will develop knowledge of departmental procedures and demonstrate health professional practice skills when interacting with patients and health care professionals. Emphasis will be placed on development of clinical skills in skeletal, genitourinary and tumor/inflammatory systems. Students will also have the opportunity to perform images, evaluation, patient management/care, quality control and instrumentation checks.

FORMAT: On line delivery via BLS

PREREQUISITE: HAHP 3000 or HSCE 3010 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 offers the opportunity to obtain 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. Six-credit hour and twelve credit hours requires 440 clinical hours. Specialty Practice is arranged through consultation with the fourth year post diploma advisor.

RESTRICTION: Restricted to MDLS students, MELS. Enrollment may be limited due to clinical site availability.

NUMT 1000.03: Fundamentals of Nuclear Medicine

This course is designed to provide the student with an introduction to Nuclear Medicine technology. The course is divided into six sections. Concepts taught will include radioactivity and its impact on nuclear medicine, detectors used in measuring radiation, an introduction to scintillation detectors, gamma camera as well as radiopharmaceuticals and basic imaging techniques.

FORMAT: Online delivery via BLS

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

NUMT 1010.03: Nuclear Medicine Instrumentation I

This course will provide students with the knowledge of the principles and operation of a gamma camera including acquisition parameters, image manipulation and quantitation. The theory and practice of Single Photon Emission Computed Tomography (SPECT) will be explored in detail. Course content also will include computed tomography (CT) and SPECT/CT instrumentation.

FORMAT: Lecture 3 hours, lab 3 hours. Online delivery via BLS (some content and supplemental material)

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

NUMT 1020.03: Nuclear Medicine Clinical Procedures I

This course will focus on methods and techniques employed in the Nuclear Medicine Department. Students will develop knowledge of departmental procedures and demonstrate health professional practice skills when interacting with patients and health care professionals. Emphasis will be placed on development of clinical skills in skeletal, genitourinary and tumor/inflammatory systems. Students will also have the opportunity to perform images, evaluation, patient management/care, quality control and instrumentation checks.

FORMAT: Full-time rotations in clinical settings

PREREQUISITE: NUMT 1000.03, HSCE 1000.03, HSCE 2020.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

NUMT 1500.03: Nuclear Medicine Clinical Practicum I

This clinical practicum introduces students to Nuclear Medicine and the Diagnostic Imaging Department. Students will develop knowledge of departmental procedures and demonstrate health professional practice skills when interacting with patients and health care professionals. Emphasis will be placed on development of clinical skills in skeletal, genitourinary and tumor/inflammatory systems. Students will also have the opportunity to perform images, evaluation, patient management/care, quality control and instrumentation checks.

FORMAT: On line delivery via BLS

PREREQUISITE: HAHP 3000 or HSCE 3010 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 offers the opportunity to obtain 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. Six-credit hour and twelve credit hours requires 440 clinical hours. Specialty Practice is arranged through consultation with the fourth year post diploma advisor.

RESTRICTION: Restricted to MDLS students, MELS. Enrollment may be limited due to clinical site availability.
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, lab 2 hours
PREREQUISITE: NUMT 1010.03, NUMT 2010.03
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

NUMT 2020.03: Nuclear Medicine Clinical Procedures III. In this course the student will learn the Nuclear Medicine procedures that involve the use of radioactive pharmaceuticals in the investigation of the function of organs in the endocrine and cardiovascular systems. Image recognition and interpretation, radiopharmaceutical distribution, computer analysis, related pathologies and procedural troubleshooting will be covered. Clinical lab sessions will enable students to observe and practice these skills.

FORMAT: Lecture 3 hours, clinical 4 hours, tutorial 1 hour
PREREQUISITE: NUMT 1010.03, NUMT 2010.03, and HSCE 2101.03
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

NUMT 2500.03: Nuclear Medicine Practicum II. This clinical practicum is designed to enable the student to integrate primary nuclear medicine and patient care principles. The student will consolidate concepts, theories and skills in performing nuclear medicine procedures. Emphasis will be placed on skill development and practice in the areas of central nervous, gastrointestinal and respiratory imaging and non-imaging procedures. The student will be exposed to image evaluation, patient management/care as well as radiopharmaceutical preparation and quality control.

FORMAT: Full-time rotations in clinical settings
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

NUMT 3000.03: Nuclear Medicine Instrumentation II. This course will enable the student to understand the principles of nuclear medicine related equipment and its application. The student will become familiar with the equipment utilized in nuclear medicine procedures and will be able to understand and troubleshoot various equipment problems.

FORMAT: Lecture 3 hours, lab 2 hours
PREREQUISITE: NUMT 2001.03
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

NUMT 3201.03: Positron Emission Tomography. The course provides students with advanced knowledge of Positron Emission Tomography (PET) scanner physics, instrumentation, and quality control. Students will also explore cyclotron physics and radiopharmaceutical synthesis in hot cells. A section of the course content involves the use of various PET radiopharmaceuticals in clinical imaging, presented in the larger context of current PET-clinical procedures. Clinical application of fusion imaging with PET/CT will also be covered.

FORMAT: On line delivery through BLS, in class tutorials
PREREQUISITE: or CO-REQUISITE: NUMT 3001.03, NUMT 3202.03
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

NUMT 3200.03: Radiopharmacy. Students will be exposed to the skills necessary to prepare compounds for intravenous delivery. The student will learn the skills necessary to prepare compounds for intravenous delivery. The 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, lab 2 hours
PREREQUISITE: NUMT 1010.03, NUMT 2010.03
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

NUMT 3210.03: Non-Imaging Procedures. This clinical course will allow students to apply theory to clinical practice by performing a variety of non-imaging Nuclear Medicine procedures to include: white blood cell labelling, red cell mass and plasma volume, scilings testing, 14C urea breath tests, and radioscintigraphic procedures, including ablations. Proper lab technique will be emphasized. Students will be able to assess, modify and apply instrumentation applications for each procedure performed. Quality Control procedures, evaluation and trouble-shooting techniques will be utilized to optimize efficiency and validate results.

FORMAT: Clinical Education Course
PREREQUISITE: NUMT 3002.03
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

NUMT 3220.03: General Imaging I. This clinical course will allow students to apply theory to clinical practice by performing a variety of imaging procedures with emphasis on Gastrointestinal, Endocrinology, and Skeletal procedures. Application and evaluation of nuclear medicine procedures relevant to the diagnosis and management of patients in general imaging procedures will be emphasized. Students will be able to assess, modify and apply instrumentation applications for each procedure performed. Quality Control procedures, evaluation and trouble-shooting techniques will be utilized to optimize efficiency and validate results.

FORMAT: Clinical Education Course
PREREQUISITE: NUMT 2910
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

NUMT 3222.03: General Imaging II. This course will enable the student to apply theory to clinical practice by performing a variety of imaging procedures with emphasis on Central Nervous System, Endocrinology, Gastrointestinal and Respiratory procedures. Application and evaluation of nuclear medicine procedures relevant to the diagnosis and management of patients in general imaging procedures will be emphasized. Students will be able to assess, modify and apply instrumentation applications for each procedure performed. Quality Control procedures, evaluation and trouble-shooting techniques will be utilized to optimize efficiency and validate results.

FORMAT: Clinical Education Course
PREREQUISITE: NUMT 3220.03, NUMT 3002.03
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

NUMT 3230.03: Cardiac Imaging. Students will apply theory to clinical practice by performing procedures involving the cardiac nuclear system. Application and evaluation of acquisition and processing of nuclear cardiology procedures with a focus on stress imaging (treadmill and medication induced) and wall motion imaging will be emphasized. Students will be able to assess, modify and apply instrumentation applications for each procedure performed. Quality Control procedures, evaluation and trouble-shooting techniques will be utilized to optimize efficiency and validate results.

FORMAT: Clinical Education Course

NUMT 3232.03: Cardiac Imaging. Students will apply theory to clinical practice by performing procedures involving the cardiac nuclear system. Application and evaluation of acquisition and processing of nuclear cardiology procedures with a focus on stress imaging (treadmill and medication induced) and wall motion imaging will be emphasized. Students will be able to assess, modify and apply instrumentation applications for each procedure performed. Quality Control procedures, evaluation and trouble-shooting techniques will be utilized to optimize efficiency and validate results.

FORMAT: Clinical Education Course
PREREQUISITE: NUMT 3200.03
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

NUMT 3240.03: Pediatric Imaging.
Students will focus on nuclear medicine practice in the care of children and their families. Application and evaluation of nuclear medicine procedures relevant to the diagnosis and management of children will be emphasized. Students will be able to assess, modify and apply interventional applications for each procedure performed. Quality Control procedures, evaluation and trouble-shooting techniques will be utilized to optimize efficiency and validate results.
FORMAT: Clinical Education Course
PREREQUISITE: NUMT 3200.03
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

NUMT 3500.03: Clinical Practicum In Nuclear Medicine Technology II.
This clinical practicum will allow the student to continue to develop skills and to complete the competencies required of a Nuclear Medicine Technologist. Integration and application of concepts, theories and skills essential for Nuclear Medicine practice will be emphasized.
FORMAT: Full-time rotations in clinical settings.
PREREQUISITE: NUMT 3200.03, 3222.03 (Q 3280.03)
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

NUMT 4100.06: Specialty Practice I/Specialty Practice II.
Specialty practice affords students the opportunity to attain additional competence and knowledge in a specialty practice area. There are three components to specialty practice: clinical, contextual and theoretical. Specialty practice is arranged through consultation with the fourth year/post diploma advisor.
PREREQUISITE: NUMT 3000.03 for entry level students; Post diploma students must consult with their post diploma advisor to ensure the necessary prerequisites have been met.
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology. Enrolment may be limited due to site availability.

NUMT 4210.03: Professional Practice in Nuclear Medicine Technology I.
This clinical education course provides the student with the opportunity to assume clinical responsibility and to continue development of professional skills in nuclear medicine technology. Students will be scheduled to a variety of imaging areas where they will be responsible, with remote supervision, for functioning as an integral member of the nuclear medicine team. This course also provides the opportunity for students to become actively involved in the education of patients, as well as the continuing education of both practicing nuclear medicine technologists and affiliate health care groups.
NOTE: Students cannot be registered in NUMT 4210.03 and 4220.03 concurrently.
FORMAT: Clinical Education Course
PREREQUISITE: NUMT 3900.03
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

RADT 1000.03: Skeletal Radiography.
This course provides the student with the knowledge required to perform basic skeletal radiography examinations. Aspects studied include: patient positioning, alignment of the radiation field, and radiation exposure factors. Radiographic images are analyzed with a focus on structures demonstrated, evaluation criteria, and modifications required to improve sub-optimal images. Students have the opportunity to develop radiographic skills for positioning and image analysis in lab/tutorial sessions.
FORMAT: Lecture: 3 hours, tutorial 2 hours
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Radiological Technology

RADT 1010.03: Imaging Fundamentals.
This course offers an introduction to the processes involved in the production of x-radiation and use of radiation for diagnostic imaging. The basic principles and equipment involved in radiography and fluoroscopy are studied as well as an introduction to the controlling parameters for image production. A major emphasis of the course is an analysis of the radiographic image and the factors that influence its quality. Students have the opportunity to use imaging equipment during lab sessions.
FORMAT: Lecture: 3 hours, 5 lab sessions
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Radiological Technology

RADT 1020.03: Skeletal and Systems Radiography.
Skeletal and Systems Radiography provides the student with the knowledge required to perform radiological imaging procedures of the vertebro column, craniofacial structures, body organs and systems. Elements of the course include patient positioning, alignment of the radiation field, patient management, use of contrast media, and image analysis. Images are assessed with a focus on structures demonstrated, evaluation criteria, and modifications required to improve image quality. Students have the opportunity to practice and demonstrate the radiographic positions in a tutorial/simulation setting. Clinical lab sessions are included in this course to link theory to practice and to provide the student with an orientation to the Diagnostic Imaging Department.
FORMAT: Lecture: 3 hours, lab: 3 hours, tutorial: 2.5 hours
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 skull/ systems radiography, image evaluation, and patient management/care.
FORMAT: Full-time rotations in clinical settings
PREREQUISITE: RADT 1020.03, HSCE 1010.03, HSCE 1020.03
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, biliary, reproductive, endocrine, cardiovascular, and central nervous systems. The students' knowledge and clinical experiences gained through RADT 1000, RADT 1020 and RADT 1500 are incorporated into the curriculum. Imaging labs in which the students reinforce their knowledge of anatomy, physiology, image quality, and radiographic processing skills.
Faculty of Health Professions
328 Health Sciences

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Radiological Technology

RADT 2010.03: Imaging Equipment. This course covers the structure, operating principles, and quality control of the equipment involved in radiological technology. It includes a comprehensive study of x-ray generators, tubes, fluoroscopes, and processing equipment with a focus on technical parameters and clinical applications. This course also covers quality control concepts, equipment used for quality control testing, and testing procedures for the imaging equipment in radiological technology.

FORMAT: Lecture 3 hours, lab 3 hours, tutorial 4 hours
PREREQUISITE: RADT 1500
RESTRICTION: Restricted to the Bachelor of Health Science students in the professional stream of Radiological Technology

RADT 2020.03: Adaption Radiography. The Adaption Radiography course provides the student with the knowledge required to adapt imaging procedures for unique clinical situations including trauma, mobile, and operating room examinations, and for patients with special needs (pediatric, geriatric, and disabled). The course expands upon the information presented in RADT 1000, RADT 1020, RADT 2000, and the skills obtained in RADT 1500. Selected radiographic projections and procedures related to the topics are also studied and pertinent radiographic images are analyzed. Students will have the opportunity to develop radiographic adaption skills in clinical/computing lab sessions and clinical simulation sessions.

FORMAT: Lecture 3 hours, lab 4 hours, tutorial 1 hour
PREREQUISITE: RADT 2000.03
CO-REQUISITE: RADT 2010.03
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Radiological Technology

RADT 2500.03: Clinical Practicum II in Radiological Technology. This practicum provides students with the opportunity to continue skill development in the clinical examinations/procedures introduced in RADT 1500. In addition, an introduction to specialized clinical procedures is provided, including operating room imaging, computed tomography, and pediatric radiology.

FORMAT: Full time rotations in clinical settings
PREREQUISITE: RADT 2010.03, 2020.03, HSCE 2010.03
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 foundation for RADT 3200 and RADT 4000 as it focuses on concepts for specialty practice in computed tomography (CT), vascular/interventional imaging, mammography, bone densitometry and magnetic resonance imaging (MRI). Specific topics include: clinical application, procedures, sectional anatomy, radiological image review, patient management, and specialized imaging apparatus. Knowledge obtained in previous courses and clinical 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
PREREQUISITE: HSCE 2010.03, RADT 2500.03
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Radiological Technology

RADT 3210.03: Introduction to Specialty Practice. This course provides the students with the opportunity to experience the clinical practice of computed tomography, angiography/interventional imaging and mammography. Under the direction of a preceptor, students will meet the competencies required in these imaging areas. This class allows the students to apply the theory from the Specialty Practice Concepts course (RADT 3000) and promotes further development of professional skills and behaviors.

FORMAT: Clinical Education Course
PREREQUISITE: RADT 3010.03, RADT 3000.03
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Radiological Technology

RADT 3220.03: Gastrointestinal/Genitourinary/Operating Room Imaging. This clinical education course will prepare students for the clinical practice of radiological technology in the areas of gastrointestinal, genitourinary, and operating room imaging. Under the direction of a preceptor, students will apply acquired knowledge and skills to radiological procedures. The students will develop their skills in providing a high standard of patient care, producing and evaluating images, problem-solving and collaborating.

FORMAT: Clinical Education Course
PREREQUISITE: RADT 2500.03, RADT 3000.03
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Radiological Technology

RADT 3240.06: General/Adaption Radiography. This course provides the student with the opportunity to further develop general radiography skills. Under appropriate direction from a preceptor, students will apply the knowledge and skills acquired in previous courses/practice and adapt routine imaging procedures for challenging clinical situations and patients with special needs. Students will be scheduled to a variety of imaging areas where radiographic adaption is typically required emergency, and inpatient/mobile procedures. Clinical experience on evening, night, and weekend shifts is provided in this course.

FORMAT: Clinical education course
PREREQUISITE: RADT 3200.03, 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 the opportunity to integrate skills and concepts from previous courses, clinical practice and the clinical education courses. Under appropriate levels of supervision, the student will assume the responsibilities of a radiological technologist and demonstrate competency. This practicum takes place in a Diagnostic Imaging Department outside the QEII Health Sciences Centre.

FORMAT: Full time rotations in clinical setting
PREREQUISITE: RADT 3200.03, 3220.03, 3240.06
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Radiological Technology

RADT 4000.12/4100.06: Specialty Practice I/Specialty Practice II. Specialty practice affords students the opportunity to attain additional competence and knowledge in a specialty practice area. There are three components to specialty practice: clinical, contextual and theoretical. This course can be six or twelve credit hours depending on the nature of the specialty practice. Specialty practice is arranged through consultation with the fourth year/post diploma advisor. 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 3000) and promotes further development of professional skills and behaviors.

PREREQUISITE: RADT 3000.03 for entry level students; Post diploma students must consult with the post diploma advisor to ensure the necessary prerequisites have been met.
RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Radiological Technology. Enrolment may be limited due to clinical site availability.

**RADT 4200.03: Pediatric Radiography**

This course provides students with the opportunity to meet the current requirements of pediatric radiography. A wide variety of clinical experiences are scheduled at the IWK Health Centre, including mobile and operating room imaging, chest, abdominal and urinary system examinations, and general imaging. Under the direction of preceptors, students will apply theoretical principles and further develop professional skills and behaviours. Students will also have the opportunity to attend pediatric radiology rounds and observe related imaging procedures.

FORMAT: Clinical Education Course

PREREQUISITE: RADT 3500.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Radiological Technology

**RADT 4210.03: Professional Skill Development in Radiological Technology**

The clinical education course provides students with an opportunity to integrate skills/concepts from previous courses, clinical 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.

FORMAT: Clinical Education Course

PREREQUISITE: RADT 3500.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Radiological Technology

**RADT 4220.03: Professional Practice in Radiological Technology**

This clinical education course provides the student with the opportunity to strengthen radiological technology skills while increasing confidence and independence in clinical practice. Under appropriate direction from a preceptor, students will apply the knowledge and skills acquired in previous courses/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 through lab simulation is required.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: RSPT 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 designed as a continuation of the knowledge and concepts acquired in Term 1 and the skills competencies completed in RSPT 1000.03. Students will focus on the basic background information and psychomotor skills necessary for understanding the physical principles and concepts associated with the safe handling and efficient operation of respiratory therapy equipment. Limited clinical opportunities may be provided. Clinical skills competency testing through lab simulation is required.

FORMAT: Lecture 3 hours, lab/tutorial 1.5 hours

PREREQUISITE: RSPT 3000.03, HSCE 1000.03, HSCE 1020.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Respiratory Therapy

**RSPT 1030.03: Cardiopulmonary Physiology I**

This course presents a modular approach to developing a thorough understanding of normal and abnormal cardiopulmonary function in the human body and is considered a foundation course for all RSPT specific courses in the program.

FORMAT: Lecture 4.5 hours, individual and group work with case studies

PREREQUISITE: RSPT 1000.03, HSCE 1020.03, CHEM 1410.03

**RSPT 1500.03: Clinical Practicum in Respiratory Therapy**

The clinical practicum introduces students to the clinical patient environment. Students will have the opportunity to apply theory to practice and to skills at the defined competency level.

FORMAT: Full-time rotations in clinical settings with assigned preceptors.

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**

This course presents a modular approach to developing a thorough understanding of normal and abnormal cardiopulmonary function in the human body and is considered a foundation course for all RSPT specific courses in the program.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: RSPT 1000.03, 2000.03, 2061.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Respiratory Therapy

**RSPT 2030.03: Cardiopulmonary Physiology II**

This course is a continuation of the physiological concepts introduced in RSPT 1030 and will examine the intricate chemical and physiological processes of fluid and electrolyte balance, pulmonary function testing, hemodynamics and the cardiopulmonary response to unusual and changing environments in preparation for subsequent RSPT specific courses and clinical practicums. Case study presentations and patient scenarios will complement the learning environment and assist the student in integrating previous knowledge.

FORMAT: Lecture 4.5 hours, individual and group work, presentations, case study scenarios

PREREQUISITE: RSPT 1500.03, BIOC 1420.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Respiratory Therapy

**RSPT 2050.03: Health Practice for Respiratory Therapy**

This course consists of classroom work, clinical skills testing, guest presentations, community project and an advanced cardiac life support course (ACLS). The learning environment will enhance the understanding of the role of the respiratory therapist in hospitals, health care facilities and the community. Basic competency level in the skills required for RSPT 2500 will be achieved through practicing the clinical skills in the lab.
RSPT 2063.03: Respiratory Disease & Therapeutics I.

The proper assessment, evaluation and treatment of clients with conditions and diseases affecting the cardio-respiratory system are vital to the role of a respiratory therapist. The purpose of this course is for students to gain knowledge and understanding of the incidence, etiology, clinical manifestations, pathophysiology, and differential diagnosis of pathologies treated by respiratory therapists in the acute, chronic and home care environments. While studying each individual disease, the evidence-based treatment and prevention strategies, including the pharmacology of drugs, will be examined.

FORMAT: Lecture 3 hours
PREREQUISITE: RSPT 1800.03

RESTRICTION: Restricted to Bachelor of Health Science students enrolled in the professional stream of Respiratory Therapy.

RSPT 2065.03: Respiratory Disease & Therapeutics II.

The proper assessment, evaluation and treatment of clients with conditions and diseases affecting the cardio-respiratory system are vital to the role of a respiratory therapist. The purpose of this course is for students to gain knowledge and understanding of the incidence, etiology, clinical manifestations, pathophysiology, and differential diagnosis of pathologies treated by respiratory therapists in the acute, chronic and home care environments. While studying each individual disease, the evidence-based treatment and prevention strategies, including the pharmacology of drugs, will be examined.

FORMAT: Lecture 3 hours
PREREQUISITE: RSPT 2063.03

RESTRICTION: Restricted to Bachelor of Health Science students enrolled in the professional stream of Respiratory Therapy.

RSPT 2070.03: Human Pregnancy and Fetal/Newborn Development.

This course contains background information and assessment skills necessary for the progression to more advanced assessment, skills and competency levels in respiratory care of the neonate and child. The integration of this and additional required courses will allow the student to learn and to challenge the competency component of the program as it relates to neonatal/pediatric therapeutics and instrumentation, pathophysiology, applications of mechanical ventilation, pharmacology, PALS and NRP.

FORMAT: Lecture 3 hours, one weekend workshop in PALS
PREREQUISITE: RSPT 2063.03

RESTRICTION: Restricted to Bachelor of Health Science students enrolled in the professional stream of Respiratory Therapy.

RSPT 2500.03: Clinical Practicum in Respiratory Therapy.

This clinical practicum provides students with the opportunity to continue clinical skill competency development and achieve defined skills by performing in a clinical patient environment. Students will have the opportunity to rotate through assigned clinical placements through 8 and 12 hour day and night shifts including weekends, depending upon the placement requirements.

FORMAT: Full-time rotations in clinical settings with assigned preceptors.

Students will be required to travel to clinical sites outside the Halifax Regional Municipality. Students will be responsible for travel and accommodation arrangements.

PREREQUISITE: RSPT 2063.03, 2065.03, 2070.03, HSC 2000.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Respiratory Therapy.

RSPT 3000X/Y.06: Anesthesia Instrumentation and Clinical Techniques.

This course will consist of two modules; the first being a six-week seminar/lecture series and the second being a five-week full-time clinical application program in the operating room. Students will be precepted by an anesthetist with a focus on airway management skills and patient monitoring. Students will also attend an intensive 2-day workshop in management of the difficult airway. Depending on availability of clinical sites, students will be expected to travel outside the metro area at their own expense.

PREREQUISITE: RSPT 2500.03

RESTRICTION: Restricted to Bachelor of Health Science students enrolled in the professional stream Respiratory Therapy.

RSPT 3010X/Y.06: Neonatal and Pediatric Therapeutics.

This course will consist of two modules; the first being a six-week seminar/lecture series and the second being a five-week full-time clinical application program. Students will integrate and apply theories and skills in the neonatal and pediatric environment under the guidance of skilled preceptors. Students will be assigned to diverse clinical areas including Neonatal Intensive Care I and II, Pediatric Intensive Care, Birth Unit, and General Ward. Students may be assigned to clinical experiences during twelve hour day or night shifts. Students may be required to travel outside the metro area at their own expense.

PREREQUISITE: RSPT 2500.03

RESTRICTION: Restricted to Bachelor of Health Science students enrolled in the professional stream Respiratory Therapy.

RSPT 3020X/Y.06: Pulmonary Function Testing and Interpretation.

This course will consist of two modules; the first being a six-week seminar/lecture series and the second being a three-week full-time clinical application program in the adult and pediatric pulmonary function laboratories. Students will integrate and apply theories and skills in a specialized diagnostic environment. Students will be precepted and evaluated by certified Cardio-Pulmonary Technologists. This course will enable students to become proficient in performing cardio-pulmonary diagnostic testing including spirometry. Students will have exposure to bronchoProvocation testing and exercise stress testing. Students may be required to travel outside the metro area at their own expense.

PREREQUISITE: RSPT 2500.03

RESTRICTION: Restricted to Bachelor of Health Science students enrolled in the professional stream Respiratory Therapy.

RSPT 3230X/Y.06: Critical Care Instrumentation and Clinical Techniques.

This course will consist of two modules; the first being a six-week seminar/lecture series and the second being a five-week full-time clinical application program in diverse critical care areas. Students will be presented with the concepts and theories relevant to the respiratory care of the critical patient. Students will recall and apply theories and concepts learned in previous courses in order to integrate this knowledge with new information presented. The clinical application program will provide the students with the opportunity to integrate theories and procedures learned in the seminar/lecture series. Students may be assigned to any of the following critical care areas: medical/surgical, neurological, cardiovascular and coronary care. Depending on availability of clinical sites, students will be expected to travel outside the Metro area at their own expense.

PREREQUISITE: RSPT 2500.03

CONTACT: RSPT 3230X/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 RSc program. Students will be assigned to a rotating clinical schedule at various clinical sites. Clinical experiences in this course may occur on weekends or night shifts. Students will be evaluated by preceptors at the assigned clinical sites in consultation with faculty. Students may be required to travel outside the metro area at their own expense.

PREREQUISITE: RSPT 2500.03

RESTRICTION: Restricted to Bachelor of Health Science students enrolled in the professional stream Respiratory Therapy.

330 Health Sciences
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 patient populations. Clinical experiences in this course will occur during twelve hour day and night shifts, including weekends.
PREREQUISITE: RSPT 3500.03, 3510.06, 3520.06, 3530.06, 3540.06
RESTRICTION: Restricted to Bachelor of Health Science students enrolled in the professional stream Respiratory Therapy

RSPT 4000.12/4100.06: Specialty Practice I/Specialty Practice II
Specialty practice affords students the opportunity to attain additional competence and knowledge in a specialty practice area. There are three components to specialty practice: clinical, contextual and theoretical. This course can be six or twelve credit hours depending on the nature of the specialty practice. Specialty practice is arranged through consultation with the fourth year/post-diploma advisor.
PREREQUISITE: RSPT 3500.03 for entry level students; Post diploma students must consult with the post diploma advisor to ensure the necessary prerequisites have been met.
RESTRICTION: Restricted to Bachelor of Health Science students in Respiratory Therapy. Enrolment may be limited due to clinical site availability

RSPT 4010.03: Anaesthesia and Related Equipment.
The course will provide advanced knowledge of the function, operation, set-up and quality assurance issues regarding anaesthesia and related equipment. The student will be provided with the knowledge necessary to work with anaesthesia equipment in operating room and related settings.
FORMAT: Online delivery via RLS
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.
The 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.
FORMAT: Online delivery via RLS
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 with special types of anaesthesia.
FORMAT: Online delivery via RLS
PREREQUISITE: RSPT 3500.03
RESTRICTION: Restricted to Bachelor of Health Science students in Respiratory Therapy or by permission of instructor

Health Services Administration

School of Health Services Administration
Location: 5599 Fencworth Street
Halifax, NS B3H 1R2
Telephone: (902) 494-7087
Fax: (902) 494-6989
Email: Health.Services.Administration@Dal.Ca
Website: http://www.dal.ca/shsa

Dean
Webster, William, G., PhD

Director
Byrne, J., BA (St. FX), MA, PhD (Kansas), MBSA (Dal)

Professor Emeritus
Nestman, I.J., BComm (Sask), CA, MBSA (Alta)

Professors
Byrne, J., BA (St. FX), MA, PhD (Kansas), MBSA (Dal)
Girouard, M., BN (Dal), MSc

Assistant Professors
Maddalena, V., BN, MHSA, PhD (Dal)

Lecturers
Simms, C., BA (SMU), MPA (Dal), MHSc (Johns Hopkins), DPhil (Sussex)

Lecturers
Abrams, T. MS (Admin), MSc, EMT-D

Cochrane, N. BA, MSW, RSW

Girouard, M., BN (Dal), MSc

Jreige, S., BSc (Hons) (SMU), MHSA (Dal)

Girouard, M., BN (Dal), MSc

Kirk, S., BSc, PhD (Leeds)

Luu, S., BS (Taiwan), MPH (Emory), PhD (USA)

Kochane, N. BA, MSW, RSW

Lyno, S., RN (Taiwan), MPH (Emory), PhD (USA)

Maddalena, V., BSc, MBSA, PhD (Dal)

Mellin, S., RN (UBC), BSc (Renes), MBSA, MHA (Dal)

O'Sullivan, K. BA, General Studies (Dal), MBSA (Dal)

Sketris, I., BScPharm (Toronto), PharmD (Miami), MPA(HFA) (Dal), major appointment in College of Pharmacy

Assistant Professors
Ponaud, D., MSc (Queen's), MSA (Carri Milich), PhD (Toronto)

Rathwell, T., BA (Hons) (York), MA, PhD (Dundim)

Johnston, G., BSc(Hons) (Toronto), PharmD (Miami), MPA(HFA) (Dal), major appointment in College of Pharmacy

Associate Professors
MacKinnon, N., PhD, BIP, major appointment in College of Pharmacy

Assistant Professors
Persaud, D., MSc (Queen's), MSA (Carri Milich), PhD (Toronto)

Professor Emeritus
Nestman, L.J., BComm (Sask), CA, MBSA (Alta)

Assistant Professors
Jreige, S., BSc (Hons) (SMU), MHSA (Dal)

Associate Professors
Cochrane, N. BA, MSW, RSW

Rathwell, T., BA (Hons) (York), MA, PhD (Dundim)

Assistant Professors
O'Sullivan, K. BA, General Studies (Dal), MBSA (Dal)

The School of Health Services Administration offers a Diploma in Health Services Administration and a Diploma in Emergency Health Services Management.

I. Introduction - Diploma in Health Services Administration (DHSA)
The Diploma in Health Services Administration (DHSA) program is designed to prepare students for a career in health care at the managerial level. It meets the needs of those currently employed in the health care sector in a managerial capacity, particularly, middle managers in medium and large institutions, administrators in small facilities, and employees in community health, long-term care, primary care, multi-service centres, and community health boards.

The program provides a conceptual background for the increasingly complex managerial tasks performed in health institutions, agencies, and...
The School of Health Services Administration offers an undergraduate diploma program in Emergency Health Services Management. The program meets the need for an educational program for mid-career managers working in the Emergency Health Services systems in Canada. The academic objectives of the program are to provide education in emergency health services management for managers of large and small emergency health services organizations, and to provide access to further education in Health Services Administration and Emergency Health Services for such individuals.

The program is designed for EHS professionals by EHS professionals drawing on the experience of EHS practitioners, educators, managers and consultants across Canada and in the United States. This program is geared towards developing essential management skills. The program is conducted through the Internet and Web-based conferencing with a product called BLS. BLS is a distance education computer product. It provides a learning environment where students direct their learning. BLS consists of a suite of tools which provide mechanisms for interactive exercises, such as group discussions, presentations, and information sharing.

A. Application Procedure
Applicants must meet the Dalhousie University undergraduate admission requirements to warrant consideration into this program. Applicants require university preparation (you may not apply from high school). In addition to transcripts, students are required to submit a current resume and at least one letter of reference with their application to the Diploma program.

Applications should be submitted as early as possible, and not later than July 1 for September admission, November 15th for January admission and March 15 for May admission.

Students may be considered for advanced placement if they have completed classes equivalent to the required or elective classes. Application for advanced placement must be made in writing after an applicant has been accepted to the program.

Further information on the Diploma in Health Services Administration program may be obtained from School of Health Services Administration, Dalhousie University, 3509 Ferries Street, Halifax, Nova Scotia, B3H 1R2, (902) 494-7097. Application forms are available from the Office of the Registrar, Dalhousie University, or may be downloaded from the Registrar’s Office website at: www.registrar.dal.ca

B. Curriculum
The one-year program features both an academic and results-oriented curriculum. Students accepted into the DHSA program take the following half-credit classes:

Fall term
- HESA 4000.03: Canadian Health Care Delivery System
- HESA 4010.03: Management Roles and Competencies
- HESA 4020.03: Health Human Resource Management
- HESA 4040.03: Principles of Community-Based EHS
- HLTH 4040.03: Health Law for Non-Lawyers

Winter term
- HESA 4001.03: Management Process and Human Resource Issues in EHS
- HESA 4002.03: Health Care Planning
- HESA 4003.03: Quality Management
- HESA 4004.03: Health Care Financial Management
- HESA 4005.03: Health Care Financial Management
- HESA 42010.03: Epidemiology for Managers

Summer term
- HESA 4400.03: Introduction to Health Care Economics
- One half credit elective as approved by the School

II. Introduction - Diploma in Emergency Health Services Management (DEHSM)

The program is designed for EHS professionals by EHS professionals drawing on the experience of EHS practitioners, educators, managers and consultants across Canada and in the United States. This program is geared towards developing essential management skills.

The program is conducted through the Internet and Web-based conferencing with a product called BLS. BLS is a distance education computer product. It provides a learning environment where students direct their learning. BLS consists of a suite of tools which provide mechanisms for interactive exercises, such as group discussions, presentations, and information sharing.

A. Application Procedure
Applicants must meet the university’s undergraduate admission requirements to be considered for admission into the program. In addition, applicants are required to have worked or volunteered at least 3 years within the Emergency Health Services industry. Applicants require university preparation (you may not apply from high school). Prospective students should submit a letter outlining their work experience and other activities with their application, for both high and 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, 3509 Ferries 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 4040.03: Health Care Planning
- HLTH 4040.03: Health Law for Non-Lawyers

Winter term
- HESA 4001.03: Management Process and Human Resource Issues in EHS
- HESA 4002.03: Health Care Planning
- HESA 4003.03: Quality Management
- HESA 4004.03: Health Care Financial Management
- HESA 42010.03: Epidemiology for Managers

Summer term
- HESA 4400.03: EHS System Design
- HESA 4400.03: Principles of Community-Based EHS
- HESA 4400.03: Introduction to Health Care Economics

III. Class Descriptions

HESA 4000.03: Canadian Health Care Delivery System
The class is designed to provide an overview of health care in Canada, and more specifically in Nova Scotia, where the current health reform process will be the focus. This class is specifically aimed at supervisors, middle managers, and administration. The history, legislation, financing and payment systems, health professionals, health promotion and existing trends in health care (e.g. Regionalization, consumerism, primary health care) will be viewed from a provincial perspective. The goal of this class is to provide the student with a snapshot view of the existing health care system, its past development, and future direction.
HESA 4001.03: Management Roles and Competencies.
This class seeks to help students to examine what managers do to add value to their organizations. As a starting point we will briefly explore the evolution of management theories, comparing the founding theories with more recent literature. We will also examine the role of managers in public organizations such as hospitals. Finally, we will examine specific skills and duties of health care managers including: leadership, power, motivation, decision making, communication, teamwork, conflict resolution, organizational change, and others. Learning is facilitated through a mix of individual study and group discussions, and direct feedback from the instructor.

HESA 4002.03: Health Human Resource Management.
This class will provide the student with a working knowledge of the day to day operational management of human resources. The class will focus on the requirements of a manager to mentor, lead and manage the organization’s human resources. The interaction and interdependencies between the manager and the human resource department will be examined. Topics include labor management relations; human rights and labor related legislation; recruitment and selection; performance development and management; professional development and training; compensation related issues; collective bargaining and dealing with special employment related issues. Approved with Canadian Studies.
PREREQUISITE: HESA 4000.03
CROSS-LISTING: HESA 4010.03

HESA 4003.03: Quality Management.
This class will provide an introduction to the concept of quality management. Class content will include the traditional models of quality assurance, risk management and utilization management as they are currently practiced in Canadian health care facilities. The concept of Total Quality Management will be discussed to demonstrate how it compares/contrasts with the more traditional models. Approved with Canadian Studies.
PREREQUISITE: HESA 4000.03
CROSS-LISTING: HESA 4020.03

HESA 4004.03: Health Care Planning.
This class will use lectures, readings and case discussion to explore issues and methods related to health planning and evaluation. Emphasis will be placed on learning how to apply the practice to theory at the system, organization, and service levels.

HESA 4005.03: Health Care Financial Management.
This class will introduce the student to financial management concepts. The key concepts of financial resource management will be explored with particular emphasis on implementation in the health care sector. Introduction of the basic components will enable the student to understand the concepts within the larger framework of strategic and organizational resource planning and utilization. Topics covered include preparing, managing, and evaluating department budgets, payment systems, and fiscal accountability.

HESA 4010.03: Management Process and Human Resource Issues in EHS.
The course is designed to develop skills in the eight core management processes required to effectively manage an EH-OP operation. The core management skills taught in this core course include: Intercultural Communications and Coaching, Building Effective Teams, Monitoring and Managing Performance, Project Management, Leading Others, productivity improvement, Influencing and Negotiating with Others, and Managing Innovation and Change. The overall aim of this course is to provide EH practitioners with the skills required to manage people effectively. The course has two principle goals: provide EH practitioners with the management and human resources skills necessary to manage effectively in their own work environment, and introduce EHS practitioners to innovations in EHS systems design and management practices.
PREREQUISITE: HESA 4000.05
CROSS-LISTING: HESA 4020.03

HESA 4020.03: Quality Improvement in EHS.
The objectives of this course are to (1) lead EH managers through a step by step process to design, plan, implement, monitor and evaluate a continuous quality improvement initiative, (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 tools throughout the course.
PREREQUISITE: HESA 4000.03
CROSS-LISTING: HESA 4003.03

HESA 4030.03: EHS System Design.
The advent of the high performance EHS system demonstrates that it is possible to “do more with less”. However, that possibility requires sensible design tempered by the political realities of the service’s area. It also requires the use of CQI practices to modify the design and ever vigilant system status management to maintain high performances. 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 3 to 10 year future.

HESA 4040.03: Principles of Community-Based EHS.
Emergency Health Service (EHS) systems face challenging environments. However, strategies can be developed that go beyond merely reacting to what occurs in the environment. This course presents public relations planning so that a disaster or even a scandal can be turned into an opportunity. In addition, the course offers a basic understanding of marketing strategies that can help offset market pressures and demands. The objectives of the course are: (1) appreciate how marketing strategies vary when designed for the public good or a public service, (2) develop a marketing plan specific to the student’s emergency health service system, (3) develop and evaluate an emergency health services public relations plan, and (4) facilitate a collaborative activity between the student’s emergency health organization and some of its stakeholders.

HESA 4200.03: Epidemiology for Managers.
This class is a general, introductory course in the principles of epidemiology. Discussion will concentrate on the occurrence of disease and injuries in human populations, examine methods of determining the causes of illness and death, and analyze conclusions which have been gained through the application of epidemiological studies.
PREREQUISITE: HESA 4003.03

HESA 4400.03: Introduction to Health Care Economics.
This class is an introduction to economic issues in the Canadian Health Care System. The purpose of this class is to provide students with economic tools with which to examine issues affecting the Canadian health system. Specific topics to be examined include: the supply of, and demand for, health care; investment appraisal; health care systems and markets; health insurance schemes; retaining health care services; human resource planning; health technology assessment; and, outcome measurement and evaluation. The class evaluation will consist of two rapid economic appraisals, a final take home examination and one major term project.
Health Professions, Interdisciplinary

HLTH 4040.03: Health Law for Non-Lawyers.
The objective of this course is to provide the non-law student with an overview of significant legal issues that arise in the health care context. The first part of the course covers an introduction to the Canadian legal system, the Canadian health care system from a legal perspective, and the nature of legal proceedings. The second part focuses on issues of particular relevance in the provision of health services; these issues may include: practice management; confidentiality and disclosure of information, including whistle blowing; consent to treatment, including issues regarding minors and those lacking capacity; mental health law; and the regulation of drugs. Finally, the third part addresses contemporary issues in health law such as cost containment, issues of care at the end of life, and the impact of human rights legislation on health care services and delivery.

FORMAT: Fall term BLS
RESTRICTION: Health Profession students only

NURS 3310.03: Health Informatics.
Please see class description in the School of Nursing section of the calendar.

School of Health and Human Performance

School of Health and Human Performance
Location: 6200 South Street
Halifax, NS B3H 3J5
Telephone: (902) 494-2152
Fax: (902) 494-5120
Website: www.hahp.healthprofessions.dal.ca

Dean
Webster, W.G., PhD

Professor Emeritus
Belzer Jr., E.G., BS (West Chester State Coll), MS (Maryland), PhD (Illinois)

Professors
Campagna, F.D., BPHE (Windsor), BEd (Queen's), MEd (SUNY), PhD (Alberta)
Jackson, L.A., BA, MA, PhD (Toronto)
Kreby, R.L., MD (Dal), FRCP (C), major appointment in the Department of Medicine
Lyons, R.F., BA (Dal), MEd (Xavier), PhD (Oregon)
Maloney, T.L., BPE, BEd (Alberta), MA (Western), PhD (Alberta), Associate Vice-President (Academic)
Singleton, J.F., BA (Waterloo), MS (Penn State), PhD (Maryland)
Umbrich, A., BSc (ST) (Western), MSN (Carleton), PhD (Dal)

Associate Professors
Bogdan, B., BA, MA (Soc) (DAL), PhD (Soc) (UBC). Major appointment in the School of Occupational Therapy.
Blanchard, C., BA Honours (UPEI), MSc, PhD (Dal). Major appointment in the Department of Medicine.
Campagna, F.D., BPHE (Windsor), BEd (Queen's), MEd (SUNY), PhD (Alberta)
Kreby, R.L., MD (Dal), FRCP (C), major appointment in the Department of Medicine
Lyons, R.F., BA (Dal), MEd (Xavier), PhD (Oregon)
Maloney, T.L., BPE, BEd (Alberta), MA (Western), PhD (Alberta), Associate Vice-President (Academic)
Singleton, J.F., BA (Waterloo), MS (Penn State), PhD (Maryland)
Umbrich, A., BSc (ST) (Western), MSN (Carleton), PhD (Dal)

Associate Professors
Bogdan, B., BA, MA (Soc) (DAL), PhD (Soc) (UBC). Major appointment in the School of Occupational Therapy.
Blanchard, C., BA Honours (UPEI), MSc, PhD (Dal). Major appointment in the Department of Medicine.
Campagna, F.D., BPHE (Windsor), BEd (Queen's), MEd (SUNY), PhD (Alberta)
Jackson, L.A., BA, MA, PhD (Toronto)
Kreby, R.L., MD (Dal), FRCP (C), major appointment in the Department of Medicine
Lyons, R.F., BA (Dal), MEd (Xavier), PhD (Oregon)
Maloney, T.L., BPE, BEd (Alberta), MA (Western), PhD (Alberta), Associate Vice-President (Academic)
Singleton, J.F., BA (Waterloo), MS (Penn State), PhD (Maryland)
Umbrich, A., BSc (ST) (Western), MSN (Carleton), PhD (Dal)

Associate Professors
Bogdan, B., BA, MA (Soc) (DAL), PhD (Soc) (UBC). Major appointment in the School of Occupational Therapy.
Blanchard, C., BA Honours (UPEI), MSc, PhD (Dal). Major appointment in the Department of Medicine.
Campagna, F.D., BPHE (Windsor), BEd (Queen's), MEd (SUNY), PhD (Alberta)
Jackson, L.A., BA, MA, PhD (Toronto)
Kreby, R.L., MD (Dal), FRCP (C), major appointment in the Department of Medicine
Lyons, R.F., BA (Dal), MEd (Xavier), PhD (Oregon)
Maloney, T.L., BPE, BEd (Alberta), MA (Western), PhD (Alberta), Associate Vice-President (Academic)
Singleton, J.F., BA (Waterloo), MS (Penn State), PhD (Maryland)
Umbrich, A., BSc (ST) (Western), MSN (Carleton), PhD (Dal)

Assistant Professors
Barros, T.J., BPE, MSc (Dal)
Bogdan, B., BA, MA (Soc) (DAL), PhD (Soc) (UBC). Major appointment in the School of Occupational Therapy.
Harman, K., BSc (Toronto), MSc (Ottawa), PhD (Carleton Univ.). Major appointment in the School of Physiotherapy.
Hedglos, A., BSc (U of BC), MA (McGill), PhD (U of BC)
Loprie, C., BSc (HEd), MA, PhD (Dal)
I. Introduction

A. Purposes of the School

The School's mission is to develop professionals and scholars who can generate, disseminate and apply knowledge to advance health and human performance. We do this by offering undergraduate and graduate programs as well as by conducting research in health promotion, kinesiology and recreation/leisure studies.

B. Limited Enrolment

All programs offered by the School of Health and Human Performance have enrolment limits. Applicants should refer to Table II in the Fees section of this calendar, or consult with the School.

C. Interprofessional Learning Requirement

Refer to Policy Statement in Faculty of Health Professions section, page 310.

D. Affirmative Action Admission Policy

Purpose of the Policy

This policy is intended to create opportunities for the admission of under-represented African Canadians, Aboriginal peoples, and persons with disabilities, in the School of Health and Human Performance.

Eligibility

Persons eligible to be considered under this policy must self-identify as African Canadian, Aboriginal, or a person with a disability. Although the School of Health and Human Performance is committed to supporting eligible students from across Canada, preference will be given to those who are residents of Atlantic Canada or who have a parent residing in Atlantic Canada at the time of application.

Consideration for admission under this policy is optional. Applicants wishing to be considered under this policy must identify themselves to the Admissions Committee on the School of Health and Human Performance. 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.

Support Services

Once admitted to the School, students wishing to access the following support services must identify their need to the Associate Director (Undergraduate), the Student Services Administrator, or the course professor.

1. School of Health and Human Performance:

   a) The Student Services Administrator will meet regularly with students to assist with advising, administrative needs, and other concerns.
   b) Faculty members will facilitate extra support or instruction for their course content if necessary.
   c) Faculty members who are members of the designated groups, or who are closely affiliated with those groups, will be asked to provide academic mentorship if required.
   d) Faculty whose office is in a building that might be inaccessible to students with a physical disability, will arrange an alternative, more accessible, space for meeting with those students.

2. Dalhousie University offers the following services:

   - Black Student Advising Centre
   - Native Education Counselling Unit
   - Advocacy Service
   - Awards and Financial Aid Office - Studley/Carleton Campus
   - Career Counselling and The Frank C. Lawson Career Information Centre
   - Chaplaincy
   - Counselling Services
   - Health Services - Studley Campus
   - Ombudsperson
   - Student Accessibility Services
   - Academic Success Services
   - Student Services - Office of the Vice-President
   - Study Skills
   - Tutoring Services
   - Women’s Centre
   - Writing Resource Centre
   - Learning Connections - Virtual Support for Undergraduate Students

II. School of Health & Human Performance Regulations

1. All students must observe the University and Academic Regulations described in this Calendar.

2. All students must attend the classes of their prescribed course regularly and punctually. When the work of a student becomes unsatisfactory or attendance is irregular, the student may be required to regularize the course concerned.

3. Grade Point Average Requirements

   The grade point average system is described in the Academic Regulations.

4. Supplemental Examinations

   The School of Health and Human Performance does not offer supplemental examinations in any of its programs.

5. Academic Appeals Procedures

   A student wishing to appeal a decision based on School regulations should in the first instance attempt to resolve the issue with the instructor(s) concerned before proceeding as per School Appeal Procedures, see Academic Regulation 25.6.

5a. Appeals to School Committee on Undergraduate Studies

   A School-wide Committee on Undergraduate Studies exists for the purpose of hearing initial student appeals of academic decisions. The student appellant is responsible for the preparation of all documentation in support of his/her appeal. The student must submit the appeal to the Chair, Committee on Studies.
The student has the right to appear before the Committee on Studies and he/she should notify the Chair of his/her desire to do so. The student also has the right to be represented by an advocate of his/her choice.

The decision of the Committee on Studies shall be conveyed to the student, in writing, by the Chair, Committee on Studies within 72 hours after the conclusion of the appeal. If the student’s appeal is being denied, this notification should include information about procedures to appeal to the Committee on Studies of the Faculty of Health Professions (see Academic Regulation 25.6). It should be noted that this appeal to the Faculty Committee on Studies must be presented within 30 days of notification from the School of the disputed academic decision.

6. Student Advisory Programs

Although many classes are compulsory in the School’s programs, considerable latitude exists for the development and extension of individual interests. To help in planning a total personal program each student is assigned to the Student Services Administrator. He/she can help students to select classes, avoid common pitfalls, interpret regulations, and solve various types of problems. Although students are responsible for their own programs and for maintaining high academic standards, they should consult their advisor regularly.

III. Degree Programs

The School offers six undergraduate degree programs:

- **BSc (Health Promotion)**
- **BSc (Health Promotion) with Honours**
- **BSc (Kinesiology)**
- **BSc (Kinesiology) with Honours**
- **BSc (Recreation)/Bachelor of Management**
- **BSc (Recreation) with Honours**

**Application is made to the Honours Coordinator by April 1st of the student’s third year. Consult department for further information.**

**The BSc (Recreation) is a degree in Therapeutic Recreation.**

**This is a five-year combined degree in which the student will graduate with both a Bachelor of Science (Recreation) and Bachelor of Management degree.**

NOTE 1: Students entering into any of the above degree programs from high school should refer to the Admission Requirements section of this calendar.

NOTE 2: Students who are transferring into any of the above degree programs from academic or non-academic work will be evaluated by the Student Services Administrator based on previous work and area of concentration. Students transferring into the BSc (Health Promotion), BSc (Recreation) and BSc (Recreation)/BManagement programs should note that the internship experiences required in the final year of these programs are normally only offered in the B term.

A. School of Health and Human Performance Core Classes

All students in the School, regardless of the degree program in which they are registered, must complete the following core classes for graduation:

- **HAHP 1000.03** 3
- **HAHP 1200.03** 3
- **HAHP 2000.03** 3
- **HAHP 3100.03** 3

Total 15

* Not required for Kinesiology students.

Core Class Descriptions

**HAHP 1000.03: Introduction to Health, Health Promotion and Health Professions.**

This class provides the philosophical and practical scope of the School’s perspective on health. It includes the presentation of theories, research, politics and practices that have helped to define health, and health promotion as an umbrella for health-related activities. An historical perspective of health and health care is offered and current international, national and local issues are considered. Also included is an introduction to the professional streams offered in the School and how they fit into health promotion and the Canadian health care system.

**FORMAT: Lecture/seminar**

**RESTRICTION: Restricted to incoming students in the School of Health and Human Performance and Bachelor of Health Science students, and Bachelor of Health Informatics Program students.**

**HAHP 1100.03: Personal Health.**

The focus of this course will be on providing an individual decision-making approach to personal health promotion. This course aims to assess and manage personal health behaviours of importance to students from a variety of social backgrounds.

**RESTRICTION: Open to all students except BSc (Kinesiology), BSc (Recreation), BSc (Recreation)/Bachelor of Management, and BSc (Health Promotion).**

**HAHP 1200.03: Communications.**

As all of the undergraduate degrees are considered professional degrees, it is recognized that graduates will require certain skills, abilities and knowledge about the process of communication to ensure successful delivery of programs and successful interaction with other professionals and clients. Communication skills, presentation skills, small group skills, and writing skills will receive attention in this class.

**FORMAT: Lecture/seminar**

**RESTRICTION: Restricted to incoming students in the School of Health and Human Performance and Bachelor of Health Science students and Bachelor of Health Informatics Program students.**

**HAHP 2000.03: Human Growth and Development.**

A study of factors influencing human growth and development from birth to maturity and throughout the lifespan, as revealed by observational and experimental studies.

**FORMAT: Lecture, 3 hours**

**RESTRICTION: Restricted to students in the School of Health and Human Performance and Bachelor of Health Science students, and Bachelor of Health Informatics Program 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 provides an opportunity to witness and become involved in local health-related projects that foster the principles of community development.

**FORMAT: Lecture/discussion/tutorial, 3 hours**

**RESTRICTION: Restricted to students in the School of Health and Human Performance.**

**HAHP 3100.03: Introduction to Research Methods.**

This class provides students with basic knowledge for conducting research in health professions. The content covers ethics associated with research, research design, issues in measurement, sampling, data collection strategies, data analysis and report writing. Students will learn about different approaches to research from the classical scientific model to more subjective interpretative models of inquiry. Testing, as well as written assignments will serve as evaluative techniques.

**FORMAT: Lecture/discussion, 3 hours**

**EXCLUSION: HSCE 3010.03**

**RESTRICTION: Restricted to students in the School of Health and Human Performance, and Bachelor of Health Informatics Program students.**

B. Bachelor of Science (Health Promotion)

The Bachelor of Science (Health Promotion) is a four-year degree program. The goal of health promotion is to educate health promotion professionals in promoting, maintaining and improving the health and well-being of individuals, families and communities. As a profession, Health Promotion is principally devoted to employing health promotion processes and to fostering healthy behaviours.
The responsibilities of health promoters include: assessing health promotion needs; planning, conducting and evaluating health promotion programs; coordinating health promotion activities and resources; promoting health promotion throughout the community; and professional development.

The BSc (Health Promotion) program guides students in attaining: (1) knowledge, attitudes and practices conducive to a healthy lifestyle; (2) professional preparation for a career in community health promotion; and (3) academic preparation for advanced study and research in health promotion or health-related fields.

Program of Study
NOTE: On admission into the BSc (Health Promotion) program, all students will be issued a Program of Studies Form. It is the responsibility of the student to ensure that all of the requirements for the degree as outlined on the form are completed for graduation.

Required Classes - BSc (Health Promotion)

<table>
<thead>
<tr>
<th>Year</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year One</td>
<td>HAHP 1000.03</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HAHP 1200.03</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HPRO 1195.03</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ANAT 1020.03</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CSCI 1200.03</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>STATS 1060.03</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PHYL 1010.06</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SOSA 1000.06 or 1050.06 or 1100.06 or 1200.06</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Community Health Promotion Stream</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year Two</td>
<td>HAHP 2000.03</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HPRO 2110.03</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HPRO 2361.03</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>One of:*** (HPRO 2255.03, HPRO 4412.03, HPRO 4365.03)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PSYO 1011/1012 or 1021/1022</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Language and Humanities Elective*</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Open Elective**</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Writing Requirement*****</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Year Three</td>
<td>HAHP 3000.03</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HAHP 3100.03</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HPRO 3397.03</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HPRO 3325.03</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>One of:*** (HPRO 3335.03, HPRO 3345.03, HPRO 3351.03)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Open Electives**</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Health Related Electives***</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Year Four</td>
<td>HPRO 4100.03</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Health Related Elective****</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HPRO 4495</td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

* Language/Humanities Elective - see list under Degree Requirements Section in the Academic Calendar.
** Open Electives can be chosen from any available course at Dalhousie.
*** HPRO A, B, C (as per program of study form available from the School of Health and Human Performance).
**** Health Related Electives - list available from the School of Health and Human Performance.
***** HPRO students must have a 6 credit hour writing requirement course (list of courses available under Degree Requirements on page 65).
****** See list of writing requirement courses under Degree Requirements Section in the Academic Calendar. If students take SOSA 3100 in Year One, the Writing Requirement becomes 6 credit hours of open electives.

At graduation, valid First Aid and CPR Certification are required.

C. Bachelor of Science (Health Promotion) with Honours

Students wishing to be considered for entrance into the Honours Program must meet the minimum requirements listed below. Acceptance to the program after meeting these requirements will depend on a faculty member being willing to supervise the honours thesis.

1. Completed a minimum 90 credit hours towards his/her undergraduate degree.
2. Obtained a GPA of 3.5 based on the previous 60 credit hours of work.
3. Completed HAHP 3100 with a minimum grade of B.
4. Completed a 3000 level or higher HPRO course most related to the area of research.
5. Completed the Financial, Technical, Equipment and Space Support Form indicating the financial needs of the thesis can be met.

Application is made by April 1st of the student’s third year.

NOTE: Students accepted into the Honours program must complete HPRO 4900A.

The Honours Program is part of the 120 credit hours required for the Bachelor of Science (Health Promotion) degree. These six credit hours may be attributed as open electives or as health-related courses.

Students accepted into the Honours program are required to attend an Honours seminar weekly for the first two months, and then monthly.

A student who has completed 87 credit hours may apply to the School of Health and Human Performance Committee on Studies for a waiver of the requirement. Successful appeal will depend upon the merits of the argument.
HPRO 1195.03: Introduction to Health Promotion.
While students are developing knowledge, understandings, attitudes and appreciations related to health and professional health promotion, they will be improving skills in library research, scholarly writing, and public speaking. In addition to the regular classroom meetings, the class includes a self-study assignment related to the organization and functioning of a charitable community-based health-related agency.
FORMAT: Lecture/discussion/seminar/self-study assignment, 3 credit hours
RESTRICTION: Restricted to Health Promotion students

HPRO 2110.03: Health Promotion Theory.
This course is designed to encourage those working and studying in the areas of health promotion to better understand the connection between health promotion theory and research, policy and community practice. This course will also provide students with an opportunity to explore and critically analyze the principal methods and theoretical approaches in the evolution and assessment of evidence for effectiveness of health promotion programs and interventions.
PREREQUISITE: HPRO/HEED 1195.03
RESTRICTION: Restricted to Health Promotion students. Others by permission of instructor with priority to Health Professions students.

HPRO 2120.03: Health Promotion Policy.
The purpose of the course is to introduce students to the concept of policy and health promotion policy in particular. Students will be exposed to content that describes how policy is developed/approved/changed on the basis of research/evidence and what processes/tools can be used to influence political decision-making as it relates to the adoption of new/changed policy. Through the use of case studies, students will be asked to critically analyze existing health promotion policies and understand issues related to policy interpretation, application and compliance at national, provincial and local levels.
PREREQUISITE: HPRO/HEED 1195.03
RESTRICTION: Restricted to Health Promotion students. Others by permission of instructor with priority to Health Professions students.

HPRO 2250.03: Interdisciplinary Class in Human Nutrition.
This course focuses on the science of nutrition and the role of nutrition in health. We study how the body responds to different nutrients including protein, 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
CROSS-LISTING: KINE 2250.03

HPRO 2255.03: Drugs and Drug Education.
Local, national, and international issues of prohibition, prevention, treatment and legislation of drug use are examined. Recreational, over-the-counter and some prescription drugs will be considered. Some strategies and methods of educating about drugs and drug-related issues will be included.
FORMAT: Lecture 3 hours
RESTRICTION: Restricted to School of Health and Human Performance students; others by permission of instructor, with priority to Health Professions students.

HPRO 2361.03: Program Planning.
During planning, implementing and evaluating programs is fundamental to both leisure services and health promotion. Both disciplines develop programs to enhance the quality of life for individuals, groups and communities. This course reviews the principles of program planning, various program planning models, and examples of programs that are pertinent to leisure services and health education/promotion. The planning process will include issues such as targeting specific populations, scanning for needs and assets, partnering, managing stakeholder relationships, and evaluation.
FORMAT: Lecture/discussion 3 hours
PREREQUISITE: HPRO/HEED 1195.03 or LIES 1127.03

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 3 hours
PREREQUISITE: PSYO 1011.03 and PSYO 1012.03 or PSYO 1011.01 and PSYO 1012.01, HPRO/HEED 1195.03, 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 1010.03 or ANAT 1010.01, HPRO/HEED 1195.03, PHYL 1000/X.06 or PHYL 2000/X.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 and 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 1010.03, or ANAT 1010.01, HPRO/HEED 1195.03, PHYL 1010/X.06 or PHYL 2010/X.06 or PHYL 2030/X.06, or permission of instructor
RESTRICTION: Restricted to School of Health and Human Performance students; others by permission of instructor, with priority to Health Professions students.

HPRO 3351.03: Injury Prevention and Safety Education.
Students are introduced to the concept of safety, the causes and effects of injuries, and strategies for reducing same through safety education, engineering and legislation. Specific study of injuries, their causes, and preventive measures and programs is preceded by a review of definitions of health, health promotion, education models and policies. The latter part of the class focuses on community orientations to injury prevention.
FORMAT: Lecture/discussion 3 hours
RESTRICTION: Restricted to School of Health and Human Performance students; others by permission of instructor, with priority to Health Professions students.

HPRO 3360.03: Multicultural Health Promotion Research and Policy.
The purpose of this course is to provide students with an opportunity to explore the distinct and integrated influence of research and policy on the health of multicultural populations within the Canadian context. In particular, this course will assist students in developing a critical understanding of the intersection of multicultural health with policies and power. Through engagement with multidisciplinary perspectives, students will examine health research and policy issues pertaining specifically to New Canadians (Immigrants), African Canadians, and Aboriginal peoples.
PREREQUISITE: HPRO/HEED 1195.03, HPRO 2110.03
RESTRICTION: Restricted to Health Promotion students. Others by permission of instructor with priority to Health Professions students.
HPRO 3370.03: International Health Promotion Research and Policy.

The main goal of the course is to introduce students to the ways in which health promotion research is carried out, as well as health policies, vary depending upon the specific international context (local and national). 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 that societies are organized, and the way in which resources are invested and whose interests the investments serve, affect the health of individuals and populations within the society.

PREREQUISITE: HPRO/HEED 1195.03, HPRO 2110.03
RESTRICTION: Restricted to Health Promotion students. Others by permission of instructor with priority to Health Professions students

HPRO 3397.03: Community Health Promotion Strategies.

A broad spectrum of health promotion strategies is available to facilitate health in various community settings and with diverse populations. The class reviews these major strategies and offers students practice in applying them. In addition, the various models and theories of health behavior change will be examined.

PREREQUISITE: HPRO/HEED 1195.03, HPRO/HEED 2961.03
RESTRICTION: Restricted to School of Health and Human Performance students; others by permission of instructor with priority to Health Professions students

HPRO 4100.06: Advanced Topics in Applied Research Methods in Health Promotion and Policy.

The purpose of this course is to provide students with an opportunity to apply the theoretical and practical understanding of research methodologies and methods to a specific health promotion research or policy topic. In particular, students will engage in activities which require them to consider and/or utilize various paradigmatic and theoretical perspectives related to research design, issues related to methodological rigor, community-based research and research ethics, various methods of data collection and analysis techniques, as well as strategies for disseminating research findings and informing health promotion policy.

The emphasis of student projects will be to address a health promotion issue that has been identified by the community. Consequently, students will work closely with a community group or organization throughout the proposal preparation process.

PREREQUISITE: HPRO/HEED 1195.03, HARP 3100.03
RESTRICTION: Restricted to Health Promotion Students. Others by permission of instructor with priority to Health Professions students

HPRO 4365.03: Health: A Biopsychosocial Approach.

Health is increasingly recognized as multiply determined by the complex interactions of biological, psychological, and social systems and determinants. Research into these interactions is advancing rapidly. Students in this class are expected to develop an understanding of these processes, be aware of the most recent research and be capable of seeking out new research in the future and applying this knowledge to health promotion in Canada.

PREREQUISITE: HPRO 3397.03 or HPRO 3340.03
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, personal, religious, and philosophical aspects of human sexuality. Four themes are threads throughout the class—diversity in gender roles and in sexual attitudes, behaviors and customs; critical thinking; making responsible decisions; sexual health. The class is designed to support positive integration of sexuality into the lives of individuals and to foster the prevention of sexuality-related problems, at all stages of life.

FORMAT: Lecture/discussion 3 hours

HPRO 4422.03: Environmental Health.

Individual health and well-being is partially determined by the values we hold and the choices we make in individuals. Equally important is the environment that enables us to make those choices that maintain and enhance our health. This class emphasizes the importance of the environment, both physical and social, and how it is implicated in the work of health promoters and other health professionals. The content reviews principles of natural and social ecology, the role of policy in shaping our environments, and research aimed at understanding the impact of various environmental conditions on health. Students will explore environmental health issues within the community and propose educational strategies to maintain and enhance health and well-being.

FORMAT: Lecture/discussion

RESTRICTION: Restricted to School of Health and Human Performance students; others by permission of instructor, with priority to Health Professions students

HPRO 4450.03: Comprehensive School Health Promotion.

This class will provide students with an overview of the components of a comprehensive health promotion program in the public school system from a community health promotion perspective. The school health curriculum, school health services, and the healthy school environment—and how a community health promoter might interact with the school system will comprise the content of the class.

FORMAT: Lecture/tutorial 3 hours

PREREQUISITE: HPRO 3195.03, HPRO 2110.03, HPRO 2961.03, HPRO 3397.03
RESTRICTION: Restricted to Health Promotion students in their final year of study

HPRO 4495.15: Health Promotion Internship.

During the first 12 weeks of this class students will intern in community health promotion settings on a full-time basis. The students will work on a major project, as well as gain workplace experience. Details of the goals and procedures for demonstrating community health promotion skills and competencies are contained in this Internship Program Handbook. During the concluding week of the term, students will return to the campus for a supervised, sharing of their internship experience, doing a formal presentation to their peers, and preparing for entry into the work force.

FORMAT: Field Placement/seminar

PREREQUISITE: Completion of all program requirements and approval of advisor

RESTRICTION: Restricted to Health Promotion majors in the Fall or Winter term of their final year

HPRO 4700.06/4801.03/4702.03: Senior Seminar.

The 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 direction of an appropriate faculty member.

NOTE: Students may take no more than a total of 6 credit hours of independent studies.

FORMAT: Research/tutorial 3 or 6 hours

PREREQUISITE: Fourth year status; a GPA of at least 3.00, a “B” grade in an earlier class in the area of study (where appropriate); consent of advisor; consent of tutor. Intention to register for an Independent Study should be confirmed with the undergraduate secretary by April 1st of the preceding academic year.
Faculty of Health Professions

340 Kinesiology

D. Bachelor of Science (Kinesiology)

Program Description
Kinesiology is the study of the structure and function of the human body within the context of human movement and with a focus on the maintenance and enhancement of health and well-being. Students may elect to concentrate in one of three professional areas - ergonomics; fitness and lifestyle; or coaching science* - or follow a more general stream with a focus on research or other professional areas in which human movement and health are central. The School offers a four-year BSc (Kinesiology) degree as well as a four-year honours degree in Kinesiology (see Section E below).

Program of Study

The goals of these degrees are to provide students with:
1. A broad background in various subdisciplines of Kinesiology, including anatomy, physiology, neuropsychology, biomechanics, movement control and psychology of performance; 2. An exposure to several science disciplines which are prerequisite and/or complementary to the kinesiology subdisciplines (e.g., biology, physics, psychology, mathematics); 3. An introduction to the discipline of health promotion and an appreciation of the role kinesiology plays in health and well-being concerns of the individual; 4. An exposure to some aspects of the humanities and social sciences, as a means of enhancing the liberal education of the student and addressing social concerns in relation to health promotion; 5. A solid foundation in research methodology and statistics, including opportunities for independent research if the student should choose; 6. An understanding of the principles and tools necessary to evaluate human movement from a variety of perspectives and in a variety of settings, as well as hands-on experience in several evaluative procedures; 7. Professional preparation in the areas of fitness and lifestyle; ergonomics; or coaching sciences; 8. Experiences in active and problem-based learning; 9. The necessary background to enable the student to pursue graduate work in kinesiology or other related fields.

Program of Study

On admission into the BSc (Kinesiology) program, all students will be issued a Program of Studies Form. It is the responsibility of the student to ensure that all of the class requirements for the degree as outlined on the form are completed for graduation.

Required Classes - BSc (Kinesiology)

Required Health and Human Performance Classes

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>HARP 3400.03</td>
<td>Human Performance</td>
<td>3</td>
</tr>
<tr>
<td>HARP 3401.03</td>
<td>Human Performance</td>
<td>3</td>
</tr>
<tr>
<td>ANAT 1020.03</td>
<td>Anatomy</td>
<td>3</td>
</tr>
<tr>
<td>PHYC 1300.03</td>
<td>Physical Science</td>
<td>3</td>
</tr>
<tr>
<td>KINE 1104.05</td>
<td>Kinesiology</td>
<td>3</td>
</tr>
<tr>
<td>KINE 1106.05</td>
<td>Kinesiology</td>
<td>5</td>
</tr>
<tr>
<td>KINE 1108.05</td>
<td>Kinesiology</td>
<td>5</td>
</tr>
</tbody>
</table>

Required Health and Human Performance Classes

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 1010.03</td>
<td>Principles of Biology I</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 1011.03</td>
<td>Principles of General Biology II</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 1320.03</td>
<td>Physics I and Around You</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 1011.03</td>
<td>General Chemistry Part I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 1022.03</td>
<td>General Chemistry Part II</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 1041.03</td>
<td>General Chemistry for the Life and Health Sciences - Part I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 1042.03</td>
<td>General Chemistry for the Life and Health Sciences - Part II</td>
<td>3</td>
</tr>
<tr>
<td>MATH 1010.03</td>
<td>Differential &amp; Integral Calculus</td>
<td>3</td>
</tr>
<tr>
<td>MATH 1011.03</td>
<td>Differential &amp; Integral Calculus</td>
<td>3</td>
</tr>
<tr>
<td>PSYO 1011 or 1021.03</td>
<td>Introduction to Psychology and Neuroscience I</td>
<td>3</td>
</tr>
<tr>
<td>PSYO 1012 or 1022.03</td>
<td>Introduction to Psychology and Neuroscience II</td>
<td>3</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 1010.03</td>
<td>Principles of Biology I</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 1011.03</td>
<td>Principles of General Biology II</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 1011.03</td>
<td>General Chemistry Part I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 1022.03</td>
<td>General Chemistry Part II</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 1041.03</td>
<td>General Chemistry for the Life and Health Sciences - Part I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 1042.03</td>
<td>General Chemistry for the Life and Health Sciences - Part II</td>
<td>3</td>
</tr>
<tr>
<td>MATH 1010.03</td>
<td>Differential &amp; Integral Calculus</td>
<td>3</td>
</tr>
<tr>
<td>MATH 1011.03</td>
<td>Differential &amp; Integral Calculus</td>
<td>3</td>
</tr>
<tr>
<td>PSYO 1011 or 1021.03</td>
<td>Introduction to Psychology and Neuroscience I</td>
<td>3</td>
</tr>
<tr>
<td>PSYO 1012 or 1022.03</td>
<td>Introduction to Psychology and Neuroscience II</td>
<td>3</td>
</tr>
</tbody>
</table>

Six credit hours of the total 24 credit hours must be 2000 level or above.

**Open Electives**

**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 unipotent to consult the Honours Guidelines outlined in the Undergraduate Student Handbook.

Stream Requirements

Students interested in focusing on Ergonomics, Fitness and Lifestyle; or Coaching Science at an advanced level will be guided into one of three Specialty Streams. A maximum of 12 students/year/stream will be selected, primarily on the basis of GPA. Students wishing to complete a stream should consult the student advisor.

A stream can be completed within the context of the BSc (Kinesiology) or BSc (Kinesiology) with Honours programs. Eighteen (18) credit hours of Kinesiology electives in the third and fourth years, plus 3 credit hours of open electives (i.e., a total of 21 credit hours in the third and fourth years) must be used for the classes listed below.

Ergonomics Stream:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>KINE 3414.03</td>
<td>Physical Fitness Assessment &amp; Program Design</td>
<td>3</td>
</tr>
<tr>
<td>KINE 3407.03</td>
<td>Principles of Ergonomics</td>
<td>3</td>
</tr>
<tr>
<td>KINE 3402.03</td>
<td>Care &amp; Prevention of Injuries</td>
<td>3</td>
</tr>
<tr>
<td>KINE 4460.03</td>
<td>Advanced Biomechanics</td>
<td>3</td>
</tr>
</tbody>
</table>
Acceptance into the Honours Conversion program can only be considered if a student has completed a minimum of 24 credit hours of Science electives, including MATH/STAT 1060 and three other credit hours of MATH other than MATH 1000.06 or PHYL 2030.06, or ECO 1000.03, 1005.02, 1005.03, 1100.03, 1120.05, or 1151.05. At least 6 credit hours of Science electives must be at the 2000 level or above.

1. Completed an upper level Kinesiology class (at the 3000 level or above) with a grade of at least B;
2. Obtained an overall GPA of 3.5 on the previous 60 credit hours of work;
3. Completed a minimum of 24 credit hours of science electives, including MATH/STAT 1060 and three other credit hours of MATH other than MATH 1000.06 or PHYL 2030.06, or ECO 1000.03, 1005.02, 1005.03, 1100.03, 1120.05, or 1151.05. At least 6 credit hours of Science electives must be at the 2000 level or above;
4. 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.

The completed Honours Program requires 30 credit hours of Science electives; 6 credit hours of which may be taken in the 4th year. Twelve credit hours must be at the 2000 level or above (at the 3000 level or above) in the area in which the research will be undertaken.

NOTE: Students accepted into the Honours program are required to attend an Honours seminar weekly for the first two months, and then monthly.

NOTE: Students accepted into the Honours program must complete KINE 4900.06. This requirement is in lieu of 6 credit hours of Open Electives listed as part of the requirements for the BSc (Kinesiology).

Honours Conversion

Students who have graduated with a Bachelor of Science (Kinesiology) degree can apply for the Honours Conversion program. Before taking KINE 4900.06, they must have satisfied the requirements for the Honours Program. With the approval of the Honours Coordinator, it may be possible to take certain prerequisite courses concurrently with KINE 4900. Acceptance into the Honours Conversion program can only be considered provided a faculty member has agreed to supervise the project.

KINE 1102.03: Physical Activity and Health.

This course is designed to introduce students to the connection between exercise and health. The lecture portion explores how exercise affects the most prevalent society-affiliated conditions. The laboratory portion is designed to help students develop a progressive exercise program for themselves based on their current fitness and strength levels as well as physical activity preferences.

FORMAT: Lecture/lab

KINE 1104.03: Foundations in Kinesiology.

The objective of this class is to introduce students to Kinesiology as a discipline and for them to learn about the sub-disciplines and content areas that contribute to the general body of knowledge in Kinesiology. In addition to understanding what these sub-disciplines are, students will gain an understanding of the interrelationships among these sub-disciplines and the types of careers that students can enter. Students will be exposed to discipline content as well as the methods of measurement and evaluation and the technology involved in each of the disciplines. Problem Based Learning (PBL) will be used as the class instruction method.

FORMAT: Lecture 3 hours; tutorial 2 hours

RESTRICTION: Restricted to Kinesiology students only

KINE 1106.03: Philosophy and Ethics for Kinesiologists.

Physical activity figures prominently in many aspects of society and culture. Kinesiologists are in a unique position to bridge the gap between the scientific study of physical activity and the implementation of physical activity programs in public and professional contexts. This course develops core principles in philosophy and ethics to help the aspiring kinesiologist think about and evaluate their role in society. Debate and critical analysis will figure prominently in the course.

FORMAT: Lecture/tutorial

KINE 1108.03: Psychology and Physical Activity.

This introductory course will provide students with knowledge and procedures in examining the psychology of physical activity. The content will consist of two distinct sections. The first section includes an introduction to general motor behaviour concepts, including motor performance and motor development. The second section contains elements of exercise psychology and group dynamics in physical activity. The laboratory component of the course will focus on measurement techniques to examine psychological aspects of human movement.

FORMAT: Lecture 3 hours

KINE 2250.03: Interdisciplinary Class in Human Nutrition.

This course focuses on the science of nutrition and the role of nutrition in health. We study how the body responds to different nutrients including protein, carbohydrate, fat, vitamins, minerals, and water. Current knowledge and controversies regarding the role of diet in disease and optimal health will be explored.

FORMAT: Lecture/lab

CROSS-LISTING: HPB 3220.03

KINE 2310.03: Physiology of Exercise.

This is an introductory class for students with a basic knowledge of anatomy and physiology. It concentrates on the respiratory, cardiovascular and neuromuscular systems in terms of their involvement during exercise, their adaptation to different types of training and how they limit performance during exercise in different environmental conditions.

FORMAT: Lecture/lab 3 hours

RESTRICTION: Restricted to Kinesiology students
KINE 2320.03: Kinesiological Anatomy.
Neuromuscular system is presented and discussed in order to establish the understandings necessary for an in-depth analysis of human movement.
FORMAT: Lecture 3 hours, lab 1 hour
RESTRICTION: Restricted to Kinesiology students.
PREREQUISITE: ANAT 1020.03 or ANAT 1010.03 and PHYL 1010.06 or PHYL 1001.08 or PHYL 2000.06
KINE 2430.03: Motor Control and Learning.
This class deals with efficiency of 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 kinesionic and kinetonic 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 1310.05
KINE 3200.03: Sociocultural Issues in Physical Activity.
This course will provide students with an introduction to social theory, culture, and social psychology as applied to physical activity and sport. While recognizing that physical activity does not take place in a social vacuum, and that social context influences how physical activity and sport are experienced, this course explores participation in, and perceptions of physical activity and sport according to gender, social class, age, sexual orientation, ethnic group and nationality. The meaning of physical activity and sport in society, the role of Canadian public policy in promoting and facilitating participation in physical activity, and sport as an agent for social change will also be explored.
FORMAT: Lecture/Lab 3 hours
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 EKG approach.
FORMAT: Lecture 3 hours, lab 1 hour
PREREQUISITE: ANAT 1020.03 or ANAT 1010.03, PHYL 1010.06 or PHYL 1001.08 or PHYL 2000.06, KINE 1104.03, KINE 2310.03, KINE 2320.03, KINE 2430.03, KINE 2465.03
RESTRICTION: Restricted to Kinesiology students.
KINE 3341.03: Physical Fitness Assessment & Program Design.
Evaluation of various methods of physical fitness assessment, designing fitness programs for diverse populations and identifying motivational techniques with emphasis on the areas of cardiovascular fitness, weight reduction, pre- and post-natal programs and the elderly. In addition, laboratory work prepares the student for the Canadian Society for Exercise Physiology (CSEP)/Certified Fitness Consultant (CFC) theory and practical exams.
FORMAT: Lecture/lab 3 hours
PREREQUISITE: KINE 2320.03
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 experiences in applying the theoretical concepts of motor control and learning. Variables that impact on skill acquisition, practice and instruction will be examined and applied. Real world settings will be used to illustrate the application of the principles of skill acquisition.
FORMAT: Lecture 3 hours/tutorial 1 hour
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. Preperception, vision, somatosensation and vestibular sensor will be explored in detail. Sensory refeeds, supratentorial pathways and cortical systems will be analyzed in detail, using case-studies to illustrate key principles. Students will learn about the major classes of neurological movement disorders, from assessment to intervention. The course will build upon introductory courses in neural basis of behaviour.
FORMAT: Lecture 3 hours/tutorial 1 hour
PREREQUISITE: KINE 2400.03 or PSYO/NESC 2450
RESTRICTION: Restricted to Kinesiology students. Others by permission of instructor, with priority to Health Professions students.
KINE 3476.03: Principles of Ergonomics.
This class applies health and human performance concepts in kinesiology to the workplace. The class content includes identifying characteristics of work environments and the effect on performance and health, the design of effective workplaces and the use of training and educational programs to increase productivity and to reduce injuries.
FORMAT: Lecture/field work
PREREQUISITE: KINE 2310.03; KINE 2320.03; KINE 2400.03; KINE 2465.03
RESTRICTION: Restricted to Kinesiology students. Others by permission of instructor, with priority to Health Professions students.
KINE 3482.03: Care and Prevention of Injuries.
An introduction into the fields of Sports Medicine and work-related musculo-skeletal disorders, specifically the basic injury mechanisms, early recognition, care and prevention, pathology, tissue healing, emergency care, and basic principles of therapeutic exercise and modalities.
FORMAT: Lecture/lab 3 hours
PREREQUISITE: ANAT 1020.03 or ANAT 1010.03, PHYL 1010.06 or PHYL 1001.08 or PHYL 2000.06, KINE 2310.03
RESTRICTION: Restricted to School of Health and Human Performance students. Others by permission of instructor, with priority to Health Professions students.
KINE 3485.03: Psychology of Sport and Physical Activity.
This class offers an awareness and understanding of the phenomena involved in mental preparation in sport. It will systematically analyze, investigate and assess psychological skills, attributes and preparation in this area, and their application in other environments. Emphasis will also be placed upon personal experience and practical application.
FORMAT: Lecture, 3 hours
PREREQUISITE: PSYO 1011.03 and PSYO 1022.03 or PSYO 1011.03 and PSYO 1022.03, KINE 2405.03 or permission of instructor
KINE 3500.03: Principles of Measurement and Evaluation.
An introduction to the fundamental involvement in measurement and evaluation, including writing, setting objectives, designing and administering tests, organizing and analyzing test results. Tests used to measure physical fitness, specific motor skills and health knowledge are investigated.
FORMAT: Lecture/lab 3 hours
PREREQUISITE: KINE 1104.03, ANAT 1020.03 or 1010.03, PHYLL 1010.06 or PHYLL 1006.06 or PHYLL 2010.06, STAT 1001.03
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 philosophic approaches to coaching pedagogy; the holistic attainment of individual potential, as well as the coaching code of ethics. Identification of issues related to risk management; developmental age; skill analysis and development; and physical preparation will also prepare students to meet the requirements for the Part A and Part B of the Theory component of the National Coaching Certification Program (NCCP).
FORMAT: Lecture/group activities, 3 hours
PREREQUISITE: First and second year HAFP Core and required Kinesiology classes
KINE 3741.03: Coaching Science Practicum.
The purpose of this class is to provide students with the opportunity to observe, identify, apply and evaluate the fundamental principles and methodologies of coaching that are associated with the creation of an effective practice, and training environment, for the developing athlete. This will be facilitated through the completion of a twelve week placement with a school, or club, mentor coach.
FORMAT: Placement with mentor coach, 3 hours per week
PREREQUISITE: KINE 3740.03
KINE 4108.03: Mind/Body Connections and Well-being.
The connection of mind and body as it relates to well-being is addressed through a survey of complementary (or alternative) health care practices including mind/body medicine (e.g., relaxation, meditation), therapeutic systems (e.g., chiropractic, homeopathy), herbalism, body work techniques (e.g., massage, pressure point therapies), movement therapies and exercises (e.g. Alexander, yoga) and integrated medical systems (e.g., Chinese medicine, Ayurveda). Theoretical and scientific bases of each are covered and controversies surrounding these practices are addressed. This class is not designed to train students to be practitioners of any techniques.
FORMAT: Lecture 3 hours
PREREQUISITE: HAFP 3020.03
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 activities in potentially hazardous environments require an understanding of the physiological responses and adaptability of the human body. The class will explore the physiological mechanisms, performance limitations, research methodology and limitations, acclimation, countermeasures, protective clothing/applicable to human endeavour in extreme environments by investigating one environmental scenario (e.g., High altitude, diving, microgravity, thermal stress) in detail. Students will produce a peer-reviewed text on the scenario. Supplementary lectures and laboratories will expose the students to current research being performed in environmental physiology and ergonomics.
FORMAT: Lecture/lab 5 hours
PREREQUISITE: KINE 3419.03 AND KINE 3476.03
RESTRICTION: Restricted to 4th year BScK students
KINE 4412X/Y.06: Advanced Fitness Assessment, Exercise Prescription and Lifestyle Counseling.
The objective of this class is to provide the student with advanced techniques to assess physical fitness, design physical activity/exercise programs and lifestyle interventions. This class will further prepare the student to write the Canadian Society for Exercise Physiology’s National Professional Fitness and Lifestyle Consultant (PFLC) examination.
SIGNATURE REQUIRED
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
FORMAT: Lecture/lab 3 hours
PREREQUISITE: ANAT 1020.03 or 1010.03, PHYLL 1010.06 or PHYLL 2010.06, KINE 2301.03, KINE 3441.03, KINE 3419.03, CPR, Certified Fitness Consultant (CFC)
RESTRICTION: Restricted to Kinesiology students. Others by permission of instructor, with priority to Health Professions students.
KINE 4416.03: Neuromuscular Principles of Human Movement.
This class uses Problem Based Learning to study neuromuscular physiology, as it relates to the control of human movement. Both central and peripheral nervous systems are studied, but the emphasis is on the peripheral. Students are presented with a problem related to abnormal gait in a child with Cerebral Palsy. Students are divided into groups and attempt to solve the problem by applying neuromuscular principles.
FORMAT: Tutorial 4 hours; 2 hour lab bi-weekly
PREREQUISITE: KINE 2310.03, KINE 2320.03, KINE 2465.03, KINE 3419.03
RESTRICTION: Restricted to Kinesiology students. Others by permission of instructor, with priority to Health Professions students.
KINE 4466.03: Advanced Biomechanics.
This class takes a quantitative approach to understanding human movement from a mechanical perspective. Concepts presented in the class will be illustrated with examples taken from the areas of sport, exercise, activities of daily living, and ergonomics. Students will be introduced to several techniques used in biomechanics research.
FORMAT: Lecture 3 hours; 2/weekly lab 2-3 hours
PREREQUISITE: KINE 2310.03
RESTRICTION: Restricted to Kinesiology students. Others by permission of instructor, with priority to Health Professions students.
KINE 4577.03: Cognitive Ergonomics.
This class examines the role of cognition in injury prevention and human performance in the workplace. The class generally takes an information processing approach to consider the various topics and related issues. The class requirements include a written test on the content, a data collection project and a class presentation.
FORMAT: Lecture/lab 3 hours
PREREQUISITE: KINE 3476.03
RESTRICTION: Restricted to Kinesiology students. Others by permission of instructor, with priority to Health Professions students.
KINE 4578.03: Physical Ergonomics.
This advanced level class examines the application of the physical sciences in the productivity, health and safety of the workplace. The class will consider the design of work and the workplace from a physical science perspective. Due emphasis will be placed on the importance of the understanding of, and designing for, the capacity and capabilities of the human operator. When possible, the class will consider the present...
Faculty of Health Professions
344 Kinesiology

PREREQUISITE: KINE 3740.03 and KINE 3741.03, Level 1 Technical. This advanced level class examines the role that Kinesiology can play in clinical and occupational settings. In particular, the class will expose the student to an integrated approach in human motion analysis with a primary focus on the use of electromyography and its relationship to other biomechanical and physiological measures. Due emphasis will be placed on the importance of understanding the strengths and weaknesses of present laboratory and field measures of human motion. The class requirements include a written test on the content, a project and a class presentation.

KINE 4588.03: Clinical and Occupational Kinesiology. This advanced level class is designed to give students an opportunity to put the principles of Kinesiology into practice. 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.

PREREQUISITE: KINE 1104.03, KINE 2310.03, KINE 2320.03, KINE 2430.03, KINE 3465.03, KINE 3740.03, KINE 3741.03, KINE 4466.03.

RESTRICTION: Restricted to Kinesiology students. Others by permission of instructor.

KINE 4700.X/Y.06/4701.03/4702.03: Senior Seminar. This is an advanced level class that is designed to allow students to focus on a particular issue or set of related issues, that are not part of the regular curriculum. Part of this class could entail a practicum experience. The class will only be offered if a faculty member is available to supervise the work.

NOTE: Students taking KINE 4700 must register in both X and Y in consecutive terms. Credit will be given only if both are completed consecutively.

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 preparation and competitive strategies. The class will also prepare students to meet the requirements for Level Three of the Theory preparation and competitive 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.

KINE 4741.03: Advanced Coaching Science Practicum. The purpose of this class is to provide students with the opportunity to observe, identify, apply and evaluate the developed principles and methodologies of coaching that are associated with the creation of an effective practice, and training environment, for the developing athlete. This will be facilitated through the completion of a twelve week placement with a varsity, school, or club mentor coach. Students will also apply the intervention strategy developed to enhance a controllable specific performance factor in a sport of choice.

KINE 4800.X/Y.06/4801.03/4802.03: Independent Study. Senior undergraduate students develop an area of specialization under the direction of a faculty member.

FORMAT I: Experimental research (laboratory experiment) or other research study, 3 or 6 hours
FORMAT II: Literature research, 3 or 6 hours
NOTE: Students may take no more than a total of 6 credit hours of independent 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 4900.X/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 consecutively.

KINE 4900.X/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 consecutively.

KINE 4900.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 consecutively.

F. Bachelor of Science (Recreation) - Therapeutic Recreation

Objectives
The general objectives of the program are:
1. To provide the student with a broad educational exposure to various social science and humanities disciplines (e.g., Psychology, Sociology, Economics, Political Science, Anthropology, History); and
2. To familiarize students with current social science-based research methods and statistics.

Program of Study
On admission into the BSc (Recreation) program, all students will be issued a Program of Studies Form. It is the responsibility of the student to ensure that all of the class requirements for the degree as outlined on the form are completed for graduation.
Program Description
Therapeutic recreation involves the delivery of change-oriented services to individuals with disabilities, illness and other limitations, with the focus on increasing quality of life through leisure and recreation involvement. The graduates of the Therapeutic Recreation degree will be skilled in the areas of disability and illness, leisure theory, assessment, planning, program and client planning, program implementation and evaluation, and documentation. Graduates will find employment in both traditional clinical settings such as rehabilitation facilities, psychiatric hospitals and nursing homes, and in community settings such as community mental health centres, associations for community living, schools, Boys and Girls Clubs, etc.

Required Classes BSc (Recreation) - Therapeutic Recreation
Required Health and Human Performance Classes
- HAHF 1000.03
- HAHF 1200.03
- HAHF 2000.03
- HAHF 3000.03
- HAHF 3100.03
- ANAT 1020.03 or 1010.03
- PHYL 1010.06 or 1000.06 or 2000.06
- MATH 1084.02
- LERH 1127.03
- LERH 2127.03
- LERH 2130.03
- LERH 2361.03
- LERH 2364.03
- LERH 3127.03
- LERH 3206.03
- LERH 3406.03
- STAT 1060.03
- MGMT 4422.03
- MGMT 4505.03
- MGMT 4577.15

Required Arts & Social Science Classes
- PSYO 1011.03 and PSYO 1012.03
- ENVI 1100.06
- ECON 1102.03
- PSYO 1021.03 and PSYO 1022.03
- SOCA 1000.06 or SOCA 1050.06
- SOCA 1100.06 or SOCA 1200.06

Therapeutic Recreation Electives
Ten of the following:
- LEIS 4422.03
- LEIS 4512.03
- LEIS 4540.03
- LEIS 4543.03
- Designated Elective* 3
- Open Electives** 21

* Designated electives can be chosen from the courses in the Language/Humanities list (under Degree Requirements at the front of the calendar), Health Professions or Interdisciplinary Health Professions, Health Services Admin. or Social Sciences.
** 12 of the 21 credit hours of the open electives must be 2000 level or above.

NOTE: Students should consult the NCTRC website (www.NCTRC.org) for CTRS Certification requirements.

G. Bachelor of Science (Recreation)/Bachelor of Management

Objectives
1. To provide the student with a broad educational exposure to various social science and humanities disciplines (e.g., Psychology, Sociology, Economics, Political Science, Anthropology, History).
2. To familiarize students with current social science-based research methods and statistics.
3. To provide the student with the necessary skills and knowledge for entry into the professional roles of leadership, advocacy, education and service delivery in recreation.
4. To provide the necessary background to enable students to pursue graduate work in leisure studies, management studies, or the social sciences and humanities.

Program Description
The curriculum of this new combined program was developed in response to guidance from alumni and practicing professionals in the field — it was clear that while graduates entering the field of recreation administration needed the strong grounding in the recreation discipline, they also needed more management skills. The Faculty of Management’s Bachelor of Management degree emphasizes an orientation to management in the public and non-profit sector. This combined degree program enhances career options of future recreation students. The Bachelor of Science (Recreation)/Bachelor of Management is a five-year program comprising 25 full credits (50 half credits), of which 16 full credits (36 half credits) are required core classes, 3.5 full credits (seven half credits) are open electives, 0.5 full credits (1 half credit) 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 1000.03
- HAHF 1200.03
- HAHF 2000.03
- HAHF 3000.03
- HAHF 3100.03
- LERH 1127.03
- LERH 2127.03
- LERH 3206.03
- LERH 3406.03
- STAT 1060.03
- MGMT 4422.03
- MGMT 4505.03
- MGMT 4577.15

Required Management Classes
- MGMT 1000.03
- MGMT 1001.03
- INFO 1601.03
- INFO 1602.03
- MGMT 2010.03
- MGMT 2022.03
- MGMT 2305.03
- MGMT 2306.03
- MGMT 2307.03
- MGMT 2308.03
- MGMT 2309.03
- MGMT 2310.03
- MGMT 2311.03
- PUAD 2601.03
- PUAD 2602.03
- MGMT 2301.03
- MGMT 2302.03
- MGMT 2303.03
- MGMT 2304.03
- MGMT 2305.03
- MGMT 2306.03
- MGMT 2307.03
- MGMT 2308.03

NOTE: Management courses require a credit in MATH 0010 if one has not completed high school math.

Other Required Classes
- ECON 1102.03
- ECON 1103.03
- ENVI 1100.06
- SOCA 1000.06 or SOCA 1050.06 or SOCA 1100.06 or SOCA 1200.06
- Designated Electives (6)*
- Open Electives (21)**

* Designated electives can be chosen from courses in the Language/Humanities list (under Degree Requirements at the front of the calendar), Health Professions or Interdisciplinary Health Professions, Health Services Admin., or Social Sciences.

Kinesiology 345
**The equivalent of 21 credit hours chosen from all classes offered in the University. Twelve of the 21 credit hours must be 200 level or above.**

**Internship Requirement (LEIS 4997.15)**
The equivalent of 2.5 (five half credits) fulfills the internship requirement during the student’s final year.

**LEIS Class Descriptions**

**LEIS 1127.03: Foundations of Recreation.**
An understanding of the place and potential of leisure for individual Canadians and Canadian society is essential if we are to move beyond the conviction that only labour is to be valued. This class introduces students to concepts including play, sport, recreation and leisure; how they are viewed and valued in our society; and how they relate to health and well-being. The content provides an overview of leisure service delivery; public access to leisure opportunities; variations in leisure involvement due to social and cultural differences; and issues that are important for future leisure service professionals. Students will have the opportunity to increase writing, verbal communication and computer skills, and learn how to use the library effectively. Participation in a professional conference is a component of the learning experience of this class. The students are required to participate in an Orientation to the recreation program that will provide the environment that will create a learning community for the next three to four years of their education experience. Students are also required to join a recreation professional group while enrolled in this class.

**FORMAT:** Lecture/discussion 3 hours

**RESTRICTION:** Restricted to students in the Bachelor of Science (Recreation) program.

**LEIS 2127.03: Leisure Theory.**
This class will provide an introductory analysis of leisure in modern society from sociological, psychological, and social psychological perspectives. The role of leisure in the everyday life of individuals will be discussed in terms of social relationships, daily 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:** SCOA 1000.06 or SCOA 1001.06 or PSYO 1011.03 and PSYO 1022.03 or PSYO 1010.03 or PSYO 1012.03; LEIS 1127.03

**RESTRICTION:** Restricted to School of Health and Human Performance students. Others by permission of instructor, with priority to Health Professions students.

**LEIS 2130.03: Foundations and Concepts of Therapeutic Recreation.**
This class provides the conceptual foundation for the study of therapeutic recreation. Philosophical, conceptual and historical issues related to the delivery of therapeutic recreation services will be discussed in terms of health and health promotion. The class will also involve the examination of professional issues such as standards of practice, ethics, quality assurance, basic concepts of therapeutic recreation service delivery and service delivery settings. Finally, students will be exposed to the variety of therapeutic recreation settings through site visits and observation. Students are required to join a therapeutic recreation professional group or provide the instructor with documentation on their current membership in a therapeutic recreation organization.

**NOTE:** Please note that the summer session of this class does not require a prerequisite however a departmental signature is required.

**FORMAT:** Lecture/discussion 3 hours

**RESTRICTION:** Restricted to Bachelor of Science (Recreation) students. Others by permission of instructor, with priority to Health Professions students.

**LEIS 2361.03: Program Planning.**
Designing, planning, implementing and evaluating programs is fundamental to both health education. Both disciplines develop programs to enhance the quality of life for individuals, groups and communities. This class reviews the principles of program planning, various program planning models, and examples of programs that are pertinent to leisure services and health education. The planning process will include issues such as targeting specific populations, scanning for needs and assets, partnering, managing stakeholder relationships. The equivalent of 2.5 (five half credits) fulfills the internship requirement during the student’s final year.

**RESTRICTION:** Restricted to Bachelor of Science (Recreation), Bachelor of Science (Recreation)/Bachelor of Management and Bachelor of Science (Health Promotion) students or with permission of the instructor.

**LEIS 2384.03: Leisure and Individuals with Disabilities.**
An introduction of current philosophical, 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 materials and issues will address the following: The three broad areas: a) concepts and models of leisure education, b) content related to specific skills required for leisure involvement/leisure assurance, values clarification, social skills development, friendship development, stress management, assertiveness, leisure resources, decision making, etc; and c) instructional and interactional techniques used in leisure education. In addition, students will have the opportunity to plan and facilitate leisure experiences in class.

**FORMAT:** Lecture/discussion/lab 3 hours

**PREREQUISITE:** LEIS 1127.03; LEIS 2130.03; LEIS 2361.03; LEIS 2384.03

**RESTRICTION:** Restricted to Recreation students. Others by permission of instructor, with priority to Health Professions students.

**LEIS 3296.03: Leadership and Group Dynamics.**
This class will focus primarily on the function of leadership and the process of small group dynamics, as applied to recreation and health education service delivery. Emphasis will be placed on the achievement of individual and group goals in health related settings. In addition, effective leadership of individuals and groups within a community, through direct experience and observation, will be emphasized.

**FORMAT:** Lecture/discussion 3 hours

**PREREQUISITE:** LEIS 1127.03 or HPRO 1101.03

**RESTRICTION:** Restricted to Health Promotion and Recreation students.

**LEIS 3360.03: Analysis of Leisure Service Delivery Settings.**
Reflections on the twentieth century reveal tremendous changes in the way people live. These changes have impacted work, family structure, and mental and physical well-being, and signal the importance and need of opportunities for leisure pursuits. Leisure is one of life’s greatest gifts — an important dimension influencing the quality of an individual’s life. Similarly, leisure enhances the quality of life available to a society or culture. The growth of the leisure industry reflects the ever increasing value that individuals are placing upon leisure in their lives. It is essential for the student of recreation management to know and understand that leisure delivery and life satisfaction are dependent upon effective...
organizational analysis and the quality of services provided. This class presents historical and contemporary concepts of the diverse types of agencies and institutional providers of leisure services in North America. It will review the nature and effectiveness of services provided by various leisure service agencies in the public, private, nonprofit, commercial, recreation, travel and tourism sectors of the leisure industry. It will seek to (a) evaluate the political, social, physical and economic impact on each of the sectors, (b) determine ways of assessing the quality of service delivery, and (c) find ways of motivating improvements in the identification 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.

LEIS 3362.03: Financial Management and Fundraising. This class builds on previous functions of management such as program planning and analysis of leisure services by further focusing on the budgeting process, cost analysis, pricing of services, resource inventory and management, fundraising and grant writing. Strategic analysis of economic trends in understanding financial management, purchasing, inventory control, fiscal policy and accountability, and financial auditing will also be examined. Course content will be presented through lecture, case study analysis, budget, and grant proposal development. Such information will be applicable to management of public, private, commercial and/or community non-governmental recreation, health, and/or sport organizations.

RESTRICTION: Restricted to Bachelor of Science (recreation) / Bachelor of Management students. Others by permission of instructor, with priority to Health Professions students.

LEIS 3370.03: Recreation Facility Design and Operations Management. This class will emphasize the management functions of planning, organizing, and coordinating as it relates to the role of the manager in effective management of physical facilities and environmental resources. The class will review the new and emerging trends in facility design and operation of recreation facilities in the area of safety and 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/case study/agency analysis, 3 credit hours.

RESTRICTION: Restricted to Bachelor of Science (recreation) / Bachelor of Management 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, the class will focus on directing towards special event management and planning, and marketing and business plan development.

RESTRICTION: Restricted to Bachelor of Science (recreation) / Bachelor of Management students. Others by permission of instructor, with priority to Health Professions students.

LEIS 4365.03: Administrative Concepts in Therapeutic Recreation. This class emphasizes the overall management of the program that is 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 the functions of management, their applications and their relevance to the management of recreation, therapeutic recreation and therapeutic leisure programs, including the design, implementation, and evaluation of therapeutic recreation programs. The class will review current concepts in therapeutic recreation program planning, including identifying client needs, selecting appropriate service types, task and activity analysis, planning change-oriented programs, writing behavioral objectives, etc.; program and service evaluation; and ethical issues. Finally, students will have the opportunity to work with individuals with disabilities in a program planning context.

FORMAT: Lecture/discussion/practicum 3 hours.

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. The youth as a sector of society and as a stage in human development is of great significance in the study of leisure. Youth is relevant to the issue of unemployment and underemployment which has created a number of problems such as low self-esteem, educational success, teenage suicide, etc. These programs are being developed to address these problems, many of which are experimentally based, e.g., Outward Bound, study skills, service learning and national service. This class will study the phenomenon of
LEIS 4512.03: Therapeutic Recreation Specialization: Physical and Developmental Disabilities. This class is an upper level therapeutic recreation specialization class which takes the concepts and skills learned in the previous therapeutic recreation classes and applies them specifically to clients with physical and developmental disabilities. Initially, issues related to etiology, characteristics, and treatment needs of clients with various physical and developmental disabilities will be discussed. The implications of these characteristics for therapeutic recreation services and the various service settings in which therapeutic recreation services are provided will then be examined. Finally, the therapeutic recreation service delivery issues specific to physical and developmental disabilities will be examined, including assessment procedures, program intervention techniques, documentation, and efficacy. Site visits, observations, and simulations will be used to facilitate the application of this material.

FORMAT: Lecture/discussion/practicum 3 hours

PREREQUISITE: LEIS 1127.03, LEIS 2127.03, LEIS 2384.03, LEIS 3127.03, LEIS 3426.03, LEIS 3492.03, PSYO 2220.03

RESTRICTION: Restricted to Therapeutic Recreation students in their final two years of study.

LEIS 4540.03: Therapeutic Recreation Specialization: Addiction and Mental Illness. This class is an upper level therapeutic recreation specialization class which takes the concepts and skills learned in the previous therapeutic recreation classes and applies them specifically to clients with mental health problems and/or addiction. Initially, issues related to etiology, characteristics, and treatment needs of clients with addiction and mental illness will be discussed. The implications of these characteristics for therapeutic recreation services and the various service settings in which therapeutic recreation services are provided will then be examined. Finally, the therapeutic recreation service delivery issues specific to mental illness and addiction will be examined, including assessment procedures, program intervention techniques, etc. Site visits, observations, and simulations will be used to facilitate the application of this material.

FORMAT: Lecture/discussion/practicum 3 hours

PREREQUISITE: LEIS 1127.03, LEIS 2127.03, LEIS 2384.03, LEIS 3127.03, LEIS 3426.03, LEIS 3492.03, KINE 3384.03

RESTRICTION: Restricted to Therapeutic Recreation students in their final two years of study. Others by permission of instructor, with priority to Health Professions students.

LEIS 4545.03: Therapeutic Recreation Specialization: Aging and Lifestyle. This class is an upper level therapeutic recreation specialization class which takes the concepts and skills learned in the previous therapeutic recreation classes and applies them specifically to older adults. Initially, issues related to theories of aging, characteristics of older adults and pre-retirement planning will be discussed. The implications of these characteristics for therapeutic recreation services and the various service settings in which therapeutic recreation services are provided will then be examined. Finally, the therapeutic recreation service delivery issues specific to older adults will be examined, including assessment procedures, program intervention techniques, documentation, and efficacy. Site visits, observations, and simulations will be used to facilitate the application of this material.

FORMAT: Lecture/discussion/practicum 3 hours

PREREQUISITE: LEIS 1127.03, LEIS 2127.03, LEIS 2384.03, LEIS 3127.03, LEIS 3426.03, LEIS 3492.03, PSYO 2220.03

RESTRICTION: Restricted to Therapeutic Recreation students in their final two years of study. Others by permission of instructor, with priority to Health Professions students.

LEIS 4597.15: Education Practicum Placement. This class is an extended professional development placement during the final year of study. It requires the completion of a minimum 12 week, 40 hours per week placement in a recreation service delivery agency. In addition, the placement involves an in-depth agency analysis and the completion of a service project for the agency.

FORMAT: Placement 12 weeks winter [January-April] term always available; other term with permission of Internship Coordinator

PREREQUISITE: Completion of all course requirements; approval of advisor

RESTRICTION: Restricted to Bachelor of Science (recreation), Bachelor of Science (recreation), Bachelor of Management students

LEIS 4700.06/4701.03/4702.03: Senior Seminar. This class is tailored for small groups of students. It is designed to allow students to focus on a particular issue or set of related issues, that are not part of the regular curriculum. Part of this class could entail a practicum experience. The class will only be offered if a faculty member is available to supervise the work.

FORMAT: Seminar

RESTRICTION: Restricted to Recreation students in their final year of study

LEIS 4800X/Y.06/4801.03/4802.03: Independent Study. Senior undergraduate students develop an area of specialization under the direction of a faculty member. NOTE: Students taking 4800X/Y.06 must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

FORMAT: Library survey or 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. Application to register for an Independent Study should be confirmed with the undergraduate secretary by April 1st of the preceding academic year. NOTE: Students may take no more than 6 credit hours of independent studies.
**Kinesiology**

See School of Health and Human Performance (page 334).

---

**Nursing**

**School of Nursing**

Location: Forrest Building
5069 University Avenue
Halifax, NS B3H 3J5

Telephone: (902) 494-2535
1-800-500-0912

Fax: (902) 494-3467

Website: www.dal.ca/nursing

**Dean**

Webster, William G., PhD

**Director**

Sullivan, P.L., BScN (MB), MSc (Boston), PhD (Alberta), RN

**Associate Director Graduate Programs**

Martin-Misener, R., DOCHN, BScN, MN (Dal), PhD (Calgary), NP, RN

**Associate Director Undergraduate Program Planning and Development**

Foster, S., RN (MIN), MN (Dal), RN

**Associate Director Undergraduate Program Student Affairs**

Wittek, L., BScN (SFU), MN (Dal), RN

**Coordinator, Nurse Practitioner Program**

Martin-Misener, R., DOCHN, BScN, MN (Dal), PhD (Calgary), NP, RN

**Coordinator, BScN (Arctic Nursing)**

Edgecomb, N., RN (Lethbridge), MN, PhD (Alberta), RN

**Professors**

Downe-Wamboldt, B.L., RN, BSc, Dip PH (Dal), PhD (U Texas-Austin), RN

**Associate Professors**

Etowa, J., BScN, MN (Dal), PhD (Calgary), RN
Hughes, J.M., RN, MN (Dal), MS (Boston), PhD (McGill), RN
McFetridge, J., RN, MN (Dal), PhD (Florida), RN
Meagher-Stewart, D.M., BScN (MB), MS (McMaster), PhD (Toronto), RN
Melanson, P., BScN (Ottawa), RN, MN (Dal), RN

**Associate Professor (Research)**

Brass, L., BA (MountA), PhD (Dal)

**Assistant Professors**

Aston, M., BScN, Med (Queen's), PhD (Dal), RN
Chircop, A., BScN, MEd (Dal), RN
Doucet, S., BScN (SFU), RN (Dal), RN
Edgecomb, N., RN (SFU), RN (Dal), RN
Foster, S., RN (MIN), MN (Dal), RN
Gibert, L., RN, MBA (S. Illinois), MSN (Western), RN
Goldberg, L., BA (UCSB), MA (Uwl), PhD (Alberta), RN
Hayward, K., BScN (Dal), RN
Hedlund, H., RN (MIN), RN (Dal), RN
Kibler, C., RN, MN (Dal), MS (Queen's), RN
Latimer, M., BA (NVU), BScN, MN (Dal), PhD (McGill), RN
Macleod, M., RN (UNB), BScN (Dal), PhD (Dalhousie), RN
McLeod, D., RN, MN (Dal), PhD (Calgary), RN
Martin-Misener, R., DOCHN, BScN, MN (Dal), PhD (Calgary), NP, RN.
Many nurses and persons in other disciplines, and settings, provide valuable assistance in the education of nursing students. Names can be obtained by contacting the School of Nursing.
I. Introduction
The School of Nursing opened in 1949 and became a constituent part of the Faculty of Health Professions in 1961. Currently the School offers an undergraduate program for Basic and Post Diploma students, a Bachelor of Science (Arctic Nursing), a Master of Nursing Program and a PhD (Nursing) Program.

A. School of Nursing Regulations
1. Students are required to observe the University Regulations and Academic Regulations as described in this calendar.
2. Students are assessed in each year on their aptitude and fitness for nursing. Students who, in the judgment of the faculty, fail to attain a satisfactory standard in this assessment may be required to withdraw from the School.
3. Students are responsible for ensuring that they are registered in appropriate classes throughout the program. Incorrect registration, at any time, could cause conflicts in a student’s year-to-year progression and/or graduation.
4. Students in the Baccalaureate Program are responsible for (a) the purchase of uniforms including shoes and a watch with a sweep hand or a digital watch with seconds display, (b) cost of accommodation and travel while on clinical experiences. Additional expenses are incurred by students in the Basic Baccalaureate Program for field experience, books, first aid class, CPR class, graduation pin, equipment, and nurse registration examinations and recommended and/or required immunizations and/or testing. Each student must also purchase a name tag from the University.
5. Because of enrolment limits on class size, part-time students who wish to change to full-time status must present this request in writing to the Associate Director of Undergraduate Student Affairs by March 1.
6. Students are assigned to a faculty member from the Academic Advising Committee to help them plan their academic program and to discuss academic progress or difficulties.
7. Students are permitted to repeat a given course in the BScN program only once. A second failure in a given course will result in dismissal from the nursing program.
8. Failure in any two courses in the BScN program will result in dismissal from the nursing program.
9. Students wishing to appeal a decision based on faculty regulations or decisions should follow the School of Nursing Appeal Procedure outlined in the Nursing Student Manual.
10. Supplemental exams will not be available in clinical courses.
11. Because of the nature of the study and practice of Nursing which places Nursing students in a position of special trust, applicants will be asked to complete a screening question related to past criminal convictions which might affect the applicant’s suitability for the practice of nursing. Students accepted into the nursing program who provide false information will be disciplined by the university. It is the student’s responsibility to inform the Associate Director (Undergraduate Student Affairs) of any new criminal conviction which could affect the student’s suitability for practice.
12. Once enrolled in the Nursing Program it is the students’ continuing responsibility to inform the Associate Director Undergraduate Student Affairs of any criminal conviction or any significant personal circumstance which would adversely affect their ability to continue with their studies or which would make them ineligible for registration within CINNS upon graduation.

B. School of Nursing Appeal Procedure
An appeal is a request for alteration of a decision which is based on School or Faculty regulations (academic matters). Both students and faculty have rights and responsibilities and further, that as the University is a complex system, students may experience difficulty in determining how to express dissatisfaction. This document is provided as a guideline for students and faculty in solving dissatisfaction.

The University has established a system which allows students to appeal academic decisions made by faculty. Appeals can be heard at different levels either in the School and at Senate. Appeals are heard in the School by the Committee on Studies and at Senate level by the Senate Academic Appeals Committee.

C. Procedure for Undergraduate Appeals
Undergraduate appeals are heard by the Committee on Studies of the School of Nursing. Procedures for Undergraduate Appeal Procedures are available from the School.

II. Degree Options
A. Bachelor of Science (Nursing) for Basic Students
1. Degree Requirements
Throughout the undergraduate program students must: obtain a minimum cumulative GPA of 2.00; accumulate a minimum of 129 credit hours; successfully complete all compulsory classes, as well as the necessary number of elective classes, and, complete the degree within six years of commencing nursing classes. Credit will be given for non-nursing classes that are up to ten years old by the date the degree is completed.
2. Grade Point Average Standards (GPA)
The grade point average system is described in the Academic Regulations.
3. Grades
The following letter-grade system is used to evaluate performance. Pass in non-nursing classes: A, A-, B, B+, C+, C, C-, D, and P, except in nursing classes where students must attain a minimum of C in both theory and clinical/laboratory components. I, F, and INC are failing grades. I, II, and W are considered neutral.
4. Requirements for Promotion
Besides meeting the GPA requirements students must meet the following for promotion:
Year I to II: A student must pass all 1000-level classes in order to advance to 2000-level nursing classes.
Year II to III: A student must pass all second-year nursing classes; MLC 1100.03, and STAT 1060.03.
Year III to IV: A student must pass all 3000-level nursing classes.
5. Normal Workload
The program consists of 429 credit hours (21.5 credits). Students can register for a maximum of 15 credit hours per term.
6. Prerequisite for Class Admissions
There are a number of classes that require prerequisites (see class descriptions). Students must successfully complete the required prerequisites for each class or obtain approval from the Committee on Studies prior to registration.
7. Advanced Placement
Students with a prior degree and/or sufficient number of relevant university credits may complete the BScN program in a minimum of two or three years. To qualify, students must have a GPA of at least 3.0. NOTE: This advanced placement option is available for Basic students only. For more information contact the Undergraduate Program Secretary.

B. Bachelor of Science (Nursing) for Registered Nurses
1. Degree Requirements
Students must: obtain a minimum cumulative GPA of 2.00 throughout the entire undergraduate program; accumulate a minimum of 60 credit hours and successfully complete all compulsory classes, as well as the required number of elective classes, and complete the degree within six years of commencing nursing classes. Note: Credit will be given for non-nursing classes that are up to ten years old by the date the degree is completed.
2. Other Regulations
Students must submit proof of an active practicing nursing registration from 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 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.

A. Bachelor of Science (Nursing) for Basic Students

The Bachelor of Science in Nursing degree is a 129 credit hour program. Graduates are eligible to write examinations for membership in the College of Registered Nurses of Nova Scotia.

1. Immunization
Before commencing first year studies, students are responsible to have complete and current immunizations against diphtheria, polio, tetanus, pertussis, measles, mumps, and rubella. Access to clinical agencies will be denied if immunizations are not current and complete. A 2-step Mantoux test (for tuberculosis) is required before students will be permitted to practice in clinical agencies. Immunization against Hepatitis B is also mandatory.

2. CPR, (BCLS) & Standard First Aid Certification
Students must have CPR (Health Care Provider Level) and Standard First Aid certification before entering the clinical area. CPR (Health Care Provider Level) must be recertified annually. A cardio-pulmonary resuscitation (CPR) class and standard first aid class are the student’s responsibilities in time and cost. Access to clinical settings will be denied if certification is not current.

3. Course of Study
The Program is offered at both the Halifax and Yarmouth sites. The following is an outline of classes that are normally taken each year.

Program requirements may change with ongoing curricular revisions.

First Year
- ANAT 1010.03
- BIOC 1420.03
- PHYL 1010.06
- NURS 1003.03
- NURS 1006.03
- NURS 1060.03
- NURS 1240.03 (a five-week clinical class starting in late April or early May with annual variations)
- 9 credit hours at the 1000 level from Biology, Chemistry, Philosophy and/or Sociology.

Second Year
- MCLI 1100.03
- NURS 2000.03
- NURS 2006.03
- NURS 2008.03
- NURS 2009.03
- NURS 2080.03
- NURS 2081.03
- NURS 2090.03
- NURS 2200.03
- NURS 2201.03
- NURS 2230.03
- NURS 2280.03
- NURS 2290.03
- NURS 2291.03
- NURS 2300.06 (a six-week clinical nursing class taken in May/June or July/August)
- NURS 3000.03
- STAT 1000.03

Third Year
- NURS 3040.03
- NURS 3046.03
- NURS 3060.03
- NURS 3200.03
- NURS 3206.03
- NURS 3208.03
- NURS 3209.03
- NURS 3210.03
- NURS 3216.03 (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.

Fourth Year
- NURS 4000.03
- NURS 4006.03
- NURS 4008.03
- NURS 4100.03
- NURS 4200.03
- NURS 4201.03
- NURS 4202.03
- NURS 4203.03
- NURS 4205.03

One Nursing elective (3 credit hours)

One Nursing elective (3 credit hours)

NURS 4240.03 (10 week internships beginning in February)

The School of Nursing offers the Post-RN Program through distance delivery. For details of the Master of Nursing, the joint Master of Nursing/Master of Health Services Administration Programs and the PhD (Nursing) program, please consult the Faculty of Graduate Studies calendar.

III. Bachelor of Science (Nursing) Degree Program

In response to a health care system based on principles of primary health care, the Bachelor of Science (Nursing) Program prepares nurses to work in partnerships with individuals, families, groups and communities to promote, maintain and strengthen health. Graduates are prepared to respond to a range of health and illness needs in a variety of settings and organizational health care infrastructures. The curriculum is designed to enable graduates to meet the standards of nursing practice in Canada and be eligible for registration in Nova Scotia.

In addition to the Dalhousie Campus, students may complete a BScN degree on site in Yarmouth. Students interested in this option should contact the School for further information.

The School of Nursing offers the Post-RN Program through distance delivery.

Program Objectives
The Bachelor of Science (Nursing) graduate will:

1. Demonstrate application of nursing science through critical inquiry, commitment to life-long learning and evidence-based practice.
2. Practice competently by applying the principles of primary health care with diverse clients in a variety of health care contexts and by responding to emerging trends, technology and concepts in health.
3. Communicate, collaborate and partner with clients, and other members of the health care team to increase capacity and enhance health of populations.
4. Demonstrate ethical, legal and professional accountability in the practice of nursing and remain committed to professional competence through life-long learning.
5. Influence nursing and health care through a social and political analysis of current health care issues and application of leadership skills.

A. Bachelor of Science (Nursing) for Basic Students

The Bachelor of Science in Nursing degree is a 129 credit hour program. A clinical major option for Registered Nurses in oncology nursing may be available as a component of the BScN (RN) degree program. Classes selected for this option have been adapted to meet the learning needs of practising 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) program to complete the requirements for the BScN degree.

C. Bachelor of Science (Nursing) (Arctic Nursing)

The School of Nursing, in collaboration with Nunavut Arctic College in Iqaluit, offers a BScN program to prepare Inuit nurses for practice in the remote northern communities of Nunavut.

Information about this program is available from the School of Nursing.

D. Graduate Programs

For details of the Master of Nursing, the joint Master of Nursing/Master of Health Services Administration Programs and the PhD (Nursing) program, please consult the Faculty of Graduate Studies calendar.

The CRNNS recognizes university credit hours as transferable practice requirements for the BScN degree.
B. Bachelor of Science (Nursing) for Registered Nurses

The Bachelor of Science (Nursing) for registered nurses consists of 60 credit hours of study. Students must complete the program at either the Halifax or Yarmouth site through full- or part-time study. The program can be completed in two calendar years of full-time study provided Faculty resources allow required nursing classes to be offered during the summer session. Otherwise, students without transfer credits can complete the program in two full-time and one part-time academic year (Sept. – April). Part-time students who wish to change their status to full-time must write their request to the Associate Director of Undergraduate Student Affairs by March 1. A clinical major option in oncology nursing may be available as a class component of the BScN (RN) degree program.

The School of Nursing has made a commitment to offer accessible nursing education to registered nurses allowing them to obtain their education in the communities where they live and work. Check with the Distance Advisor for Post RN students regarding class offerings.

Course of Study

With the help of an academic advisor, an individual course of study is determined. Course of study may be affected by the actual classes offered in an academic year. Certain classes may have prerequisites as noted in the class descriptions. Part-time students are encouraged to complete most of the required non-nursing classes before starting nursing classes. The course of study varies considerably when the student applies transfer credits toward the degree. Transfer credit regulations are outlined under the Academic Regulations section of the University Calendar.

Required Classes

- STAT 1060.03
- NURS 2240.03
- NURS 2250.03
- NURS 4360.03: Management - The Process in Health Care Agencies.
- NURS 4351.03: Specialty Practice of Oncology Nursing.
- NURS 4330.03: Self-Directed Learning.
- NURS 3310.03: Health Informatics.
- NURS 2360.03: The Phenomen of Pain: Assessment and Management.
- Statistics
- Microbiology, Philosophy, Physiology, Psychology and Sociology

Sixteen credit hours must be chosen from at least two of the following non-nursing subjects areas: Anatomy, Biochemistry, Biology, Chemistry, Microbiology, Philosophy, Physiology, Psychology and Sociology.

Optional classes (9 credit hours must be selected)

- NURS 2980.03
- NURS 3240.03
- NURS 3270.03
- NURS 4400.03

Eighteen credit hours must be chosen from at least two of the following non-nursing subjects areas: Anatomy, Biochemistry, Biology, Chemistry, Microbiology, Philosophy, Physiology, Psychology and Sociology.

C. Nursing Elective Classes

Basic students are required to complete 6 credit hours of nursing electives. Post RN students must complete 6 credit hours of nursing electives. NOT ALL NURSING ELECTIVES ARE OFFERED EVERY YEAR. Please consult the School to ascertain the current offerings. When resources allow, the following are offered:

- NURS 2200.03: Fundamentals of Oncology Nursing
- NURS 2400.03: The Phenomen of Pain: Assessment and Management.
- NURS 3310.03: Health Informatics.
- NURS 3520.03: Acute Care Specialty Nursing.
- NURS 4901.03: Breast Feeding for Family and Community Health.
- NURS 4902.03: Self-Directed Learning.
- NURS 4501.03: Specialty Practice of Oncology Nursing.
- NURS 4600.03: Management - The Process in Health Care Agencies.
- NURS 4571.03: Addictions Nursing Practice.
- NURS 4300.03: Intermediate Pathophysiology and Nursing.

IV. Class Descriptions

See class description in the Anatomy/Neurobiology section of calendar.

BIOL 1420.03: Introductory Biochemistry for Nursing Students.

See class description in the Biochemistry/Molecular Biology section of calendar.

MICI 1100.03 Health Science Microbiology.

See class description in the Microbiology & Immunology section of calendar.

NURS 1000.03: Introduction to the Foundations of Nursing.

Major concepts of health and professional nursing are introduced. Students begin to develop an awareness of the practice of nursing based on the determinants of health, primary health care and major nursing concepts. Emphasis is given to the helping role of nursing. A variety of experiences facilitate learning and students are introduced to the practice of nursing in clinical settings.

FORMAT: Lecture 2 hours, lab 1 hour

NURS 1030.03: Human Development and Health I: Adults and Healthy Aging.

Guided by the principles of Primary Health Care and building on the concepts introduced earlier, students examine the developmental processes experienced by adults. Students focus on the psychosocial, cultural, cognitive, and spiritual health of adults and on nursing practices that promote health in adults at specific developmental stages. Issues of safety and nutrition are specifically addressed. Strategies to promote healthy aging at the individual, family, and community level are explored.

FORMAT: Lecture 2 hours/week; three 2-hour seminars

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

NURS 1240.03: Introduction to Nursing Practice.

This course is designed to introduce health care settings where they interact with older adults at various levels of health. As a basis for these experiences the foundations of nursing addressed in NURS 1000.03, NURS 1030.03, and NURS 1060.03 are further developed. Learning experiences are designed to promote beginning knowledge and skills for the practice of nursing with an emphasis on helping relationships.

FORMAT: Lecture, lab and clinical 40 hours/week for 5 weeks

NURS 2000.03: Teaching and Learning and the Communication Process.

Teaching and learning transactions among nurses and individuals, families, groups and communities are integral to health and well-being. The process of communication is central to the teaching-learning process.
NURS 3030.03: Nursing Research.

This course requires students to engage in a critical inquiry about how research processes influence the way knowledge is constructed. Students explore dimensions of knowing from multiple perspectives of acquired knowledge, experiential knowledge of nursing practice, conceptual meanings, collaborative partnerships and values and beliefs about the contributions of nursing knowledge as transformative in the health care system. Sharing new knowledge resulting from the synthesis and transfer of these components, students will be challenged to critically analyse the social and cultural determinants of health. This course enables students to continue to develop knowledge and skills to influence the social determinants of health in the health care system. 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 the nurse-client interaction. 

NURS 2360.03: The Phenomenon of Pain: Assessment and Management.

This course provides an opportunity for students to understand the process of nurse-client interaction. 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 the nurse-client interaction. 

NURS 2240.03: Knowledge and Process in Nursing Practice II.

Students develop knowledge and skills in the nursing process skills learned in NURS 2220.06. This course requires students to engage in a critical inquiry about how research processes influence the way knowledge is constructed. Students will be challenged to critically analyse the social and cultural determinants of health. This course enables students to continue to develop knowledge and skills to influence the social determinants of health in the health care system. 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 the nurse-client interaction. 

NURS 2260.03: Theoretical Perspectives for Contemporary Nursing Practice.

The purpose of this course is to provide students the opportunity to use theoretical perspectives in nursing to discover knowledge related to the process of nurse-client interaction. Students will examine the development and progress of relevant nursing theories and explore the relationships between nursing, 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 the nurse-client interaction. 

NURS 2350.03: Fundamentals of Oncology Nursing.

This nursing elective provides an introduction to oncology nursing. Beginning with a review of the physiology of the cancer cycle, the course considers cancer control related to: prevention, screening, early detection, diagnosis, treatment, supportive care/rehabilitation, palliative care. The focus of the course is to provide students the opportunity to study the cancer care experience from the perspective of the patients and their caregivers.
ways of communicating and translating research findings for application to practice.

**FORMAT:** Lecture 3 hours
**PREREQUISITE:** NURS 2220.06 and STAT 1060.03 for Basic students; STAT 1060.03 for Post-Diploma students

**NURS 3040.03: Human Development and Health II: Children and Youth.**
This course examines concepts and theories of healthy growth and development across the life-span from conception to adolescence. Content is organized around health, nutrition, and the safety of individuals at specific stages in their physical, cognitive, and psychosocial development. Concepts of culture/ethnicity, environment, and life situations are introduced in terms of their relationship to optimal health.

**FORMAT:** Lecture 3 hours
**PREREQUISITE:** NURS 2410.03

**NURS 3260.03: Nursing Practice: Mothers, Infants and Childbearing Families.**
Students focus on the integration of the domains of nursing practice in caring for mothers and newborn infants within the context of the childbearing family. The nature of the childbearing experience is critically analyzed from the perspective of the determinants of health as well as the theoretical bases of maternal-infant attachment and nurse caring. Clinical experience with clients during pregnancy, birthing and post birth in hospital and home settings enable students to focus on health promotion within the context of family-centered care.

**FORMAT:** Lecture 2 hours, clinical 6 hours
**PREREQUISITE:** NURS 2220.06

**NURS 3270.03: Nursing Practice: Caring for Families.**
Guided by the principles of primary health care, students focus on families and family health with an emphasis on a thorough understanding of family assessment and developing family therapeutic relationship skills. Students examine family health and health issues from a nursing, cultural, sociological, psychological and other theoretical perspectives as they relate to nursing practice that focuses on working with families in all settings. Upon completion of the course, students will have developed competencies required to use a systems approach when working with families. Laboratory and clinical experiences that include visiting families in their homes provide the students with opportunities to integrate, discuss and practice family nursing.

**FORMAT:** Lecture 2 hours, clinical 6 hours
**PREREQUISITE:** NURS 2220.06

**NURS 3280.03: Care of Adults II.**
This course focuses on family-centered nursing practice with adults who are managing complex health problems. Emphasis is placed on the theoretically based nursing strategies incorporating principles of primary health care. Students are guided to incorporate theoretical bases into their clinical practice.

**FORMAT:** Lecture 2 hours, clinical 6 hours
**PREREQUISITE:** NURS 2220.06

**NURS 3290.06: Nursing Practice III.** (Intensive)
This opportunity is to apply the principles of primary health care through reflective practice, the integration and application of theories and family nursing. Students enhance their ability to work with clients through a continuum of care approach. Students must be prepared to travel beyond the Halifax metropolitan area for part or all of this experience.

**FORMAT:** Clinical practice 40 hours/week for 6 weeks
**PREREQUISITE:** NURS 3260.03, 3270.01, and 3280.03

**NURS 3310.03: Health Informatics.**
This nursing elective provides an overview of information technology and information systems as they relate to practice, research, and education. Students are introduced to information technology and provided with opportunities to use critical thinking in analyzing the implications of information systems.

**FORMAT:** Distance

**PREREQUISITE:** NURS Basics - third-year students; none for Post-RNs; open to students from other departments

**NURS 3320.03: Acute Care Specialty Nursing.**
This nursing elective is a clinical course that incorporates theory, laboratory practice and direct client care opportunities in clinically relevant nursing units (intermediate care and/or emergency nursing settings). Teaching methods include, but are not limited to, case studies, demonstration, and lab practice. Client care is under the direct supervision of the assigned registered nurse with the faculty member providing clinical teaching and evaluation. Six clinical days in the second half of the twelve weeks provide an opportunity to apply the theoretical content previously taught.

**FORMAT:** Lecture/Lab/Clinical
**PREREQUISITE:** NURS 3280.03

**NURS 3350.03: Family Centered Supportive Care for Those Who are Living with Cancer.**
This course focuses on families connected to an oncology experience. A family assessment model frames the role of the nurse in family centered supportive care. Supportive care is the provision of the necessary services as defined by those living with or affected by cancer to meet their physical, social, emotional, nutritional, informational, psychological, spiritual and practical needs throughout the spectrum of the cancer experience. These needs may occur during the diagnostic, treatment, or follow-up phases and encompass issues of survivorship, recurrence, palliative care and bereavement.

**NOTE:** This course fulfills the requirement for NURS 3270.

**FORMAT:** Lecture 2 hours, clinical 6 hours
**PREREQUISITE:** NURS 2220.06 for Basic students; NURS 3290.06 for Post-Diploma students

**NURS 4030.03: Collaborative Leadership for Nursing Practice.**
Based on the view that leadership is integral to the practice of every nurse, the focus of the class is on leadership theories and behaviors essential to nursing practice. Critical thinking, decision-making processes and other leadership behaviors are fostered through experiential and simulated learning methods.

**FORMAT:** Lecture 2 hours
**PREREQUISITE:** NURS 3280.06 for Basic students; Second and third year Nursing classes are strongly recommended for Post-Diploma students

**NURS 4050.03: Advanced Communication and Counselling.**
This course provides theory related to the counselling role of the nurse and addresses the dynamics of therapeutic communication in complex collaborative situations. Counselling occurs within the nurse-patient relationship viewed as a collaborative partnership which requires the active participation, involvement, and agreement of all partners. The course is designed to assist students to facilitate and encourage individuals, families or client groups to effectively deal with change related to complex health situations. Application of course content in simulated nurse-client interviews in home, clinic or institutional settings enables the student to develop interactive skills in dealing with complex, collaborative health situations such as those requiring immediacy, confrontation, advocacy, conflict resolution and crisis intervention.

**FORMAT:** Lecture 2 hours, lab 2 hours
**PREREQUISITE:** NURS 3280.06 for Basic Students

**NURS 4060.03: Palliative Care Nursing.**
This course provides an overview of the significant issues facing individuals and their families related to life threatening illness, dying, and the promotion of quality of life. An exploration of one's own attitudes, beliefs, and values regarding death and dying provide a foundation for examination and discussion of course content. An analysis of the principles and standards of palliative care, principles of primary health care, methods of assessment, and means of pain and symptom management guide delivery of care. Emphasis on communication, collaboration within teams, ethical issues, spiritual and cultural influences, and grief and coping provide opportunities for reflection and discussion.

Online resources offer opportunities for students to enhance their knowledge and understanding of course content.
FORMAT: Lecture 2 hours
PREREQUISITE: NURS 3290.06 for Basic Students; NURS 2250.03 for Post-RNs
CROSS-LISTING: NURS 5800.03

NURS 4091.03: Breast Feeding for Family and Community Health.
This nursing elective is designed to promote student understanding of the process of human lactation. Developmental, sociocultural, physiological, community development is a variety of strategies used to describe and discuss the dynamics and effects of breast feeding on personal, family and community health. Interprofessional issues and strategies for the protection, promotion and support of breast feeding are explored in the context of primary health care and the Canadian health care system. FORMAT: Campus/Distance offering; 3 hours
PREREQUISITE: Health professions students at least 1 year of study at professional school/collage or by faculty permission

NURS 4210.03: Nursing Practice: Children and Families.
Students focus on nursing practice in the care of children and families. The determinants of child and family health care are examined, as well as the role of nursing practice in health promotion and illness prevention for children. Clinical and family issues associated with childhood illness and hospitalization draw on knowledge of child and family development as well as the art and science of nursing knowledge. Students work in clinical settings where care is provided to children and families experiencing illness.
FORMAT: Lecture 2 hours, clinical 6 hours
PREREQUISITE: NURS 3200.06

NURS 4220.03: Mental Health Nursing Practice.
Integrating a holistic perspective within a primary health care philosophy, this class focuses on the promotion of individual and community mental well-being. Through reflective practice the use of nursing theories and effective communication, students assist clients through the challenges of mental health problems, crisis, and mental disorders. Students critique the social responsibility of the nursing profession through, not only direct care, but also client advocacy.
FORMAT: Lecture 2 hours, clinical 6 hours
PREREQUISITE: NURS 3200.06

NURS 4240.06: Nursing Practice IV Internship.
Nursing Home. A ten (10) week internship prior to graduation, provides students with the opportunity to consolidate and apply knowledge and processes within the framework 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 BSN 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 3200.06; for Basic Students; Post-Diploma students NURS 2250.03, WR 30.03, and 32T10.03

NURS 4260.03: Community Development and Advocacy.
This course builds on the content of NURS 4250.03. The focus is on critical thinking, interventions, and the evaluation of community health nursing strategies with client groups and communities. Community development is used as a strategy to put primary health care principles into nursing practice. Students are encouraged to work with communities using an empowerment and advocacy approach. Current local, national and international health issues are explored. Clinical experience in a variety of community settings allows students to practice nursing in a reflective manner to improve the health of the community as a whole.
FORMAT: Lecture 2 hours/week, clinical 6 hours/week
PREREQUISITE: NURS 4250.03

NURS 4330.03: Self-Directed Learning.
Students may carry out independent studies or projects related to the theory or practice of nursing, under the direction of a faculty facilitator. Students are encouraged to systematically identify, plan, execute and evaluate a learning project that is relevant to nursing practice.
FORMAT: Flexible according to study/project
CROSS-LISTING: NURS 5900.03

NURS 4351.03: Specialty Practice of Oncology Nursing.
This nursing elective challenges learners to consider the comprehensive care of a range of health and illness needs of individuals at risk or living with cancer within the existing infrastructure for cancer care. While the focus of this course is on the context of adults with cancer, the course reflects a critical analysis of the existing theoretical and evidence-based perspectives influencing health related behaviours of health promotion, illness prevention and decision-making that span from individual to organizational levels.
PREREQUISITE: NURS 2590.03 and 3550.03

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 deliver 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 examined and discussed while examining their implications for practice. Current management problems in nursing are explored through this introductory class in management.
FORMAT: Lecture/seminar
PREREQUISITE: NURS 4360.03, 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 poverty; self-image and sexuality; health and the aging woman; and older women and poverty.
FORMAT: Lecture/discussion/seminar 2 hours
PREREQUISITE: SOCA 1000.06, 1001.06, 1200.06, or two classes in Gender and Gender and Women's Studies
CROSS-LISTING: SOCA 3245.03, 3250.03, 3290.03, CANT 3810.03, NURS 5800.03

NURS 4371.03: Addictions Nursing Practice.
This nursing elective introduces major concepts associated with addiction nursing practice. It provides a foundation for students pursuing careers in addiction-related care. Within a primary health care framework, 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 2250.03, NURS 2220.06, NURS 2250.03 (for Post-RNs)
NURS 4390.03: Intermediate Pathophysiology and Nursing.
This nursing elective is intended to provide a more in-depth examination of human physiological function in disease than the introductory Pathophysiology and Nursing (N2000.03). 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.
PREREQUISITE: Basic - PHYL 1010.06, ANAT 1010.03, MCT 1100.03, NURS 2050.03, and NURS 2090.03

NURS 4800.03: Interdisciplinary Class in Human Nutrition.
The interdisciplinary nursing elective is an interdisciplinary study of the basic principles of nutrition needs throughout the life cycle. Physiological, psychological, socio-economic, physical, educational and cultural determinants are explored to explain why the nutritional status of Canadians can vary and how this variation affects the development of chronic disease. Special emphasis is given to community nutrition in the Atlantic Region.
FORMAT: Lecture 3 hours/week
PREREQUISITE: BICS 1000.06 or by faculty permission
CROSS-LISTING: PHAR 4900.00, PHYH 3090.00, HPRO 2250.00, NURS 5990.03

PHYL 1010XY.06: Human Physiology.
See class description in the Physiology section of calendar.

STAT 1060.03: Introductory Statistics for Science and Health Sciences.
See class description in the Statistics section of calendar.
NOTE: A "strong recommendation" to complete one class before another means that some of the content of the new class draws directly on knowledge, skills and experience gained in a previous class. Students should realize that they may have to do some supplementary work in order to meet the expectations of the new class.

Occupational Therapy

School of Occupational Therapy

Location: 3020A Atlantic School of Occupational Therapy
Format Building, Room 215
5869 University Avenue
Halifax, NS B3H 3J5

Telephone: (902) 494-8804
Fax: (902) 494-1229
Email: occupational.therapy@dal.ca
Website: www.occupationaltherapy.dal.ca

Websites: www.dal.ca/occscience (Canadian Society of Occupational Scientists)

Dean
Webster, William G., PhD

Director
Townsend, E., DipP & OT (Toronto), BSc (OT) (Toronto) MAdEd (St.FX), PhD (Dal)

MSc(Occupational Therapy) Graduate Coordinator
Morriss, B., BSc (Physiology), MSc OT (Dal), PhD (Colorado State)

MSc(Occupational Therapy - Post-Professional) Graduate Coordinator
Ve noises, J., BSc(OT) (Toronto), MSc(OT) (Western), PhD (Queen’s)

Professor Emeritus
Clyburn, B., BScA(O) (Toronto), BSc (Queen’s), MSc (Colorado State), LLd (Dal)

Professor
Townsend, E., DipP & OT (Toronto), BSc (OT) (Toronto) MAdEd (St.FX), PhD (Dal)

Associate Professors
Boag, B., BA, MA (Dal), PhD (UBC)
Carruthers, A., DipP(OT) (McGill), MScOT (McGill), MScOT (McGill), PhD (Toronto)
Dobie, N., BSc (OT) (Western), MB (Boston), PhD (Dal)

Assistant Professors
Bankes, S., BSc, Cert.Occ.Ther. (Columbia), MA (Dal)
Brown, J., BSc (OT) (Toronto), MSc OT (Dalhousie)
Grew, C., BSc (OT) (Western), MSc (Queens), PhD Candidate (Queens)
MacKenzie, D.E., BSc Physical Education (Saskatchewan), BScOT (Alberta), MA (Ed) (MNU)
Merritt, B., BSc (Psychology), MSc OT (Queen’s)
Sanford, J., BSc (OT) (Dal), MSc (Queen’s), PhD (Queen’s)
Studdal, R., BA (Alberta), BScOT, MSc (Queen’s), PhD (Toronto)
Ve noises, J., BSc(OT) (Toronto), MScOT (Western), PhD (Queen’s)
Warner, G., PhD (Physical Therapy) (Case West Reserve University)

School Fieldwork Education Coordinator
Bankes, S., BSc, Cert.Occ.Ther. (Columbia), MA (Dal)

International Fieldwork Education Coordinator
Sanford, J., BSc (OT) (Dal), MBA (St Mary’s)

Provincial Fieldwork Education Coordinators
New Brunswick: Roussel, M., DipFH (S-L Maillet), BSc, MA (Montreal)
Newfoundland: Head, B., BSc (OT) (Alberta), MSc OT(Post-Professional) (Dal)
Nova Scotia: Saunders, J., BSc (OT) (Dal), MBA (St Mary’s)
Prince Edward Island: Costello, H., Dip (OT) (Man)
Faculty of Health Professions

for quality life with meaningful occupations in supportive environments. Health is viewed broadly as having the ability, opportunity and resources, contributing to the social and economic productivity of our communities. Ourselves in enjoying life, looking after ourselves and others, and Occupation is viewed broadly to include everything we do to "occupy" opportunities for meaningful participation in daily life occupations. Groups, and organizations, particularly where inequities or injustice limit the occupational performance, health and well-being of individuals, Occupation is varied and challenging. People's "occupational performance" may be limited by illness, injury, workplace. Using a "partnership" approach, occupational therapists can work with the clients and communities to overcome obstacles that limit their ability to do things they need and want to do. Obstacles addressed by occupational therapists may include illness, injury, physical or mental disability, social disadvantage, cultural, and physical barriers in the home, community and workplace. People's "occupational performance" may be limited by illness, injury, developmental delay, aging, social conditions and/or physical barriers. Using a "partnership" approach, occupational therapists can work with individuals, groups, communities, organizations, businesses or governments. The focus can be either on enabling individual change, or enabling change in physical and social environments, policies or legislation to enhance occupational performance. Practice may enable change in skills, attitudes, routines, design of buildings, use of assistive technology, policies, etc. The role of an occupational therapist is varied and challenging. People's "occupational performance" may be limited by illness, injury, workplace. Using a "partnership" approach, occupational therapists can work with the clients and communities to overcome obstacles that limit their ability to do things they need and want to do. Obstacles addressed by occupational therapists may include illness, injury, physical or mental disability, social disadvantage, cultural, and physical barriers in the home, community and workplace. People's "occupational performance" may be limited by illness, injury, developmental delay, aging, social conditions and/or physical barriers. Using a "partnership" approach, occupational therapists can work with individuals, groups, communities, organizations, businesses or governments. The focus can be either on enabling individual change, or enabling change in physical and social environments, policies or legislation to enhance occupational performance. Practice may enable change in skills, attitudes, routines, design of buildings, use of assistive technology, policies, etc. The role of an occupational therapist is varied and challenging. People's "occupational performance" may be limited by illness, injury, workplace. Using a "partnership" approach, occupational therapists can work with the clients and communities to overcome obstacles that limit their ability to do things they need and want to do. Obstacles addressed by occupational therapists may include illness, injury, physical or mental disability, social disadvantage, cultural, and physical barriers in the home, community and workplace. People's "occupational performance" may be limited by illness, injury, developmental delay, aging, social conditions and/or physical barriers. Using a "partnership" approach, occupational therapists can work with individuals, groups, communities, organizations, businesses or governments. The focus can be either on enabling individual change, or enabling change in physical and social environments, policies or legislation to enhance occupational performance. Practice may enable change in skills, attitudes, routines, design of buildings, use of assistive technology, policies, etc. The role of an occupational therapist is varied and challenging. People's "occupational performance" may be limited by illness, injury, workplace. Using a "partnership" approach, occupational therapists can work with the clients and communities to overcome obstacles that limit their ability to do things they need and want to do. Obstacles addressed by occupational therapists may include illness, injury, physical or mental disability, social disadvantage, cultural, and physical barriers in the home, community and workplace. People's "occupational performance" may be limited by illness, injury, developmental delay, aging, social conditions and/or physical barriers. Using a "partnership" approach, occupational therapists can work with individuals, groups, communities, organizations, businesses or governments. The focus can be either on enabling individual change, or enabling change in physical and social environments, policies or legislation to enhance occupational performance. Practice may enable change in skills, attitudes, routines, design of buildings, use of assistive technology, policies, etc. The role of an occupational therapist is varied and challenging. People's "occupational performance" may be limited by illness, injury, workplace. Using a "partnership" approach, occupational therapists can work with the clients and communities to overcome obstacles that limit their ability to do things they need and want to do. Obstacles addressed by occupational therapists may include illness, injury, physical or mental disability, social disadvantage, cultural, and physical barriers in the home, community and workplace. People's "occupational performance" may be limited by illness, injury, developmental delay, aging, social conditions and/or physical barriers. Using a "partnership" approach, occupational therapists can work with individuals, groups, communities, organizations, businesses or governments. The focus can be either on enabling individual change, or enabling change in physical and social environments, policies or legislation to enhance occupational performance. Practice may enable change in skills, attitudes, routines, design of buildings, use of assistive technology, policies, etc. The role of an occupational therapist is varied and challenging. People's "occupational performance" may be limited by illness, injury, workplace. Using a "partnership" approach, occupational therapists can work with the clients and communities to overcome obstacles that limit their ability to do things they need and want to do. Obstacles addressed by occupational therapists may include illness, injury, physical or mental disability, social disadvantage, cultural, and physical barriers in the home, community and workplace. People's "occupational performance" may be limited by illness, injury, developmental delay, aging, social conditions and/or physical barriers. Using a "partnership" approach, occupational therapists can work with individuals, groups, communities, organizations, businesses or governments. The focus can be either on enabling individual change, or enabling change in physical and social environments, policies or legislation to enhance occupational performance. Practice may enable change in skills, attitudes, routines, design of buildings, use of assistive technology, policies, etc. The role of an occupational therapist is varied and challenging. People's "occupational performance" may be limited by illness, injury, workplace. Using a "partnership" approach, occupational therapists can work with the clients and communities to overcome obstacles that limit their ability to do things they need and want to do. Obstacles addressed by occupational therapists may include illness, injury, physical or mental disability, social disadvantage, cultural, and physical barriers in the home, community and workplace. People's "occupational performance" may be limited by illness, injury, developmental delay, aging, social conditions and/or physical barriers. Using a "partnership" approach, occupational therapists can work with individuals, groups, communities, organizations, businesses or governments. The focus can be either on enabling individual change, or enabling change in physical and social environments, policies or legislation to enhance occupational performance. Practice may enable change in skills, attitudes, routines, design of buildings, use of assistive technology, policies, etc. The role of an occupational therapist is varied and challenging. People's "occupational performance" may be limited by illness, injury, workplace. Using a "partnership" approach, occupational therapists can work with the clients and communities to overcome obstacles that limit their ability to do things they need and want to do. Obstacles addressed by occupational therapists may include illness, injury, physical or mental disability, social disadvantage, cultural, and physical barriers in the home, community and workplace. People's "occupational performance" may be limited by illness, injury, developmental delay, aging, social conditions and/or physical barriers. Using a "partnership" approach, occupational therapists can work with individuals, groups, communities, organizations, businesses or governments. The focus can be either on enabling individual change, or enabling change in physical and social environments, policies or legislation to enhance occupational performance. Practice may enable change in skills, attitudes, routines, design of buildings, use of assistive technology, policies, etc. The role of an occupational therapist is varied and challenging. People's "occupational performance" may be limited by illness, injury, workplace. Using a "partnership" approach, occupational therapists can work with the clients and communities to overcome obstacles that limit their ability to do things they need and want to do. Obstacles addressed by occupational therapists may include illness, injury, physical or mental disability, social disadvantage, cultural, and physical barriers in the home, community and workplace. People's "occupational performance" may be limited by illness, injury, developmental delay, aging, social conditions and/or physical barriers. Using a "partnership" approach, occupational therapists can work with individuals, groups, communities, organizations, businesses or governments. The focus can be either on enabling individual change, or enabling change in physical and social environments, policies or legislation to enhance occupational performance. Practice may enable change in skills, attitudes, routines, design of buildings, use of assistive technology, policies, etc. The role of an occupational therapist is varied and challenging. People's "occupational performance" may be limited by illness, injury, workplace. Using a "partnership" approach, occupational therapists can work with the clients and communities to overcome obstacles that limit their ability to do things they need and want to do. Obstacles addressed by occupational therapists may include illness, injury, physical or mental disability, social disadvantage, cultural, and physical barriers in the home, community and workplace. People's "occupational performance" may be limited by illness, injury, developmental delay, aging, social conditions and/or physical barriers. Using a "partnership" approach, occupational therapists can work with individuals, groups, communities, organizations, businesses or governments. The focus can be either on enabling individual change, or enabling change in physical and social environments, policies or legislation to enhance occupational performance. Practice may enable change in skills, attitudes, routines, design of buildings, use of assistive technology, policies, etc. The role of an occupational therapist is varied and challenging. People's "occupational performance" may be limited by illness, injury, workplace. Using a "partnership" approach, occupational therapists can work with the clients and communities to overcome obstacles that limit their ability to do things they need and want to do. Obstacles addressed by occupational therapists may include illness, injury, physical or mental disability, social disadvantage, cultural, and physical barriers in the home, community and workplace. People's "occupational performance" may be limited by illness, injury, developmental delay, aging, social conditions and/or physical barriers. Using a "partnership" approach, occupational therapists can work with individuals, groups, communities, organizations, businesses or governments. The focus can be either on enabling individual change, or enabling change in physical and social environments, policies or legislation to enhance occupational performance. Practice may enable change in skills, attitudes, routines, design of buildings, use of assistive technology, policies, etc. The role of an occupational therapist is varied and challenging. People's "occupational performance" may be limited by illness, injury, workplace. Using a "partnership" approach, occupational therapists can work with the clients and communities to overcome obstacles that limit their ability to do things they need and want to do. Obstacles addressed by occupational therapists may include illness, injury, physical or mental disability, social disadvantage, cultural, and physical barriers in the home, community and workplace. People's "occupational performance" may be limited by illness, injury, developmental delay, aging, social conditions and/or physical barriers. Using a "partnership" approach, occupational therapists can work with individuals, groups, communities, organizations, businesses or governments. The focus can be either on enabling individual change, or
OCCU 2207.03: Occupational Development Across the Life Span.
Theories and processes that explain the complexity and dynamics of occupational development across the lifespan are introduced. The course explores typical patterns of physical, cognitive, and psychosocial development and their occupational implications, as well as contexts for occupational development including roles and environments.
PREREQUISITE: None

OCCU 2209.03: Enabling Principles and Processes.
Students will develop introductory knowledge and skills in ‘enabling’ with individuals, groups, agencies, and organizations. Upon successful completion of this course, students will be able to identify and discuss the principles and processes of enabling and client-centred practice in occupational therapy; describe the educational foundations of enabling; describe the social and psychological foundations of enabling; discuss professional dominance, privilege, and power dynamics with respect to enabling; identify and discuss the opportunities or possibilities and challenges for enabling; and educate others in enabling.
PREREQUISITE: None

OCCU 3324.03: Research II, Designs for Occupational Science and Occupational Therapy.
This course is an introductory overview of the theories and practice of research in occupational therapy, and more broadly in the health professions. Emphasis is on understanding the components of basic methodologies in experimental/quantitative and naturalistic/qualitative research. The primary focus is on research design, rather than data analysis.
PREREQUISITE: Instructor permission

OCCU 4401.03: Research III, Evidence-Based Practice.
This course builds on OCCU 2203.03, Research I: Critical appraisal of Statistics in Occupational Therapy Research and OCCU 3324.03, Research II: Designs for Occupational Science and Occupational Therapy Research by exposing students to the principles and processes of critical appraisal and their application to evidence-based occupational therapy. A basic level understanding of statistics; qualitative and quantitative research design; reliability; validity and utility of measures; and common occupational therapy interventions, is an essential prerequisite for this course. Students will complete a major assignment in pairs, or on their own, examining the evidence pertaining to a specific occupational therapy intervention of their own choice.
PREREQUISITE: Instructor permission

OCCU 4402.03: Program Design and Evaluation for Enabling Occupation.
This course enables students to critically assess, plan and design an evaluation for occupational therapy programs in a variety of settings. Students will be provided with the basic knowledge and skills of strategic planning; program development; resource management; and program evaluation. As part of this course, students will complete a novice consulting project. This project will provide students with the opportunity to explore the provision of occupational therapy in a non-traditional setting.
PREREQUISITE: Instructor permission

OCCU 4420.00: Fieldwork III.
This eight week fieldwork placement introduces students to occupational therapy practice outside the Atlantic region. There are a limited number of opportunities for International options outside Canada and expanded fieldwork with an off-site occupational therapist preceptor within Atlantic Canada. Students develop competence and increased independence in integrating theoretical knowledge and skills through the full process of Occupational Therapy practice. Under supervision, students assume responsibility for a case load of approximately 40-45% of that of an entry level therapist. All expenses are the responsibility of the student including a placement fee, travel, accommodations, etc.
PREREQUISITE: Instructor permission

OCCU 4422.00: Fieldwork Level III (Continued).
During this six week fieldwork experience students focus on refining professional competencies and seeking new challenges with minimum guidance from a preceptor. Students are expected to develop the capacity to carry 75% or more of the responsibilities of an entry-level occupational therapist by the completion of this fieldwork education placement.
PREREQUISITE: Instructor permission
Coordinator, Community Experience Program
Harris, N., B(Pharm) (Dal)

Joint Appointment
Foy, E.A., Professional Information Officer, College of Pharmacy, Pharmacy Subject Specialist and Information Officer, W.K. Kellogg Health Sciences Library.

Adjunct Appointments

Annesi, Thompson, D., BSc (Biology) (LPEI), BSc (Pharm) (Dal), PharmD (U of T)
Broadfield, L., BSc (Pharm) (Memorial), MSc (Health Care) (McMaster)
Graham, S., BSc (Math) (U Manitoba), BSc (Pharm) (Dal), PharmD (U of Florida)
Graves, Kent, BSc (Hons) (Guelph), MSc (U of Saskatchewan), PhD (Dal)
Kent, A., BSc (Pharm) (Dal), PharmD (Idaho State)
Lammi, Heather, BSc (Pharm), MSc (CH(E)D)]
MacDonald, T., BSc (Biology), BSc (Honors) (Marine Biology), BSc (Pharm) (Memorial), PharmD (Florida)
Ryan, Jennifer, BSc (Hons) (Dal), BSc (Pharm) (Dal), PharmD (Florida)
West Broun, D., BSc (Pharm) (Dal), PharmD (Duquesne University)

PEP Associates
Throughout the Maritime provinces pharmacist preceptors in community and hospital pharmacies participate in structured practice experience programs (PEP). The College of Pharmacy would like to acknowledge the valuable and essential contribution that preceptors make to the education process. Sincere thanks and appreciation is extended to all preceptors for the time and energy they devote to students.

The PEP is administered by the College with the support of the provincial pharmacy regulatory authorities in the Maritimes. Second, third, and fourth year students demonstrate their knowledge and professional competency in practice rotations in community and hospital pharmacy sites.

I. History

Formal pharmacy education in the Maritime provinces began in 1908, with evening classes in pharmacy and chemistry conducted in the University of King’s College. A pharmacy program was initiated by the New Brunswick Pharmaceutical Society in 1908 and in 1909, the Nova Scotia Pharmaceutical Association was admitted to affiliation with the College.

In the fall of 1968, the College of Pharmacy moved into the George A. Burbidge Pharmacy Building. This building, the former Medical Sciences Building was renamed in honor of the first Dean of the College, in recognition of his contribution to pharmacy education in the Maritimes.

In 1961, the Maritime College of Pharmacy was awarded the title of College of Pharmacy. A four-year baccalaureate program was introduced.

In 1966, a Master’s program was established, followed by a Doctor of Philosophy program in 1977.

In 1972, a twelve month pharmacy residency program was initiated by the College of Pharmacy, in cooperation with the College of Pharmacy, a constituent part of the new Faculty of Health Professions.

II. College of Pharmacy Mission Statement

Mission
Enhancing health through pharmaceutical education, community service and research.

360 Pharmacy
1. Grading is on a Pass/Fail basis, and grades recorded on the official See Academic Regulations section 21.2, page 40 of this calendar. Dean's List in the year in question. student who has obtained a failing grade (FM or F) will be eligible for the assessments and class standing in the annual "Progress Exam." No 2. Dean's List knowledge assessments is 60% unless otherwise indicated. Students must pass all components of the year in which they are registered to proceed to the next year. The passing grade for 3. To pass a PBL class, a student must pass both the student tutorial performance assessment and the class knowledge assessment. A student who fails no more than one academic class will be assigned a 4. A student who fails no more than one academic class will be assigned a grade of marginal failure (FM) in that class. The student must meet with the Associate Director, Undergraduate Education to discuss remediation and /or support. More than one failure will result in all failed classes being assigned the grade of Fail (F). 5. The Promotions Committee of the College of Pharmacy is responsible for monitoring the academic progress of students and providing recommendations to faculty regarding promotion and graduation of students. Students in academic difficulty may meet with the Promotions Committee at the end of the academic year to discuss their standing and request special consideration if exceptional circumstances have affected their performance. Exceptional circumstances affecting academic performance should be made known to the Associate Director, Undergraduate Education, at the time of their occurrence. 6. Attendance at the tutorials, skills laboratory and practice experience program (PEP) is mandatory. Absence must be supported with a valid reason, such as illness with a medical certificate or other reason approved by the Undergraduate Education Committee. Other absences will be reported to the Promotions Committee and may be reason for failure. 2. Student performance will be assessed during and at the end of each PBL class. Assessment will be of both the learning process and the knowledge/skills achieved. Tutors will provide informal assessment of the student’s learning process throughout a PBL class and a formal assessment (student tutorial performance assessment) at the completion of a class. Knowledge/skills will be assessed as described in the syllabus provided for each class. 3. To pass a PBL class, a student must pass both the student tutorial performance assessment and the class knowledge assessment. 4. If a student fails one PBL or non-PBL class, the grade will be recorded as "P" with a notation that the grade was earned by supplemental assessment. Failure in a second class (either a PBL or non-PBL class) will negate a 5. Failure in a second class (either a PBL or non-PBL class) will negate a pass that may have been achieved by supplemental assessment in the first failed class. (See F.1.a below.) 6. If a student fails one PBL or non-PBL class, the grade will be recorded as "FM" on the student's transcript. Failure to pass the remedial work and supplemental assessment will lead to conversion of the grade to "F." If the student successfully completes the remedial work and supplemental assessment, the passing grade will then be added to the transcript and recorded as "P" with a notation that the grade was earned by supplemental assessment. 7. Attendance at the tutorials, skills laboratory and practice experience program (PEP) is mandatory. Absence must be supported with a valid reason, such as illness with a medical certificate or other reason approved by the Undergraduate Education Committee. Other absences will be reported to the Promotions Committee and may be reason for failure. D. Reassessment of a Grade See Academic Regulation 16.7. In all cases of reassessment, the calculations used to arrive at the final grade will be checked. In those 1. A student who receives a grade of FM is eligible for remedial work and supplemental assessment. 2. A student who fails one PBL student tutorial performance assessment must undertake remedial work during the following class, organized by the Associate Director, Undergraduate Education. If the failure occurs in the final class of the year, remediation will occur during the summer. The student must successfully complete the remedial work and supplemental assessment to achieve a Pass. 3. A student who fails the knowledge assessment or other requirement outlined in the syllabus of a PBL or non-PBL class will be required to do remedial work and must pass a supplemental assessment, which will be scheduled by the class coordinator in consultation with the Associate Director, Undergraduate Education and the students involved. 4. If a student fails one PBL or non-PBL class, the grade will be recorded as "FM" on the student’s transcript. Failure to pass the remedial work and supplemental assessment will lead to conversion of the grade to “F.” If the student successfully completes the remedial work and supplemental assessment, the passing grade will then be added to the transcript and recorded as “P” with a notation that the grade was earned by supplemental assessment. 5. Failure in a second class (either a PBL or non-PBL class) will negate a pass that may have been achieved by supplemental assessment in the first failed class. (See F.1.a below.) E. Supplemental Assessment 1. A student who receives a grade of FM is eligible for remedial work and supplemental assessment. 2. A student who fails one PBL student tutorial performance assessment must undertake remedial work during the following class, organized by the Associate Director, Undergraduate Education. If the failure occurs in the final class of the year, remediation will occur during the summer. The student must successfully complete the remedial work and supplemental assessment to achieve a Pass. 3. A student who fails the knowledge assessment or other requirement outlined in the syllabus of a PBL or non-PBL class will be required to do remedial work and must pass a supplemental assessment, which will be scheduled by the class coordinator in consultation with the Associate Director, Undergraduate Education and the students involved. 4. If a student fails one PBL or non-PBL class, the grade will be recorded as “FM” on the student’s transcript. Failure to pass the remedial work and supplemental assessment will lead to conversion of the grade to “F.” If the student successfully completes the remedial work and supplemental assessment, the passing grade will then be added to the transcript and recorded as “P” with a notation that the grade was earned by supplemental assessment. 5. Failure in a second class (either a PBL or non-PBL class) will negate a pass that may have been achieved by supplemental assessment in the first failed class. (See F.1.a below.) F. Repeating the Year 1. Subject to eligibility, a student will be required to repeat the year if: a) the student has failed any two classes (PBL or non-PBL classes) or b) the student has failed one class and has not successfully completed the prescribed remedial work and supplemental assessment. 2. To be eligible to repeat a year, a student who has failed two classes must satisfactorily complete all other year requirements except the
Faculty of Health Professions

5. No student will be allowed more than one repeat year during the College.

Students must show proof* of current immunization against tetanus, diphtheria, polio, measles, mumps, rubella, Hepatitis B, varicella (if non-immune) and a negative two-step tuberculin testing (Mantoux) test prior to admission to the College.

Evidence of a negative two-step tuberculin testing (Mantoux) is required before all hospital rotations. Students are responsible for the cost of all tests and immunization.

*Students must complete the Faculty of Health Professions' infectious disease and immunization checklist.

Each student is required to maintain their personal immunization record, and submit a copy of it at a designated time prior to the start of the fall semester. Individual sites may require students to present immunization records prior to acceptance at a practice site. Individual clinical practice sites may have additional immunization requirements. Failure to provide this information may result in a student being denied access to a placement site.

C. Career Opportunities

Pharmacy is a health profession in which pharmacists provide care for their patients as one member of the health care team. This care focuses on the patient from the perspectives 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 medications, 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, research, production and quality control. Opportunities may also be available in universities and pharmaceutical research laboratories.

The increased role of federal and provincial governments in public health provides opportunities for pharmacists in analytical laboratories and in the fields of sales and marketing.

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 generally required.

In a self-reporting poll, 99% of 2007 graduates were employed upon graduation.

D. Practice Requirements

1. Licence in Pharmacy

The College of Pharmacy, being purely educational, has no jurisdiction in matters related to licensing or registration as a Pharmaceutical Chemist (Pharmacist). These functions are entirely under the control of the respective 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 to practice as a pharmacist. Information regarding licensing or registration in each province may be obtained from the respective provincial regulatory authority.

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 provincial regulatory authorities. The Board provides for annual examinations and issues a certificate to the
successful candidate, which may be filed with a Canadian provincial regulatory authority in connection with an application for license to practice pharmacy under the laws of that province. Baccalaureate graduates from Faculties of Pharmacy accredited by the Canadian Council for Accreditation of Pharmacy Programs are eligible to write these examinations. Successful completion of these examinations is a prerequisite to licensure in Canada. Information relative to the dates of examinations, application forms, etc., may be obtained through the Director's Office, College of Pharmacy.

The current FEBC pass rate for the College of Pharmacy is 97%.

Individuals who are not graduates of an accredited Canadian Faculty of Pharmacy must first complete the FEBC 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 FEBC Qualifying Examination Information booklet.

E. Student Pharmacy Society

The basic aims of the Student Pharmacy Society are to promote a closer liaison with the other societies on campus, to give the pharmacy students a strong position with regard to Student Council activities, to provide a means of communications between students and their respective provincial regulatory authorities in the Maritimes, and to provide an organizational body which plans and finances the various unique Pharmacy Society activities.

Membership in the Pharmacy Society includes membership in the Canadian Association of Pharmacy Students and Interns and membership in the Canadian Pharmacists Association.

V. Programs Offered

The College of Pharmacy offers a four-year program, following at least one year of general science, leading to the degree of Bachelor of Science (Pharmacy) - BSc (Pharm).

The undergraduate program has a patient-oriented curriculum integrating clinical pharmacy with the pharmaceutical sciences. The curriculum utilizes an integrated problem-based learning format. Year 1 includes pharmacy law and health care ethics, biomedical and physical sciences (anatomy, biochemistry, microbiology, pharmacology and physiology) in discrete three-to-seven-week classes. The pharmaceutical sciences (biopharmaceutics and pharmacokinetics, medicinal chemistry, drug metabolism, toxicology, pharmacodynamics and pharmacokinetics) with necessary reviews of biomedical content, are integrated in Years 2 through 4, with therapeutics, pharmacoeconomics, pharmaceutical care, communications, interprofessional relations, law and ethics, social and administrative pharmacy issues, and the role of pharmacy in the health care system.

The College participates with the Queen Elizabeth II Health Science Centre, Halifax, NS; South East Regional Health Authority, Moncton, NB and Atlantic Health Sciences Corporation, Saint John, NB in providing a twelve-month post graduate hospital pharmacy residency program. Through structured rotations in various areas of pharmacy practice, the program aims to prepare pharmacists for exemplary pharmacy practice. Areas of rotations include patient care, drug information, drug distribution, pharmacy administration, a research project and in-service and education. The emphasis is on providing exemplary patient care. Practitioner role models/preceptors are utilized throughout the program to mentor the necessary skills, knowledge and values required to be a pharmacist for application by the resident. A stipend is provided and a certificate is presented to candidates successfully completing the program.

Undergraduate Curriculum Structure

The College of Pharmacy offers an Undergraduate Curriculum, which may be scheduled past the posted exam periods. Students are responsible for all costs associated with expenses during this time (i.e., meal plan expiration, residence closure, etc.).

A. Tutorials

The principal feature of the curriculum is problem-based learning (PBL). Students learn together in tutorial groups of seven to ten.

Each group is facilitated by a trained non-content-expert tutor who may be faculty, sessional tutors, practitioners or graduate students.

Two-hour tutorials are held three times a week. In tutorial sessions students are presented with a situation for which they must identify their own prior knowledge and set specific learning objectives. Students use the time between tutorial sessions for self-directed learning of the objectives that they have set. They then are responsible for ensuring that other group members learn these objectives.

B. Classes

A minimal number of classes explain difficult concepts and summarize learning modules. Science laboratory sessions are limited to experiments and demonstrations that enhance student learning of concepts.

C. Skills Laboratory

The skills laboratories help students develop skills such as compounding, sterile technique, use of devices such as glucose monitors and ostomy aids, computer skills, written and verbal communications and responding to drug information requests.

A cardiopulmonary resuscitation (CPR) class and standard first-aid class are the student’s responsibilities in cost.

D. Practice Experience Program (PEP)

A progressive professional field experience complements the PBL curriculum as follows:

Year 1 - Community Experience Program (CEP)

• the equivalent of a half day per week in a goal-related service learning in a non-pharmacy health-oriented community site.

Year 2 - Practice Experience Program (PEP)

• PHAR 2011-03 - Community Rotation (2 consecutive weeks)

Second year rotations are completed during the months of May - August, after successful completion of all other second year classes. Each rotation is two weeks in length, at a minimum of 35 hours/week. Second year rotations provide students with an opportunity to see pharmacists practice patient focused care in both community and hospital practice settings.

Time is also spent on the distributive, legislative and administrative components of pharmacy practice.

Year 3 - Practice Experience Program (PEP)

• PHAR 3080-13 - Community Rotation (4 consecutive weeks)

This rotation is completed during the months of May - August, after successful completion of all other third year classes. This rotation is four weeks in length at a minimum of 50 hours/week and introduces students to the practical application of the pharmacist’s patient care process in a community pharmacy. Rotation objectives address drug information, prescription and non-prescription medications, patient education, and health promotion presentations to community groups. This rotation is intended to provide an introductory experience to clinical activities including: monitoring patients, identifying drug-related problems, and defining and measuring patient goals and outcomes.

Year 4 - Practice Experience Program (PEP)

• PHAR 400145 – Hospital Rotation (6 consecutive weeks)

• PHAR 400144 – 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-focused and primarily clinical. Each rotation is six-weeks, at a minimum of 40 hours/week.
For each rotation, from year 2 through to year 4, students are required to travel to sites outside of the Halifax area and will be responsible for any costs incurred as a result of the program.

Students should note that there are very limited PEP rotation sites outside the Maritime Provinces. All PEP rotations must take place within Canada. Students must be prepared to complete all PEP rotations within the Maritimes.

E. Prescribed Classes

Year 1
- ANAT 1040.03
- BIOL 1000X/Y.06
- CHEM 2442.03
- MICR 1050.03
- PHAC 1470.06
- PHAR 1060.015
- PHAR 1070.03
- PHAR 1080.00
- PHY1 1400.06

Year 2
- PHAR 2010.03
- PHAR 2020.03
- PHAR 2030.03
- PHAR 2040.03
- PHAR 2050.03
- PHAR 2060.03
- PHAR 2070.03
- PHAR 2081.03
- PHAR 2082.03

Year 3
- PHAR 3010.03
- PHAR 3020.03
- PHAR 3030.03
- PHAR 3040.03
- PHAR 3050.03
- PHAR 3051.06
- PHAR 3060.03
- PHAR 3070.03
- PHAR 3080.03

Year 4
- PHAR 4010.015
- PHAR 4021.06
- PHAR 4030.06
- PHAR 4040.03
- PHAR 4050.03
- PHAR 4060.05
- PHAR 4060.04
- PHAR 4081.04

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 BS (Pharm) program.

CO-REQUISITE: CHEM 2442.03

CHEM 2442.03: Organic Chemistry for Pharmacy Students.
This class will cover aspects of organic chemistry relevant to the requirements for the degree of Bachelor of Science in Pharmacy. This class does not serve as a prerequisite for any other chemistry class.

FORMAT: Lecture 3 hours
RESTRICTION: Restricted to students in the Bachelor of Science in Pharmacy program.

MICI 1050.03: Basic Microbiology and Immunology for Pharmacy.
This class is strictly for students in pharmacy. Microbiology is learned over a three–week period by way of PBL tutorials, lectures and laboratory sessions. It addresses some basic principles of microbial structure, physiology and genetics in relation to microbial pathogenesis. General concepts of antibiotics and immunity are also discussed. Laboratory sessions using demonstrations and exercises are designed to complement the lectures and to provide a practical appreciation of the isolation, identification, cultivation and control of microorganisms.

INSTRUCTOR(S): L. Murray
FORMAT: Lecture 3 hours, tutorial 6 hours; 3 weeks
PREREQUISITE: BIOL 1000X/Y.06 or instructor's consent

PHAC 1470.06: Pharmacology for Pharmacy.
This class will provide an introduction to pharmacology, emphasizing basic mechanisms of drug action and principles of drug-receptor interactions, pharmacokinetics, and drug metabolism.

COORDINATOR: M. Kelly
FORMAT: Lecture 3 hours, tutorial 6 hours; 6 weeks
PREREQUISITE: BIOC 1040.06, MICR 1050.03, PHYL 1400.06

PHAR 1060.015: Pharmacy Law and Health Care Ethics.
This problem-based learning class focuses on the provincial and federal laws that regulate the practice and profession of pharmacy, and key ethical principles and considerations for the pharmacist. Students will learn through a series of mini-cases based on real-life practice scenarios, with integrated ethical components. Students will be introduced to professionalism and the associated responsibilities of a pharmacist. This class introduces students to the legal and professional framework on which all pharmacists practice. Integrated courses in future classes will build on the law and ethics introduced in this course.

COORDINATOR: N. MacKinnon, C. Tobin
FORMAT: Lecture 3 hours, tutorial 6 hours

PHAR 1070.03: Pharmacy Skills Lab I.
First year skills labs provide an introduction to skills required by a practicing pharmacist. These include communication skills, pharmacy computer skills, prescription processing and compounding of select dosage forms.

COORDINATOR: K. Walsh
FORMAT: Lecture 1 hour, tutorial and/or lab 3 hours

PHAR 1080.00: Community Experience Program.
This program consists of service learning at a health-related non-pharmacy site such as the Canadian Cancer Society, CNIB, Special Olympics etc. The purpose is to augment developing communication skills, interpersonal skills, basic work ethic, ethics including the importance of teamwork, introduction to client needs and the professional helping ethic.

COORDINATOR: N. Hauser
FORMAT: 1 hour per week
PHAR 2010.03: Critical Appraisal Series I.  
Students are introduced to a variety of drug/health information resources including specific websites, texts, journals, bibliographic databases, the Regional Drug Information Service and the pharmaceutical manufacturer. They gain experience in evaluating and using these resources efficiently and effectively through assignments. Second term focuses on the fundamentals of clinical research methodology, evaluating a research paper and biostatistics. 
COORDINATOR: M. MacCara  
FORMAT: Lecture/computer training lab

PHAR 2015.03: Topical Products (Dermatologically).  
Students learn the medicinal chemistry, pharmacodynamics, and pharmacokinetics, and pharmacology, as well as the pathophysiology and pathopharmacologic 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  
FORM: 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, pharmacodynamics, biopharmaceutics and pharmacokinetics, and pharmacology, as well as the pathophysiology and pathopharmacologic 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  
FORM: 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, pharmacodynamics, biopharmaceutics and pharmacokinetics, and pharmacology, as well as the pathophysiology and pathopharmacologic principles pertaining to the problems and products discussed. Pharmacy administration is also integrated. Pharmacy 2035 deals with common infectious and non-infectious respiratory complaints, treated with non-prescription and prescription medications. 
COORDINATOR: S. Mansour  
FORM: Lecture 3-4 hours, tutorial 6 hours  
PREREQUISITE: Successful completion of all first year classes

PHAR 2040.03: Gastrointestinal Disorders.  
Students learn about nutritional needs of healthy clients and special populations. The role, the daily requirements and sources of various vitamins, and pathological consequences of dietary deficiencies will be addressed. Special nutritional challenges in pregnancy, infancy, elderly, and grave illness will be examined. 
COORDINATOR: S. Mansour  
FORM: Lecture 3 hours, tutorial 6 hours  
PREREQUISITE: Successful completion of all first year classes

PHAR 2045.015: Nutrition.  
Students learn about nutritional needs of healthy clients and special populations. The role, the daily requirements and sources of various vitamins, and pathological consequences of dietary deficiencies will be addressed. Special nutritional challenges in pregnancy, infancy, elderly, and grave illness will be examined. 
COORDINATOR: S. Mansour  
FORM: Lecture 3 hours, tutorial 6 hours  
PREREQUISITE: Successful completion of all first year classes

PHAR 2055.015: Drug Disposition.  
The objective of this course is to provide students with an overview of the determinants of drug disposition, including a qualitative and quantitative assessment of drug absorption, distribution, metabolism and excretion. Major topics include hepatic and renal clearance, and factors which alter pharmacokinetics such as protein binding, disease states, age, enzyme induction/inhibition, drug interactions, and obesity, gender, and genetics. 
COORDINATOR: K. Goralski  
FORM: Lecture 27 hours, 3 weeks  
PREREQUISITE: Successful completion of all first year classes

PHAR 2060.015: Medication Use Management.  
This problem-based learning class focuses on the following: (1) the medication use process in today’s healthcare system, (2) an overview of the problems with the current medication use process; (3) philosophies and programs that can/may improve the effectiveness and safety of the current medication use process, (4) and methods to measure improvement with medication use and patient outcomes. Each tutorial group is assigned to a local pharmacy to develop a disease management program tailored to the specific needs of that pharmacy. 
COORDINATOR: N. MacKinnon  
FORM: Lecture 3 hours, tutorial 6 hours  
PREREQUISITE: Successful completion of all first year pharmacy

PHAR 2070.03: Pharmacy Skills Lab II.  
Second year skills labs are designed to reinforce and assess 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  
FORM: Lecture, lab 4 hours  
PREREQUISITE: Successful completion of all first year classes

PHAR 2081.03: Practice Experience Program (PEP) I.  
This rotation provides students with an opportunity to see patient centered pharmacy care in a hospital practice setting. Specific units focus on drug information, hospital pharmacy services provided as part of the health care team, sterile procedures and IV admistirations, 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  
FORM: Minimum 35 hours/week x 2 consecutive weeks (May-Aug)  
PREREQUISITE: Successful completion of second year classes (see College of Pharmacy Regulation F2)

PHAR 2082.03: Practice Experience Program (PEP) II.  
This rotation provides students with an opportunity to participate in patient care in a community pharmacy setting. Pharmacy law, narcotics and controlled drugs, third party insurers, processing prescriptions, provincial formulations, 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  
FORM: Minimum 35 hours/week x 2 consecutive weeks (May-Aug)  
PREREQUISITE: Successful completion of second year classes (see College of Pharmacy Regulation F2)

PHAR 3010.03: Critical Appraisal Series II.  
This course advances and reinforces the topics learned in PHAR 2010.03. The first term focuses on research methods and biostatistics seen in various trial designs. Students learn to critically evaluate the medical literature and write a term paper reviewing the evidence behind a clinical decision. The second term will focus on applying the tenets of evidence-based clinical practice. Through a journal club setting, students will evaluate the strengths and weaknesses seen in the literature as they relate to a clinical situation. Students are expected to use these skills in their problem-based learning classes. 
COORDINATOR: P. J. Zed  
FORM: 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, pharmacodynamics, biopharmaceutics and pharmacokinetics, and pharmacology, as well as the pathophysiology and pathopharmacologic principles pertaining to the problems and products discussed. Pharmacy administration is also integrated. PHAR
PHAR 3030.03: Infectious Diseases. Students learn the medicinal chemistry, pharmacodynamics, pharmacokinetics, and pharmacology, as well as the pathophysiology and pharmacotherapeutic principles pertaining to the problems and products discussed. PHAR 3030.03 is devoted to miscellaneous infectious diseases.
COORDINATOR: P. Farmer
FORMAT: Lecture 3-4 hours, tutorial 6 hours
PREREQUISITE: Successful completion of all second year classes

PHAR 3040.06: Cardiovascular Diseases. Students learn the medicinal chemistry, pharmacodynamics, pharmacokinetics, and pharmacology, as well as the pathophysiology and pharmacotherapeutic principles pertaining to the problems and products discussed. This class addresses cardiovascular diseases such as hypertension, stroke, ischemic heart disease, congestive heart failure and thromboembolism, and the pharmacologic management of these conditions.
COORDINATOR: P. Farmer
FORMAT: Lecture 3-4 hours, tutorial 6 hours
PREREQUISITE: Successful completion of all second year classes

PHAR 3050.03: Pain and Rheumatology. Students learn the medicinal chemistry, pharmacodynamics, pharmacokinetics, and pharmacology, as well as the pathophysiology and pharmacotherapeutic principles pertaining to the problems and products discussed. PHAR 3050.03 deals with the understanding and management of acute and chronic pain of various origins.
COORDINATOR: P. Farmer
FORMAT: Lecture 3-4 hours, tutorial 6 hours
PREREQUISITE: Successful completion of all second year classes

PHAR 3055.06: CNS and Behavioral Disorders. Students learn the medicinal chemistry, pharmacodynamics, pharmacokinetics, and pharmacology, as well as the pathophysiology and pharmacotherapeutic principles pertaining to the problems and products discussed. PHAR 3055.06 involves the study of an array of conditions ranging from depression to seizure disorders.
COORDINATOR: 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, pharmacodynamics, pharmacokinetics, and pharmacology, as well as the pathophysiology and pharmacotherapeutic principles pertaining to the problems and products discussed. PHAR 3060.03 focuses primarily on 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: P. Spurgeon
FORMAT: Lecture/lab/seminar, 4 hours
PREREQUISITE: Successful completion of all second year classes

PHAR 3080.03: Practice Experience Program (PEP) III. This rotation focuses on the practical implementation of patient centered pharmacy care in community practice. Students will complete a variety of patient care work-ups. Provision of drug information, prescription and non-prescription medications, patient education and health promotion are integral components of this rotation. Students are required to travel to sites outside the Halifax area, and are responsible for all associated costs.
COORDINATOR: H. Davies
FORMAT: Minimum 35 hours/week x consecutive 4 weeks (May-Aug)
PREREQUISITE: Successful completion of third year classes (see College of Pharmacy Regulations F2)

PHAR 4010.015: Critical Appraisal Series III. This is a continuation of PHAR 3010.015. Students will combine their skills from the previous courses in this series as well as knowledge and skills derived from their problem-based learning curriculum and skills lab courses in a variety of tasks over the term. The ability to follow an evidence-based approach for supporting clinical decisions will be emphasized.
COORDINATOR: D. Gardner
PREREQUISITE: PHAR 3010.015 or consent of instructor
FORMAT: Lecture, small group – 2 hours

PHAR 4025.06: Pathopharmacologic Disorders. Students learn the medicinal chemistry, pharmacodynamics, pharmacokinetics, and pharmacology, as well as the pathophysiology and pharmacotherapeutic principles pertaining to the problems and products discussed. Pharmacy administration is also integrated. This class deals with the pharmacotherapy of common cancers and includes issues such as pain control.
COORDINATOR: P. Farmer
FORMAT: Lecture 3-5 hours, tutorial 6 hours
PREREQUISITE: Successful completion of all third year classes

PHAR 4030.06: Disorder of the Liver and Genitourinary Systems. Students learn the medicinal chemistry, pharmacodynamics, pharmacokinetics, and pharmacology, as well as the pathophysiology and pharmacotherapeutic principles pertaining to the problems and products discussed. Pharmacy administration is also integrated. This class deals with hepatic, vascular, urinary and other liver disorders, renal disease and men's health issues related to the genitourinary tract.
COORDINATOR: P. Farmer
FORMAT: Lecture 3-4 hours, tutorial 6 hours
PREREQUISITE: Successful completion of all third year classes

PHAR 4060.03: Advanced Patient Health Management. These major areas of patient health management will be discussed in this class: (1) the Canadian health care system and pharmacy benefit management, (2) pharmacoeconomics and formulary decision making; and (3) human resource management and leadership. In this third section, we will discuss (a) human resource management principles in pharmacy, including the relevant theories and the practical application of these theories (b) financial management in pharmacy, (c) management implications of pharmacy technology, (d) professional leadership, and (e) time management.
COORDINATOR: N. MacKinnon
FORMAT: Lecture 3-4 hours, tutorial 3 hours
PREREQUISITE: Successful completion of third year pharmacy.

PHAR 4070.015: Pharmacy Skills Lab IV. Skill Lab IV expands upon the skills learned in Skills Lab I, II and III. Students must apply the knowledge gained via PBL modules to provide patient care. Specific activities include but are not limited to: computer prescription processing, patient interviewing and counseling, and application of the pharmaceutical care process to simulated patient situations. Patient scenarios are more complicated with the introduction of patients with multiple medications and disease states.
COORDINATOR: H. Deal
FORMAT: Lecture/Lab/Seminar – 3 hours
PREREQUISITE: Successful completion of all third year classes
IV.

This clinical rotation focuses primarily on the provision of patient-focused pharmacy care in hospital practice. The student will apply the knowledge, skills, and values that have been learned in their academic study and previous PEP rotations using a patient-centered approach. Students will serve as a member of the health care team incorporating professionalism, ethical principles, drug information, patient education, and health promotion in the application of pharmaceutical care. Students will be required to complete a full patient care work-up on several patients and present the cases to a health professional audience. Students will expand their educational role by preparing and presenting an in-service on a relevant topic to a health professional audience. Students are required to travel to sites outside the Halifax area and are responsible for all associated costs.

COORDINATOR: H. Davies
FORMAT: Minimum 40 hours/week x 6 consecutive weeks (first or second rotation, 4th year, second term)
PREREQUISITE: Successful completion of fourth year classes (see College of Pharmacy Regulation F2)

PHAR 4085.045: Practice Experience Program (PEP)

V.

This clinical rotation focuses primarily on the practical provision of patient-centered pharmacy care in community practice. As with the hospital rotation, students will apply the knowledge, skills, and values that have been acquired throughout academic study and previous PEP rotations using a patient-centered approach. Interaction with family physicians and other health care professionals in the community is a key component of this rotation. Students will serve as a member of the health care team and incorporate professionalism, ethical principles, drug information, patient education, and health promotion in the application of pharmaceutical care. Students will be required to complete full pharmaceutical care work-ups on several patients and present the cases to a health professional audience. Students will expand their educational role by preparing and presenting a relevant health promotion/disease prevention topic to a community audience. Students are required to travel to sites outside the Halifax area and are responsible for all associated costs.

COORDINATOR: H. Davies
FORMAT: Minimum 40 hours/week x 6 consecutive weeks (first or second rotation in 4th year, second term)
PREREQUISITE: Successful completion of fourth year classes (see College of Pharmacy Regulation F2)

PHYL 1400.06: Human Physiology.

This course is designed to give pharmacy students a broad understanding of normal human physiology using pathophysiologic scenarios. Selected topics in physiology and biophysics will be presented in tutorials as case studies and in lectures. The central themes include respiratory, endocrine/reproductive, gastrointestinal, neuromuscular, nervous system, renal, and cardiovascular. Students will be provided with means for self-evaluation throughout the unit. Evaluation will be based on tutorial performance as well as mid- and end-of-unit examinations. This class is only for Pharmacy students.

DIRECTOR: M. Murphy and other staff members
FORMAT: A 7-week comprehensive unit with 6 hours tutorial and 4 hours lecture per week
PREREQUISITE: ANAT 1040.03

Recreation

See School of Health and Human Performance (page 334).
I. Introduction

The School of Social Work's vision is a commitment to building a socially just society, defined as one that upholds and validates the values of equality, diversity, inclusiveness, democracy and concern for human welfare. We manifest and advance core values, scholarship and school culture that are congruent with those values.

The School was founded in 1941 to meet a need for professionally qualified social workers in the Atlantic region. The School amalgamated with Dalhousie University in 1969 to become one of the nine constituents of the Faculty of Health Professions. The Undergraduate program leading to a Bachelor of Social Work degree (BSW) was introduced in the late 1970s to provide basic professional education in Social Work. Liberal arts classes in the humanities and social sciences and more specialized courses in professional social work equip students with the knowledge and skills essential to employment in a wide range of human services.

The BSW degree program is accredited by the Canadian Associations of Schools of Social Work. In embraces a critical and anti-oppressive approach to social work practice that includes an emphasis on social policy, research skills and critical analysis, professional values, theoretical perspectives and practice methods, while the program has evolved within the context of the people, communities and service network of the Maritime Provinces, graduates are qualified to practice social work throughout Canada and beyond.

A. BSW Delivery Options

The BSW is a 2 credit degree program and is offered on campus and by distance. Campus study may be full time or part time while distance study is available on a part time basis. Both delivery methods include 700 hours of field placement experience. The application deadline is February 15th of each year.

B. Relationship to the MSW Program

The School also offers a Master's degree program for advanced specialized study in Social Work practice. The BSW is the academic prerequisite for graduate study in Social Work. The MSW program at the School of Social Work also has a social work practice prerequisite, which requires two years of post BSW full-time social work experience (or the part-time equivalent). The program is available on a part time basis. Both delivery methods include 700 hours of field placement experience.

C. Continuing Education

The School offers a Continuing Education Program (non-credit) of thematic workshops.

D. Nova Scotia Association of Social Workers

The Nova Scotia Association of Social Workers (NSASW) can practice as social workers within Nova Scotia. To become fully registered and use the title of Social Worker after award of the BSW degree, at least 3,858 hours of paid supervised social work experience is necessary, followed by an examination established by the Board of Examiners, NSASW.

II. Bachelor of Social Work Degree Program

Admission

Information on academic preparation, admission and application procedures is contained in the Admission Requirements sections of the calendar. Enrolment is limited to a specified number of places that are offered once a year to the best qualified candidates, selected by the School's admissions committee. Equal consideration is given to part-time and full-time applications.
Prior Criminal Conviction
BSW applicants should be aware that a prior criminal conviction may render them ineligible to obtain a degree in their field of study upon graduation, or unable to participate in some clinical field work experiences throughout their course of study.

A. Affirmative Action
In accordance with Human Rights legislation, the School of Social Work has an affirmative action policy for applicants who are Acadian, Aboriginal, Black/African Canadian, members of other racially-visible groups, and for persons with disabilities. The School is committed to admitting and graduating the highest possible number of students who qualify under this policy. Members of these groups who have five general (non social work) university credits that average B- are encouraged to apply under this policy. Applicants make their request in a place provided on the Personal Statement cover sheet, which is part of the BSW application package. Each candidate is considered individually on the basis of her/his qualifications, rather than in relation to other applicants. The admissions prerequisites and selection criteria are otherwise the same for all candidates.

B. Program Objectives
Upon successful completion of the BSW program, students will:
1. Have acquired the knowledge base which enables them to understand human development and social conditions and the skills to analyse policies and political forces that influence human lives, including their own and those of users of social services, and which also shape health and social welfare services. This includes an understanding of systemic inequality in resources and power rooted in diverse factors such as class, gender, sexual orientation, race, ethnicity, disability, age and regional underdevelopment.
2. Be aware of a range of social work theories and practice methods.
3. Be able to practice in accordance with social work values and ethics.
4. Use their knowledge, analytical abilities and values to develop a professional development framework or approach to social work practice which they can articulate and use as a translation for ongoing learning and professional development.
5. Have integrated theories, values, analytical and practice methods into a framework or approach to social work practice which can articulate and use as a translation for ongoing learning and professional development.

C. Program Requirements
The five admission credits that form the basic BSW academic prerequisite reduces the 20 degree requirement to the following 15 credits for all students.

Required Courses
- SLWK 3011.03: Historical and Ethical Foundations of Social Work Practice
- SLWK 2002.03: Beginning Social Work Practice
- SLWK 2010.03: Introduction to Community Social Work
- SLWK 3011.03: Perspectives on Social Welfare Policy I
- SLWK 2012.03: Perspectives on Social Welfare Policy II
- SLWK 3020.06: Field Instruction I (or equivalent)
- SLWK 3020.06: Field Instruction II (or equivalent)
- SLWK 3030.06: Theoretical Foundations of Social Work
- SLWK 3070.03: Social Service Delivery Analysis
- SLWK 3085.03: Introduction to Research Methods and Statistics in Social Work
- SLWK 3084.03: Understanding Research and Research Methods in Social Work
- SLWK 5200.03: Cross-Cultural Issues and Social Work Practice
- SLWK 4010X.Y.O6: Advanced Social Work Practice
- SLWK 4000.12: Field Instruction I
- SLWK Social Work Elective
- SLWK Social Work Elective

Electives
Electives may be chosen from those offered by the School of Social Work (or other social problem electives offered by other university departments).

Transfer Credit Policy
The 15 credits may be further reduced by the amount of transfer credits for which a student is eligible. Suitable university credits that have been completed with a cumulative average of 2.7 (or B-) are eligible for transfer credit consideration. The following procedures guide the assignment of transfer credit:

a. A maximum of five transfer credits (30 credit hours) can be awarded.

b. As a general rule, transfer credit is assigned first to Elective Courses and then to Required Courses within the BSW curriculum.

c. Transfer credit for university Social Work courses taken prior to a student’s admission to the SWY may be assigned to required courses within the BSW curriculum. For this to occur students are required to submit the course outlines for these courses (calendar descriptions are not sufficient).

d. No matter where transfer credit is assigned all students must complete at least ten credits offered by BSW 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 SWY curriculum. Transfer credit is assigned as fairly and appropriately as possible, although some loss of credit usually occurs. Students who transfer from other BSW degree programs are governed by the regulation that any student with a previous degree is required to complete a minimum of six credits (36 credit hours) under Dalhousie instruction, and that any student without a degree is required to complete a minimum of 7.5 credits (45 credit hours) under Dalhousie instruction.

D. Course Load and Sequencing
1. Length of Program
Most students accepted to the BSW program have a degree on entry with the required cumulative grade point average. Such students normally require 90 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 (at least ten credits offered by BSW) and complete a two-to-three-year program as determined by the number of prior credits in relation to the School’s transfer credit policy.

2. On-Campus Delivery

- Course load and sequencing may vary from student to student depending upon the number of transfer credits and full or part-time status.
- For full-time students the usual load is 15 credit hours (i.e., five .03 credit classes) in the Fall and Winter terms.
- For part-time study the course load may be as minimal as one .03 credit class per term.
- The only Social Work courses offered in the Spring semester consist of one Social Work elective and Field I/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 may be 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 3003.06X: Theoretical Foundations of Social Work
- 2 other .03 credits from the list of required courses

**Year 1: Winter Term**
- SLWK 3003.06Y: Theoretical Foundations of Social Work
- SLWK 3003.06B: Field Instruction I
- 2 other .03 credits from the list of required courses

**Year 2: Fall Term**
- SLWK 4010.06X: Advanced Social Work Practice
- SLWK 4001.06: Field Instruction II
- 2 other .03 credits from the list of required courses

**Year 2: Winter Term**
- SLWK 4010.06Y: Advanced Social Work Practice
- SLWK 4001.06: Field Instruction II
- 2 other .03 credits from the list of required courses

For part-time, on-campus study, students have some flexibility in designing their program. However, SLWK 2001 and SLWK 2002 are prerequisites for many courses and should therefore be taken in the Fall term of the first year. If one is doing a three-year program it is suggested that SLWK 3030 be done in year two and SLWK 4010 in year three.

### 3. Distance Delivery

Distance Students are strongly encouraged to maintain the three-year schedule which follows. Research has shown a positive correlation between the length of time in the program and the drop out rate. That is, the shorter time students remain in a program the more likely they are to graduate. Any change from the three-year schedule must be in accordance with pre- and co-requisites as outlined in the calendar and are dependent upon availability of course offerings, especially electives. Any student wishing to complete the program in a different time frame should discuss their situation with the Distance Education Coordinator.

Students studying by distance follow the following three-year schedule:

**Year 1: Fall Term**
- SLWK 2001.03: Historical and Ethical Foundations of Social Work
- SLWK 3202.03: Cross-Cultural Issues and Social Work Practice

**Year 1: Winter Term**
- SLWK 3201.03: Perspectives on Social Welfare Policy
- 2 other .03 credits from the list of required courses

**Year 2: Spring/Summer Term**
- SLWK 4010.06: Advanced Social Work Practice
- 2 other .03 credits from the list of required courses

**Year 2: Fall Term**
- SLWK 3030.06X: Theoretical Foundations of Social Work Practice
- SLWK 2002.03: Beginning Social Work Practice
- SLWK 3030.06B: Field Instruction I
- Elective

**Year 2: Winter Term**
- SLWK 4030.12X: Field Instruction II
- SLWK 3020.06Y: Theoretical Foundations of Social Work Practice
- SLWK 3030.12Y: Theoretical Foundations of Social Work Practice
- 2 other .03 credits from the list of required courses

Students studying by distance follow the following three-year schedule:

**Year 3: Fall Term**
- SLWK 4010.06: Advanced Social Work Practice (Residential Component)*
- Elective

**Year 3: Winter Term**
- SLWK 4030.12X or 4031.06: Field Instruction II (If students register for SLWK 4031.06 they are required to complete SLWK 4032.06 in the summer semester.)

**Year 3: Spring/Summer Term**
- SLWK 4012.06: Field Instruction II
- Students choose from four electives offered each Spring and/or Summer.
- Students who have additional courses to complete may need to take more electives.
- Students are required to complete a two-week residency onsite at the Dalhousie University campus in the Spring/Summer of the second year, to complete one full credit of study SLWK 4010/Y Advanced Social Work Practice. In addition to tuition (2 x tuition) and distance delivery fee (2 x ddf), students are responsible for the cost of travel, meals and accommodation during the two weeks on campus. Pre/co-req: SLWK 2001, SLWK 2002, SLWK 3030.06Y, SLWK 3030.06X/Y.

### E. Registration

Registration is completed online for all students (regardless of delivery methods). For more information, go to www.registrar.dal.ca/regguide and www.dal.ca/online.

The academic timetable is available online each year. On-campus Social Work classes have section numbers of 01 or 02. Online Distance Social Work classes have section numbers of 07 or 18, and a notation of “DR”.

**IMPORTANT:** Please note that it is not possible to transfer between onsite and the online delivery or to register for core classes other than those which apply to the delivery method for which the student has been accepted.

The fee schedule for the new academic year is available at this time, and comes into effect in September. International students are required to pay an additional “differential fee”, and a health insurance fee. Students studying by distance are charged a distance delivery fee (ddf) of $242.00 per half credit course. Fees are paid by the term in relation to the number of classes in which the student enrolls.

### F. Field Placement

**1. List Of Available Field Placement Information**

For further information about Field Placements you may pick up the appropriate manuals and forms from the ISSW office or the following web link: http://socialwork.dal.ca/bsintro.html.

**2. Field Instruction**

All students are required to undertake the two field placements (SLWK 3020.06 and 4030.06Y/YI) normally during regular working hours of the agency/institution/government department. The field component of the program is organized by the Field Coordinator of the School of Social Work. There is provision for seminars, workshops and consultations in order to assist the students with applying content from academic classes.

### G. New Student Advising Sessions

New on campus students are expected to attend Orientation which is scheduled prior to the commencement of classes. Students studying by distance will receive online orientation. Students can meet individually with the Student Services Coordinator to review the curriculum advising forms and ask questions pertaining to the BSW program. Distance students should contact the Distance Education Coordinator regarding their program schedule.

### H. Tri-IPAAC

Students in the Faculties of Dentistry, Health Professions and Medicine participate in interprofessional modules to discuss contemporary health and health care issues. The interprofessional modules are part of the curricula of individual programs. Participation is mandatory. The objectives of these modules for students and faculty are to:

- Learn and develop skills and strategies for working effectively to address complex problems and issues with other professionals, colleagues, and clients/consumers/patients;
- Develop an awareness of, and respect for, the expertise, roles, values of other professionals, colleagues and clients/consumers/patients.
BSW students need to attend four of the five modules to be determined by the School. Each module is assigned to a particular course for the purpose of integrating the learning. Students attend these modules in Line of Class time, and therefore, will be given equivalent time off by their professor. The module 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/tri.

III. School of Social Work Regulations: BSW Degree Program

A. All Bachelor of Social Work students are required to observe the University and Academic Regulations of Dalhousie University and the Faculty of Health Professions which are set forth in the annual Undergraduate Calendar, which is available to all registered students without cost. The website location is www.registrar.dal.ca - Undergraduate Calendar - Academic Regulations, University Regulations.

1. Grade Point Average Requirements

Faculty of Health Professions academic regulations apply to the BSW degree requirements. Students require a cumulative GPA of 2.0 to graduate. In addition, the School grade requirements specified in Items 2 & 3 below apply to components of the Social Work curriculum.

2. Grade Requirements for Social Work Classes

The minimum grade requirement for satisfactory completion of a Social Work class is C-. A student who earns a grade of less than C- but is otherwise still eligible to continue in the program must repeat the class until a grade of at least C- is attained. Social Work classes are all classes taken under BSW study other than those designated as general admission credits.

3. Grade Requirements for Field Instruction Class

Field Practice classes SLWK 3020.06 - Field I and SLWK 4030.12 - Field II are graded on a pass/fail system. A student who receives a failing grade in SLWK 3020.06 - Field I, must normally withdraw from the School.

4. Required Withdrawal: Academic Dismissal

• A student who fails to meet sessional GPA standards as defined in the Academic Regulations - Faculty of Health Professions must withdraw from the School for at least twelve months. (Please refer to Academic Regulations - Good Standing, Probation and Academic Dismissal, Dalhousie Undergraduate Calendar).

• A student who fails a repeated academic class or who fails a repeat of SLWK 3020.06 - Field I, must normally withdraw from the School.

• A student who fails SLWK 4030.12 - Field II is required to withdraw from the School.

5. Required Withdrawal on Grounds of Unsuitability

See University Regulations: Suspension or Dismissal from a Program on the Grounds of Professional Unsuitability - Faculty of Health Professions (page 29).

6. Readmission

Because of the relation of the BSW program to the attainment of professional qualifications the BSW Committee evaluates each application separately, and informs the student by letter of its decision. Due to the competitive nature of the enrolment process, readmission of students is not guaranteed. Program requirements for accepted 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 for reasons of integrating the learning. Students attend these modules in Line of Class time, and therefore, will be given equivalent time off by their professor. The module 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/tri.

8. Readmission After Voluntary Withdrawal

Students in good standing who have not registered in the program for two years or less and who wish to be reinstated are required to submit a new application form, to be returned with a letter to the Chairperson, BSW Committee, requesting re-entry to resume their BSW degree studies.

Students who have not registered in the program for three years or more and who wish to be reinstated are required to supply, normally by the February 15 admission deadline date. The application and supporting documentation must be accompanied by a letter explaining the reasons for the interruption in the student’s studies and the decision to resume the BSW degree program. Former students who have less than the five general admissions credits, which are now required prior to BSW admission, must complete these before supplying. (See Admissions Requirement Faculty of Health Professions - School of Social Work (page 13) of this calendar.

9. Appeals

A student wishing to appeal a decision based on School regulations, should consult with the Chairperson of the Academic Appeals Committee for advice on appeal procedures.

10. Duration of Undergraduate Study

Students are normally required to complete the BSW degree within 10 years of their first registration (see Academic Regulation—Duration of Undergraduate Study (page 33).

11. Workload Regular Academic Year

Five (5) full-credit (i.e., 30 credit hours) per academic year shall be regarded as constituting a normal workload for a full-time student. Permission of the Chair, BSW Committee, School of Social Work, is required if this workload is to be exceeded, or if the planned workload in any one term (Fall or Winter) would amount to more than five full credits (i.e., 15 credit hours per term).

On-campus, part-time students may register for a minimum of one .03 credit (three credit hours) per term. Part-time status applies to students registered for no more than a total of 2.5 credits (15 credit hours) in the Fall and/or Winter terms. All new students are required to register in the first Fall term following their acceptance in order to maintain their place in the program.

In addition to the regular timetable, field seminars, labs and/or workshops may be offered throughout the term.

12. Workload Summer Session (includes May-June and July-August parts of term)

Dalhousie regulations permit students to take one full credit (a total of six credit hours) in each of the May-June and July-August parts of Summer term. Social Work students may, following consultation with the Field Coordinator, register for the Field placements during this session. The School usually offers one .03 credit Social work class in the May-June period for BSW campus students, provided that minimum enrolment requirements are met. Students in good standing may take elective courses in the summer sessions. Consult the timetable for current course offerings.

Special permission is required to exceed the two-credit limit for the two summer terms.

13. Students in Other Degree Programs (applicable for on-campus students only)

Students enrolled in degree programs at Dalhousie may, in conformance with their program regulations, choose their degree electives from restricted Social Work classes, specifically SLWK 3011.03, 3012.03, 3003.03, 3004.03 and certain Special Field of Practice electives. Permission from the instructor is required, class prerequisites and class size limitations apply. Students are able to enrol 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.”

Social Work 371
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 exceptions of agency field instructors and other qualified Social Work professionals who are able to satisfy normal admission requirements. Permission of the Undergraduate Coordinator is also required.

Students enrolled in other Social Work degree programs may be permitted to pursue a special approach to practice. Finally, the student’s program.


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 2001.05

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-REQUISITE: SLWK 2001.03 and 2002.03

RESTRICTION: Restricted to Social Work students

SLWK 3011.03: Perspectives on Social Welfare Policy I.

This course provides a history of the development of social welfare in Canada and the context in which that development occurred. The focus is on historical understandings of social welfare. In some respects, the historic understandings are different from today; in other respects, they influence how we think today. The course does not address current policies. Perspectives on Social Welfare Policy II deals with policy issues in a contemporary context.

FORMAT: Lecture and discussions

SLWK 3012.03: Perspectives on Social Welfare Policy II.

As an introduction to social policy analysis, this class provides a survey of a variety of perspectives on social problems and social policy issues, with a focus on contemporary debates.

FORMAT: Lecture and discussions

SLWK 3020.06: Field Instruction I.

The initial field placement provides an opportunity for beginning social work practice under supervision of social workers within the Agency. Students are expected to participate in a minimum of 15 hours of lab time during the term.

NOTE: A Field 1 Equivalency Option exists for those students who have considerable social work practice experience and who would benefit from taking additional courses. Applications for the "Equivalency Option" are due October 30 of the first year of a student's program. If approved the student does not complete Field 1 but completes two other half credits in lieu of Field 1.

FORMAT: Practice Placement

PREREQUISITE/CO-REQUISITE: SLWK 2001.03 and 2002.03

RESTRICTION: Restricted to Social Work students
The central theme of this course is the integration of theory and practice, recognizing that theory guides practice and practice informs theory. Case applications are explored from a variety of practice situations and problem definitions. The first term consists of the theoretical foundations of social work, understanding their relation to social work practice from a social, political, economic and historical position. The second term explores issues of oppression and domination, followed by the examination of substantive areas of conceptual practice, including community advocacy work, group work, gender/sexuality, depression, grief and violence toward women. The dynamics of ethics relating to practice are woven throughout the course.
NOTE: Students taking this class must register in both X and Y terms; credit will be given only if both are completed consecutively.
FORMAT: Lecture, discussions, and group exercises
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 course provides an introduction to research methods and statistics, with particular attention to examples from social work research. Through the use of examples, students become familiar with the whole of the research process from the identification of the problem to the presentation of results, including the application of statistics. Students will be exposed to the full range of alternative research designs, including both quantitative and qualitative research methods.
FORMAT: Lecture, discussions, and group exercises

SLWK 3084.03: Understanding Research and Research Methods in Social Work.
This course provides students with the research methods required to evaluate social work practice at the case and program level. Students will learn how to recognize organizations, case studies, plan evaluations, and analyze quantitative and qualitative approaches to evaluations. Emphasis will be placed on evaluating benefits and outcomes of interventions for clients. Being competent in the evaluation of social work research allows social workers to meet their ethical and professional obligations to evaluate interventions, contribute to social work knowledge and to use social work literature in decision-making.
FORMAT: Lecture, discussions, and group exercises
PREREQUISITE: SLWK 3083.03 is recommended

SLWK 3220.03: Cross-Cultural Issues and Social Work Practice.
This class provides an opportunity to critically examine theoretical frameworks for viewing marginalized racial, ethnic and cultural groups in society, to examine personal values as they relate to the above groups, to develop skills in working effectively with these groups, and to understand social policies as they relate to them.
FORMAT: Lecture, discussions, and group exercises
RESTRICTION: Restricted to Social Work students

SLWK 4010X/Y.06: Advanced Social Work Practice.
The purpose of SLWK 4010 is to help students further develop and become skilled in applying a critical social work practice framework at the beginning practitioners level. NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
Faculty of Management

Location: 6100 University Avenue
Halifax, NS B3H 3J5
Telephone: (902) 494-2582
Fax: (902) 494-1195
Website: http://management.dal.ca

Dean
Wheeler, D., BSc (Hons) (Surrey), PhD (Surrey)
Suite 3050
Telephone: 494-2582

Directors
School of Business Administration
Klapstein, R.E., BSc (Calgary), BA (Alberta), MBA, LLB (Dalhousie), LLM (Osgoode), CGA
Suite 4004
Telephone: 494-7080

School of Information Management
Black, F.A., BEd (Abia), MLS (Dalhousie), PhD (Loughborough)
Suite 4010
Telephone: 494-3656

School of Public Administration
Siddiq, F.S., BA (Dhaka), MA (Dhaka), PhD (Dalhousie)
Suite 3010
Telephone: 494-3742

School for Resource and Environmental Studies
Beazley, K.F., AADipl (Fanshawe College of Applied Arts and Technology), BLA (Ontario Agricultural College), MA (Waterloo), PhD (Dalhousie)
Suite 5010
Telephone: 494-3632

The Faculty of Management includes four schools - School of Business Administration, School of Information Management, School of Public Administration, and School for Resource and Environmental Studies, as well as the Marine Affairs Program. The Faculty has two undergraduate program options - BComm in the School of Business and BEdMD in Environmental Studies, offered jointly by the four schools. The commerce degree has a mandatory co-operative education format.

Students wishing to enrol in programs offered by the Faculty should address themselves directly to the Schools concerned for further information or for help in planning classes of study; for the Bachelor of Management program, contact the Program Office at 494-2659.

Commerce

School of Business Administration
Location: 6100 University Avenue
Halifax, NS B3H 3J5
Telephone: (902) 494-7080
Fax: (902) 494-1107

The Dalhousie School of Business Administration provides quality programs at both the undergraduate and master’s levels that prepare students to contribute to and take leading positions in business and society. Graduates of the programs are competitive in the global, diverse and continuously 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 case work, as well as comprehensive field projects.
- Enhance students’ team and communication skills, which are needed to succeed in careers and management.
- Develop knowledge through research and association with the academic and professional communities.
- Maintain strong ties with both the private and public sectors.

The undergraduate commerce program includes studies in the humanities and social sciences as well as in the functional areas of business. It is offered on a co-operative education (work/study) basis.

Administrative Staff

Dean, Faculty of Management
Wheeler, D.

Director, School of Business Administration
Klapstein, R.E.

Director, Commerce Program
Sheehan, L.

Commerce Program Manager
MacInnis, A.J.

Commerce Program Academic Advisor
TBA.

Director, Centre for International Business Studies
Hobb, C.

Coordinator, International Student Exchange Program
Richard, T.

Director, Management Career Services
Akerboom, L.
## Academic Staff

### Professors Emeriti
- George, R. E., BSc (London), BA (Bristol), PhD (London)
- Park, J. E. L., BCom (Dalhousie), MBA (Wash), CPhil (McGill), FCA

### Professors
- Brooks, M.R., BSc (McGill), MBA (Dalhousie), PhD (Wales) Chairholder - William A. Black Chair of Commerce
- Carroll, R., BBA, BEd (StFX), MBA (Dalhousie), PhD (Dalhousie), FCFA
- Coned, J. E. D., BCom (Dalhousie), MBA (Toronto), FCA
- Duffy, J. E., BA, BEd (Saint Mary's), MS (Wisconsin) Chairholder - Douglas C. MacKay Chair in Finance
- MacLean, L., BA, BEd (StFX), MBA (Dalhousie), PhD (Dalhousie) Chairholder - Herbert S. Lam Chair in Business Education

### Lecturers
- Sy, D., DUESI - DUESII (UCAD), BAA (HEC - Montreal), MSc (HEC - Pacurar, M., BA (Babes - Bolyai, Romania), MBA (Univ. of Nantes), IFAG
- Manderson, J., BA (PEI), MA (Dalhousie), PhD (Alberta)

### Assistant Professors
- Zhao, Y., BSc (Anhui), MSc (Kentucky), PhD (UBC)
- Trifts, V., BBA (UPEI), MBA (St. Mary's), PhD (Univ. of Alberta)
- Sagebien, J., BA (Hampshire Coll), MA (Naropa Inst), MBA (Simmon's Coll), PhD (Dalhousie) Chairholder - Douglas C. MacKay Chair in Finance

### Associate Professors
- Schellinck, D.A., BSc, MBA (Dalhousie), PhD (Ill) Chairholder - F.C. Manning Chair in Economics and Business
- Oppong, A., BSc (Ghana), MBA (Chicago), PhD (York)
- McLarney, C., BComm, MBA (Windsor), PhD (York)
- Marche, S., BA (Royal Military College), Professional Diploma (Alberta), Med (Alberta), PhD (London School of Economics)
- Klapstein, R.E., (Director) BCom, BA (Alberta), MBA, LLB (Dalhousie), LLM (London School of Economics)

### Assistant Professors
- B. Program Guide

### I. Bachelor of Commerce Program

The School of Business Administration offers a four-year Bachelor of Commerce (Co-operative Education) Program that is accredited by the Canadian Association for Co-operative Education (CASE). It is one of the only two mandatory co-op business degree programs in Canada. Co-operative education is an academic strategy that integrates on-campus study with off-campus work experience. The schedule for the Bachelor of Commerce Co-op Program includes seven academic terms (AT) and three work terms (WT), as follows:

<table>
<thead>
<tr>
<th>Year</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>WT1</td>
<td>AT4</td>
</tr>
<tr>
<td>Year 3</td>
<td>WT2</td>
<td>AT5</td>
<td>WT3</td>
</tr>
<tr>
<td>Year 4</td>
<td>AT6</td>
<td>AT7</td>
<td></td>
</tr>
</tbody>
</table>

The co-op program in Commerce requires a broad and general range of studies, including required and elective classes provided by the College of Arts and Science. The program also allows students to choose a major in a variety of special areas. The Commerce program does not offer Minors or Double Majors.

The three work-terms each receive credit, but constitute a full work load. (See the Regulations section of this calendar for “overload” limits and conditions.)

### A. Degree Requirements

- Four-year program - 7 academic terms and 3 work-terms
- Total credits required - 20
- Required GPA for graduation - 2.0
- Required core classes - 10 / 1 credits
- Note: Some suitable replacements for MATH 1101.03 are MATH 1010.03 and MATH 1012.03
- Required core area classes - 10 1/2 credits
- Total credits required - 20
- Four-year program - 7 academic terms and 3 work-terms
- Four-year program - 7 academic terms and 3 work-terms

### Conditions

- Overload limits and conditions.
- Note: Students readmitted to the Commerce program will be subject to the Academic Regulations as stated in the Calendar for the year of readmission. For further information, contact the School of Business, Commerce Program Manager, 6100 University Ave., (902) 494-1811. Email: amrita.macinnis@dal.ca

### B. Program Guide

Students normally follow a fixed program of study, as outlined below:

#### Academic Term One

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMM 1010.03</td>
<td>Business in a Global Context</td>
</tr>
<tr>
<td>ECON 1101.03</td>
<td>Principles of Microeconomics</td>
</tr>
<tr>
<td>COMM 1020.03</td>
<td>Core Business Applications</td>
</tr>
<tr>
<td>COMM 1700.03</td>
<td>Communications I</td>
</tr>
<tr>
<td>One non-Commerce elective</td>
<td></td>
</tr>
</tbody>
</table>

#### Academic Term Two

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMM 2003.03</td>
<td>Communications II</td>
</tr>
<tr>
<td>COMM 2100.03</td>
<td>Financial Accounting</td>
</tr>
<tr>
<td>ECON 1102.03</td>
<td>Principles of Macroeconomics</td>
</tr>
<tr>
<td>MATH 1115.03</td>
<td>Mathematics for Commerce</td>
</tr>
<tr>
<td>One non-Commerce elective</td>
<td></td>
</tr>
</tbody>
</table>

### Core Courses

- Required core area classes - 10 1/2 credits.
- Required GPA for graduation - 2.0
- Total credits required - 20
- Four-year program - 7 academic terms and 3 work-terms
- Four-year program - 7 academic terms and 3 work-terms

### Faculty of Management

### Commerce 375

### Faculty of Management

### Commerce 375
Either the second (COMM 3801) or third (COMM 3802) work term must be an "entrepreneurial work term", as defined by the Norman Newman Centre for Entrepreneurship; or an approved work term in an entrepreneurial setting.

Major in Finance
Students must complete the following three classes:
- COMM 3203.03
- COMM 3206.03
- COMM 4250.03

Major in International Business
Students must do either an approved work term or academic term abroad, in order to major in International Business.

Major in Marketing Logistics
Students must complete the following five classes:
- COMM 3404.03
- COMM 3407.03
- COMM 3409.03
- COMM 4401.03
- COMM 4402.03

Major in Marketing Management
Students must complete the following five classes:
- COMM 3401.03
- COMM 3402.03
- COMM 3404.03
- COMM 3407.03
- COMM 4401.03

Students interested in majoring should consult the School’s website for further details before beginning their fifth academic term.
C. Co-op Work Terms
(Fore more information visit: http://www.dal.ca/commerce)
A work term is a period of time when a student gains practical experience in a business-related work environment. Each passed work term is an academic half credit and must meet the requirements listed below. Three passed work terms are required to graduate.

During a work term a student is considered an employee of their work term employer with reference to the conditions of their employment and is a student with respect to academic evaluation only. The university does not accept liability for the student’s work environment.

Students are remunerated according to employer policy and the labour laws of the jurisdiction in which they work.

Career Education conducts work site visits with both the employers and students to ensure the work term objectives are being met.

Work Term Requirements
- Students receive academic credit upon completion of the following for each work term:
  1. Students must register online with the Registrar office.
  2. Students must also register electronically on Placepro for each work term.
  3. A work term must total no less than 12 weeks with a cumulative total of 42 weeks over three work terms. Each work of a work term must be a minimum of 35 hours.
  4. All jobs, including self-found jobs must be approved by a career educator within Management Career Services (MCS).
  5. Students are responsible for finding suitable employment and students sign a Co-op Work Term Agreement prior to the first work term accepting this responsibility. (Aid in the job search is provided by the career coordinators at the MCS and some job opportunities are posted through MCS on Placepro.)
  6. Students must submit an acceptable work term report pertaining to a student’s area of study or co-operative education fee. Co-op fees are divided into seven equal payments of co-op fees.

- Classes Offered

Sections I, II, III:

1. Students must register online with the Registrar office.
2. Students must also register electronically on Placepro for each work term.
3. A work term must total no less than 12 weeks with a cumulative total of 42 weeks over three work terms. Each work of a work term must be a minimum of 35 hours.
4. All jobs, including self-found jobs must be approved by a career educator within Management Career Services (MCS).
5. Students are responsible for finding suitable employment and students sign a Co-op Work Term Agreement prior to the first work term accepting this responsibility. (Aid in the job search is provided by the career coordinators at the MCS and some job opportunities are posted through MCS on Placepro.)
6. Students must submit an acceptable work term report pertaining to a student’s area of study or co-operative education fee. Co-op fees are divided into seven equal payments of co-op fees.

II. Class Descriptions
Note: Consult the current timetable to determine in which term(s) each class is offered. It may not be possible to offer all the electives listed below every year. Students should bear this in mind when planning their program.

COMM 1010.03: Business in a Global Context
This course provides an introduction to the national and international context of Canadian political, economic and business activity. It presents a sampling of the most relevant issues facing managers in business, labor and public sector organizations. Emphasis is placed on developing an understanding of Canada’s competitive position today and of the historical background and current influences on this position. The focus of the course will be on lectures, the text, guest speakers, and more specifically what is said in class by your instructor as well as in tutorials by your tutorial leader and your colleagues. Leading edge ideas and concepts - many of which are not confined exclusively to any one particular text or article - will be introduced by your instructor during the lectures, and may be reinforced through hands-on from time to time.

COMM 1502.03: Core Business Applications: Introduction to Computers
The course focuses on how business applications, notably word processors and spreadsheet, contribute to the management and analysis of data with respect to business processes. This class begins with an overview of how computers work before proceeding through several modules that involve data-to-document transformations. We use spreadsheets to perform, to automate routine business calculations, and to visualize the data. The analyses is then collated and summarized using features of word processors to produce a final report. Each successive module increases the complexity of the analyses and reports. The class is taught with both in-class lectures and self-paced laboratory exercises.

Note: ASCC 1000 or CSCI 1200 will not be counted in the Commerce program.

EXCLUSION: COMM 1000.03

FORMAT: Lecture 3 hours.

COMM 1701.03: Communications I
This class follows Comm 1701. Students are now well acquainted with communication theory and strategic writing. Now they will learn how to be effective speakers and presenters. The primary goal of this class is to teach students how to appropriately 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.

Note: ASCC 1000 or CSCI 1200 will not be counted in the Commerce program.

EXCLUSION: COMM 1000.03

FORMAT: Lecture 3 hours.

COMM 1702.03: Communications II
This class follows Comm 1701. Students are now well acquainted with communication theory and strategic writing. Now they will learn how to be effective speakers and presenters. The primary goal of this class is to introduce the first-year students to the types of oral communication used in today’s workplace. The course will cover a variety of topics such as interviewing, formal and informal presentations, listening, team dynamics, and conducting meetings. Students will have the opportunity to practice their skills and analyze the skills of others.

Grade basis: Letter grades

EXCLUSION: COMM 1000.03
COMM 2101.03: Introductory Accounting I.
An introduction to the principles and practices used by accountants in processing and communicating data, both within and outside the organization. Emphasis is on financial accounting and reporting, with the following objectives:
1. To introduce the theoretical framework upon which financial statements are based, and examine the major underlying concepts and principles;
2. To demonstrate basic financial accounting methodologies, and develop the analytical and procedural skills related thereto;
3. To understand the information content of conventional financial statements, and the inherent limitations of accounting data.
FORMAT: Lecture 3 hours; plus tutorials, as required; written and computer-based assignments
PREREQUISITE: COMM 1010.03
EXCLUSION: MGMT 2102.03
COMM 2102.03: Introductory Accounting II.
An introduction to the use of accounting information by managers, within the organization. Emphasis is on management accounting and analysis, with the following objectives:
1. To develop an understanding of the kinds of accounting information managers need;
2. To examine managerial accounting methodologies and develop the analytical and procedural skills related thereto;
3. To prepare accounting reports which are useful for management planning, control and decision-making;
4. To develop an awareness of the limitations of managerial accounting information.
FORMAT: Lecture 3 hours; plus tutorials as required; written and computer-based assignments
PREREQUISITE: COMM 2101.03
EXCLUSION: MGMT 2103.03
COMM 2110.03: Accounting Database Analysis and Design.
This class provides a basic understanding of information systems, especially accounting information systems. The class emphasizes the topics of systems analysis, design, control and evaluation, and topics related to database systems. The class emphasizes instruction in, and the use of databases.
FORMAT: Lecture 3 hours; students must complete a major database design project.
PREREQUISITE: COMM 2101.03 or 2102.03, 1501.03 or 1502.03; or permission of the instructor.
EXCLUSION: COMM 3515.03
COMM 2202.03: Finance I.
An introduction to the problems faced by business managers in the acquisition and effective use of the firm’s resources, and analytical concepts for evaluating financial decisions. Topics covered are: Financial ratio analysis, financial planning, time value of money, working capital management, risk and return, and valuation of debt and equity instruments.
FORMAT: Lecture 3 hours
PREREQUISITE: COMM 1010.03 and 2101.03; ECON 1101.03 and 1102.03
CO-REQUISITE: COMM 2202.03
EXCLUSION: MGMT 3201.03
COMM 2203.03: Finance II.
This course provides students with an overview of the theory of corporate finance and its application to the problems faced by financial managers. This course covers an in-depth study of capital budgeting and long term investment decisions in national and international contexts, risk and return, capital structure, dividend policy, lease financing, and the fundamentals of options and futures.
FORMAT: Lecture 3 hours
PREREQUISITE: COMM 2202.03
COMM 2303.03: Introduction to Managing People.
This course provides an appreciation of some of the legal problems that might be faced by the business community. It examines the meaning and sources of law, the machinery of justice, the law of torts, various aspects of the law of contracts and application of principles from equity, the law of agency, the law relating to the sale of goods, bailment, contracts of employment, negotiable instruments, real property, mortgages, partnerships, international transactions, corporations and secured transactions. Students must make extensive use of the law library in writing reports on a series of cases.
FORMAT: Lecture 3 hours
PREREQUISITE: At least second-year standing.
COMM 2801.03: Work-Term One, Bachelor of Commerce Co-op.  
Unless written permission is obtained, in advance, from the Program Manager, this must be done in the Winter term of the second year.  
PREREQUISITE: Successful completion of at least 6.1/2 full credits, of which at least 3 credits must be in the Core Area (Commerce, Economics, Mathematics)  

COMM 3100.03: Financial Reporting and Statement Analysis.  
This course is intended for non-accounting students. The approach to the class is analytical rather than procedural, with an emphasis on a user perspective. Topics include an in-depth treatment of liquidity risk, and profitability analysis, and valuation as well as accounting topics such as pensions, leases, earnings per share, and cashflow.  
FORMAT: Lecture 3 hours  
PREREQUISITE: COMM 2101.05 and 2102.05  
EXCLUSION: COMM 3105.03, COMM 3111.05 and COMM 3113.05  

COMM 3101.03: Managerial Accounting and Decision Making.  
The course focuses on cost and management accounting analysis to support the formulation and implementation of different business strategies. These include analysis of the entire value chain (from R&D to customer service), analysis of underlying cost drivers, and customer profitability analysis. Modern costing approaches for enhancing an organization’s competitive position (such as target costing and life-cycle costing) are also considered. A combination of case studies and problem-solving techniques are used to demonstrate the concepts and techniques.  
NOTE: This course is intended primarily for non-accounting majors, accounting majors who are considering professional certification in management accounting will also find it useful.  
FORMAT: Lecture/case discussions 3 hours  
PREREQUISITE: COMM 2101.03 and COMM 2102.03  
EXCLUSION: BUSI 6108.03  

COMM 3105.03: Intermediate Financial Accounting I.  
This class is designed to introduce students to the structure and operations of financial institutions and the role they play in the growth and operation of capital markets. The class content includes reviewing the operation and functioning of various types of financial institutions and their roles in the economy. An emphasis will be put on measuring different types of risks and methods for managing these risks for financial institutions, particularly the banks. The topics include (but are not limited to) interest rate risk management, credit risk management, liquidity risk management, market risk management, and so forth. The role of derivative securities in various hedging strategies will also be reviewed.  
FORMAT: Lecture 3 hours  
PREREQUISITE: COMM 2201.03 and 2202.03  

COMM 3206.03: Portfolio and Money Management.  
This course is designed to provide the students with an overview of the Modern Portfolio Theory and its application to the real world. In particular, a considerable effort will be made to compare and contrast the activities of money managers with the ones that are developed through various theories. The intention is to provide our students with the needed skills to successfully face the challenging world of portfolio and money management.  
FORMAT: Lecture 3 hours  
PREREQUISITE: COMM 2201.03 and 2202.03  

COMM 3303.03: Introduction to Human Resource Management.  
The role of human resource management and administration of the personnel function are analyzed, along with the major aspects of the personnel function: job analysis, human resource planning, selection, training, performance appraisal, compensation, labor relations, safety and health, and team building. Knowledge of the processes is supplemented by the development of analytical skills in coping with various human resource problems and in the integration of the processes with the many other functions required in the organization. This “system and process” analysis builds upon the skills and knowledge acquired in COMM 2011.05. Cases simulate work environments.  
FORMAT: Lecture 3 hours  
PREREQUISITE: COMM 2011.05 or COMM 2021.03  
EXCLUSION: MGMT 2303.03 and 2304.03
COMM 3307.03: New Venture Creation.
This class is about venturing - the process of creating new ventures in both the for-profit and not-for-profit environment. The target audience is students, in any discipline, who have the desire to venture. The course is designed to expose students to the issues, problems and challenges of creating new ventures and to provide students with the opportunities, within the framework of a formal class, to explore and develop venture ideas as they have been considered widely 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 2301.03, 2303.03, and 2401.03, or permission of the instructor.
COMM 3308.03: Managing the Family Enterprise.
Family enterprises dominate the business landscape of Atlantic Canada, business such as Sobey's, Irving, and McCain's. In addition, a large number of smaller businesses are family-owned and operated two. With over 65% of all businesses in Canada being family firms, the likelihood of your encountering a family firm (as a family member that owns the business, or as an employee, a customer, or a supplier) is extremely high. While these firms are similar to non-family firms in some respects, they are quite unique in others. This class provides you with a state-of-the-art treatment of critical issues that confront these firms. It addresses issues such as challenges and strengths of family firms, inter-generational dynamics, sibling relationships, managing of conflict, succession planning and transfer of power from one family member to another, professionalization and strategic management of family firms. The class provides you with an opportunity for extensive interaction and discussion in class, as well as to view a family firm closely through a field project. In addition, you are exposed to some professionals who deal with family firms.
FORMAT: Lecture/discussion 3 hours PREREQUISITE: COMM 2101.03 (or MGMT 2101.03) and COMM 2401.03 (or MGMT 2401.03) or permission of the instructor.
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 required 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.
Course focuses on six major approaches to the study of leadership. Some major ethical traditions will be linked to managerial excellence, corporate culture, motivation, human personality, core values, decision making and vision. New perspectives on mentoring, coaching and empowerment will also be emphasized in this course. In view of the crisis in ethics most professions, the major parameters of ethical leadership will be analyzed.
PREREQUISITE: COMM 2303.03
COMM 3401.03: Consumer Behaviour.
In view of the very competitive situation in modern business, the firm that is successful designs and sells products that meet the desires of specific consumer segments. Thus, analysis and prediction of consumer behaviour are increasing in importance and sophistication. An extensive body of research evidence from marketing and the behavioral sciences is explored and evaluated to assess the marketing implications of elements of consumer behaviour. Emphasis in class will be focused on how to incorporate an understanding of consumer behaviour into strategic marketing plans.
FORMAT: Lecture/discussion 3 hours PREREQUISITE: COMM 2401.03
COMM 3402.03: Marketing Communications.
The communication tools of advertising, sales promotion, and public relations are presented as part of the overall marketing mix. Positioning, segmentation, and other marketing concerns will be studied as they relate to the firm’s communications strategy. Challenges of the product manager will be presented to help students appreciate those factors which affect marketing communications.
FORMAT: Lecture/case method/applied project work 3 hours PREREQUISITE: COMM 2401.03
COMM 3403.03: Market Research.
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 and three or four 1.5-hour tutorials early in the semester.
COMM 3405.03: Export Marketing.
The class will discuss reasons why Canadian companies get involved in exporting, and will focus on the development of marketing plans for the export of Canadian goods and services. Also discussed will be barriers faced by companies engaging in international trade, and government agencies providing support services to facilitate international transactions.
FORMAT: Lecture/discussion 3 hours and three or four 1.5-hour tutorials early in the semester.

380 Commerce
by technological developments in database storage and mining, the development of relationship marketing, and the introduction of new media such as the Internet.

The skills required in direct marketing are in strong demand within the Canadian economy. This class focuses on the development of a direct marketing strategy that requires an understanding of the tools of direct marketing, the creative process, and how direct marketing fits into the total marketing strategy.

This is a very applied class that will have guest speakers and industry projects. It is designed to complement the Marketing Informatics class that focuses more on the total information needs, acquisition and usage within a firm as opposed to marketing.

PREREQUISITE: COMM 2301.03 and COMM 2401.03

COMM 3412.03: Internet Marketing.

As more business is conducted online, it is important that marketers understand technology developments and their impact. That is the goal of this course. It begins by developing a framework so that the forces driving use of the Internet in marketing and business are understood. With this foundation in place, a series of online marketing themes are explored, including such topics as customer support and online quality, personalization; and traffic and brand building. Finally, a series of problem areas will be explored such as distribution channel conflicts and intellectual property.

FORMAT: Lectures/discussions/group projects

PREREQUISITE: COMM 2401.03

COMM 3501.03: Production/Operations Management.

“Production” is one of the basic functions of any organization, whether it provides goods or services. Consequently, all managers, whatever their specialist interests, should have an understanding of some of the key concerns in managing operations; particularly if they aspire towards senior/general management positions. The purpose of this class is to provide such an understanding. It begins at a basic level by examining various types of production processes and continues by considering key aspects of scheduling, control, materials management and quality assurance. It concludes by examining production planning and strategy.

FORMAT: Two 1.5 hour lectures (or case discussions)

PREREQUISITE: COMM 2203.03, 2301.03, 2401.03, 2501.03, or STAT 1060.03 or MATH 1060.03

EXCLUSION: MGMT 3503.03

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 management systems are used in organizations, the technologies that influence their use, how they need to be managed, and the impact that they can have on organizations' competitive positions.

This is an on-line class (offered in winter and summer sessions) designed to meet the needs of Commerce students both on campus and in Co-op placement. Much of it is self-paced, and this will place a demand on you for self-discipline and hard work. The course web page, and the pages linked to it, are designed to support you in this adventure in learning.

CLASS PAGE: http://www.dal.ca/cd/

FORMAT: Delivered online/LINE, using Blackboard Learning Systems, the World Wide Web and electronic mail. You are required to have daily access to a high-speed computer with Internet access. Weekly participation in online activities and assignments is required, starting in the first week.

PREREQUISITE: COMM 1001.03 or COMM 1101.03 and COMM 1901.03 or COMM 1902.03

CROSS-LISTING: BUSI 3511.03, INFO 5905.03, PUAD 6205.03

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 2601.03 and at least 7 ½ other credits in the Core Area (Commerce, Economics, and Mathematics)

COMM 3802.03: Work-Term Three, Bachelor of Commerce Co-op.

Unless written permission is obtained, in advance, from the Commerce Program Manager, this must be done in the Summer term of the Third year.

PREREQUISITE: At least 12 full credits earned, including COMM 3801.03 and at least 10 other credits in the Core Area (Commerce, Economics, and Mathematics)

COMM 4000.03: Directed Reading and Research.

This class offers the student the opportunity to explore in greater detail a particular area of interest. The content of the class is negotiated with the individual instructor involved. The student and instructor must develop a proposal, and submit it to the Curriculum Committee for approval. Guidelines are available from the Commerce Program Manager.

COMM 4101.03: Advanced Topics in Accounting I.

This class provides a theoretical framework for the study of accounting policy. Case analysis is an integral part of the course. Topics covered include partnerships, standard setting, not-for-profit accounting, fund accounting, various practical and theoretical topics, and current topics, as appropriate.

FORMAT: Lecture 3 hours

PREREQUISITE: COMM 3105.03 and 3111.03, or permission of the instructor

CROSS-LISTING: BUSI 6110.03

EXCLUSION: COMM 3115.03

COMM 4102.03: Advanced Topics in Accounting II.

This course provides an in-depth study of the interrelated topics of intercorporate investments, business combinations, consolidated financial statements, foreign currency transactions and foreign operations. The course also covers segmented reporting and bankruptcy.

FORMAT: Lecture 3 hours

PREREQUISITE: COMM 3105.03 and 3111.03, or permission of the instructor

CROSS-LISTING: BUSI 6120.03

COMM 4114.03: Computer Security, Controls and Auditing.

This course covers the principles of establishing and maintaining 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 structured and organizational considerations for security control, the role of key individuals, control and security techniques at the boundary, for input, output, processing communication and data storage. We will use software to protect your computer and your network. We will relate the course materials to the COBIT Control Objectives for IT a world recognized standard. The course covers most of the material to write external exams for certification as a Security Auditor. It covers the computer auditing portion of the Atlantic Provinces School of Accountancy Audit II. It provides exemptions for the Computer auditing courses in the CA program in Ontario and Quebec as well as similar courses offered by the CGA’s and the CMA’s.

FORMAT: Lecture 2 hours/sub 1 hour

PREREQUISITE: COMM 2110.03
COMM 4102.03: Taxation.  
An introduction to the taxation system in Canada, with special reference to the provisions of the Income Tax Act and their effects on business decisions. The measurement processes used to determine the tax base are examined, and the basic elements in the calculation of tax payable for individuals and corporations are discussed. 
FORMAT: Lecture 3 hours, with significant effort directed to the solving of short case problems. 
PREREQUISITE: COMM 2101.03 or MGMT 2101.03; ECON 1101.03 and 1102.03 
CROSS-LISTING: BUSI 6102.03

COMM 4201.03: International Financial Management.  
The focus is how to manage a set of cash flows of different currencies. Topics include international accounts, balance of trade, currency exchange rate forecasting, capital budgeting, and assessing and hedging foreign exchange risk. 
PREREQUISITE: COMM 2102.03, 2203.03

COMM 4202.03: Derivatives.  
This course is an introduction to derivatives and the main applications of derivatives for both investment purposes and corporate finance use. As an introductory or first course in derivatives, the goal is to cover the central concepts and issues that will permit the student to start using the products and understanding the main advantages, as well as the issues with derivative transactions. The course covers both quantitative pricing issues, as well as the many practical qualitative issues involved with the use of derivatives. Students should be comfortable with basic statistics and algebra. Knowledge of calculus is not required for this course. Students should also be comfortable with Excel spreadsheets and basic Excel mathematical functions. 
PREREQUISITE: COMM 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 2202.03 and 2203.03

COMM 4250.03: Theory of Finance.  
This course is intended to enhance students’ understanding of the theory of finance to a level which enables them to critique current research published in journals and to apply selected research to financial management issues. This course is designed with the assumption that students have a background in financial economics. In addition to the main text, selected journal articles will be reviewed in each area. 
Seminar style classes will feature discussion and student participation. 
FORMAT: Seminar 3 hours 
PREREQUISITE: COMM 2202 and COMM 2203 
CROS-LISTING: BUSI 6250.03

COMM 4301.03: Managing the Venturing Process.  
Managing the Venturing Process is a capstone course that explores the strategic elements required to venture successfully. Delivery is in a seminar format with students taking significant responsibility for their own learning. The constructs of venture stage, venture process and venture context are used to frame the discussion. 
PREREQUISITE: COMM 3306.03 or MGMT 3907, or permission of instructor. 
CROSS-LISTING: MGMT 4901.03

COMM 4306.03: Organizational Change, Theory and Design.  
This course will provide students with an understanding of contemporary organizational theories relating to organizational structure, design and change. The main thrust of the course will be a practical analysis of why organizations change, why organization/structures evolve and the impact of change on individuals. The objective of the course is for students to fine-tune those analytical and decision-making skills necessary for the effective introduction of change into complex organizations. 
NOTE: This course replaces COMM 4501.03
PREREQUISITE: COMM 2101.03 and COMM 3300.03 
EXCLUSION: COMM 3302.03, COMM 4301.03, COMM 4302.03

COMM 4315.03: International and Intercultural Management.  
This senior level course is designed to provide students with the knowledge and skills necessary for effective membership and management in global as well as culturally diverse domestic workplaces. The growing importance of international business and escalating levels of involvement in global competitiveness necessitates that the manager of the 21st century acquire additional skills and abilities for effective international and intercultural interactions at home and abroad. 
The course content includes such topics as; introduction to comparative and cross-cultural management, variations on cultural orientations and value, cross-cultural communications, employee attitude, motivational issues in cross-cultural settings, differences in management and leadership styles, training for international assignments, cross-cultural staffing, inter-cultural negotiations, ethics and social responsibility, expatriation and repatriation management, and designing global structure. 
RECOMMENDED: COMM 3300.03 and 3309.03 
FORMAT: Lecture 3 hours/cases/exercises 
PREREQUISITE: COMM 2102.03 or COMM 2203.03 
EXCLUSION: MGMT 4001.03

COMM 4351.03: Competitive Strategy.  
Competitive Strategy is the first of the two required classes in strategic management in the Bachelor of Commerce program. The focus in both classes is on decision-making from the viewpoint of senior and middle managers. 
In COMM 4351, students examine the competitive environment faced by organizations. This includes understanding the prevailing economic, social, ethical, demographic, political, and technological trends, as well as the competitive forces prevailing in different industries. Various pedagogical methods are used to develop and enhance the analytical, writing, and presentation skills required in today’s business environment. 
Students are exposed to a wide variety of organizations and contexts through case studies, and have an opportunity to examine a particular industry in detail through their field projects. 
PREREQUISITE: At least 12.5 credits earned, including COMM 3802.03 and at least 9 other credits in the Core area

COMM 4352.03: Strategic Management.  
Strategic Management builds on COMM 4351: Competitive Strategy. After conducting a brief review of the external environment faced by the organizations, the focus of this capstone course turns to the examination of the internal workings of an organization. More specifically, this course is about the general manager’s task of implementing competitive strategy and managing strategic changes. This course is integrative, as it deals with the organization as a holistic entity. 
In COMM 4352, various pedagogical methods are used to develop and enhance your analytical, writing, and presentation skills required in today’s business environment. It also emphasizes analytical tools and conceptual frameworks that aid in the development of judgment. 
Although it draws on specific concepts, tools, and techniques from other core courses in the Bachelor of Commerce program, its basic purpose is to sharpen your expertise and skills at developing judgments to help guide managerial actions in the face of uncertainty and complexity. Therefore,
you are strongly encouraged to leverage and apply those concepts, tools, and techniques in this course.

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. Instruction is mostly through case study discussions, report writing, and group presentations.

COMM 4402.03: 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 premiere intercollegiate marketing competitions in Winnipeg in January. Evaluations are based on competitive performance, design and implementation of a fundraising campaign, team presentation, and the development of a study/implementation guide incorporating learnings for subsequent teams.

COMM 4413.03: Marketing Informatics.
Marketing Informatics is an applications, not theoretical based course that introduces the user to the concepts underlying the techniques. Students learn basic programming skills using Excel, Access and industry standard statistical software. The class works with an industry client who supplies a data set for analysis. The emphasis is on the student developing real world skills and many of those who have attended this class in the past have found exciting careers as market analysts.

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.

COMM 4538.03: Applied Multivariate Analysis.
The convenience of packaged statistical programs (e.g. SPSS) has opened the area of data analysis to researchers with a wide variety of backgrounds. Since it is possible to operate “canned” programs without understanding advanced mathematics, there is a need for a course that introduces the user to the concepts underlying the techniques. Students use and interpret statistical programs with data sets from such business areas as marketing, finance and organizational behaviour.

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.

COMM 4801.03: Special Topics.
This course is intended for marketing majors who wish to deepen their understanding of how marketing strategy is formulated and implemented. This involves high-level, long-time-frame decisions, since the product and market strategies are at issue. The course aims to improve decision-making skills in managing product/market portfolios and implementing marketing strategies. As a capstone course, it is designed to permit the integration of learning from other marketing courses. Instruction is mostly through case study discussions, report writing, and group presentations.

COMM 4801.03: Operations Research.
The goal of this course is an understanding of the major O.R. techniques and how to apply them, not their theoretical development. Topics include: linear programming formulation, simplex method, sensitivity, integer variables, transportation, network problems, and simulation. Excel and GAMS are used to illustrate the main topics.
Management

Faculty of Management
Location: 6100 University Ave.
Halifax, NS B3H 3J5
Telephone: (902) 494-2871
Fax: (902) 494-3480
Website: www.bmgnt.management.dal.ca

Dean
Whacker, D., BSc (Hons) (Surrey), PhD (Surrey)

Director
Howard, Vivian, BA, MA (UBC), MLIS (Dal)

Program Assistant/Academic Advisor
Muise, Margie
Telephone (902) 494-2659
Email: Margie.Muise@dal.ca

Faculty are drawn from all four Schools that comprise the Faculty of Management: Business Administration, Information Management, Public Administration, and Resource and Environmental Studies.

I. General
The Faculty offers a curriculum of undergraduate and graduate studies designed to prepare students for careers in the fields of business, public administration, environmental and information management.

The undergraduate management degree includes studies from the humanities and social sciences as well as in the functional areas of management.

In co-operation with the School of Health and Human Performance, the Faculty also offers a combined, five-year program in which the student receives both degrees upon graduation. Please refer to Faculty of Health Professions on page 345 for more information on the Bachelor of Science (Recreation)/Bachelor of Management.

II. Bachelor of Management
The Bachelor of Management provides undergraduate education in the management of organizations and human activities, in public sector management, environmental management, information management, and enterprise management.

This degree recognises that managers work and move across borders between these sectors of management. Drawing of faculty from all four schools in the Faculty of Management, the program recruits students locally, nationally and internationally.

The Objectives of the Bachelor of Management program are:
• 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’ awareness of their strengths, career aspirations and personal goals.
• Prepare students to graduate with management skills that can be applied in general management, information management, environmental management, public sector management, not-for-profit management, and enterprise management.

A. Degree Requirements
• Four-year program
• Total credits required - 20
• Required GPA for graduation - 2.00
• Required core area classes - 12 credits
  • ECON 1101.03
  • ECON 1102.03
  • ECON 1103.03
  • MGMT 1000.03
  • MGMT 1001.03
  • INFO 1001.03
  • INFO 1002.03
  • MGMT 2100.03
  • MGMT 2101.03
  • MGMT 2303.03
  • MGMT 2304.03
  • MGMT 2305.03
  • MGMT 2306.03
  • INFO 1003.03
  • INFO 1004.03
  • INFO 1601.03
  • INFO 1602.03
  • INFO 1603.03
  • MGMT 2401.03
  • MGMT 2402.03
  • MGMT 2501.03
  • MGMT 2502.03
  • PUAD 2801.03
  • PUAD 2803.03
  • MGMT 3201.03
  • MGMT 3501.03
  • MGMT 4001.03
  • MGMT 4002.03
• Open electives
  • 8 full credits, chosen from all classes offered in the University
  • A maximum of 4 full credits (eight half credits) classes at the 1000 level is permitted
  • A maximum of 3 full credits (six half credits) classes in Commerce is permitted

Strongly advise students to choose a class in ethics (e. g., PHIL 2081 Business Ethics, PHIL 2485 Technology and the Environment)

B. Program Guide
Students will normally follow the classes as listed in the table below:

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall (Sept - Dec)</th>
<th>Winter (Jan - Apr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>ENVI 1100X.03</td>
<td>ENVI 1100Y.03</td>
</tr>
<tr>
<td></td>
<td>ECON 1101.03</td>
<td>ECON 1102.03</td>
</tr>
<tr>
<td></td>
<td>MGMT 1000.03</td>
<td>MGMT 1001.03</td>
</tr>
<tr>
<td></td>
<td>INFO 1002.03</td>
<td>INFO 1003.03</td>
</tr>
<tr>
<td></td>
<td>INFO 1601.03</td>
<td>INFO 1602.03</td>
</tr>
<tr>
<td>Year 2</td>
<td>MGMT 2101.03</td>
<td>MGMT 2303.03</td>
</tr>
<tr>
<td></td>
<td>MGMT 2304.03</td>
<td>MGMT 2501.03</td>
</tr>
<tr>
<td></td>
<td>MGMT 2305.03</td>
<td>MGMT 2502.03</td>
</tr>
<tr>
<td></td>
<td>PUAD 2801.03</td>
<td>PUAD 2803.03</td>
</tr>
<tr>
<td>Year 3</td>
<td>MGMT 3201.03</td>
<td>MGMT 3501.03</td>
</tr>
<tr>
<td></td>
<td>Open Elective .03</td>
<td>Open Elective .03</td>
</tr>
<tr>
<td></td>
<td>Open Elective .03</td>
<td>Open Elective .03</td>
</tr>
<tr>
<td></td>
<td>Open Elective .03</td>
<td>Open Elective .03</td>
</tr>
<tr>
<td>Year 4</td>
<td>MGMT 4001.03</td>
<td>MGMT 4002.03</td>
</tr>
<tr>
<td></td>
<td>Open Elective .03</td>
<td>Open Elective .03</td>
</tr>
<tr>
<td></td>
<td>Open Elective .03</td>
<td>Open Elective .03</td>
</tr>
<tr>
<td></td>
<td>Open Elective .03</td>
<td>Open Elective .03</td>
</tr>
</tbody>
</table>

*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 0030 or 0010, and attain a 60% in the class before their second year of study.
C. Combined Degree
The School of Health and Human Performance and the Faculty of Management offer a five-year program in which a student graduates with both degrees, Bachelor of Science (Recreation)/Bachelor of Management. Please consult the School of Health and Human Performance in the calendar (page 286) for more information.

D. Informal Areas of Concentration
Informal areas of concentration are available to students who focus their electives in areas of entrepreneurship, environment, or public sector management. Opportunities also exist for students to focus their electives on other areas. Interested students should contact the Program Manager. These informal areas of concentration are not reflected on your transcript, however, a reference letter is available from the Program Manager.

Entrepreneurship: Students should follow the requirements for the Major in Entrepreneurship in the Commerce program. (See page 376.)

Environment: Students should take 5 courses above the 1000 level from the approved electives list in environmental studies including 2 courses above the 2000 level. (See page 385.)

Public Sector: Students should take a total of 5 courses either from political science or economics (or a combination of both) above the 1000 level, including 2 courses above the 2000 level. (See pages 398 and 437 respectively.)

International Development Studies: Students should take INTD 2001, 2002, 3001, 3002 and two full credits (4 half credits) from the list of approved international development studies classes starting on page 141. One credit must be at the 2000 level and one credit at the 3000 level.

For all other areas, the student must bring their informal area of concentration to the attention of the Program Manager one month before graduation in order to obtain a letter of reference about the area of concentration.

III. Class Descriptions
NOTE: Students enrolled in the Bachelor of Management must register for cross-listed classes under the MGMT designation.

MGMT 1000.03: Managing Organizational Issues I.
The course places management in its broadest context and helps students understand the complex social, economic, ecological, political and technological forces shaping the 21st century leadership in the public, private and non-profit sectors. Key themes explored in the course include systems thinking, values based approaches to management, and personal and professional development. We see these who successfully complete MGMT 1000/1001 as holistic, critical and strategic thinkers, acting with integrity to engage stakeholders, individually and in teams, to achieve personal, organizational and societal goals through interdisciplinary approaches. MGMT 1000/1001 graduates will possess the ability to think globally, strategically, boldly, holistically and inter-disciplinarily, while considering local ecological, economic and cultural differences
EXCLUSION: COMM 1000.03, 1001.03, 2001.03, HESA 403.03
MGMT 1001.03: Managing Organizational Issues II.
A continuation of MGMT 1000.03.
PREREQUISITE: MGMT 1000.03
INFO 1002.03: Effective Written Communications.
Improving writing skills allows managers to save time, to make their correspondences 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, effective methods of use to select effective methods of use for any document, how to make effective use of graphics, how to work effectively as part of a collaborative writing team, and how to write clearly, correctly and concisely.
EXCLUSION: COMM 2701.03, CPST 2001.03, MGMT 1002.03, INFO 1002.03, COMM 1701.03
INFO 1003.03: Effective Oral Communications.
This course will introduce students to the broad range of oral communication skills needed by managers. As such, the course is very practical in its approach, covering a variety of applied topics including giving clear instructions, improving listening, interpreting and using nonverbal communication, participating in meetings as well as delivering formal 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 ASC 2100.03 and ASC 3100X/3102X/3103X are exempt from registering for INFO 1002.03 and 1003.03.
PREREQUISITE LIBS 1002.03 or INFO 1002.03 or MGMT 1002.03
EXCLUSION: HAHP 1200.03, COMM 1702.03, INFO 1003.03, MGMT 1003.03
ENV 1100X/Y.06: Introduction to Environmental and Resource Management.
An introduction to resource and environmental problems and the range of solutions to be considered in addressing them. Key forces driving environmental change are discussed, and means for reducing their negative effects explored. Lectures are complemented with tutorials in which students debate issues and undertake hands-on exercises.
NOTE: Students taking this course must register for both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
INSTRUCTORS: Bash, P.
EXCLUSION: ENV 1000X/Y.06, SOYA 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. ASC 1000 and CSC 1200 are exclusions up to 1998. After 1998, they are an open elective in the BManagement Program.
INFO 1602.03: Critical Information Skills.
Topics dealt with in the class include finding, evaluating and using information and knowledge management, communications, information-seeking processes, the ethics of information handling, evaluation of information sources, resources for professional application, organizing the search for information and access tools to information and the process of building a subject/topic pathway. 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 help students develop the 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 those with existing print and electronic resources.
MGMT 2101.03: Financial Accounting.
This class focuses on the accounting principles used in the measurement and reporting of an organization’s operating, financing and investing activities to the parties external to that organization that have a need for this information. The coverage includes an examination of the accounting process, the financial statement disclosure requirements in business, government and not-for-profit settings, and some techniques for analyzing the financial statements useful to both the external users and internal management.
PREREQUISITES: MGMT 1000.03, 1001.03, or professor approval
EXCLUSION: COMM 2201.03
MGMT 2102.03: Managerial Accounting.

This class examines how accounting can provide internal financial and other information to assist management in their planning, decision-making and control. It will cover topics such as cost behaviour, cost-volume-profit analysis, and the principles and procedures of financial and managerial accounting. Students will learn how to prepare financial statements and understand their implications for decision-making and control. The class will also cover the role of accounting in internal control systems and the importance of ethical considerations in financial reporting. A prerequisite for this class is MGMT 1000.03.

PREREQUISITE: MGMT 1000.03
EXCLUSION: COMM 2401.03
CROSS-LISTING: COMM 2401.03

MGMT 2101.01: Public Sector Financial and Managerial Accounting.

This is required for all students who have been granted exemption for MGMT 2011 and MGMT 2012. It covers the components that are covered in the MGMT classes and missing from typical private sector accounting classes. It includes an overview of public sector accounting, financial reporting, and the role of public sector managers in decision-making.

MGMT 2303.03: People, Work, and Organizations: Micro Organizational Behaviour.

This course focuses on the study of work organizations and management within the context of social sciences to help us understand and make sense of individual behaviour and human action in groups and organizations. Through a combination of individual and group work and a blend of classroom-based activities supplemented by additional resources and materials available via BLS, this class will explore concepts and theories relating to micro-levels of organizational behaviour. Topics include: individual motivation, personality, perception, attitudes and values, and the relationships between individual choices and actions. Links will also be made to practice and processes in organizations (for example: rewards, appraisal, feedback, and organizational commitment). PREREQUISITE: MGMT 1000.03 and MGMT 2301

MGMT 2304.03: People, Work, and Organizations: Macro Aspects of Organizational Behaviour.

This course builds on the concepts and principles identified in MGMT 2303. It takes a macro perspective that will consider the relationships between structural, cultural, social, economic and political factors and managing and organizing work. Topics include: organizational structure and processes, leadership, power and politics; organizational cultures, processes of organizational change, and legal and ethical issues and frameworks. To achieve a balance between theoretical and practical learning, the teaching methods will combine mini-lectures with its class/ on-line exercises, cases, presentations and group facilitated discussions. PREREQUISITE: MGMT 2303. MGMT 2304.03 is a continuation of MGMT 2303.

EXCLUSION: COMM 2301, COMM 2303, COMM 3301 and MGMT 2301

*Students who have taken COMM 2303 Introduction to Managing People are currently required to take MGMT 3309 Management Development Skills for full exclusion to MGMT 2301 and 2304.

MGMT 2401.03: Introduction to Marketing.

The objective of this class is to familiarize you with marketing’s mode of inquiry—the way marketers look at the world. As a marketer you should be able to: 1) ask the right questions about markets; 2) organize data into relevant information; 3) discover market opportunities; 4) set goals; 5) create a marketing plan that includes clear target markets, as well as product, price, distribution and communication strategies; and 6) implement and control a marketing program. The class will also train you in a number of skills that are necessary for higher level classes and career advancement (i.e., case analysis and analytical report writing).

NOTE: Students enrolled in the Bachelor of Management must register for this course under its MGMT designation. Only students enrolled in the Bachelor of Management are permitted to take MGMT 2401.03

PREREQUISITE: MGMT 1000.03, MGMT 1001.03, ECON 1001.03, ECON 2021.03
CROSS-LISTING: COMM 2401.03
EXCLUSION: COMM 2401.03

MGMT 2402.03: Marketing Applications in the Not-for-Profit Sectors.

This course 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 marketing class and 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. Topics are covered to include: micro-marketing (firm perspective) vs. macro-marketing (societal perspective); non-profit, cause-related, “green” and social marketing; is-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 course under its Bachelor of Management designation to take MGMT 2501.03

PREREQUISITE: LIBS 1001.03 or INFO 1001.03
CROSS-LISTING: COMM 2501.03
EXCLUSION: MATH 1001.03 or 2001.03, STAT 1001.03 or 2001.03, ECON 2200.03, ECON 2222.03

MGMT 2502.03: Statistics for Managers II.

A continuation of MGMT 2501.03. Topics covered include ANOVA, chi-square, non-parametric statistics, regression and correlation, time series, index numbers, an introduction to the use of statistical packages on the computer, and management uses of statistical data.

NOTE: Students enrolled in the Bachelor of Management must register for this course under its Bachelor of Management designation to take MGMT 2502.03

PREREQUISITE: MGMT 2501.03
CROSS-LISTING: COMM 2502.03
EXCLUSION: MATH 1001.03 or 2001.03, STAT 1001.03 or 2001.03, ECON 2200.03, 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 politicians and information management. PREREQUISITE: Second-year student

EXCLUSION: PUAD 2249.03

PUAD 2803.03: Management in the Public Sector.

This class provides an introduction to the principles and methods used in the management of financial, human, and information resources in public sector organizations, with an emphasis on leadership in the Canadian context. It is designed to meet the educational needs of undergraduate students who are interested in a career in public service, the arts, or non-
MGMT 3015.03: Organizational Behavior.
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 used in self 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. The emphasis of the course is on building general problem solving skills. Students are expected to apply these skills in other courses and in their professional careers.
PREREQUISITE: INFO 1601.03 or LIBS 1601.03, MGMT 2301.03, MGMT 2304.03, MGMT 2401.03, MGMT 2501.03
CROSS-LISTING: COMM 3501.03

MGMT 3031.03: Financial Management.
This course is an introduction to the techniques and core principles for making optimal financial decisions for profit, not-for-profit, and public sector organizations. It examines the role of finance in an integrated management framework. Concepts covered include starting business analysis, financial planning, valuation and capital budgeting analysis.
PREREQUISITE: ECON 1101.05, ECON 1102.05, MGMT 2010.03, MGMT 2015.03
EXCLUSION: COMM 2201, COMM 2202.03/2203.03

MGMT 3032.03: Management Skills Development.
This class will expose students to key knowledge, skills, and attitudes (KSA’s) considered critical to managerial success. Such an exposure is designed to provide the students with the behaviors which will help ensure that, when managing human resources, staff will perform at or near peak capabilities. Topics include understanding what the successful manager needs to know, understanding the personal self, communications, interpersonal negotiations, goal setting, managing innovation and change, handling conflict and anger, performance evaluation, counseling and feedback, and management attitudes needed for success. Significant amounts of classroom time will be devoted to behavior modeling exercises, role plays, case studies, and group discussions.
FORMAT: Lecture/discussion 3 hours
PREREQUISITE: MGMT 2303 and MGMT 2304
CROSS-LISTING: COMM 3009

MGMT 3032.03: Management Skills Development.
This class is an introduction to the techniques and core principles for making optimal financial decisions for profit, not-for-profit, and public sector organizations. It examines the role of finance in an integrated management framework. Concepts covered include starting business analysis, financial planning, valuation and capital budgeting analysis.
PREREQUISITE: ECON 1101.05, ECON 1102.05, MGMT 2010.03, MGMT 2015.03
EXCLUSION: COMM 2201, COMM 2202.03/2203.03

PUAD 3005.03: Government Policy Toward Business.
The focus of this course is twofold: first, how governments shape business behavior through policy, regulation, state ownership, and other forms of intervention; and secondly, why collaboration is a growing reality for public sector and private sector organizations and the implications for each sector and society as a whole. The course aims to understand the fundamental differences between the public interest and the private interest and how such differences are sorted out through contemporary governance systems involving public, private, and civic actors. While the emphasis will be on the Canadian environment, a comparative perspective will also be used in light of many issues that are increasingly transnational in scope.
FORMAT: Lecture/Seminar
PREREQUISITE: Second year course in Public Administration, ECON 1101, ECON 1102 or equivalent

MGMT 3907.03: New Venture Creation.
This class is about venturing - the process of creating new ventures in both the for-profit and not-for-profit environment. The issue of Social Entrepreneurship will receive specific attention. The target audience is students, in any discipline, who have the desire to venture. The course is designed to expose students to the issues, problems, and challenges of creating new ventures and to provide students with the opportunity, within the framework of a formal class, to explore and develop venture ideas as they have been considering or wish to investigate. Experiential exercises enable the student to better understand themselves, their venture potential and the merits of their new venture ideas. A major field project requires the development of a detailed plan for the new venture.
INSTRUCTOR(S): E. Leach
PREREQUISITE: MGMT 1001.03 and MGMT 1001.03 or COMM 1001.03,
COMM 1010.03
CROSS-LISTING: COMM 3307.03
EXCLUSION: COMM 3307.03

MGMT 4001.03: Strategy Formulation.
This class exposes the student to the perspective and role of the manager within an organization. The nature of effective strategies and developing students’ skills in both formulating and evaluating potential strategies is the focus. This class includes examination of examples from a variety of institutional settings.
PREREQUISITE: All required first, second, and third year core classes for the Bachelor of Management.
EXCLUSION: COMM 4351.03

MGMT 4002.03: Strategy Implementation.
This class follows on MGMT 4001.03 and focuses on the implementation phase within the organization. This class includes case studies from a variety of institutional settings and a major project that provides direct exposure to the complexity and uncertainty provided by "real world" issues and constraints.
PREREQUISITE: MGMT 4001.03
EXCLUSION: COMM 4352.03

MGMT 4050.03: Directed Reading and Research.
This class offers the student the opportunity to explore in greater detail a particular area of interest. The content of the class is negotiated with the individual instructor involved. The student and instructor must develop a proposal, and submit it to the Program Committee for approval. Guidelines are available from the Bachelor of Management Program Administrator.

MGMT 4901.03: Managing the Venturing Process.
This class is about the student opportunity to explore in greater detail a particular area of interest. The content of the class is negotiated with the individual instructor involved. The student and instructor must develop a proposal, and submit it to the Program Committee for approval. Guidelines are available from the Bachelor of Management Program Administrator.
I. General Information

Dalhousie Medical School was organized in 1868, but medical teaching was carried out by the independent Halifax Medical College from 1875 to 1911, when the Faculty of Medicine was re-established by the University. The Faculty provides a complete medical training leading to the degree of Doctor of Medicine (MD). Nationally accredited postgraduate training in family medicine and specialty training is provided in University-affiliated hospitals in Nova Scotia, Prince Edward Island and New Brunswick. Continuing Medical Education is provided to the practitioners of the three Maritime Provinces. The Faculty is fully accredited by the Liaison Committee on Medical Education and the Committee on Accreditation of Canadian Medical Schools.

The Medical School has strong research programs in basic biomedical sciences, clinical sciences, population health and medical education.

A. Mission Statement

The Faculty of Medicine, Dalhousie University, strives to benefit society through equal commitment to exemplary patient care, education and the discovery and advancement of knowledge. We aim to create and maintain a learning and research environment of national and international stature to enable our graduates and us to serve the health needs of the Maritime Provinces and the rest of Canada.
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), Kinesiology (Section 02), or Pharmacy (Section 03). A limited number of seats are available for Special Health Professions, Arts & Science, or Non-Degree students. Note that this class is also offered by DISTANCE EDUCATION (ANAT 1010.03, Section 04) during the regular term (Fall or Winter) and during the Summer Term. Upon successful completion of the class, the student will be able to explain and describe, at a basic level, the gross anatomy and histology of the human body. There are no formal laboratory sessions. However, mandatory virtual anatomy laboratory will be provided throughout the year for independent study.
INSTRUCTOR(S): C.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 & Science, or Non-Degree students. Note that this class is also offered by DISTANCE EDUCATION (ANAT 1020.03, Section 02) during the regular term (Fall or Winter) and during the Summer Term. Upon successful completion of this class, the student will be able to explain and describe, at a basic level, the gross anatomy and histology of the human body. There are no formal laboratory sessions. However, a mandatory virtual anatomy laboratory will be provided throughout the year for independent study.
INSTRUCTOR(S): C.V. Allen
FORMAT: Lecture: 3 hours
RESTRICTION: Restricted to student in Recreation, Physical and Health Education and Kinesiology. A limited number of seats are available for Special Health Professions, Arts & Science, or Non-Degree students.

ANAT 1040.03: Basic Human Anatomy for Pharmacy Students.
This class is offered by the Department of Anatomy and Neurobiology primarily to students in the College of Pharmacy. Upon successful completion of the course, the student will be able to explain and describe, at a basic level, the gross anatomy and histology of the human body. There are no formal laboratory sessions.
INSTRUCTOR(S): D. Marsh
FORMAT: Lecture: 3 hours/tutorial: 6 hours; 4 weeks
RESTRICTION: Restricted to Pharmacy students.

ANAT 2160.03: Introduction to Human Histology.
Histology is the study of the structure of cells, tissue and organ systems, and utilizes information derived from both light and electron microscopy. This course complements studies in anatomy, cell biology, physiology, and biochemistry, broadening the understanding of how organisms function.
INSTRUCTOR(S): F. Smith, B. Kablar (Dept. of Anatomy and Neurobiology)
FORMAT: Lecture: 2 hours; lab: 2 hours
RESTRICTION: Cross-listed: BIOC 2020.03; permission of instructor
CROSS-LISTING: BIOC 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
RESTRICTION: Cross-listed: BIOC 3421.03
Pharmacology

Location: Sir Charles Tupper Medical Building, 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
Coey, J.D., BSc, MD (Alta), FRCP(C)
Renton, R.K., BSc (Simon Fraser), PhD (McGill)
Raeedy, J., MDCM (Queen's), FRCP(C), FACP
Vohra, M.M., RPPh, MD, PhD (Toronto)
White, T.D., BSc, MSc (UWO), PhD (Bristol)

Professor and Head of Department
Sawynok, J., BSc, MSc (Dal), PhD (Queen's)

Professors
Blay, J., BSc (Brad), PhD (Cambridgeshire)
Dowson, J.H., BSc, PhD (Manitoba)
Howlett, S.E., BSc (Concordia), MSc, PhD (Memorial)
Kelly, M.E., BSc, PhD (Southampton)
Robertson, G.S., BSc, PhD (Dal)
Robertson, H.A., BA, BSc (Western), PhD (Dal)

Associate Professors
Denovan-Wright, E.M., BSc, PhD (Dal)

Assistant Professors
Dupré, D.J., BSc, PhD (Sherbrooke)
Feinworth, J., BSc, MSc, PhD (McMaster), PhD (McGill)
Pasumarthi, K.B.S., DVM (India), PhD (Manitoba)

Cross Appointments
Abu, R., BPharm, MPharm (Nigeria, Nsukka U.), MPharm, PhD (Katholieke U., Belgium)
Acott, P., BSc, MD (Dal), MD (Memorial), PhD (Memorial), Major Appointment in Department of Anesthesia
Gardner, D.M., BScPharm (Toronto), PharmD (BC), Major Appointment in Department of Psychiatry
Gardalski, K., BSc, PhD (Manitoba), Major Appointment in College of Pharmacy
Hall, R.L., BSc Pharm, PhD (Dal), FRCP(C), FCC, Major Appointment in Department of Anesthesiology
Huang, O.R., BSc Pharm, PhD (Dal), FRCP(C), Major Appointment in Department of Psychiatry
Lehmann, C., MD (Sambodhi U., Berlin)
Lynch, M.E., BSc, PhD (Dal), FRCP(C), Major Appointment in Department of Psychiatry
Peterson, T.C., BSc, MSc (UWO), MSc, PhD (Dal), Major Appointment in Department of Medicine
Raskul, B.A (Toronto), PhD (Berkley), Major Appointments in Departments of Psychiatry and Psychology

I. Introduction

Pharmacology is the study of the actions and fates of drugs in biological systems. Studies of the interaction of drugs with their receptors and the elucidation of the cellular mechanisms underlying the resulting responses are central to Pharmacology. It is also important to understand how drugs are handled in the body, why they produce adverse effects, and how they interact with each other. In addition, scientists often use drugs as tools to determine the basic mechanisms that underlie both normal and pathological conditions in biology. A solid understanding of the principles of Pharmacology is essential for any scientist who wishes to use drugs as tools properly. The experimental approaches used in Pharmacology are varied, ranging from bioassay, electrophysiology, chemical and biochemical analyses to molecular biology.

II. Degree Programs

Students intending to pursue graduate training in Pharmacology are encouraged to study pharmacology at the undergraduate level. In addition, a solid background in pharmacology can open the door to employment in numerous sectors, most notably the pharmaceutical industry. The Department of Pharmacology does not offer an honours pharmacology degree program as such. However, it does provide classes that may be taken for credit within various other honours degree programs, including Biology, Biochemistry, Psychology (Neurosciences) and Microbiology & Immunology. In addition, students can conduct honours thesis research projects in the laboratories of Pharmacology faculty. Finally, undergraduate students may, with permission of their home department and the class instructor, take certain graduate specialty classes which are offered in the Department of Pharmacology.

BIOL 4404.03: Introduction to Pharmacology I.

This introductory class is designed to acquaint students with the actions of drugs on physiological and biochemical functions in mammals including humans. Factors which affect the blood levels of drugs (absorption, distribution, metabolism, and elimination) will be considered, together with the mechanisms by which drugs act and their potential uses. The interaction of drugs with various bodily systems will be covered, including the central and peripheral nervous systems and the cardiovascular system. Drugs that assist or regulate host defence mechanisms will also be studied.

COORDINATOR: S.E. Howlett
FORMAT: Lecture 3 hours
PREREQUISITE: A previous class in physiology and biochemistry is recommended. Extra readings may be required for students without these classes.

BIOL 4407.03: Introduction to Pharmacology II.

This class is intended to cover specific aspects of drug action not covered in BIOL 4404.03. The class includes: drug receptor signaling, ion channels, second messengers, G-proteins, plus specific consideration of drugs used for pain, inflammation, cancer, diabetes, asthma, and diseases of the thyroid, eye and gastrointestinal tract. Special pharmacological topics including over-the-counter drugs, herbal medication, drug abuse, and industrial development of new drugs, plus a section on how drug actions and handling are altered in pregnancy, the elderly, and in children are included.

COORDINATOR: S.E. Howlett

FORMAT: Lecture 3 hours
PREREQUISITE: BIOL 4404.03 (with a grade of B or better).

CROSS-LISTING: PHAC 5405.03, BIOC 4804.03, and NESC 4374.03

BIOL 4408.03: Introduction to Pharmacology III.

The course will present practical aspects of how experimental data related to fundamental questions in the field of pharmacology are obtained. Basic pharmacologic concepts (e.g. drug absorption and distribution, receptor binding, concentration-response relationships, antagonism, post-receptor events) will be emphasized and presented in a variety of preparations (cells, isolated tissues, whole animals). In addition to the set laboratories, more extensive exercises based on themes presented in groups of laboratories may be assigned as experimental problems (e.g. unknowns) or more extensive exercises based on themes presented in groups of laboratories may be assigned as experimental problems (e.g. unknowns) or as written exercises (literature-based problems, computer simulations). The course will relate pharmacologic methodologies to related areas of neuroscience, biology, and biochemistry.

COORDINATOR: J.W. Dowson

FORMAT: Lab
PREREQUISITE: BIOL 4404.03 or BIOC 4804.03 or NESC 4374.03 (with a grade of B or better) and permission of instructor.

CROSS-LISTING: BIOC 4807.03, NESC 4377.03, PHAC 5410.03

COORDINATOR: BIOC 4807.03 or BIOC 4806.03 or NESC 4376.03

390 Pharmacology
Physiology and Biophysics

Location: 5th Charles Upper Building, Third Floor
Telephone: (902) 494-3517
Fax: (902) 494-5565

Dean
Cook, H.W., PhD

Head of Department
Murphy, P.R., MSc, PhD

Undergraduate Coordinator
Morgunov, N.

Professors
Barrow, S.A., PhD (Birkbeck)
Brown, R.E., BSc (Victoria), MA, PhD (Dal), Major appointment - Dept. of Psychology
Chuah, B., PhD (Vailes), Major appointment - Dept. of Ophthalmology
Croll, R.P., BSc (Tartu), PhD (McGill)
Fine, A., AB (Harvard), VDM, PhD (Penn)
French, A.S., MSc, PhD (Goaas)
Guerney, D., BA (London), MB (Bridgeport), PhD (Hawaii), Major appointment - Dept. of Pathology
McDonald, T.F., BSc (Aberdeen), PhD (Dal), DUC (Imperial College)
Meinertzhagen, I.A., BSc (Aberdeen), MA, PhD (Univeristé de Provence-Marseille, France), Licence Maîtrise (Université de la Méditerranée-Marseille), Diplôme d’Etudes Approfondies, PhD (Univeristé de Provence-Marseille, France)

 Assistants

Torkkeli, P.H., BSc, MSc, LeC (McMaster), PhD (Alberta)
Wilkinson, M., BSc (Southampton), PhD (London), Major appointment - Dept. of Obstetrics/Gynecology

Associate Professors
Carr, N. (Toronto), Major appointment - Dept. of Psychiatry
Holland, J.G., BSc, MD (Dal)
Inanc, P., BSc (London), PhD (Leicester)
Morgunov, N., BSc, MSc, PhD (Toronto), Undergraduate Coordinator
Murphy, M.G., BSc, MSc, PhD (Dal)
Pellaro, S., BSc, MSc, PhD (Dal)

Instructor
Fenney, C., BSc, PhD (Dal)

Adjunct Professor
Rittmaster, R., BA (Brown), MD (Tufts Med Sch), Glaxo-SmithKline.

I. Introduction

The Department of Physiology and Biophysics offers a wide range of undergraduate courses in addition to those restricted to students in the faculties of Medicine and Dentistry. Students who have previously taken biology, chemistry, physics will be best equipped to study physiology.

The classes listed below are aimed at providing the student with an understanding of the functioning of the human body. The Distance Education class PHY1000X/Y.06 is the recommended prerequisite for science students interested in taking higher level physiology courses. Students wishing to enrol in other specialized classes require permission from the Course Director or Department Head.

II. Class Descriptions

PHYL 1000X/Y.06: Human Physiology.

This is a full-credit introductory human physiology class equivalent to PHY1000X/Y.06. The functions of body organs and body systems, as well as integrative functions of the whole organism are studied. This course is intended primarily for students in the Health Professions and it cannot be used as a prerequisite course for 3rd and 4th year physiology courses, nor as a co-requisite for PHY1000X/PHY1000Y. 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 PHY1010X/Y.06. The functions of body organs and body systems, as well as integrative functions of the whole organism are studied. This course is intended primarily for students in the Health Professions and it cannot be used as a prerequisite course for 3rd and 4th year physiology courses, nor as a co-requisite for PHY1000X/PHY1000Y. Credit will only be given upon the successful completion of both halves.

PHYL 1010X/Y.06: Human Physiology.

This is an introductory human physiology class equivalent to PHY1010X/Y.06. The functions of body organs and body systems, as well as integrative functions of the whole organism are studied. This course is intended primarily for students in the Health Professions and it cannot be used as a prerequisite course for 3rd and 4th year physiology courses, nor as a co-requisite for PHY1000X/PHY1000Y. Credit will only be given upon the successful completion of both halves.

PHYL 1400X: 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.

DIRECTOR: C. Penney

NOTE: Students taking this class must register in, and pass, both PHY1000X and PHY1000Y. Credit will only be given upon the successful completion of both halves.

PHYL 2030X/Y.06: Human Physiology.

This is a 7-week comprehensive unit with 6 hours tutorial and 4 hours lecture per week.

PREREQUISITE: ANAT 1040/1041

PHYL 2030X/Y.06: Human Physiology.

The function of organs and body systems is presented through lectures and some laboratory work. Special emphasis is on the integration of function in the whole organism. This is a prerequisite course for 3rd and 4th year physiology courses, and a co-requisite for PHY1000X (Cellular Neurophysiology). DIRECTOR: N. Morgunov

Physiology and Biophysics 391
NOTE: Students must register in, and pass, both PHYL 2030X and PHYL 2030Y. Credit will only be given upon the successful completion of both halves.

FORMAT: 4 hours of lectures/tutorials per week; 4 labs

PREREQUISITE: Two classes from Biology, Physics, or Chemistry, or permission of the class director

PHYL 2570.03: Cellular Neurophysiology.

This course provides an introduction to the function of the nerve cells of the brain, which forms the basis for understanding the behavior 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 students wishing to take more advanced courses in, or major in, Neuroscience. Although the course covers topics of neuroscience at all levels, the content is directed towards cellular neuroscience; detailed coverage of the strictly developmental systems or molecular levels of neuroscience is provided in other courses.

DIRECTOR: S. Adamo and C. Barnes

PREREQUISITE: PSYO 2470.03 or NSYC 2470.03

CROSS-LISTING: NSYC 2570.03

CO-REQUISITE: PHYL 2030.06, or permission of the class director

PHYL 3120.03: Exercise Physiology in Health and Disease.

The function and dysfunction of body organ systems are reviewed, and the short- and long-term responses of these systems to physical exercise are analyzed. Factors affecting physical performance are considered, and the preventive and therapeutic use of exercise for a wide range of clinical conditions is examined.

DIRECTOR: T.F. McDonald

FORMAT: Lecture/tutorial: average 4 hours per week

PREREQUISITE: Permission of the class director

PHYL 3320.03: Human Cell Physiology.

Events at the cellular and molecular level determine the activities of tissues, organs, and systems. This course examines key physiological principles and integrates the material to provide students with a core knowledge base pertaining to biophysical and biochemical principles that govern the function of cells. The topics to be discussed include: (i) the functional organization of cells (cellular compartments, cytoskeleton), (ii) reception and processing of environmental information (cell membrane receptors, second messengers), (iii) membrane physiology (membrane transport processes, regulation of intracellular ion concentrations, regulation of cell volume), (iv) electrophysiology of the cell membrane, electric excitability and action potential. Through didactic (lectures) and problem-solving sessions (tutorials), students will acquire the necessary knowledge to pursue the study of organ system physiologies and integrative mechanisms of homeostasis (PHYL 3322.03).

DIRECTOR: S. Polzer

FORMAT: Lectures 3 hours/tutorial 1 hour

PREREQUISITE: PHYL 2030.06 or permission of the class director

EXCLUSION: PHYL 4320.06, BIX 4320

PHYL 3520.03: Core Concepts in Medical Physiology.

Physiology is the foundation of a number of disciplines. A firm understanding of its principles is essential for any student contemplating a career in the health professions. Through didactic (lectures) and problem-solving (tutorial) sessions, students will gain a deeper understanding of the functions of various organ system physiologies. In addition, the integration of a number of organ system functions will also be discussed (integrative mechanisms of homeostasis) including fluid and electrolyte balance, blood pressure regulation and acid-base homeostasis. Where appropriate, the physiology of disease processes will underscore the consequences of a malfunction of a physiological process. Organ systems covered include autonomic nervous system, cardiovascular, renal, respiratory and gastrointestinal.

DIRECTOR: N.S. Morgunov

FORMAT: Lectures/tutorial 4 hours per week

PREREQUISITE: PHYL 2030.06, PHYL 3320.03 or permission of course director

EXCLUSION: PHYL 4322, BIX 4322

PHYL 4324.03: Endocrine Physiology.

This class is designed to provide intermediate and advanced undergraduates with a basic understanding of the function of the endocrine system. The class will progress from a consideration of basic concepts and mechanisms to the physiological function of specific endocrine systems. Interactions between organ systems will be emphasized.

DIRECTOR: P.R. Murphy

PREREQUISITE: PHYL 3320.06 or BIX 3070.06 or permission of the class director

PHYL 4326.03: The Pathophysiology of Heart Disease.

This course is a comprehensive introduction to diseases of the cardiovascular system. Normal physiology serves as a frame of reference that students must comprehend before they understand the derangements caused by disease. Thus, this course creates a bridge between basic cardiovascular physiology, and the care of patients with heart disease in hospital wards and clinics. Throughout the course, emphasis is placed on the basic mechanisms by which cardiac diseases develop to facilitate an understanding of clinical diagnosis and therapy.

DIRECTOR: D. Polzer

FORMAT: Lectures/tutorial 4 hours per week

PREREQUISITE: PHYL 3320.03

PHYL 4327.03: Advanced Human Cell Physiology.

This course is designed to provide advanced undergraduates with an up-to-date understanding of the major systems that govern cellular communication and the regulation of cell function in various tissues and organs. The topics to be discussed include: (i) cellular calcium homeostasis and calcium signaling (ii) secretion in excitable and non-excitable cells (sympathetic neurotransmission, endocrine and exocrine secretion), (iii) stimulus transduction in metabolic sensor cells, and (iv) stimulus - contraction coupling and contractile properties of striated and smooth muscle. Lectures will be accompanied by problem-solving sessions (tutorials) where students have the opportunity to integrate the material presented in lectures and to discuss pathophysiological aspects (mini-cases, problems).

DIRECTOR: S. Polzer

FORMAT: Lecture 3 hours/tutorial 1 hour

PREREQUISITE: PHYL 3320.06 or BIX 3070.06, PHYL 3320.05 or permission of the class director

PHYL 4328X/Y.03: Directed Project in Physiology.

This class allows the advanced undergraduate student to pursue more specialized with student interest and faculty expertise. A student wishing to take this class must find a faculty member who is prepared to supervise a directed project. Before registering for this class, a student must provide the Course Director with a letter from the faculty member describing the project and agreeing to serve as supervisor. Class approval will not be given until this is done.

DIRECTOR: N.S. Morgunov

PREREQUISITE: PHYL 2030.06 and permission of the class director
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 11 departments. The principal mission of the Faculty is the discovery, organization, dissemination and preservation of knowledge and understanding of the natural world. The Faculty is dedicated to excellence in the pursuit of this mission. Students in the Faculty of Science develop a capacity for inquiry, logical thinking and analysis; cultivate an ability to communicate with precision and style; and acquire skills and attitudes for lifelong learning.

Undergraduate students in the Faculty of Science normally develop these abilities by concentrating their studies in one or more of the following areas: Biochemistry & Molecular Biology, Biology, Biotechnology, Chemistry, Earth Sciences, Economics, Environmental Science, Marine Biology, Mathematics, Meteorology, Microbiology & Immunology, Neuroscience, Physics, and 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. Combined Honours programs with Oceanography are offered. Details concerning particular programs of study are found in the departmental entries.

II. Departments of the Faculty of Science

Biochemistry & Molecular Biology* (also in the Faculty of Medicine), Biology*, Chemistry*, Earth Sciences*, Economics*, Mathematics and Statistics*, Microbiology & Immunology* (also in the Faculty of Medicine), Oceanography, Physics and Atmospheric Science*.

* Co-op Option available.

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

Dean
Taylor, K., BSc (St. FX), PhD (U of Alberta), Professor (Mathematics & Statistics)

Associate Dean
Ryall, P.L.C., BSc (Dal), MSc (Dal), PhD (Dal), P.C.E., Associate Professor (Earth Science).

Associate Dean (Research)
O’Dror, R.K., BA (Berkeley), PhD (UBC), Professor (Biology)

Assistant Dean (Student Affairs)
Retallick, R., BSc, MSc (Dal), PhD (Manchester), Senior Instructor (Biology)

Secretary of Faculty
Swaminathan, S., MA, MSc, PhD (Madras), Professor Emeritus (Mathematics)
Telephone: (902) 494-2173/3864

Director of Finance, Research & Development
Jackson, D., BSc (Dal), MSc (Dal), PhD (Dal)
Telephone: (902) 494-2713

Finance Coordinator
Hines/Smith, D.
Telephone: (902) 494-1443

Administrative Assistant
Wells, J., BBA (MSVU)
Telephone: (902) 494-3540

Administrative Secretary
Cox, Danielle
Telephone: (902) 494-2373
Biochemistry & Molecular Biology

Location: Sir Charles Tupper Medical Building
5850 College Street, Ninth Floor
Halifax, NS B3H 1X5

I. Introduction

Biochemistry is the study of biological function at the molecular level. Although biochemical processes follow the basic laws of physics and chemistry, living organisms, because of their complexity, operate on a set of distinct principles that are not found in simple isolated chemical systems. The goal of biochemistry is to elucidate these principles. The department offers an integrated series of classes that will provide students with an up-to-date view of modern biochemistry & molecular biology ranging from structure-function relationships in macromolecules to the dynamic aspects of metabolism. The core programs can be adapted to emphasize different biochemical specialties such as structural biology, metabolism, molecular biology, and biotechnology. Students wishing to pursue advanced studies in Pharmacology or related sciences for which there is no undergraduate program can include classes in Physiology, Pharmacology and/or Pathology in their programs. Greater flexibility is available in combined degree programs of Biochemistry with another subject; most often with Chemistry, Microbiology, Biology, Neuroscience or Psychology. Specific programs developed with the Department of Microbiology & Immunology provide coordinated studies of metabolism, enzymology and molecular biology with bacteriology, virology and immunology. These programs provide the foundation for molecular genetics, genetic engineering, and biotechnology.

Laboratory Exercises: Some of the classes offered by the Department of Biochemistry & Molecular Biology include a laboratory component. The laboratory exercises provide an opportunity to develop laboratory skills, as well as to illustrate the theoretical principles taught in class. This process culminates in fourth year, when both an advanced laboratory class and a supervised research project are required for honours Biochemistry students. Although no exercise involves live animals, experiments may use materials derived from animal sources, as well as from plants and micro-organisms. Laboratory experiments will often be performed in groups, but writing of reports is expected to be an individual effort, meeting the guidelines on plagiarism set out in the University Regulations in the Calendar and the Department Policy on Plagiarism.

Students must plan their degree programs in consultation with the undergraduate coordinator (Dr. M. Dobson), or another advisor (Dr. C. Too, Dr. B.H. Lesser, P. Briggs). The department offers an integrated series of classes that will provide students with an up-to-date view of modern biochemistry & molecular biology ranging from structure-function relationships in macromolecules to the dynamic aspects of metabolism. The core programs can be adapted to emphasize different biochemical specialties such as structural biology, metabolism, molecular biology, and biotechnology. Students wishing to pursue advanced studies in Pharmacology or related sciences for which there is no undergraduate program can include classes in Physiology, Pharmacology and/or Pathology in their programs. Greater flexibility is available in combined degree programs of Biochemistry with another subject; most often with Chemistry, Microbiology, Biology, Neuroscience or Psychology. Specific programs developed with the Department of Microbiology & Immunology provide coordinated studies of metabolism, enzymology and molecular biology with bacteriology, virology and immunology. These programs provide the foundation for molecular genetics, genetic engineering, and biotechnology.

II. Degree Programs

NOTE: Students interested in a Biochemistry degree should first read the Undergraduate handbook on the Department website that describes all of the programs available and the special requirements relating to them. Degree programs must be planned in consultation with the undergraduate coordinator (Dr. M. Dobson), or another advisor (Dr. C. Too, Dr. B.H. Lesser, P. Briggs). There is no 15-credit BSc program with a concentration in Biochemistry. Students wishing to include Biochemistry in other programs are welcomed. Note that all Biochemistry classes have prerequisites. Students must satisfy the requirements outlined in the Degree Requirements section, page 65 of this calendar.

A. 20-credit BSc with Honours in Biochemistry

This is a special concentrated Honours Program in which emphasis may be placed on different areas of biochemistry such as protein chemistry, metabolism or molecular genetics. Because Biochemistry and Chemistry are closely intertwined both conceptually and experimentally, the list of required classes includes both subjects. Additional chemistry classes beyond those required for the honours degree may be taken as electives. For entrance to BIOC 2300.03 and BIOC 2610.03, students require minimum grades of B- in BIOC 1011.03 and BIOC 1012.03, or equivalents. Students should also note the minimum grade requirements specified in the prerequisites for all 3rd year and some 4th year Biochemistry classes. Honours students must meet the general degree requirements of the faculty.
Departmental Requirements

1000 level
- CHEM 1011.03 and 1012.03 (or equivalent) - minimum passing grade B-
- BIOL 1010.03 and 1011.03 (or equivalent) - minimum passing grade B-
- MATH 1000.03 or 1215.03 and MATH 1010.03 or 1060.03
- or, in lieu of the above, SCIE 15XX

2000 level
- BIOL 2020.03
- BIOL 2030.03
- BIOC 2300.03
- BIOC 2610.03
- CHEM 2201.03 and 2302.03 or if not taking combined program with Chemistry, CHEM 2303.03
- CHEM 2401.03 and 2402.03

3000 level
- BIOC 3200.03
- BIOC 3300.03
- BIOC 3400.03
- CHEM 3601.03 or MIBC 3033.03

4000 level
- BIOC 4604.03 and 4605.03
- BIOC 4610.06
- One credit from BIOC 40XX, BIOC 43XX, BIOC 44XX, BIOC 45XX, BIOC 47XX

Other requirements
Two full credits in a single subject other than Biochemistry taken after first year are required for BA students. A pass is required in the Honours Qualifying examination. Students should also ensure that they have enrolled in any 2000 or 3000 level classes that are prerequisites for advanced classes they intend to take (see appropriate calendar entries).

B. 20-credit BSc with Combined Honours in Biochemistry and Another Subject
Biochemistry may be chosen along with one of Biology, Chemistry, Environmental Science, Mathematics, Microbiology, Physics, Psychology, or possibly another subject, for a Combined Honours Program.

Departmental Requirements

1000 level
- as for Single Major, above

2000 level
- BIOL 2020.03
- BIOL 2030.03
- BIOC 2300.03
- BIOC 2610.03
- BIOC 3200.03
- BIOC 3300.03
- BIOC 3400.03
- CHEM 2401.03 and 2402.03
- Students are advised to take some Physical Chemistry, if possible

3000 level as for Single Major, above

4000 level
- A minimum of one full credit in Biochemistry at the 4000 level.

D. 20-credit BSc Double Major in Biochemistry and Another Subject
*See notes in C, above.

The Department will approve the combination of Biochemistry with a wide variety of other fields of study, subject to confirmation by an Undergraduate Advisor from the Department of Biochemistry & Molecular Biology.

Departmental Requirements

1000 level
- as for Single Major, above

2000 level
- BIOL 2020.03
- BIOL 2030.03
- BIOC 2300.03
- BIOC 2610.03
- CHEM 2401.03 and 2402.03
- Students are advised to take some Physical Chemistry, if possible

3000 level as for Single Major, above

4000 level
- A minimum of one full credit in Biochemistry at the 4000 level.

E. Co-operative Education in Biochemistry
Co-operative Education in Science (Science Co-op) is a program where academic study is combined with paid career-related work experience. Students alternate three to four work terms throughout their academic study terms and graduate with a Bachelor of Science Co-op. Science Co-op enables students to apply their knowledge directly while providing them with work experience that assists in making educated career choices. Students should apply to join Science Co-op before their second year of study. If accepted into the Science Co-op program, students are required to register for and attend the Science Co-op Seminar Series (SCIE 2800.00) in the fall term of the year they join.

See the “Co-operative Education in Science” section of this calendar, or www.sciencecoop.dal.ca, for information on Science Co-op such as Science Co-op requirements, eligibility, how to apply, deadlines and other related information.
Admission to the Biochemistry Co-op program requires a GPA of at least 3.00 in first year classes. Continuance in the Biochemistry Co-op program and graduation with the Co-op designation require that students maintain a GPA of 3.00 in the courses specified as departmental requirements.

**Biochemistry Work - Study program:**

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Acid</td>
<td>Acid</td>
<td>Acid</td>
</tr>
<tr>
<td>2</td>
<td>Acid</td>
<td>Acid</td>
<td>W1</td>
</tr>
<tr>
<td>3</td>
<td>Acid</td>
<td>Acid</td>
<td>W2</td>
</tr>
<tr>
<td>4</td>
<td>W3</td>
<td>Acid</td>
<td>W4</td>
</tr>
<tr>
<td>5</td>
<td>Acid</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For further information, please see www.sciencecoop.dal.ca.

**II. 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. Lawer

**FORMAT:** Lecture 4 hours/ lab 3 hours/ tutorial 6 hours; 7 weeks

**CO-REQUISTES:** CHEM 2442.03

**RESTRICTION:** This class is restricted to students in the BScN program.

**BIOC 1420.03: Introductory Biochemistry for Nursing Students.**

Topics discussed include the structure, biosynthesis and functions of biologically important compounds, enzymes, control of metabolism, genetic engineering, and nutrition. Medical aspects are stressed.

**NOTE:** This class cannot be used as a prerequisite for any other biochemistry class and is not normally accepted by the Faculty of Dentistry in fulfillment of the requirement of a biochemistry class for admission.

**INSTRUCTOR(S):** B.H. Lawer

**FORMAT:** Online (BLS)/tutorial 2 hours

**PREREQUISITE:** None, but Biochemistry 1410.03 is recommended

**RESTRICTION:** This class is restricted to students in the BScN and BHSc program.

**BIOC 2300.03: Introduction to Biochemistry.**

This class will survey basic topics and concepts of Biochemistry. 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. Lawer

**FORMAT:** Lecture 3 hours

**PREREQUISITE:** BIOC 1040.05 and 1041.05 (or equivalent), all with grades of B- or higher, or instructor’s consent

**NOTE:** Students are advised to also take CHEM 2401.03 and 2402.03, or CHEM 2441.03, CHEM 244i.03; CHEM 2441.03 does not satisfy the prerequisite requirement for BIOC 2200.05 and BIOC 3300.05

**EXCLUSION:** BIOC 2200.05, BIOC 2100.03, BIOC 2033.05

**BIOC 2610.03: Introductory Biochemistry Lab.**

An introduction to fundamental techniques in Biochemistry through the exploration of the properties of essential biomolecules. This class is intended for students in Biochemistry and Microbiology Programs.

**INSTRUCTOR(S):** P. Briggs

**FORMAT:** Lab-3 hours

**EXCLUSION:** BIOC 2200.05, BIOC 2100.03

**CO-REQUITISe:** BIOC 2200.03 and CHEM 2401.03 and CHEM 2402.03 or instructor’s consent

**BIOC 3200.03: Biological Chemistry.**

This class deals with chemical principles governing biochemical systems, and in particular, how they operate in the relationship between structure and function in proteins. Basic principles of protein structure are discussed. The ways in which proteins bind other molecules are described. A discussion of enzyme catalysis emphasizes relationships between macromolecular structure and biochemical function, enabling us to explain the striking effectiveness and high specificity with which these catalytic proteins carry out their functions.

**INSTRUCTOR(S):** S.L. Bruno, C.J.A. Wallace

**FORMAT:** Lecture 3 hours/lab 3 hours

**PREREQUISITE:** BIOC 2300.03 and BIOC 2610.03 (both with grades of B- or higher) and BIOC 2200.03 and BIOC 2030.03 and CHEM 2401.03 and CHEM 2402.03, or instructor’s consent

**BIOC 3300.03: Intermediate Metabolism.**

Emphasis is chiefly on metabolic pathways common to all organisms, notably the respiratory synthesis and oxidative catalysis of carbohydrates, lipids, and some nitrogen compounds. Other pathways, significant in certain tissues or organisms, are included. Metabolic regulation is emphasized, and factors influencing the rate at which compounds flow through selected pathways are examined. Students learn how pathways are compartmentalized, interrelated, and affected by changes in the environment. Laboratory exercises demonstrate the strategies and techniques used to study metabolic pathways.

**INSTRUCTOR(S):** R. McLeod (Coordinator), B. Karten, C. Too

**FORMAT:** Lecture 3 hours/lab 3 hours

**PREREQUISITE:** BIOC 2300.03 and BIOC 2301.03 (both with grades of B- or higher) and BIOC 2200.03 and BIOC 2030.03 and CHEM 2401.03 and CHEM 2402.03, or instructor’s consent

**BIOC 3400.03: Nucleic Acid Biochemistry and Molecular Biology.**

This class focuses on the relationship of structure to function in RNA and DNA. Methods for studying the primary, secondary, and tertiary structures of nucleic acids are explored in lectures and in the laboratory. Enzymatic mechanisms for biosynthesis, rearrangement, degradation, and repair of nucleic acid molecules are studied, as are the processes of replication and transcription. In this context, nucleic acid biochemistry is emphasized as a basis for understanding storage and transfer of biological information.

**INSTRUCTOR(S):** J. Archibald (Coordinator), P. Liu

**FORMAT:** Lecture 3 hours/lab 3 hours

**PREREQUISITE:** CHEM 2401.03 and CHEM 2402.03, or CHEM 2411.03; BIOC 2200.03 and BIOC 2201.03 (both with grades of B- or higher); BIOC 2300.03, or instructor’s consent

**BIOC 4001.03: Special Topics in Biochemistry.**

Students interested in topics not covered in formal classes may ask the department for special classes to meet their needs. An Undergraduate Advisor will assist students to ascertain if faculty expertise is available to direct reading and the preparation of papers and seminars in a particular subject area.

**COORDINATOR(S):** C. Too

**PREREQUISITE:** BIOC 3200.03, 3300.03, and 3400.03

**CROSS-LISTING:** BIOC 5003.03

**BIOC 4010.03: Bioinformatics.**

This class presents both the theoretical basis for, and the application of, computing in molecular biology and evolution. A wide range of topics will be addressed including the estimation of rates and patterns of mutations, sequence database searching, with an emphasis on...
BIOC 4027.03: Molecular Mechanisms of Cancer.
An introduction to biotechnology fundamentals from a medical perspective. Topics will include recombinant DNA technology, DNA microarrays, and bioinformatics. Prior approval must then be obtained from the class coordinator.
PREREQUISITE: BIOC 3400.03 and consent of instructor.
FORMAT: Lecture 3 hours.
COORDINATOR(S): M. Dubson.

BIOC 4501.03: Medical Biotechnology I.
The biochemistry and metabolism of a variety of lipids is studied, especially of those, such as fatty acids, glycolipids, eicosanoids, sterols, and phospholipids, with specialized physiological or lipid second messenger functions. Intracellular and inter-tissue transport and regulatory processes are emphasized. The chemistry and physics of insoluble lipids in an aqueous environment are explored and problems in the interaction of lipids with soluble and insoluble enzymes are considered.
INSTRUCTOR(S): N. Ridgway, C. McMaster.
FORMAT: Lecture 3 hours.
PREREQUISITE: BIOC 3200.03 and 3000.03.
CROSS-LISTING: BIOC 5301.03.

BIOC 4305.03: Mechanisms of Signal Transduction.
The emphasis of the course is systems biology. Lecture topics include emergent properties of protein kinases, tumour suppressors, cell cycle, apoptosis, oncogenes, cytokine-receptor signalling, and lipids.
INSTRUCTOR(S): P.A. Marignani (Coordinator), B. Karten, K. Rosen.
FORMAT: Lecture 3 hours.
PREREQUISITE: BIOC 3200.03, BIOC 3300.03, BIOC 3400.03 and consent of instructor.
CROSS-LISTING: BIOC 5301.03.

BIOC 4043.03: Genes and Genomes.
This class discusses the organization of genes into genomes. It deals with (i) compartmentalization of genetic material in nuclear and organelar genomes, (ii) the structure, behaviour and origins of components of both nuclear and organelar genomes which are not genes (transposable and other repetitive elements, introns), (iii) genetic and physical methods for mapping genomes, and (iv) the significance of genetic organization and higher order chromosomal structure and function. The methodology and prospects of the genomics will be discussed at some length.
INSTRUCTOR(S): P. Liu.
FORMAT: Lecture 3 hours.
PREREQUISITE: BIOC 3400.03, BIOC 3303.03 or instructor’s consent.
CROSS-LISTING: BIOC 5403.03.

BIOC 4404.03: Gene Expression.
The different mechanisms for regulation of gene expression in bacterial and eukaryotic cells, and their viruses, are emphasized. Particular topics include genomic, transcriptional, and post-transcriptional modes of regulation.
INSTRUCTOR(S): R.A. Singer.
PREREQUISITE: BIOC 3400.03 or instructor’s consent.
CROSS-LISTING: BIOC 5404.03.
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 3 modules from each section. Students in combined Honours with Biochemistry may select their three modules from any section or sections, subject to availability of space. Students must obtain a class outline from the Biochemistry & Molecular Biology Department prior to registration and attend the organizational meeting on a date of which will be indicated in the Registration Timetable. COORDINATOR(S): P. Liu and L. Murray

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

INSTRUCTOR(S): Faculty members of the departments of Biochemistry & Molecular Biology, and Microbiology & Immunology

FORMAT: Twelve 6-hour labs and three 3-hour tutorials/computer assignments.

PREREQUISITE: BIOC 3200.03, 3300.03, 3400.03 (Average grade of B or higher) and consent of coordinator

CROSS-LISTING: BIOC 5601.03, BIOC 4501.06/08/BIOC 5121.06, BIOC 5113.06/MICR 5113.06

EXCLUSION: BIOC 4603.03/BIOC 5603.03, BIOC 4502.06/BIOC 5122.06, MICR 5101.06/MICR 5102.06

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 three dimensional fold, and to modify it for experimental or practical purposes considered. Specific details of how form determines function in the proteins’ role in binding other molecules both small and large, in membranes, and in energy transduction will be provided. This class will also examine the ways for orderly elimination of superfluous proteins, and how the present variety of form has evolved from primordial origins. Some weeks, in addition to lectures, students will independently research and write about specialized topics suggested by the instructor and occasionally present these to the class in discussion group format.

INSTRUCTOR(S): C.J.A. Wallace

FORMAT: Lecture 3 hours

PREREQUISITE: BIOC 3200.03, CHEM 2301.03 and 2302.03, or CHEM 2303.03 (All with grades of B or higher) or instructor’s consent

CROSS-LISTING: BIOC 5700.03

BIOC 4701.03: Enzymes.
Fundamental principles of enzyme catalysis and its regulation will be examined. Use of tools such as steady-state and pre-steady-state kinetics, isotope-effect measurements, site-directed mutagenesis, spectroscopy, X-ray crystallography, and mechanism-based inhibitors to study the architecture and mechanism of action of enzyme active sites will be presented. The catalytic mechanism and transition state stabilization will be considered in detail for selected enzymes that have been well-characterized structurally. Classic and current papers in the literature will be reviewed so that the experimental and conceptual approaches used may be critically appraised.

INSTRUCTOR(S): S.L. Beerese

FORMAT: Lecture 2.5 hours, seminar/tutorial 0.5 hour

PREREQUISITE: BIOC 3200 (Grade of B or higher), CHEM 2301.03 and 2302.03, or CHEM 2303.03 (Grade of B or higher), and CHEM 3001.03 or instructor’s consent

CROSS-LISTING: BIOC 5701.03

BIOC 4804.03: Introduction to Pharmacology I.
This introductory class is designed to acquaint students with the actions of drugs on physiological and biochemical functions in mammals including humans. Factors which affect the blood levels of drugs (absorption, distribution, metabolism, and elimination) will be considered, together with the mechanisms by which drugs act and their potential uses. The interaction of drugs with various body systems will be covered, including the central and peripheral nervous systems and the cardiovascular system. Drugs that assist or regulate host defence mechanisms will also be studied.

COORDINATOR(S): S.E. Howlett

FORMAT: Lecture 3 hours

PREREQUISITE: A previous class in biochemistry and in physiology is recommended. Extra reading will be required of students without these classes.

CROSS-LISTING: PHAC 5406.03, 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 to provide students with practical experience in pharmacology and a perspective on pharmacological research. The laboratory component consists of practical exercises using various techniques, as well as computer simulations. There will be an opportunity to visit research laboratories. Instructor’s consent and signature are required.

COORDINATOR(S): H.A. Robertson

FORMAT: Lecture 3 hours

PREREQUISITE: BIOC 4804.03 (with a grade of B or better) and instructor’s consent

CROSS-LISTING: PHAC 5407.03, BIOC 4407.03, and NESC 4375.03

BIOC 4807.03: Introduction to Pharmacology III.
This course will present practical aspects of how experimental data related to fundamental questions in the field of pharmacology are obtained. Basic pharmacologic concepts (e.g. drug absorption and distribution; receptor binding, concentration-response relationships, antagonism, post-receptor events) will be emphasized and presented in a variety of preparations (cells, isolated tissues, whole animals). In addition to the set laboratories, more extensive exercises based on themes presented in groups of laboratories may be assigned as experimental problems (e.g., unknowns) or as written exercises (literature-based problems, computer simulations).

The course will relate pharmacologic methodologies to related areas of neuroscience, biology and biochemistry.

FORMAT: Lab

PREREQUISITE: BIOC 4804.03 or BIOC 4404.03 or NESC 4374.03 and permission of instructor

CROSS-LISTING: BIOC 4408.03, NESC 4375.03, PHAC 5407.03

CROSS-LISTING: BIOC 4406.03 or BIOC 4407.03 or 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(S): TBA

FORMAT: Lecture 3 hours, case studies and assignments

PREREQUISITE: BIOC 3200.03, 3300.03 and 3400.03 or consent of instructor

CROSS-LISTING: BIOC 5810.03, PATH 5010.03

BIOC 4812.03: Biochemistry of Clinical Disorders II.
An introduction to the pathophysiology of disease. It takes the same approach as BIOC 4811.03, but different groups of diseases are discussed. Topics will include carbohydrate, lipid and amino acid disorders, endocrine and rheumatological diseases, as well as tumor markers and toxicology.

COORDINATOR(S): TBA

FORMAT: Lecture 3 hours, case studies and assignments

PREREQUISITE: BIOC 3200.03, 3300.03 and 3400.03 or consent of instructor

CROSS-LISTING: BIOC 5810.03, PATH 5010.03

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 aberrations, population genetics, genes of immunity and cancer, genetic technology in medicine, and ethical and social issues related to medical genetics.

COORDINATOR(S): W.L. Green

FORMAT: Lecture 3 hours, tutorial 2 hours

PREREQUISITE: BIOC 3200.03/BIOC 3304.03, or permission from instructor

CROSS-LISTING: BIOC 4015.03, 5035.03, PATH 5035.03

398 Biochemistry & Molecular Biology
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 1110.03: Elements of Writing.
This half class consists of three lecture hours per week for one term and
totally 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: 3 Writing requirement for Faculty of Science BSc students only

SCIE 2800.00: Science Co-op Seminar Series.
This class is a prerequisite to the first work term and is a mandatory
component of the Science Cooperative Education program; all Science Co-
operative Education students are required to register for and attend, upon
acceptance into the program. A grade of Pass is required before students
undertake the first work term experience. This class is designed to
introduce Science Co-op students to aspects of career development and
preparation for their work terms. SCIE 2800.00 is a required non-credit
class which is offered in the fall term only. Students must register for this
class in the fall term of the year they join Science Co-op. Co-operative
Education seminars are required by the Canadian Association for Co-
operative Education. Students are required to have a Dalhousie University
e-mail address with their name in it. Students must be able to check their
e-mail every weekday. See www.dal.ca/scicoop for further information.

INSTRUCTOR(S): A. Little and others

FORMAT: Seminars, 3 hours each

Biology

Location: Life Sciences Centre, Second Floor
1355 Oxford Street
Halifax, NS B3H 4J1
Telephone: (902) 494-3515
Fax: (902) 494-3736
Website: http://www.dal.ca/biology

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

Chair
MacRae, T.H., MSc, PhD (Windsor)

Biology Undergraduate Program Advisors
Beuchamp, C. (902-488)
Bishop, T. (904-494)
Brocklehurst, J. (902-4881)
McCaw, N. (904-7072) (Biology Co-op)
Staples, E. (904-2444)
Van Dommelen, J. (904-1584)
Walsh, E. (904-7110)

Marine Biology 20-credit Major Program Advisor
R. Scheibling (902-2286)

Biology Honours Program Advisors
Collins, T. (904-3607)
Latta, R. (904-2727)
McCaw, M. (904-2753) (Honours Co-op)
Fohlgak, B. (904-1855)
Wright, J. (904-4646)

Marine Biology Honours Program Advisors
Harrington, C. (904-1395) (Marine)
McAllister-Irwin, N. (904-3818) (Marine Co-op)
Finder, A. (904-3632) (Marine)

Professors Emeriti
Hall, B.K., PhD, DSc (UNE), FRSC, University Research Professor
Emeritus
Van Maltzahn, K.E., MS, PhD (Yale)
McLaren, I.A., MSc (McGill), PhD (Yale), George S. Campbell Professor
Emeritus
Vining, L.C., MSc (Auckland), PhD (Canad), FRSC

Professors
Bentzen, P., MSc (UBC), PhD (McGill)
Bazaz, D., BSc (Bath), PhD (London)
Croft, R.P., PhD (McGill), major appointment in Physiology and
Biology
Fentress, J.C., PhD (Canad) (major appointment in Psychology)
Freudel, B., MSc, PhD (Toronto)
Hutchings, I.A., PhD (Memoria)
Iverson, S.J., PhD (Maryland)
Johnston, M.O., PhD (Chicago)
Lane, P.A., MSc (UNB), PhD (SUNY Albany)
Leonard, M.L., PhD (Ottawa)
MacRae, T.H., MSc, PhD (Windsor) (Killam Professor of Biology)
Mills, E.L., MSc, PhD (Yale) (major appointment in Oceanography)
O’Dor, R.K., PhD (UBC)
Pattuex, D.C., MSc, PhD (McGill)
Polugak, B., MSc, PhD (Man)
Scheidbach, B.E., PhD (McGill)
Balasubramaniam, J.A., MSc (Dalhousie)
Herbinger, C.M., PhD (Dalhousie)
Latta, R., PhD (Colorado)
Pinder, A., PhD (Dal)
Ruzzante, D.E., MSc, PhD (Dal)

Assistant Professors
Balasubramaniam, J.A., MSc (Dalhousie)
Herbinger, C.M., PhD (Dalhousie)
Lotta, J.R., PhD (Kiel)
Romaniuk, T. N., PhD (McMaster)
Simpson, A.G.R., PhD (Sydney)
Staicer, C., PhD (Dalhousie)
Stone, S., PhD (York U.)
Worm, B., PhD (Kiel)


Adjunct Professors
Berber, C., PhD (Queens)
Band, S., PhD (UMT)
Bowen, W.D., PhD (UBC), BDC
Brzez, M., PhD (New York State)
Brown, L., PhD (Univ. of BC)
Campagn, S.E., PhD (UBC), BDC
Cree, D.K., MSc (Guelph), PhD (UNB), SML
Dong, Z., PhD (Carleton)
Draga, S., MSc, PhD (Dal)
Ewett, V., PhD (Memorial)
Hansen, M., MSc (Ottawa), PhD (McGill), BSc (Ottawa)
Harrison, W.G., PhD (New York at Stony Brook)
Hatchett, R., MSc (Dal), PhD (Sydney)
Joliat, V., PhD (Monasheer)
Johnson, S., BSc, MSc (Dal), PhD (Sydney), Dal
Kernschtung, E., MSc (Dal), PhD (Torrri), BDC
Lall, S.P., MSc, PhD (Guelph), NIC
Oliver, Gille, BSc, MSc, PhD (Montreal)
Platt, T.C., MA (Tor), PhD (Dal), BDC
Ross, N., BSc (McGill), PhD (MD)
Rossini, T., PhD (Monsnow)
Sensati, A., PhD (St. Francis Xavier)
Swan, D.J., PhD (BDC)
Vozza, A., BSc (Laval), PhD (McGill)
Warman, P., BSc (Regina), MSc (Guelph), PhD (Guelph)
Witten, P., PhD (Hamburg)

Honoray Research Associates
Chapman, A., PhD (Hamburg)
Horn, A., PhD (Toronto)
Wilgert, L., PhD (Dalhousie)

Senior Instructors
Bouchamp, C., BSc, MSc (Memorial), BEd (Dal)
Bishop, T., BSc, MSc (Dal)
Collins, P., BSc (Dalhousie)
McAllister-Irwin, N., PhD (Dal)
McCarville, M., BSc, MSc (Dalhousie)
Van Dommelen, J.A., MSc (Dal)

Post Doctoral Fellows
Dunn, K., PhD (Texas A & M)
Ferens, D., PhD (Laval)
Garten, K., PhD (Dalhousie)
Hampel, V., PhD (Charles University)
Hawyard, A., PhD (McMaster)
Hoch, W., BSc, PhD (Michigan)
Kong, B.-Y., PhD (South Korea)
Sallam, G.M., (Cairo)
Park, J.S., (Seoul)
Tong, Y., MSc, PhD (Dal)
Winter, J., PhD (Guelph)

Areas of Specialty of Biology Faculty
Cell Biology: P. Cote, T. MacRae, W. Pohajdak, A. Gunawardana, S. Stone.
Developmental Biology: B.K. Hall, T. MacRae, A. Pinder, S. Stone.
Molecular Biology: T. MacRae, B. Pohajdak, J. Wright.
Physiology: S. Iverson, A. Pinder.
Protostomy: S. Adl, A. Simpson.

I. Degree Programs
The department offers the following degree programs in Biology:

• 20 credit Honours (Concentrated, Combined, or Multidisciplinary), BA or BSc.
• 21 Credit Major, BA or BSc.
• 21 Credit Double Major, BA or BSc.
• 25 Credit Concentration, BA or BSc.

Departmental requirements for these programs are described below. In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 65 of this calendar.

Departmental Requirements for all Biology programs have changed effective 2005/2006. Please note that a student is governed by the academic regulations in place at the time of initial enrolment as long as the degree is completed within the time permitted, and that subsequent changes in regulations shall apply only if the student so elects. Students applying the old academic regulations should consult the calendar of the appropriate year.

Students should plan their program of study carefully and are encouraged to do so in consultation with a departmental academic advisor.

The department also offers degree programs in Marine Biology. Please consult the Marine Biology section of this calendar.

A. Co-operative Education Program in Biology
The Department of Biology will be offering a Co-operative Education Program for Biology Major and Honours students.

Co-operative Education in Science (Science Co-op) is a program where academic study is combined with paid career related work experience. Students alternate three to four work terms throughout their academic study is combined with paid career related work experience. Students alternate three to four work terms throughout their academic study is combined with paid career related work experience.
Students apply to join Science Co-op on or 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 2001.00) 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 McCarrville (Mindy.McCarville@dal.ca) during their first year of study for program details.

B. 20-credit Honours Biology, BA, BSc

Students will not normally be officially registered into an Honours program until their 3rd year, after they have completed at least most of the required 2nd and 3rd year classes and earned the specified 3.0 GPA in them. Students may be admitted into a program without having completed all of the 2nd and 3rd year required classes but their ultimate graduation with an honours degree will be conditional upon achieving a 3.0 average in these classes.

Students considering doing an honours program are encouraged to pick up a departmental honours record form which lists the classes which are required. These forms are available in the Biology Main office in LSC 2079 and at www.biology.dal.ca (Undergraduate Program). Students should also attend the Cameron Conference for Honours Students which is held in the department in February of each year. This is an excellent opportunity to talk to honours students who are in the final year of their program and to find out about the thesis research, the process of finding honours supervisors and other issues related to an honours program.

It is the responsibility of students to arrange for a supervisor for their thesis research. Honours these may be supervised by a faculty member of the Biology department, or by an external scientific investigator, subject to the approval of the Honours committee. A list of external researchers who have previously served as Honours supervisors and are therefore approved to supervise future Honours students is posted on the Honours bulletin board outside the Biology Main Office in LSC 2079 and is also on the Honours Website. Students should begin to search for a potential supervisor during their 2nd year of study and should have completed arrangements by May of their 3rd year. If students wish to be supervised by someone external to the Department who has not been previously approved by the Honours committee, they must consult with their Honours advisor to determine this potential supervisor’s eligibility.

Departmental Requirements

See the following sections of the calendar: “Academic Regulations,” “Degree Requirements” and “Graduation Standing” for the number of classes and the grade level required for Concentrated, Combined, or Multidisciplinary Honours Programs. To register for a Multidisciplinary Program, students must meet with the Chairs of each of the Departments with which they wish to design a program. To register for a Concentrated or Combined Honours Program in Biology, students must meet with a Biology Honours advisor. In addition to the University requirements for an Honours degree, students taking any TYPE of Biology Honours Program, even if Biology is the Allied subject of a Combined program, MUST TAKE THE FOLLOWING CLASSES.

Classes required in all Biology Honours Programs

**1000 level**
- BIOL 1011.03 or BIO 1012.05 (minimum grade of C-)
- BIO 1011.03 or BIO 1012.05 (minimum grade of C-)
- CHEM 1011.03/1012.03 OR
- DBS (minimum grade of C) (SCIE 1501X/Y or 1502X/Y or 1503X/Y or 1510X/Y)

A “B” average (3.0) must be attained in the following 2000 and 3000 level required biology classes.

A maximum of two of these required classes may be repeated in an attempt to achieve this grade point average. Students in ANY type of Biology honours program, even if Biology is the Allied Subject and not the major area of concentration, MUST take all of these 2nd and 3rd yr. required classes and earn a 3.0 GPA.

- BIO 2011.03
- BIO 2012.03
- BIO 2040.03 (or BIO 3041.05 prior to 2005)
- BIO 2060.03
- BIO 2013.03 (2 of BIO 2011, 2012, 2105 prior to 2005)
- BIO 2014.03 (2 or 2 of BIO 2011, 2012, 2105 prior to 2005)

**3000 level**
- At least one class from BIO 3051.03, 3070X/Y, 3080, and PHYL 3030X/Y (PHYL 3030X/Y will be counted as a 2nd year level Biology credit).
- See recommendations under B Course Selection Guidelines

**4000 level**
- BIO 4000X/Y (for those in Concentrated Honours and Combined Honours programs in which Biology is the major area of study)
- Honours Qualifying exam (graded as Pass/Fail) and based on participation in BIO 4000X/Y (4.0 class and the Cameron Conference for Honours students)
- NOTE: A minimum of 9 credits in biology above the 1000 level, including 2 credits above the 2000 level are required for the Honours degree.

**Other Required Classes**
- For Concentrated Honours programs, two full credits above the 1000 level in any subject other than Biology (applies to BA students only).
- Other Recommended Classes
  - PHYS 1000X/Y or 1000X/Y or 1010X/Y
  - STAT 1000.03 and MATH 1000.03 or 1215.03

C. 20-credit BA or BSc with Major in Biology

**Departmental Requirements**

- BIO 1011.03 or BIO 1012.05 (minimum grade of C-)
- BIO 1011.03 or BIO 1012.05 (minimum grade of C-)
- CHEM 1011.03/1012.03
- OR
- DBS (minimum grade of C) (SCIE 1501X/Y or 1502X/Y or 1503X/Y or 1504X/Y or 1510X/Y)

**2000 level**
- BIO 1011.03 or BIO 1012.05 (minimum grade of C-)
- CHEM 1011.03/1012.03
- OR
- DBS (minimum grade of C) (SCIE 1501X/Y or 1502X/Y or 1503X/Y or 1504X/Y or 1510X/Y)

**3000 level**
- Minimum of three (3) full credits at or above the 3000 level for a BA
- Minimum of four (4) full credits at or above the 3000 level for a BSc
- See recommendations under B Course Selection Guidelines

D. 20-credit BA or BSc with Double Major in Biology

**Departmental Requirements**

- BIO 1011.03 or BIO 1012.05 (minimum grade of C-)
- CHEM 1011.03/1012.03
- OR
- DBS (minimum grade of C) (SCIE 1501X/Y or 1502X/Y or 1503X/Y or 1504X/Y or 1510X/Y)

Biology 401
II. Course Selection Guidelines

Biology is a large and diverse field, and students enroll in Biology programs with a corresponding diversity of interests and goals. While we encourage students to sample broadly across the various biological disciplines during their undergraduate years, we recognize that many students wish to emphasize one or more general areas within Biology. To help students select courses that fit their interests and goals, we have identified three general areas in Biology: A. Ecology and Evolution, B. Organismal Biology, C. Cell/Molecular Biology. Below, we list courses associated with each area, and provide recommendations for designing individual programs at the 3rd and 4th year levels.

IMPORTANT: Students should choose both 2000 level classes in their 2nd year, with care, so that they will have the necessary pre-requisites to enroll in 3rd and 4th year classes in their interest areas.

NOTE: THESE ARE NOT REQUIREMENTS. STUDENTS MAY SELECT COURSES FROM ANY OR ALL AREAS, PROVIDED THEY MEET REQUIREMENTS FOR THEIR DEGREE PROGRAM.

A. Ecology and Evolution

Ecology and Evolution (E&E) spans a broad range of concepts and applications from ecosystem ecology through population ecology to molecular evolution. A well-rounded course of study in Ecology or Evolution or both will include some classes in basic principles applicable to all organisms and habitats/ecosystems, as well as more specific classes on the details of how these principles play out in particular situations (e.g. taxa, habitats), and how these principles are applied to real world problems. In addition, a well-trained student in E&E should have both well developed numerical skills as well as exposure to the application of E&E in broader society.

It is recommended that students wishing to emphasize E&E in their degree program select 3rd and 4th year classes as follows:

• Three half credits from the Principles group (see below)
• At least one half-credit from each of
  • Biodiversity
  • Ecosystems
  • Applications
• Methods and Data Skills
• Two half credits of Statistics (Stat 1060 and 2080)
• A half-credit in calculus (MATH 1000)
• One half-credit class with a field component (marked 3 below)

Principles:
- BIOL 3042, BIOL 3044, BIOL 3046, BIOL 3061, BIOL 3062, BIOL 3065, BIOL 3069, BIOL 3101

Biodiversity:
- BIOL 3007, BIOL 3012, BIOL 3015, BIOL 3022, BIOL 3027, BIOL 3029, BIOL 3032, BIOL 4060

Ecosystems:
- BIOL 3015, BIOL 3064, BIOL 3066, BIOL 4070, BIOL 4071, BIOL 4072, BIOL 4076, BIOL 4078

Applications:
- BIOL 3060, BIOL 3061, BIOL 3062, BIOL 3066, BIOL 3068, BIOL 3070, BIOL 3101, BIOL 3262, BIOL 3264, BIOL 4060, BIOL 4061, PSYO 2670, PSYO 2671, PSYO 2672

B. Organismal Biology

Organismal biology includes areas such as development, physiology and anatomy, as well the study of particular taxonomic groups. Students interested in organismal biology are encouraged to select courses from the following:

Developmental Biology:
- BIOL 3505, BIOL 4050

Physiology/Anatomy:
- BIOL 3079, BIOL 3079, BIOL 3080, BIOL 3091, BIOL 3121, BIOL 3430, PHYT 3120, PHYT 3134, BIOL 4074, BIOL 4408

Methods:
- BIOL 3004, BIOL 3011, BIOL 3101, BIOL 3510, BIOL 4033, BIOL 4061, BIOL 4062, BIOL 4063

402 Biology
Biology 403

III. Enrolment Limitations

Students intending to enroll in programs in Biology and Marine Biology should note that there are limitations on the number of students that can be accepted into 2000 and higher level classes in any given year. Passing the introductory Biology classes with the required grade of C- does not guarantee a place in any of these classes. Lecture classes are limited by room size. Additional size restrictions are imposed on laboratory classes because of equipment limitations and the much closer supervision required. Size limitations on 2000- and 3000- level laboratory classes are specified under the timetable listings for these classes.

Students are advised to apply as early as possible during the registration period to secure their space within their desired classes.

Students not appearing on the first day of class may be deleted from class lists.

Biology

1. 1000-Level Classes

These classes include introductory university-level classes in Biology. For entry into upper level Biology classes, a minimum of C- must be obtained in the first year classes.

2. 2000-Level Classes

All Biology majors (15-, 20-credit and Honours) are required to take a core program at the 2000 level. Students should normally complete these core classes in their second year. The core program is designed to provide a basis for more advanced studies in Biology as well as to ensure that all majors are exposed to the general discipline or subject areas of biology. A variety of skills including writing, oral presentation, computer literacy, library use, and problem solving are integrated into the curriculum of these core classes along with hands-on activities in the laboratory or field. The second-year core program covers five discipline areas:

1. Cell Biology - BIOC 2020.03
2. Diversity of Organisms (animals, plants and microbes)
   - BIOC 2003.05
3. Ecological - BIOC 2060.03
4. Evolution - BIOC 2040.05
5. Genetics and Molecular Biology - BIOC 2030.03

Students interested in biochemistry are advised to take the second-year biochemistry class offered by the Biochemistry & Molecular Biology departments. This class is not part of our core-program but is a prerequisite for entry into some higher level classes.

Students majoring in subjects other than Biology can design their own programs and will not have to conform to these 2000-level core requirements. All students should ensure they have the necessary prerequisite classes required for entry into 3000-level classes.

3. 3000-Level Classes

These classes are mainly for second- and third-year students. No student whose concentration is in Biology will be allowed to register in any 3000 or 4000-level class without having completed, or being registered in 2000- level Biology totalling at least two full credits.

4. 4000-Level Classes

These classes are primarily for honours or major students. They are open to others with the permission of the instructor. Where biology classes are identified as being given in another department (e.g., Anatomy), that department should be consulted for details.

5. Other Classes

The following classes given by other departments may be taken as a Biology class toward BA, BSc, and BSc (Honours) Biology degrees even though they are not cross-listed with Biology.

BIOL 2200, 2300, 2610, 3300, 3400, 4027, 4031, 4042, 4043, 4404, 4501
PHYS 3020, 3520, 4020

Faculty of Science

III. Enrolment Limitations

Students intending to enroll in programs in Biology and Marine Biology should note that there are limitations on the number of students that can be accepted into 2000 and higher level classes in any given year. Passing the introductory Biology classes with the required grade of C- does not guarantee a place in any of these classes. Lecture classes are limited by room size. Additional size restrictions are imposed on laboratory classes because of equipment limitations and the much closer supervision required. Size limitations on 2000- and 3000- level laboratory classes are specified under the timetable listings for these classes.

Students are advised to apply as early as possible during the registration period to secure their space within their desired classes.

Students not appearing on the first day of class may be deleted from class lists.

Biology

1. 1000-Level Classes

These classes include introductory university-level classes in Biology. For entry into upper level Biology classes, a minimum of C- must be obtained in the first year classes.

2. 2000-Level Classes

All Biology majors (15-, 20-credit and Honours) are required to take a core program at the 2000 level. Students should normally complete these core classes in their second year. The core program is designed to provide a basis for more advanced studies in Biology as well as to ensure that all majors are exposed to the general discipline or subject areas of biology. A variety of skills including writing, oral presentation, computer literacy, library use, and problem solving are integrated into the curriculum of these core classes along with hands-on activities in the laboratory or field. The second-year core program covers five discipline areas:

1. Cell Biology - BIOC 2020.03
2. Diversity of Organisms (animals, plants and microbes)
   - BIOC 2003.05
3. Ecological - BIOC 2060.03
4. Evolution - BIOC 2040.05
5. Genetics and Molecular Biology - BIOC 2030.03

Students interested in biochemistry are advised to take the second-year biochemistry class offered by the Biochemistry & Molecular Biology departments. This class is not part of our core-program but is a prerequisite for entry into some higher level classes.

Students majoring in subjects other than Biology can design their own programs and will not have to conform to these 2000-level core requirements. All students should ensure they have the necessary prerequisite classes required for entry into 3000-level classes.

3. 3000-Level Classes

These classes are mainly for second- and third-year students. No student whose concentration is in Biology will be allowed to register in any 3000 or 4000-level class without having completed, or being registered in 2000- level Biology totalling at least two full credits.

4. 4000-Level Classes

These classes are primarily for honours or major students. They are open to others with the permission of the instructor. Where biology classes are identified as being given in another department (e.g., Anatomy), that department should be consulted for details.

5. Other Classes

The following classes given by other departments may be taken as a Biology class toward BA, BSc, and BSc (Honours) Biology degrees even though they are not cross-listed with Biology.

BIOL 2200, 2300, 2610, 3300, 3400, 4027, 4031, 4042, 4043, 4404, 4501
PHYS 3020, 3520, 4020
BIOL 1020.03: Introductory Biology I: Cells, Genetics 

This class introduces students to the main domains of microbial life, based on modern principles of phylogeny and taxonomy. Lectures provide an overview of prokaryotic diversity, structure, growth and metabolism, with an explanation of the basic differences between Archaea, Eubacteria and Eukaryota, and an overview of the origin and diversity of the main groups of eukaryotes. The importance of protists and bacteria to marine and terrestrial ecology and to environmental issues will be discussed. The class is recommended to students interested in further studies in cell biology, developmental biology, ecology, environmental sciences, evolution, marine biology, microbiology, and oceanography.

BIOL 2020.03: Celliology.

An introduction to the eukaryotic cell. Major cell components and activities are described at ultrastructural and molecular levels with emphasis on mammalian systems. The concept of the cell as an integrated structural, functional unit is developed. 

COORDINATOR(S): P. Coni, B. Pohajdak, M. McCarville
FORMAT: Lecture, 3 hours, 3 lab hours
PREREQUISITE: BIOL 1020.03 or 1021.03 (C- or better), OR DISP (SCIE 1500.30X/Y or 1501X/Y.27 or 1502X/Y.21, or 1503X/Y.21 or 1504X/Y.27 or 1510X/Y.33) or equivalent
CON-REQUISITE: Recommended CHEM 1011.03 and 1012.03

BIOL 3030.03: Genetics and Molecular Biology.

Genes contain the biological information that specifies the cell and the organism. Therefore, genetics, the study of genes, is a means to understand the function and propagation of cells and organisms. The power and prominence of modern genetics has grown from a blend of classical and molecular approaches, both of these approaches are emphasized in this class. Major topics discussed include: the structure and function of DNA, the nucleic acid that comprises genes and chromosomes; transmission genetics, concerned with the propagation of genetic information; gene function, the expression of genetic information; and
manipulation of DNA (genes) by genetic engineering. A range of organisms is considered, including bacteria, single-celled and multicellular eukaryotes, and viruses.

INSTRUCTOR(S): E. Staples, J. Wright, C.M. Herbigner, S. Stone

FORMAT: Lecture 3 hours, lab/tutorial 3 hours

PREREQUISITE: BIOL 1010.03 or 1021.03 (C- or better) AND BIOL 1011.03 or 1021.03 (C- or better), OR DSIF/DSCE 1512/Y.27 or 1532/Y.27 or 1532/Y.21 or 1504/Y.33/C or better

RECOMMENDED: CHEM 1011.03 and 1012.03

BIOL 2040.03: Evolution.

Evolution is a basic unifying principle in Biology. This course will provide a thorough overview of the process of evolution. Beginning with genetic variation and changes in representation of populations, we will proceed through the relationship between genetic change and phenotypic change. Adaptation will be analyzed at various levels of organization (DNA to species). The course will finish with studies of speciation, phylogeny, and macroevolutionary patterns. Students who complete the course should have a working familiarity with the full breadth of evolutionary concepts, preparing them for more advanced courses which will cover the application of these concepts to particular taxa or situations.

INSTRUCTOR(S): M. Johnston, R. Latifa, E. Welsh

FORMAT: Lecture, lab/tutorial

PREREQUISITE: BIOL 1001.03 or 1021.03 (C- or better) AND BIOL 1011.03 or 1021.03 (C- or better), OR DSIF/DSCE 1512/Y.27 or 1532/Y.27 or 1532/Y.21 or 1504/Y.33/C or better

EXCLUSION: BIOL 3041.03

BIOL 2060.03: Introductory Ecology.

Ecology is the study of the interrelationships of organisms and their environments. The broad subject of ecology focuses upon the interactions of plants and animals, including humans, with each other and with their non-living world. Three levels of ecology are studied: (1) Individuals, (2) Populations, (3) Communities and Ecosystems. Assignments and tutorials employ concepts presented in lectures. Students are instructed in elementary computer techniques and use the computer for most assignments. This class provides an overview of the science of ecology for the informed citizen, and also a good foundation for further work in ecology, marine biology and environmental studies.

INSTRUCTOR(S): C. Beauchamp, S. Walde, D. Ruzzante, H.K. Latte

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

PREREQUISITE: BIOL 1001.03 or 1021.03 (C- or better) AND BIOL 1011.03 or 1021.03 (C- or better), OR DSIF/DSCE 1512/Y.27 or 1532/Y.27 or 1532/Y.21 or 1504/Y.33/C or better

EXCLUSION: BIOL 3041.03

BIOL 2605.03: Introduction to Marine Life of Nova Scotia.

This class will introduce students to the beauty, mystery and variety of marine life found in Nova Scotia. The diversity and zonation of invertebrates and macroalgae will be explored with field trips to a salt marsh, rocky and sandy shore. These visits will be supplemented by laboratory-based investigations on live marine organisms. Students will use project-based studies to understand and appreciate how a full and wise use of the sea's living resources requires and understandings of how human activities affect marine life. Students will also make a pressed collection of macroalgae and visit an aquaculture facility. This class carries an auxiliary fee to cover transportation.

INSTRUCTOR(S): L. Corlett

FORMAT: Lecture/lab/field

PREREQUISITE: OCEA 1000.03

CROSS-LISTING: OCEA 3003.03, MARI 3003.03

BIOL 3020.03: Advanced Cell Biology.

The eukaryotic cell is a complex system with an array of interconnected organelles. Some of the topics include the processing of proteins and other molecules as they move through the cell, how the cell interacts with its environment and integrated information, a strong emphasis on signaling pathways and programmed cell death. Lectures will still be supplemented with assigned readings of original research articles for discussion in class.

INSTRUCTOR(S): Côté, P.

FORMAT: Lecture 1.5 hours / discussion 1.5 hours

PREREQUISITE: BIOL 2021.03 or BIOL 2031.03 (with a minimum grade of B or instructor's consent)

BIOL 3024.03: Microscopy.

See class description for MIC 3024.03 in the Microbiology and Immunology section of the calendar.

CROSS-LISTING: MIC 3024.03

BIOL 3036.03: Transgenic Organisms.

Over the past few decades scientists have been inserting foreign genes into various organisms and creating genetically modified organisms (GMOs). These transgenic organisms are now being used (and eaten) for several commercial applications. This course will include: A review of recombinant DNA technologies, the history of transgenesis, 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. Frankensfood) associated with this technology. Gene therapy in humans will also be discussed.

INSTRUCTOR(S): B. Pohajdak

FORMAT: Lecture 3 hours

PREREQUISITE: BIOL 1001.03 or 1021.03 (C- or better) AND BIOL 1011.03 or 1021.03 (C- or better), OR DSIF/DSCE 1512/Y.27 or 1532/Y.27 or 1532/Y.21 or 1504/Y.33/C or better

EXCLUSION: BIOL 3042.03

BIOL 3042.03: Molecular Ecology.

The analysis of molecular genetic data has revolutionized many areas of ecology and conservation biology. In support of this assertion, consider the following questions: How do you deduce parentage, kinship and mating patterns in wild populations from bits of fur or feathers? Count bears (and other large mammals) with bits of fur? Identify the sex of mammals and the dist of sharks from local samples? Deduce population structures and average dispersal rates without tagging organisms? Use scale samples to tell whether the effective population size of fishes has changed over the last few decades? Determine the continent and river of origin of Atlantic salmon caught off Greenland? Compare the microbial diversity of deep sea vents and thermal hot springs? Identify the species and even population of origin of food products and consumer goods made from illegally harvested fish and wildlife? Determine where the ancestors of northwest Atlantic fishes spent the last ice age? This course will answer these and many other questions while introducing students to the methods and principles of the rapidly developing field of molecular ecology.

INSTRUCTOR(S): P. Renton, D. Ruzzante

PREREQUISITE: BIOL 2021.03, BIOC 2021.03, BIOL 2040.03, BIOL 3040.03 or BIOL 2031.03

EXCLUSION: BIOL 4042.03

BIOL 3044.03: Ecological Genetics.

The interface of historical variation and evolutionary change. As genes become more and more the focus of modern biology, it is relevant to ask how genetics is important to natural populations of organisms. This class will present an advanced examination of genetic adaptation will be analyzed at various levels of organization (DNA to species). The course will finish with studies of speciation, phylogeny, and macroevolutionary patterns. Students who complete the course should have a working familiarity with the full breadth of evolutionary concepts, preparing them for more advanced courses which will cover the application of these concepts to particular taxa or situations.

INSTRUCTOR(S): M. Lewis

FORMAT: Lecture, lab/tutorial

PREREQUISITE: OCEA 2000.03

CROSS-LISTING: OCEA 3003.03, MARI 3003.03

BIOL 3090.03: Advanced Cell Biology.

The eukaryotic cell is a complex system with an array of interconnected organelles. Some of the topics include the processing of proteins and other molecules as they move through the cell, how the cell interacts with its environment and integrated information, a strong emphasis on signaling pathways and programmed cell death. Lectures will still be supplemented with assigned readings of original research articles for discussion in class.

INSTRUCTOR(S): Côté, P.

FORMAT: Lecture 1.5 hours / discussion 1.5 hours

PREREQUISITE: BIOL 2021.03 or BIOL 2031.03 (with a minimum grade of B or instructor's consent)

BIOL 3090.03: Advanced Cell Biology.

The eukaryotic cell is a complex system with an array of interconnected organelles. Some of the topics include the processing of proteins and other molecules as they move through the cell, how the cell interacts with its environment and integrated information, a strong emphasis on signaling pathways and programmed cell death. Lectures will still be supplemented with assigned readings of original research articles for discussion in class.

INSTRUCTOR(S): Côté, P.

FORMAT: Lecture 1.5 hours / discussion 1.5 hours

PREREQUISITE: BIOL 2021.03 or BIOL 2031.03 (with a minimum grade of B or instructor's consent)
vowing (quantitative) traits and is thus complementary to courses in molecular ecology and evolution. Throughout the course we will seek rigorous evidence for the action of natural selection, testing such observation against the expectations of non-selective (neural) theories. Topics will include methods for determining whether a trait is inherited; the action of natural selection in the wild; when selection will favour specialistic vs. generalist strategies; how variation is maintained in the face of selection; trade-offs between competing selective pressures and selection for diversification.

INSTRUCTOR(S): R. Latta
FORMAT: Lecture 3 hours
PREREQUISITE: BIOL 2060.03 or BIOL 3041.03
EXCLUSION: BIOL 4494.03

BIOL 3046.03: Molecular Evolution.
The aim of this course it to examine the principles and processes of evolutionary change at the molecular level. The course begins with the various sources of genetic mutation, and moves on to the dynamics of genetic variation in populations. The course then shifts to a macro- evolutionary perspective and examines topics in protein phenotypic variation, adaptive molecular evolution, molecular clocks, evolution by genetic co-option, and developmental evolution. This class is complementary to BIOL 4041 (Bioinformatics), in that BIOL 4041 focuses on the use of computational techniques to study molecular evolutionary processes.

INSTRUCTOR(S): Biedlakowicz, J.P.
FORMAT: Lecture 3 hours

BIOL 3050.03: Developmental Biology.
The lectures describe development as a sequence of processes and events, in which ‘simple’ structures such as the fertilised egg are progressively transformed into complex organisms. These events are governed by a set of developmental rules. Our knowledge of these rules comes from experimental study of developing systems such as sea urchins, frogs, peas, carrots, chick embryos and humans. Laboratories stress the use of live material and give students practice with such techniques as test tube fertilization in echinoderms.

INSTRUCTOR(S): P. Collins, A. Gaimard and S. Stow
FORMAT: Lecture/discussion 3 hours, lab 3 hours
CO-REQUISITE: BIOL 3056.03, BIOL 3057.03

BIOL 3060.03: Environmental Ecology.
This course considers the ecological effects of pollution, disturbance, and other stressors. Emphasis is on air pollutants, toxic metals, acidification, eutrophication, pesticides, forestry, extinction, resource degradation and warfare.

INSTRUCTOR(S): B. Freedman
FORMAT: Lecture 3 hours, tutorial 3 hours
PREREQUISITE: BIOL 2060.03 (or see instructor)
CROSS-LISTING: BIOL 5060.03

BIOL 3061.03: Communities and Ecosystems.
Ecosystems are communities of living organisms and their physical-chemical environments that interact together within the biosphere. With few exceptions, all life, including human life, exists in ecosystems. The class is divided into two parts. In the first part, there will be an introduction to ecosystems including their definition, history, and the theory of community structure and stability. Topics include complex systems, general systems theory, pair-wise and multiple species interactions, the community matrix, descriptors of natural communities, ecological stability theory, food webs and network analysis. Several types of modeling approaches to ecosystems will be explored and compared including conceptual, mathematical and statistical examples. Emphasis will also be given to the community structure-controversy and recent evidence for and against the notion that communities are highly structured.

In the second part, the Ecosystem Approach will be discussed and applied aspects of ecosystem management. The Ecosystem Approach relates to how people’s use of an ecosystem affects its functioning and productivity. The need for an Ecosystem Approach has been driven by many global trends simultaneously. Clearly, for many seeking sustainability in an ecologically deteriorating world, the concept of an Ecosystem Approach is an idea whose ‘time has come’. Concepts like ecosystem health and ecosystem integrity will be explored. Other topics such as environmental indicators, environmental impact assessment, comparative environmental risk assessment, and resilience theory will also be discussed.

This is a web-based class using WISENet with frequent use of the Internet to study topics and complete exercises.

INSTRUCTOR(S): P. A. Lane
FORMAT: Lecture 3 hours
PREREQUISITE: BIOL 2060.03 or INTO 2061 on INTO 2062

BIOL 3062.03: Behavioral Ecology.
This class examines animal behaviour from an evolutionary perspective. Using the theory of natural selection as a basis, we will examine foraging, grouping patterns, territorial behaviour, parenting, mating behaviour, social organization, aggression and cooperation. There will be tutorials and essay assignments.

INSTRUCTOR(S): M. Leonard, A. Horm
FORMAT: Lecture 3
PREREQUISITE: BIOL 2060.03

BIOL 3063.03: Resource Ecology.
This class considers the ecology, utilization, and management of renewable resources. It will introduce the history and current state of natural resource use in marine and aquatic fisheries, wildlife and forest management, agriculture and aquaculture. We will examine population dynamics, community interactions, and ecosystem support of resources in relation to their exploitation and management. Practices of controlling production, pests, and predators will be discussed. Finally, we will evaluate single-, multi-species, and ecosystem-based approaches to sustainable management.

INSTRUCTOR(S): H. K. Lotze
FORMAT: Lecture 2 hours, tutorial 2 hours
PREREQUISITE: BIOL 2060.03, (MATH 1010.03, STAT 3040.03 or DSP)

BIOL 3065.03: Conservation Biology.
This class offers an introduction to conservation biology, the science of understanding and conserving biodiversity on Earth. Scientists recognize that humans are affecting biodiversity, and that the consequences are deleterious to species, ecosystems, and ultimately our society. This class has two goals: (1) to learn how processes and changes in biodiversity are quantified and tracked over time and space, and (2) to learn about methods and tools used to prevent the extinction of species and the disruption of habitats and ecosystems. Examples will come from terrestrial, freshwater, and marine ecosystems. Tutorials involve student presentations on key papers in conservation biology as well as a written essay. Both ecological principles and the management implications of conservation biology will be discussed in detail.

INSTRUCTOR(S): B. Wem
FORMAT: Lectures and Tutorials
PREREQUISITE: BIOL 2060.03

BIOL 3067.03: Ecology and Evolution of Fishes.
This class will examine selected topics on the ecology and evolution of marine and freshwater fishes. Topics will 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 2063.03, BIOL 2064.03
CROSS-LISTING: BIOL 5067.03, MARR 3067.03

BIOL 3069.03: Population Ecology.
An examination of selected topics in population ecology. Topics include the effect of species interactions (predation, competition, mutualism) on population fluctuations, cycles and extinction. The relevance of theory to particular case studies such as lynx-boreal cycles and biological control of winter moth will be discussed. Recent literature will be emphasized. Written assignments and exams will contribute to the final grades.

INSTRUCTOR(S): S. Wilda
FORMAT: Lecture/tutorial 3 hours
PREREQUISITE: BIOL 2060.03 (minimum grade of B), (STAT 1060.03 and (MATH 1205.03 or MATH 1255.03) or DSP)
BIOL 3078.03/3079.03: Principles of Animal Physiology. Part I and II.

A discussion of the mechanisms which coordinate the activities of cells within multicellular organisms and permit such organisms to maintain a stable internal environment in a changing external environment. The emphasis is on the mechanisms most widely distributed through the animal kingdom. The laboratories are designed to illustrate these "principles of physiology" in a variety of organisms and to demonstrate the experimental approaches used to study physiological functions. NOTE: Students must complete 3078.03 before 3079.03

INSTRUCTOR(S): N. McAllister, A. F. Tanger, S. I. Imanishi

FORMAT: Writing Intensive, lecture 3 hours, lab 3 hours

PREREQUISITE: BIOL 2003.03 and BIOL 2020.03

EXCLUSION: BRL 3071.03, BRL 3074.03, BRL 3076.03, BRL 3079.06, MARY 3073.03, 3074.03, 3075.03

BIOL 3101.03: Microbial Ecolgy.

Lectures on the ecology of microscopic organisms, including bacteria, protozoa, fungi and micro-invertebrates. The class will focus on interactions between species and with the environment. In ecosystems microbial ecology has a central role in linking nutrient cycles between decomposition, and primary productivity. Competition, succession and community structure are discussed with examples from marine, fresh-water and soil habitats. The course is useful for students in marine biology, ecology, environmental science and microbiology.

INSTRUCTOR(S): S. Adl

FORMAT: Lecture 3 hours

PREREQUISITE: BRL 2004.03, or MCI 2100.03 and BRL 2010.03

BIOL 3102.03: Microbial Eukaryotes: Biodiversity and Evolution.

Microbial eukaryotes are of tremendous importance in ecological, evolutionary and medical/veterinary spheres, as well as in modern cell biology, molecular biology and biochemistry. This course provides a comprehensive and modern understanding of the biodiversity of microbial eukaryotes, the evolutionary history of eukaryotic life, and the organismal biology of complex unicells (strastophoric strategies, life history, symbiosis etc.). The curriculum covers both 'algal' and 'protozoon' forms including many of the most important organisms in marine, fresh-water, sediment and soil ecosystems, major human, agricultural, and aquatic/parasitic pathogens, and some important 'model organisms'. The course would be of particular importance for students of microbial ecology, cell biology, and microbiology.

INSTRUCTOR(S): A. Simpson

FORMAT: Lecture/Lab 3 hours

PREREQUISITE: BRL/BSC 2020.03 and BRL 2004.03 or MCI 2100

BIOL 3113.03: Bacterial Physiology.

The biochemistry of the physiological pathways is considered in relation to the biology of bacteria. A good knowledge of basic microbiology and biochemistry is required.

INSTRUCTOR(S): M. Silver

FORMAT: Lecture 2 hours

PREREQUISITE: BRL 2004.03

BIOL 3212.03: Biology of the Algae.

A non-taxonomic examination of the cellular, organismal, population and community organizations of both marine and planktonic algae. This course uses WebCT.

INSTRUCTOR(S): E. Kocian

FORMAT: Lecture 2 hours, lab 3 hours

PREREQUISITE: Grade B or better in BIOL 2003.03 or BIOL 2004.03 or permission of instructor

CROSS-LISTING: MARI 3212.03

BIOL 3218.03: Plant Anatomy.

Lectures will explore the internal organization of the leaves, stems, and roots of both the flowering plants and the cone-bearing plants, emphasizing the common plan that is found at the tissue 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 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 used 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: BRL 2010.03 or 2012.03 (C- or better) and BRL 3011.03 or 3012.01 (C- or better), or DSF 210.03 (C- or better), or (BIO 1502.03 or BIIOL 1503.03 or 1504.03 or 1510.03)(C- or better)

BIOL 3225.03: Plants in the Human Landscape.

This course covers the use of plants for human recreation and aesthetics in gardens, public parks, subsistence 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): M. Silver

FORMAT: Lecture/tutorial

PREREQUISITE: BRL 1010.03 or BOL 1020.03 (C- or better) and BOL 3011.03 or BOL 3012.03 (C- or better) or DSF or PLAN 2101.03

CROSS-LISTING: PLAN 3225.03, ENV 3225.03

BIOL 3226.03: Plants and Civilization.

This course covers the botany, domestication, development, distribution, production, processing, history and economic and social impacts of plants which have become major world crops. Topics include the cereals (corn, rice and wheat), fruits (apples, blueberry, citrus, grape, olive, pineapple, and strawberry), vegetables (alliums, beets, legumes, lettuce, potato and tomato) and industrial crops (cocoa, coffee, cotton, hemp, rubber, and sugar), and the development of novel bioenergy products (bio-fuels, etc.) from plant sources. Course includes field trips and laboratory exercises.

INSTRUCTOR(S): D. Buszard

FORMAT: Lecture/lab

PREREQUISITE: BRL 1010.03 or BOL 1020.03 (C- or better) and BOL 3011.03 or BOL 3012.03 (C- or better) or DSF

CROSS-LISTING: MARI 3226.03

BIOL 3301.03: Invertebrate Biology.

A survey of the diversity, ecology and evolutionary history of the major invertebrate groups. Lectures will emphasize phylogenetics and diversity of body plans. Labs will emphasize identification and anatomy. Through field trips to local sites, computer-aided learning, and group projects to construct food webs for local invertebrate communities.

INSTRUCTOR(S): T. Romaniuk

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: BRL 2003.03

CROSS-LISTING: MARI 3301.03

CROSS-LISTING: MARI 3301.03

CROSS-LISTING: MARI 3301.03

CROSS-LISTING: MARI 3301.03

CROSS-LISTING: MARI 3301.03

CROSS-LISTING: MARI 3301.03

BIOL 3322.03: Parasitology.

The lectures emphasize the parasite-host relationships, evolution of the parasites and adaptations to the host, modifications of physiology, structure and life cycle for a parasitic existence. Examples are taken from all major animal groups where a parasitic mode of existence has developed beginning with protozoa. Since the most extensive research pertains to parasites of man, the emphasis is on human parasites.

Recommended for Ecologists and Pre-Meds. The laboratory stresses recognition and identification of parasites.

INSTRUCTOR(S): T. Rosenthal

FORMAT: Lecture 2 hours, lab 3 hours

PREREQUISITE: BRL 2011.03 or 2012.01 (C- or better) and BRL 3011.03 or 3012.01 (C- or better), or DSF 210.03 (C- or better), or (BIO 1502.03 or BIIOL 1503.03 or 1504.03 or 1510.03)(C- or better)
BIOL 3326.03: Vertebrate Design: Evolution and Function.

Design of organisms is the result of both evolutionary history and natural selection for function. Organisms have to work, but do not have to be the best possible design. In this class we will analyze current designs found among the vertebrates in terms of vertebrate-evolutionary history and functional morphology. This class will be particularly valuable in conjunction with BIOL 3210X/3210Y and BIOL 3710X/3710Y. INSTRUCTORS: A.W. Poeder

FORMAT: Lecture 3 hours

BIOL 3327.03: Entomology.

Entomology, the study of insects, is an important branch of academic biology and also one of the longest disciplines of applied biology. Any study of terrestrial ecosystems would be incomplete without considering this diverse and important group of animals. This class is an introduction to the study of insects. Topics will include insect classification, evolutionary diversity, biology, ecology, behaviour, and various applied aspects. Through the survey of the insects, students will gain an appreciation of insect biodiversity as well as their economic and ecological importance. When offered during the summer, this class will carry an extra fee to cover costs of transportation on field trips to a variety of terrestrial habitats.

INSTRUCTORS: T. Roselinde, P. Ingham, A. Regev

FORMAT: Lecture 2 hours, lab 3 hours

BIOL 3329.03: Applied Entomology.

Insects not only comprise more than half of the world's biodiversity, but influence human health and economic well-being in many ways. In this class students will work on their identification skills and be introduced to several areas of applied entomology, including insect pest management, medical entomology, forensic entomology, and insects in food science. The class will cover the principal applications of entomology in agriculture (crop and animal production), forestry and medicine. Beneficial as well as harmful insects will be discussed.

INSTRUCTORS: T. Roselinde

FORMAT: There are three hours of lectures and three hours of lab session each week

BIOL 3404.03: History of Medicine.

See description for HIST 2995.03 in the History section of this calendar.

BIOL 3421.03: Comparative Vertebrate Histology.

An advanced histology class surveying the entire range of vertebrate tissues and organs. See description for ANAT 3421.03 in the Anatomy and Neurobiology section of this calendar.

BIOL 3430.03: Introduction to Human Histology.

The class provides a comprehensive treatment of cells, tissues and selected organ systems. See class description for ANAT 2160X/2160Y in the Anatomy and Neurobiology section of this calendar.

BIOL 3503X/Y.06: Introduction to the History of Science.

See description for HIST 2205X/Y.06 in the History of Science & Technology section of the calendar.

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

INSTRUCTORS: G. McDougall and staff

FORMAT: Lectures and Tutorials; 3 hours

BIOL 3504.03: Philosophy of Biology.

See class description for PHIL 3420X 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; feeding; health and disease; genetics; nutrition; pollution; economics; and environmental ethics. Special attention is paid to the establishment and management of protected areas. Students who have completed BIOL 3301X/3301Y and BIOL 3302X/3302Y and have a strong interest in aquatic biology and also one of the largest divisions of applied biology. Any study of aquatic ecosystems would be incomplete without considering this diverse and important group of animals. This class is an introduction to the study of aquatic organisms. Topics will include fish and crustacean culture, seaweed culture, and the culturing and raising of aquatic plants and animals. This class will be particularly valuable in conjunction with BIOL 3210X/3210Y and BIOL 3710X/3710Y. INSTRUCTORS: A.W. Poeder

FORMAT: Lecture 3 hours

BIOL 3601.03: Methods in Ecology.

This hands-on class provides practical experience in various skills needed to conduct ecological research and prepare scientific papers. Through participation in several class projects, students obtain experience conducting field studies and laboratory experiments. Project design, by the instructors, includes a wide range of ecological questions, techniques, organisms, and ecosystems. Specific topics may include the spatial distributions of organisms, animal orientation and movement, disturbance and succession in forests, function of animal behaviour, and microbial ecology. Students collect, analyze, and interpret their own data and summarize their findings in formal scientific reports. Evaluation of students is based on written assignments and participation. No exams are given. This class enables students to apply what they have learned in lecture-based classes. Lectures are limited to background and technical tips necessary to conduct each project and comprehensive lists of articles are provided for each project. Instructors will provide a computer package for data analysis (e.g. Excel, Systat, Primer) and help with graphic presentation (e.g. formatting papers using Word).

FORMAT: Field and Lab intensive

BIOL 3615.03: Field Survey of Terrestrial Biodiversity.

This summer class provides field experience with biodiversity survey techniques and practical experience in relating trends in biodiversity to natural and anthropogenic variation in terrestrial environments. Lectures will provide an overview of relevant concepts in biodiversity and ecology, as well as focused instruction on the ecology and taxonomy of particular groups of organisms such as lichens, mosses, higher plants, insects, amphibians, birds, and mammals. Students will take field trips to a variety of terrestrial habitats. At each site, students will gain experience with standard techniques used to quantify the biodiversity of different groups of terrestrial organisms. Students will learn to use Excel to tabulate and analyze data, and will write several reports based on the techniques used.
the data collected, and the major biodiversity issues involved. Five days will be devoted to planning, conducting, writing-up, and presenting to the class an independent project of the student's own choice. An extra fee will be charged to cover costs of transportation and camping.

**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 activities will revolve around field trips, laborato- ry, or a combination of these, depending on weather. Lectures and laboratory work will investigate pinniped haulout behaviour and cetacean biology through application in the field. The course format incorporates introductory lectures, field work and laboratory analysis. Assessment will include 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 bird behavior. Students are introduced to the 'Marine Invertebrate Diversity Initiative', and will each contribute a species profile.

**BIOL 3623.03: Field Studies of Marine Mammals.**

This summer class provides first-hand experience in studying animal behaviour in the field, so that upon completion, students should be able to carry out field studies of their own. Topics include focusing questions, describing behaviour, choosing sampling regimes, and designing and conducting experiments. Lectures will provide background information, but most of the class will consist of day-long field projects that give students practical experience with each of the main topics. Specific exercises will involve various species from insects to mammals to various behaviours, including, visual signaling, foraging, and responses to playback to tape-recorded sounds. Students will also plan, conduct, write-up, and orally present a 1- or 2-day project of their own choice. An extra fee will be charged to cover costs of transportation.

**BIOL 3630.03: Field Methods in Animal Behaviour.**

This summer class provides first-hand experience in studying animal behaviour in the field, so that upon completion, students should be able to carry out field studies of their own. Topics include focusing questions, describing behaviour, choosing sampling regimes, and designing and conducting experiments. Lectures will provide background information, but most of the class will consist of day-long field projects that give students practical experience with each of the main topics. Specific exercises will involve various species from insects to mammals to various behaviours, including, visual signaling, foraging, and responses to playback to tape-recorded sounds. Students will also plan, conduct, write-up, and orally present a 1- or 2-day project of their own choice. An extra fee will be charged to cover costs of transportation.

**BIOL 3632.03: 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. 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 is field-intensive, and will concentrate on developing frameworks to assess ecosystem health in urban wetland ecosystems, including: Coniferous and deciduous forests of various types; coastal marsh, tidal flats, beach, grassy dunes, and rock shore; freshwater lakes; and offshore islands. Students will keep a field notebook and prepare written reports summarizing field observations and addressing particular questions. Students will learn techniques for the scientific study of bird populations, including identification of species by sight and sound. Exams will test student comprehension of the lecture and laboratory material, as well as identification skills. For the last week of the class, students will design, conduct independent projects to test a specific hypothesis about the behavior of birds. On the final day, students will present their work to the class in research seminar form. One week will be spent at various field camps; extra fees will be charged to cover costs of transportation and camping.

**INSTRUCTOR(S): C. Staicer**

**FORMAT: SEASIDE Field intensive**

**PREREQUISITE: BIOL 2060.03 and BIOL 2062.03 (or similar behaviour class), STAT 1060.03 or equivalent, or permission of instructor**

**BIOL 3632.03: Applied Field Methods in Fish Ecology.**

This summer class provides first-hand experience in studying animal behaviour in the field, so that upon completion, students should be able to carry out field studies of their own. Topics include focusing questions, describing behaviour, choosing sampling regimes, and designing and conducting experiments. Lectures will provide background information, but most of the class will consist of day-long field projects that give students practical experience with each of the main topics. Specific exercises will involve various species from insects to mammals to various behaviours, including, visual signaling, foraging, and responses to playback to tape-recorded sounds. Students will also plan, conduct, write-up, and orally present a 1- or 2-day project of their own choice. An extra fee will be charged to cover costs of transportation.

**INSTRUCTOR(S): A. Harris**

**FORMAT: SEASIDE Field intensive**

**PREREQUISITE: BIOL 3062.03 or STAT 2160.03 or STAT 2160.04 or permission of instructor**
BIOL 3665.03: Food Web Assembly and Modelling. In “Food Webs” the student will examine the structure and functioning of ecological communities through a lens of “who eats whom” predation prey feeding interactions. The course is designed to be an introductory course in community ecology and will involve the analysis of food webs from field, experimental and modelled perspectives and take part in field trips, group projects, and running computer simulations. 

FORMAT: SEASIDE: Lectures, Lab, Field trips
PREREQUISITE: BIOL 2003.03
INSTRUCTOR(S): R. Scheibling

BIOL 3680.03: Scientific Diving Methods for Marine Ecology. This course will emphasize the practicalities of doing field ecological experiments under water using SCUBA. It will also cover aspects of safety and the regulations governing scientific diving. The class will include at least 12 dives in various habitats, both from shore and from boats. Specific topics will include expedition logistics, site choice, site mapping, equipment installation, experimental manipulations, various censusing methods (transects, quadrats, video, photographs), dive logs and data recording, sampling, capture, and transport methods for animals, plants, and bottom samples. This class will use diving, but will not teach students to dive. Students should have at least advanced open water, > 10 recent open water dives, have completed a full diving medical, be admitted to the Dalhousie Scientific Diving Program (contact the University Diving Officer), and be comfortable under water in cold water equipment.

FORMAT: SEASIDE: Lectures, Lab, Field trips
PREREQUISITE: BIOL 2003.03
EXCLUSION: For third year and above or with permission of the instructor

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 levels (e.g. primary and secondary productivity, food web structure and trophodynamics, nutrient/cooperation, 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/laminarian interactions, trophic cascades, and El’Nino events. Field trips to local shores provide first-hand experience with identification of marine biota, measurement of environmental factors, and fundamentals of sampling and experimental design.

FORMAT: SEASIDE: Field and Lab intensive
PREREQUISITE: BIOC 2060.03 and (STAT 1060.03 or DSP)
CROSS-LISTING: ENV 3644.03, MARI 3644.03
EXCLUSION: BIL 3662.03, 3663.03

BIOL 4013X/Y.06: Scientific Writing and Advanced Laboratory In Biochemical techniques. This class will consist of a series of laboratory modules (3 modules each of 4 weeks’ duration, 1 day per week or 72 hours in total with limited flexibility to accommodate those desiring to attend off-campus courses and tutorials with computer-based assignments designed to teach scientific writing techniques (5 hours in total). The course is organized collaboratively by the Departments of Biochemistry & Molecular Biology, Biology, and Microbiology & Immunology. Several lab modules will be offered in 3 sections covering techniques used in the study of molecular biology, protein structure-function, and specific metabolic processes. Students in concentrated Honours Biochemistry must complete 1 module from each section. Students in combined Honours Biochemistry must select their three modules from any section or sections, subject to availability of space. Students must obtain a class outline from the Biochemistry & Molecular Biology Department office prior to registration and return the module selection form at least 24 hours prior to the organizational meeting, the date of which will be indicated in the Registration Timetable.

COORDINATORS: P. Liu and L. Murray.
NOTE: Students taking this class must register in both X and Y in consecutive terms, courses cannot be given only if both are completed consecutively. A certificate (CEILA) will be awarded when both terms are completed successfully.

INSTRUCTOR(S): Faculty members of the departments of Biochemistry & Molecular Biology, Biology, and Microbiology & Immunology.

FORMAT: Twelve 6-hour labs and three 3-hour tutorials/computer assignments.
PREREQUISITE: BIOC 3200.03, 3300.03, 3400.03 and consent of coordinator.

CROSS-LISTING: BIOC 4603/5603, BIOC 5603/5604, MICI 4601/5601, MICI 5601/5602.

BIOL 4035.03: Molecular Genetic Techniques in Ecology. This course will provide a practical introduction to molecular genetic techniques that have gained wide use in ecological, behavioural and evolutionary studies of populations and species. Students will be introduced to the fundamental principles of molecular biology and learn a variety of molecular techniques, including DNA isolation and quantification, gel electrophoresis, the polymerase chain reaction (PCR), RFLP analysis, DNA sequencing, and microsatellite and amplifying fragment polymorphism (AFLP) analysis. During the first part of the course, 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 (undergraduate and graduate students) or chosen by the students subject to approval by the instructor. (graduate students). The students will be expected to keep a laboratory notebook, and prepare a final report on their research project.

INSTRUCTOR(S): Faculty members of the departments of Biochemistry & Molecular Biology, Biology, and Microbiology & Immunology.

FORMAT: Twelve 6-hour labs and three 3-hour tutorials/computer assignments.
PREREQUISITE: BIOC 3200.03, 3300.03, 3400.03 and consent of coordinator.

CROSS-LISTING: BIOC 3300.03, 3400.03, 3504.03, 4035.03, MICI 4601/5601.

BIOL 4035.03: Human Genetics. For science students with special interest in human genetics. Topics include errors of metabolism, human development, transmission genetics, DNA structure, gene function, mutation and chromosomal alterations, population genetics, genetics of immunity and cancer, genetic technology in medicine, and ethical and social issues related to medical genetics.

INSTRUCTOR(S): D.C. Riddell, W.L. Green.

FORMAT: Lecture 3 hours, tutorial 2 hours.
PREREQUISITE: BIOL 3041.03, BIOL 3042.03, BIOL 3043.03.

CROSS-LISTING: BIOL 4835.03, PATH 5035.03

410 Biology
PREREQUISITE: BIOL 2060.03, MATH 1000.03 (or DISP), STAT 2080.03

BIOL 4060.03: Marine Mammalogy.
The class will examine the characteristics that mammals brought with them when they returned to the ocean, the evolution of the different groups of marine mammals, some of their special adaptations, the roles of marine mammals in oceanic ecosystems and general principles of the marine mammal population biology. Students will use information on the biology of marine mammals to explore conservation/management issues.

INSTRUCTOR(S): Staff

FORMAT: Lectures 3 hours, (optional) labs

PREREQUISITE: BIOL 2060.03, MATH 1000.03, MARB 4000.03

BIOL 4061.03: Design of Biological Experiments.
The purpose of this class is to introduce students who have previously taken formal classes in statistics to the practice and pitfalls of experimental design and data analysis in biology. Using examples from the ecological literature, the class examines how experiments should be designed and analyzed in different situations, with emphasis on potential problems and how they may be overcome.

INSTRUCTOR(S): R. Schilling

FORMAT: Lecture 3 hours

PREREQUISITE: STAT 2003.03 or ECON 2293.03/Grade of B+ or higher

BIOL 4062.03: Analysis of Biological Data.
The class introduces students to techniques available for the analysis of biological data, including correlation, regression, general linear models and multi-state methods. Emphasis will be on the practical use and abuse of these techniques rather than derivations or mathematical formulae. Students will analyze real and realistic data sets, and be assessed on write-ups of these analyses.

INSTRUCTOR(S): Whitehead, P.E.

FORMAT: Lecture 3 hours

PREREQUISITE: STAT 2003.03 or ECON 2293.03

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, 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, state-space models and meta-analysis, and will work with dynamic modelling approaches. At the end of this course, students should be able to formulate research problems as models, create an introductory verbal, analytical or simulation model, and independently find out more.

FORMAT: Lecture, Lab

PREREQUISITE: BIOL 2060.03, MATH 1000.03 (or DISP), STAT 2003.03

BIOL 4065.03: Sustainability and Global Change.
Sustainable Development has become a worldwide concept embraced by both the North and the South. This concept emphasizes the intersection of society, economy, and environment. The goal of achieving sustainable development includes: equitable and just societies, protected environments with ecosystem integrity, and robust economies. All of this must be achieved for the present and future generations in a world that is undergoing unprecedented global change. Most countries include Sustainable Development in their national priorities and approaches to development. In Canada, it is a critical component of both domestic and foreign policies. Sustainable development has also become a main organizing principle for global environmental management; for example, multilateral environmental agreements and international environmental agencies are mandated to enhance sustainability. At the same time, the concept is controversial, and often defined differently in the North and the South. Besides definitional problems, making the concept operational has proven extremely difficult. The global trends portion of the class will deal largely with those trends that relate directly to environmental management and achievement of sustainability at the global level.

NOTE: This is a web-based class and weekly assignments are related the Internet.

INSTRUCTOR(S): P. Lane

FORMAT: Lecture and discussion 3 hours + BLS

PREREQUISITE: BIOL 3060.03 and one of BIOL 3063.03, BIOL 3064.03, BIOL 3602.03, BIOL 3603.03, BIOL 3604.03, BIOL 3605.03, BIOL 3606.03, BIOL 3607.03, BIOL 3608.03, BIOL 3609.03, BIOL 3610.03, BIOL 3611.03, BIOL 3612.03, BIOL 3613.03, BIOL 3646.03, BIOL 3751.03, INTD 2002.03 or permission of instructor

BIOL 4070.03: Advanced Topics in Animal Physiology.
Whereas the introductory animal physiology classes emphasize common principles, this class emphasizes the diversity of physiological solutions to common problems among animals. A thesis is chosen each year and each student presents two seminars reviewing the literature of particular animal solutions. The student also writes a short term paper based on one of their presentations.

INSTRUCTOR(S): A. Fender

FORMAT: Lecture 2 hours

PREREQUISITE: BIOL 3070.03 or XI01.03

CROSS-LISTING: BIOL 5070.03

BIOL 4074.03: Introduction to Animal Nutrition.
There will be an introduction to the history of nutritional sciences, nutrition research techniques and focus on vitamins, mineral, lipid, protein, amino acid and carbohydrate requirements.

INSTRUCTOR(S): N. Malott-Lerain

FORMAT: Lecture

PREREQUISITE: BIOL 2002.03 or BIOC 2002.03

CROSS-LISTING: BIOL 5074.03

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/semester 2 hours

PREREQUISITE: BIOL 2004.03 or MGT 2193.03

BIOL 4160.03: Political Ecology.
Political ecology examines the politics of the environment. How do existing policies and stakeholder interactions affect the use of environment by society? Political ecology does not center on specific policies, political theories, or ideologies, but rather considers an array of broad political and socio-economic forces that shape the human relationships to the environment. These forces are multiple and interact in complex ways.
The class will cover some of the lessons learned around the world concerning the relationships between nature and society. Several case studies will be evaluated using a variety of environmental issues in the use and sharing of natural resources and environmental damage and protection. Decisions about these issues often do not adequately address scientific considerations especially ecological ones. Often there is a mixture of knowledge and myth associated with these issues, and who controls the knowledge often has the power to control the decisions and the ecological resources. This class has a discussion format. This is a web-based class employing WebCT.

INSTRUCTOR(S): P. Lane

FORMAT: Discussion 3 hours + BLS

PREREQUISITE: BIOC 2801.03, or one of BIOC 3060.03, BIOC 3061.03, BIOC 3062.03, BIOC 3063.03, BIOL 3066.03, BIOC 3069.03, BIOC 3101.03, BIOC 3161.03, BIOC 3164.03, BIOC 3165.03, or BIOC 3265.03, or BIOC 3264.05, BIOC 3646.03, or BIOC 3576.03 or INTD 2001.03 or INTD 2002.03 or consent of instructor

BIOL 4302.03: Molecular Immunology.

See class description for MSCI 4302.03 in the Microbiology and Immunology section of this calendar.

BIOL 4335.03: Marine Impacts.

Marine environments are subject to a variety of environmental impacts caused by resource extraction and utilization as well as waste disposal. These impacts arise from oil and gas production, ocean dumping, coastal habitat alteration and restoration, 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 modeling of impacts and ecosystems will be undertaken using Stella graphical modeling 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 exercises (computer projection), and discussion of research papers. Course requirements will consist of problem sets and a student modelling project.

INSTRUCTOR(S): J. Grant

PREREQUISITE: BIOC 2003.03, 2060.03, (MATH 1000.03, STAT 1060.03 or DSIP) or permission of instructor

CROSS-LISTING: OCEA 4335.03, MARI 4335.03

BIOL 4369.03: Fisheries Oceanography.

See class description for MARI 4369.03 in the Marine Biology section, or OCEA 4100.03 in the Oceanography section of this calendar.

BIOL 4370.03: Deep Sea Biology.

See class description for MARI 4370.03 in the Marine Biology section or OCEA 4370.03 in the Oceanography section of this calendar.

BIOL 4404.03: Introduction to Pharmacology I.

This introductory class is designed to acquaint students with the actions of drugs on physiological and biochemical functions in mammals including humans. Factors which affect the blood levels of drugs (absorption, distribution, metabolism, and elimination) will be considered, together with the mechanisms by which drugs act and their potential uses. The interaction of drugs with various body systems will be covered, including the central and peripheral nervous systems and the cardiovascular system. Drugs that assist or regulate host defense mechanisms will also be studied.

COORDINATOR: S.E. Hindleit

FORMAT: Lecture 3 hours

PREREQUISITE: A previous class in biology and biochemistry is recommended. Extra readings may be required for students without these courses

CROSS-LISTING: PHAC 5406.03, BRO 4804.03, and NESC 4374.03

BIOL 4407.03: Introduction to Pharmacology II.

This class is intended to cover specific aspects of drug action not covered in BIOL 4404.03. The class includes: drug receptor signaling, ion channels, second messengers, G-proteins, plus specific consideration of drugs used for pain, inflammation, cancer, diabetes, asthma, and diseases of the thyroid, eye and gastrointestinal tract. Special pharmacological topics including over-the-counter drugs, herbal medication, drug abuse, and industrial development of new drugs, plus a section on how drug actions and handling are altered in pregnancy, the elderly, and in children included.

COORDINATOR: H.A. Robertson

FORMAT: Lecture 3 hours

PREREQUISITE: BIOL 4404.03 (with a grade of B or better).

CROSS-LISTING: PHAC 5407.03, BIOC 4806.03, NESC 4375.03

EXCLUSION: BIOL 4805.03

BIOL 4408.03: Introduction to Pharmacology III.

The course will present practical aspects of how experimental data related to fundamental questions in the field of pharmacology are obtained. Basic pharmacologic concepts (e.g. drug absorption and distribution, receptor binding, concentration-response relationships, antagonism, post-receptor events) will be emphasized and presented in a variety of preparation (cells, isolated tissues, whole animals). In addition to the set laboratories, more extensive exercises based on themes presented in groups of laboratories may be assigned as experimental problems (e.g. unknowns) or as written exercises (literature-based problems, computer simulations). The course will relate pharmacologic methodologies to related areas of neuroscience, biology and biochemistry.

COORDINATOR: J.W. Doorne

FORMAT: Lab

PREREQUISITE: BIOL 4404.03 or BIOL 4406.03 (with a grade of B or better) and permission of instructor

CROSS-LISTING: BRO 4807.03, NESC 4377.03, PHAC 5410.03

CONSEQUENCE: BIOL 4407.03 or BIOL 4806.03 or NESC 4375.03

BIOL 4661.03: Principles of Biological Oceanography.

See class description for OCEA 4461.03, in the Oceanography section of this calendar.

BIOL 4662.03: Biology of Phytoplankton.

See class description for MARI 4662.03 in the Marine Biology section of this calendar.

BIOL 4664.03: History of Marine Sciences.

See class description for MARI 4664.03 in the Marine Biology section, or SCE 4801.03 in the Science, Interdisciplinary section of this calendar.

BIOL 4666.03: Benthic Ecology.

See class description for MARI 4666.03 in the Marine Biology section, or OCEA 4370.03 in the Oceanography section of this calendar.

BIOL 4800/Y.06: Special Topics.

Available as 4800.03, 4807.03, 4809.03, 4810.03. These courses 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 course content must be submitted to and approved by the chair of the Honours Research and Thesis.

The Chairperson of the Curriculum Committee can sign the approval form. For more information and forms see http://biol.dal.ca/classes/classes/sptopics.html

BIOL 4900X/Y.06: and 4901.03/4902.03 (Parts I and II)

Honours Research and Thesis.

This class is required of all students in the Biology and Marine Biology Honours programs. It consists of a research project carried out under the supervision of a faculty member or research scientist at Dalhousie or elsewhere as well as weekly meetings of the class. Students that wish to be supervised by someone external to the department must consult with their Honours advisor before starting their research to determine their supervisor's eligibility (see Biology Web site, http://www.biology.dal.ca/
honours/index.html for more details). Students supervised by a department member or external professor/scientist must also submit a research proposal to the Biology Honours committee to determine the project’s eligibility before starting their research. The results of the research will be submitted as a thesis for a letter grade. The rest of the grade will come from an oral presentation of your research to the Honours class, and another presentation or poster at the annual Honours Cameron conference.

NOTE: Regular Honours students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively. Marine Biology Co-op students taking this class normally attend and register for MARI 4901 in the Winter term of their 4th year and MARI 4902 in the Fall term of their 5th year to accommodate their workterms.

INSTRUCTOR(S): P. Collins, A. Pinder, B. Pohajdak

FORMAT: Weekly class meetings (1.5-3.0 hrs) and an independent research project

CROSS-LISTING: MARI 4900X/Y.06 and MARI 4901.03/4902.03 (Parts I and II)

RESTRICTION: Honours students normally in their final year of study.

Honours Qualifying Examination.

This is an additional requirement of all Biology and Marine Biology Honours students and is normally taken concurrently with BIOL 4900X/Y.06 (4901.03/4902.03). Students are required to attend weekly seminars for two academic terms where they and other students in BIOL 4900X/Y.06 (4901.03/4902.03) give oral presentations of their Honours research projects. Instructional seminars on thesis writing, oral presentations, poster preparation, and other skills are also given. Registrations for this class is not required but it does appear on your final transcript as a Pass/Fail grade and attendance is recorded at all seminars. Marine Biology Co-op students who are on work terms during the Fall term of their 4th year normally attend these seminars during the Winter term of their 4th year and Fall term of their 5th year.

BIOL 8891.00: Co-op Work term I.
PREREQUISITE: SCIE 2800.01

BIOL 8892.00: Co-op Work term II.
PREREQUISITE: SCIE 2800.01

BIOL 8893.00: Co-op Work term III.
PREREQUISITE: SCIE 2800.01

BIOL 8894.00: Co-op Work term IV.
PREREQUISITE: SCIE 2800.01

Chemistry

Location: Chemistry Building, Second Floor
Halifax, NS B3H 4J3

Telephone: (902) 494-3305
Fax: (902) 494-1310
Email: chemistry@dal.ca
Website: http://chemistry.dal.ca

Dean
Taylor, K., BSc (SF), PhD (U of Alberta)

Chairperson of Department
Pincarrow, J.A.

Graduate Coordinator
Barnett, D. J.

Co-op Advisor
Grindley, T.B.

Faculty Undergraduate Advisors
Doustie, A.A. (494-5714)
Grindley, T.B. (494-2641) (Co-op Academic Advisor)
Guy, R.D. (494-5709) (Coordinator)
Laws, P. (494-5643)
Wentzell, P.D. (494-5706)

Professors Emeriti
Auer, W.A., PhD (Vienna), FCIC
Coxon, J.A., BA (Cambridge), MSc, PhD (East Anglia)
Kemp, G., BSc (Laval), FCIC
Kosak, J.C.T., BSc, MSc, PhD (Amsterdam), FCIC

Professors
Bamee, J.R., PhD (Toronto), MDCM (McGill), cross-appointment from Biochemistry & Molecular Biology
Becke, A.D., BSc (Queen’s), MSc, PhD (McMaster), FRSC, FRS, FCIC, Canada Council Killam Research Fellow and Killam Chair in Computational Science
Boyd, R.J., BSc (UBC), PhD (McGill), FCIC, Alexander McLeod Professor of Chemistry
Burford, N., BSc (Wales, Cardiff), PhD (Calgary), FCIC, Harry S. Flannery Professor of Chemical Research and Canada Research Chair in Synthesis and Characterization of Materials
Burnell, D.J., BSc, MSc (Carleton), PhD (UNB), Faculty of Science Killam Professor of Chemistry
Cameron, T.S., BA, MA, DPhil (Oxon), Director of DALX
Chatt, A., BSc (Calcutta), MSc (Bristol), MSc (Wit), PhD (Attr), FCIC, Director of SLOWNORE and Faculty of Science Killam Professor of Chemistry
Daher, J.K., BSc (Dal), MSc, PhD (UBC), Canada Research Chair in Battery and Fuel Cell Materials, NSERC/3M Canada Inc. Industrial Research Chair and cross-appointment from Physics and Atmospheric Science
Grindley, T.B., BSc, MSc, PhD (Queen’s), FCIC
Pincarrow, J.A., BSc, MSc, PhD (McGill), FCIC, Killam Professor of Chemistry
Shaver, A., BSc (Carleton), PhD (MIT), Vice President Academic & Provost
Weaver, D.F., MD, PhD (Queen’s), FRCT(C) (Dal), FCIC, Canada Research Chair in Clinical Neuroscience and cross-appointment from the Division of Neurology
Wentzell, P.D., BSc (Dal), PhD (Mich State)
Chemists study the properties of atoms, molecules and ions, and how these interact with each other. Chemists make new compounds and analyze for their purity. Since all matter around us is composed of chemicals, understanding these helps people to protect and influence both their own lives and the environment around them. Chemical principles form the groundwork of all aspects of the physical and biological sciences, from the air, the earth and the sea, to plants, animals, insects and viruses, to plastics, glass, concrete, steel, wood, bricks, microchips and more.

A chemistry degree involves considerable breadth of training in the major 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 results from other laboratories.

I. Introduction

Chemists study the properties of atoms, molecules and ions, and how these interact with each other. Chemists make new compounds and analyze for their purity. Since all matter around us is composed of chemicals, understanding these helps people to protect and influence both their own lives and the environment around them. Chemical principles form the groundwork of all aspects of the physical and biological sciences, from the air, the earth and the sea, to plants, animals, insects 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. The degree will provide a background for further graduate work in chemistry or in such diverse areas as medicine, law, business administration, biochemistry, oceanography and geology. A postgraduate degree is essential for independent original research in industry or for an academic career.

At the 3000 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 3000 level, a student’s studies in chemistry become increasingly concentrated in one of these four areas.

II. Degree Programs

The Honours in Chemistry, Joint Honours in Chemistry and Biochemistry and 20-credit Major in Chemistry as described in this calendar, are programs accredited by the Canadian Society for Chemistry (CSC). CSC accreditation ensures that graduates of these programs have met certain criteria concerning the quantity and quality of their instruction. It qualifies such graduates for membership in the CSC, and to practice chemistry as professionals.

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

A. 20-credit Honours in Chemistry

This program is intended to provide a broad training in chemistry while at the same time making provision for the individual interests of students. Competence in mathematics as well as chemistry is required. All honours students must consult annually with the Honours Student Advisor and obtain approval of their class selection.

For the Honours BSc, all credits in the Honours subject must be passed with a grade of at least C. In the Honours BA all credits (honours subject and the subject chosen for the two credits outside the honours subject) of the Honours BA must be passed with a grade of at least C.

Departmental Requirements

1000 Level
- CHEM 1011.03 or 1012.03 (or equivalent)

2000 Level
- CHEM 2101.03
- CHEM 2201.03
- CHEM 2301.03
- CHEM 2302.03
- CHEM 2401.03 or 2402.03

3000 Level
- CHEM 3013.03
- CHEM 3201.03
- CHEM 3301.03
- CHEM 3401.03 or 3402.03
- CHEM 3401.03
- CHEM 3601.03
- CHEM 3601.03

4000 Level
- CHEM 4801.00
- CHEM 4901.00
- Honours qualifying examination (8880.00)

The remaining four half credits in Chemistry must be chosen from the classes listed below, with at least one half credit from each of the groups 1 and 2.

1. CHEM 4101.03 or 4202.03
2. CHEM 4202.03, 4203.03, 4204.03, 4205.03, 4206.03
3. CHEM 3310.03, 3304.03, 3401.03, 4302.03, 4303.03, 4306.03
4. CHEM 3402.03, 4401.03, 4402.03, 4403.03
5. CHEM 4501.03, 4502.03, 4504.03, 4601.03

Other required classes
- MATH 1000.03
- MATH 1010.03
- MATH 2001.03 and one of 2002.03 or 2030.03
- PHYC 1100X.Y.06 or equivalent

Two full credits, not taken within the first year, must be taken in a single subject other than the honours subject (BA students only). This subject (if applicable), the unspecified credits in chemistry, and electives should be chosen according to the future plans of the student.

B. Combined Honours Program

The department has designed a number of programs which allow a student to obtain a Combined Honours Degree in Chemistry. To obtain an introduction to all the basic areas of chemistry, CHEM 2301.03, 2302.03, 2401.03, and 2402.03 must be part of any combined honours program involving Chemistry, and must be passed with a grade of at least C.

The additional eight credits in chemistry and the other subject must be chosen in consultation with the two departments involved. Students must consult the Honours Student Advisor of the Department of Chemistry and the Chair of the other area of study before registering in the combined program. Students should also consult the Department’s Handbook “Undergraduate Studies in Chemistry” for more information.

C. 20-credit BSc Major in Chemistry

The BSc Major (20-credit) program is accredited by the Canadian Society of Chemistry. Students who wish to obtain a BSc Major (20-credit) in Chemistry must complete the core program and one of the three options described below.

Core program:
- CHEM 1011/1012 or 1021/1022 or 1041/1042 or Science 1501 or 1510.
- CHEM 2201.03
- CHEM 2301.03
- CHEM 2302.03
- CHEM 2401.03
- CHEM 2402.03
- CHEM 3101.03
- CHEM 3201.03
- CHEM 3401.03

Option A
CHEM 3202, CHEM 3401, and CHEM 3410 and three chemistry electives (minimum of two classes at the 3000/4000 level)

Option B
Any two of CHEM 3202, CHEM 3401, and CHEM 3402 and CHEM 4801 and three chemistry electives (minimum of two classes at the 3000/4000 level)

Option C
One of CHEM 3202, CHEM 3401, and CHEM 3402 and CHEM 4801/4802 or CHEM 4901 and four chemistry electives (minimum of two classes at the 3000/4000 level).

All classes in chemistry must be passed with a grade of at least C.

In addition to the chemistry requirements students in this program must also take
- MATH 1000.03 and MATH 1010.03
- PHYC 1100.06 or 1300.06
- One additional credit in mathematics at the 2000 level or higher.
All students who wish to complete a 20 credit major degree must consult an advisor in Chemistry at the beginning of their third year to complete a proposed program form. Any changes to this program must be approved in writing by an advisor.

D. 20-credit Double Major Program
The Department has a number of programs which allow a student to obtain a Double Major degree in Chemistry with one of Biochemistry, Biology, Computing Science, Earth Sciences, Economics, Marine Biology, Mathematics, Microbiology & Immunology, Neuroscience, Physics, Psychology, and Statistics.

Students who wish to have Chemistry as the primary subject (6 or more credits) of this program must include CHEM 2301.03, CHEM 2302.03, CHEM 2401.03, and CHEM 2402.03 as part of their program and must pass these classes with a grade of at least C-

Students who wish to have the primary subject a life science (Biochemistry, Biology, Marine Biology, Microbiology & Immunology, Neuroscience or Psychology for 6+ credits) the required chemistry classes are:

• CHEM 2101.03
• CHEM 2201.03
• CHEM 2303.03
• CHEM 2401.03/2402.03
• CHEM 2505.03
• two credits of CHEM 3/4xxx.03

Students who wish to have the primary subject a physical science (Earth Sciences, Economics, Mathematics, Physics, or Statistics for 6+ credits), the required chemistry classes are:

• CHEM 2101.03
• CHEM 2201.03
• CHEM 2301.03
• CHEM 2302.03
• CHEM 2401.03
• CHEM 2402.03
• two credits of CHEM 3/4xxx.03

Students who wish to take a traditional class offering, with the potential to transferring to a 20 credit major or honours degree in chemistry, are recommended to take:

• CHEM 2101.03
• CHEM 2201.03
• CHEM 2301.03
• CHEM 2302.03
• CHEM 2401.03
• CHEM 2402.03
• two credits of CHEM 3/4xxx.03

Additional credits in Chemistry and the other subject must be chosen in consultation with the two departments involved. Students are encouraged to consult the Chair of the Undergraduate Studies Committee in the Department of Chemistry and the Chair of the other area of study before registering in the program. Students should also consult the Department’s Handbook “Undergraduate Studies in Chemistry” for more information.

E. Co-operative Education Program in Chemistry
Co-operative Education in Science (Science Co-op) is a program where academic study is combined with paid career related work experience. Students undertake three or four work terms throughout their academic study term 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 2000.00) in the fall term of the year they join.

Students will learn laboratory skills, computers, electronics and statistics. Their training will be broadened by proper choice of electives which can lead to further computer skills, to experience in biological laboratory techniques, to physics, engineering, or the earth sciences. As Chemistry is the science on whose foundations most other scientific endeavours rest, this training will equip students for work in a wide range of activities. These include production and plant management, product and process development, basic research in many areas including medicine, agriculture or manufacturing, environmental analysis and regulation, database development and management, marketing and customer service. Chemists work for large and small industries, for consulting companies, patent offices, legal offices and teaching institutions, for government laboratories or as self-employed consultants. In addition to a wide range of chemical skills, students will acquire expertise in statistics and computer use, especially for spreadsheets and databases, to equip them for work in modern environments which stress Total Quality Management and ISO 9000 standards.

A limited number of students will be admitted into this program each year. Students must be Canadian citizens or landed immigrants. Students may be admitted to the 20-credit BSc Major program when they have successfully completed all the classes listed below under Year 1, with an average GPA of at least 2.70, normally with no grade of less than a C. This minimum standing must be maintained throughout the degree program. Students must register before August 1, but should, however, register their intention to enter the program with the Chemistry Office in the Spring of their first year if possible. Registration details are available from the DalChem Co-op Academic Advisor or the Co-operative Education office. For more information, please see www.sciencecoop.dal.ca

Departmental Requirements
Year 1
Regular Session
• CHEM 1011.03/1012.03 (or equivalent)
• MATH 1000.03/1010.03
• PHYC 1100X/Y.06 (or PHYC 1300X/Y.06)
• Social Science Class
• Writing Class (must be a language)

Spring or Summer Session: no academic classes specified

Year 2
• CHEM 2101.03
• CHEM 2201.03
• CHEM 2301.03
• CHEM 2302.03
• CHEM 2401.03
• CHEM 2402.03
• two credits of CHEM 3/4xxx.03

Electives (four half credits)

These classes must normally be successfully completed before proceeding to Work Term 1. Summer: no academic classes specified

Year 3, year 4, and year 5 – consult the co-op advisor in chemistry

Students must consult the DalChem Co-op Academic Advisor to discuss scheduling options.

See the “Co-operative Education in Science” section of this calendar, or www.sciencecoop.dal.ca, for information on Science Co-op such as Science Co-op requirements, eligibility, how to apply, deadlines and other related information.

F. 15-credit BA, BSc Concentration in Chemistry

Departmental Requirements
1800 level
• CHEM 1011.03/1012.03 (or equivalent)

2000 level
• CHEM 2101.03
• CHEM 2201.03
• CHEM 2301.03
• CHEM 2302.03
• CHEM 2401.03/2402.03
3000 level
- At least one credit at or above the 3000 level

All Chemistry classes must be passed with a grade of at least C-

Other required classes
- PFVC 1000X/Y.06 or 1001X/Y.06
- MATH 1000.03
- MATH 1010.03

G. Concurrent BSc/DipEng

The Faculty of Engineering and the Faculty of Science have agreed to offer a combined BSc/DipEng program. This program allows students to complete requirements for the BSc (15-credit) and Diploma degree in as little as five years. Consult the degree requirements section for details.

Lists of classes required to achieve these two degrees are tightly regulated, with few opportunities to study electives. Programs which will most likely appeal to students are those combining Chemistry (5 credits) with Biological or Chemical Engineering. However, in principle, all engineering disciplines can be accommodated.

H. Other Programs

Minor in Business

A Minor in Business may be completed as part of an Honours or Major degree, each of which involves 20 credits. Consult the Degree Requirements section for details.

Minor in Canadian Studies

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

Minor in Community Design

The minor in community design is available to students registered in the BA, BSc 20-credit major and honours programs. The requirements are as for the appropriate degree program with completion of the following classes:
- PLAN 1001.03 and PLAN 1002.03
- Either PLAN 2001.03 or PLAN 2002.03
- Seven additional half-classes (21 credit hours) in PLAN classes. See page 86 for further details

Minor in Computer Science

A Minor in Computer Science is available as part of an Honours or Major BSc degree, each of which involves 20 credits. Consult the Degree Requirements section, page 65 for details.

Minor in Environmental Studies

A Minor in Environmental Studies may be completed as part of an Honours or Major degree, each of which involves 20 credits. Consult the Environmental Programs section for details.

Minor in Film Studies

A Minor in Film Studies is available as part of a BA, BSc Major (20-credit) and a BA Honours degree. Consult the Degree Requirements section for details.

I. Bachelor of Computer Science with a Minor in Chemistry

Bachelor of Computer Science students may complete a minor in chemistry. The required classes are:
- CHEM 1011.03 and CHEM 1012.03 or equivalent
- CHEM 2010.03 and CHEM 2011.03
- CHEM 2020.03 and CHEM 2021.03
- CHEM 2401.03 and CHEM 2402.03
- At least one credit at the 3000/4000 level in chemistry.

In addition to these classes, students are required to take MATH 1000.03 MATH 1010.03, and PFVC 1000X/Y.06

III. Class Descriptions

NOTE: Not all classes are offered every year. Please consult the current timetable for this year’s offerings.

The credit hour extension following the class number, e.g., .06 or .05 indicates the credit hour weight of the class. Consult the timetable for up-to-date details.

Students who have passed a first-year Chemistry class with a grade of D should consider themselves inadequately prepared for further studies in this subject. Such students may not be allowed to register directly for 2000 level Chemistry classes. It 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 112 and 115, respectively. The former is staffed by advanced undergraduate and graduate students to help with both lab and course material. First-year students may also make use of the Concept Rooms, which is located in the First-Year Resource Centre. Here, first-year Professors will be available at irregularly scheduled times to provide aid with course material in a small group or one-on-one atmosphere.

The First-Year Chemistry Resource Centre also houses a number of computers with chemistry-specific programs for students to use. Additionally, there is a selection of resource materials such as molecular model kits and reference texts available to the students.

CHEM 1000X/Y.06: The Chemical World.

This class is intended for students who want to take only a first-year credit in science, and who wish to understand some of the chemical aspects of the world around us. The class does not use a mathematical approach to science, and can be taken by students with no, or limited, previous chemistry experience. The class will cover the development of chemical knowledge from early times to the present. By means of lectures, frequent (and sometimes spectacular) demonstrations, and laboratory or reading projects, students will be introduced to the world of chemistry and to chemical and chemical ideas in everyday use. Students contemplating careers, e.g., in law, business, or government could profit from the material studied in this class. Students will be required to do extensive written assignments, which will be marked both on content and writing style.

CHEM 1000X/Y.06 is an approved “writing class” in the College of Arts and Science. CHEM 1000X/Y.06 does not serve as a prerequisite for second-year chemistry classes.

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

INSTRUCTORS: T.S. Cameron

FORMAT: Writing Requirement, lecture 2 hours, lab/tutorial 2 hours


The electronic structures of atoms and molecules are used to explain the reactivity and properties of chemicals. The course starts with the nucleus, electronic configurations and the periodic table, the structure and shapes of organic and inorganic molecules and ions, and the mathematics of chemical reactions. Special topics include nuclear chemistry, spectroscopy, and chirality to illustrate the relevance of chemistry in everyday life. It is recommended that students have Nova Scotia grade 12 chemistry or equivalent before taking this class.

INSTRUCTOR(S): M. Slaymaker

FORMAT: Lecture 3 hours, lab 3 hours


The electronic structures of atoms and molecules are used to explain the reactivity and properties of chemicals. The course starts with the nucleus, electronic configurations and the periodic table, the structure and shapes of organic and inorganic molecules and ions, and the mathematics of chemical reactions. Special topics include nuclear chemistry, spectroscopy, and chirality to illustrate the relevance of chemistry in everyday life. It is recommended that students have Nova Scotia grade 12 chemistry or equivalent before taking this class.

INSTRUCTOR(S): M. Slaymaker

FORMAT: Lecture 3 hours, lab 3 hours

EXCLUSION: Credit will be given for only one of the following combinations: CHEM 1013.03/1012.03 or CHEM 1021.03/1022.03 or CHEM 1410.05.
The principles of thermodynamics and kinetics are used to explain chemical equilibrium and related topics; such as, free energy, phase and reaction equilibrium, electrochemistry and kinetics. Special topics include polymers, chemistry of living systems, and pharmaceutical chemistry to illustrate the relevance of chemistry in everyday life.
INSTRUCTORS: Staff
FORMAT: Lecture 3 hours, lab 3 hours
PREREQUISITE: Chemistry 1011.03 or equivalent or permission of the instructor.
EXCLUSION: Credit will be given for only one of the following combinations: 1011.03, 1012.03 or 1021.03, 1022.03 or 1041.03, 1042.03 or 1410.03.

CHEM 1021.03: Engineering Chemistry I.
A study of the fundamental principles of chemistry with an emphasis on quantitative topics, including chemical equilibrium, thermodynamics, normal kinetic and electrochemistry. This class is only open to students in the Engineering program. CHEM 1022.03 is a sequel to this class.
INSTRUCTORS: Staff
FORMAT: Lecture 3 hours, lab 3 hours
PREREQUISITE: Non-Acadia Grade 12 chemistry or equivalent.
EXCLUSION: Credit will be given for only one of the following combinations: 1011.03, 1012.03 or 1021.03, 1022.03 or 1041.03, 1042.03 or 1410.03.

CHEM 1022.03: Engineering Chemistry II.
This class builds on the principles of Chemistry 1021.03 to provide a broader background in chemistry for engineering students. CHEM 1021.03 combined with CHEM 1022.03 covers the material previously given in CHEM 1020X/Y.06. CHEM 1021.03 and 1022.03 together may serve as a prerequisite for any 2000-level class in chemistry.
INSTRUCTORS: Staff
FORMAT: Lecture 3 hours, lab 3 hours
PREREQUISITE: CHEM 1021.03 or permission of the instructor.
EXCLUSION: Credit will be given for only one of the following combinations: 1011.03, 1012.03 or 1021.03, 1022.03 or 1041.03, 1042.03 or 1410.03.

CHEM 1410.03: Introductory Chemistry Related to Human Health.
A descriptive introduction to chemistry with emphasis on materials related to human health. The class requires a background of high school chemistry and mathematics. Topics covered include atomic and molecular structure, lipids, solutions, hydrocarbons, alcohols, ethers, acids, bases, fats, simple carbohydrates and proteins and radiactivity. This class is being offered to provide a basic background in chemical principles to be useful to students considering careers in medicine.
NOTE: This class does not serve as a prerequisite for any other chemistry class.
INSTRUCTORS: 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.
INSTRUCTORS: Staff
FORMAT: Lecture 3 hours, lab 4 hours
PREREQUISITE: CHEM 1011.03 or 1012.03 or equivalent.

CHEM 2201.03: Introductory Analytical Chemistry.
The concepts used to know what is in a sample or how much of it is there, then you need analytical chemistry. The techniques most often employed in modern chemical analysis are introduced in this class. Topics include: acid-base and redox chemistry, the theory and practice of titrimetry, atomic and molecular spectroscopy in the visible and ultraviolet regions of the electromagnetic spectrum; polarimetry 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.
INSTRUCTORS: Staff
FORMAT: Lecture 3 hours, lab 4 hours
PREREQUISITE: CHEM 1011.03 or 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 thermocouple, entropy, and free energy relations, with many applications including phase equilibria, chemical equilibrium, solutions and coligative 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.
INSTRUCTORS: Staff
FORMAT: Lecture 3 hours, lab 4 hours
PREREQUISITE: CHEM 1011.03 or 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.
INSTRUCTORS: Staff
FORMAT: Lecture 3 hours, lab 4 hours
PREREQUISITE: CHEM 1011.03 or 1012.03 or equivalent; MATH 1000.03.

CHEM 2303.03: Physical Chemistry for the Life Sciences.
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.
INSTRUCTORS: Staff
FORMAT: Lecture 3 hours, lab 3 hours
PREREQUISITE: CHEM 1011.03 or 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.

This class provides an introduction to the structure of carbon-containing compounds and to the mechanistic principles of their reactivity. Topics include bonding, acid-base properties, stereochemistry and spectroscopy (IR, UV, and NMR) of organic molecules. In addition, the principles of reactivity and mechanisms will be introduced through the chemistry of alky halides. Laboratory work will include introductory techniques of organic chemistry and will be based on the topics listed above.
INSTRUCTORS: Staff
FORMAT: Lecture 3 hours, lab 3 hours
PREREQUISITE: CHEM 1011.03 or 1012.03 or equivalent.
EXCLUSION: CHEM 2403.03/1.16.
CHEM 2402.03: Introductory Organic Chemistry: Reactivity of Functional Groups. This class continues building on work begun in CHEM 2401.03. Syntheses, spectra and reaction mechanisms of the major functional groups, including alkenes, alkynes, alcohols, ethers, amines, aldehydes, ketones, carboxylic acids, acid halides and esthers, amines, 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 2402/V.06

CHEM 2441.03: Foundations of Organic and Biological Chemistry. This class is intended primarily to help students in the life sciences develop an appreciation for the chemistry of molecules which are important to living organisms. Emphasis is placed on structure, functional groups and stereochemistry; mechanisms 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 or CHEM 1012.03 or equivalent, or permission of the instructor EXCLUSION: CHEM 2441.03 does not count as a Chemistry credit towards any degree with a major in Chemistry.

CHEM 2442.03: Organic Chemistry for Pharmacy Students. This class will cover aspects of organic chemistry relevant to the requirements for the degree of Bachelor of Science in Pharmacy. This class does not serve as a prerequisite for any other chemistry class. FORMAT: Lecture 3 hours RESTRICTION: Restricted to students in the Bachelor of Science in Pharmacy program.

CHEM 2505.03: Environmental Chemistry I. The objective of this class is to apply the knowledge acquired in introductory chemistry classes to the description of chemical reactions in the environment. The class will start with the composition of the atmosphere, photochemical reactions in the stratosphere (ozone production and loss) and troposphere (production of smog) and simple models used to describe room air quality. The class will then describe the transfer of gases across the air/water interface and the chemistry of natural waters (hardness, alkalinity), the treatment of both drinking water (chlorination and aeration/coagulation) and waste waters (primary, secondary, and tertiary treatment). The class will also introduce the students to some of the classes of chemicals commonly encountered in the environment and describe their impact both on humans and aquatic organisms. The chemical topics to be discussed include formaldehyde, chlorinated hydrocarbons, pesticides, PAHs, and heavy metals. INSTRUCTOR(S): Staff FORMAT: Lecture 3 hours PREREQUISITE: CHEM 1011.03 or CHEM 1012.03 or equivalent EXCLUSION: Students having received credit for CHEM 4203.03 are not permitted to register in CHEM 2505.03

CHEM 3103.03: Intermediate Inorganic Chemistry. In this class, modern bonding theories will be utilized to address the chemical and physical properties of compounds of the elements. Concepts of symmetry introduced in CHEM 2101 will be addressed in further detail and will lead into discussions about molecular structure, spectroscopy, and the reactivity properties of inorganic compounds, such as coordination compounds and organometallic complexes. The class concludes with an introduction to the role of inorganic species in biology, exploring the properties and function of metalloproteins and metalloenzymes, as well as metal ion transport and storage in living systems. The compounds prepared in the laboratory component will introduce more advanced synthetic procedures for the preparation of inorganic compounds and will illustrate principles discussed in lecture. INSTRUCTOR(S): Staff FORMAT: Lecture 3 hours, lab 4 hours PREREQUISITE: CHEM 2101.03 EXCLUSION: CHEM 3101.03, CHEM 3102.03

CHEM 3201.03: Analytical Mass Spectrometry and Separations. The most commonly employed instrumental techniques in chemical analysis use spectroscopy in some form or involve separations. Qualitative and quantitative analysis and the instrumentation involved are discussed in some detail for mass spectrometry. Various methods of separation, including solvent extraction and the various types of chromatography are presented. Laboratory experiments illustrate the above techniques with practical examples. INSTRUCTOR(S): Staff FORMAT: Lecture 3 hours, lab 4 hours PREREQUISITE: CHEM 2201.03

CHEM 3202.03: Instrumental Methods of Analysis. Modern scientific research of all kinds depends on accurate measurements, and today almost all such measurements are made by instruments, many running under computer control. In addition, computer aided data analysis is often employed to process the information obtained from experimental measurements. The need to gain experience in these subjects is addressed in this class by examining in some detail several important topics in instrumental analysis. These include electrochemistry, polarography, flame spectrometry, ultraviolet/visible spectrophotometry, data analysis, and automation. Experimental principles are explained, the instrumentation is described, and analytical applications are examined. The laboratory experiments are chosen to illustrate the topics covered in the lecture. INSTRUCTOR(S): Staff FORMAT: Lecture 3 hours, lab 4 hours PREREQUISITE: CHEM 2201.03

CHEM 3301.03: Quantum Mechanics and Chemical Bonding. This class gives an introduction to quantum mechanics and its application to spectroscopy and the electronic structure of atoms and molecules. The postulates of quantum mechanics are presented and applied to some simple physical systems, followed by a discussion of the rotations and vibrations of molecules, and the electronic structure of atoms, concluding with an introduction to the simple Hückel molecular orbital method. The relevance to chemical bonding will be stressed. INSTRUCTOR(S): Staff FORMAT: Lecture 3 hours PREREQUISITE: MATH 2001.03 and one of MATH 2002.03 or MATH 2103.03 and CHEM 2101.03 or CHEM 2103.03 or CHEM 2102.02 or CHEM 2102.05

CHEM 3303.03: Materials Science. The emphasis of this class will be on the exposition of the underlying principles involved in understanding physical properties of materials, such as thermal and mechanical stability, and electrical and optical properties. All phases of matter will be examined: gases, liquids, films, liquid crystals, perfect crystals, defective solids, glasses. The principles of important processes such as photography and Xerography will be explained. INSTRUCTOR(S): M.A. White FORMAT: Lecture 3 hours PREREQUISITE: CHEM 2501.03 or PHYC 2520.03 or PHYC 3202.03 or EARTH 2001.03 or EARTH 2002.05 or ENGC 2800.03 or permission of the instructor CROSS-LISTING: PHYC 3305.05
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 3001.03

CHEM 3401.03: Intermediate Organic Chemistry. 
This class is a continuation of CHEM 2400Y.0.06 and covers many of the topics included in the last third of modern organic chemistry texts. Topics presented include enolate anions, amines, aromatics, heterocycles, carbohydrates, amino acids, and concerted reactions. The synthesis of compounds of chemical and pharmaceutical interest will be used as a focus for these topics. In addition, there is a continuing emphasis on the principles of mechanistic organic chemistry will be presented. Students work independently in the laboratory on the preparation of organic compounds. The success of student syntheses is monitored by the use of spectroscopic and other techniques. INSTRUCTOR(S): Staff 
FORMAT: Lecture 3 hours, lab 4 hours PREREQUISITE: CHEM 2401.03/2402.03 (or equivalent)

CHEM 3402.03: Identification of Organic Compounds. 
The class develops separation techniques, together with wet chemical and spectroscopic analysis methods, that were introduced in CHEM 2401.03/2402.03. Spectral techniques studied include ultraviolet, infrared, Raman, proton and carbon nmr, and mass spectrometry. Students, using a variety of techniques, work independently in the laboratory to identify unknown substances and to separate and identify components of mixtures. Students should have a good comprehension of the principles studied in CHEM 2400X/Y.06, and, as a minimum, a grade of at least C. INSTRUCTOR(S): Staff 
FORMAT: Lecture 3 hours, lab 4 hours PREREQUISITE: CHEM 2401.03/2402.03 (or equivalent)

CHEM 3601.03: Chemistry of Living Systems. 
The chemical principles that govern a wide variety of processes found to occur in biological systems will be discussed. Emphasis will be placed on applying the principles of chemistry to explain and predict the behavior 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 chemical systems. INSTRUCTOR(S): Staff 
FORMAT: lecture, 3 hours per week PREREQUISITE: CHEM 2402.03 or equivalent

CHEM 3880.00: Intermediate Chemistry Seminar. 
A 1-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 5201.03 CROSS-LISTING: CHEM 5102.03

CHEM 4201.03: Advanced Topics in Separations. 
Chemistry deals with the science of separations. Separations are still the most prominent feature used in many laboratories around the world. The class begins with a review of classical methods (precipitation, solvent extraction, and ion exchange) used for preconcentration of metal ions prior to their determination by spectroscopic methods. The major thrust of the class will cover chromatographic methods; in particular, gas chromatography in its regular, capillary, and supercritical forms, liquid chromatography, and capillary electrophoresis. A general survey of methods used in environmental and biological analysis will be undertaken using a series of case-studies taken from the recent literature. INSTRUCTOR(S): Staff 
FORMAT: Lecture 3 hours PREREQUISITE: CHEM 3201.03, or permission of the instructor CROSS-LISTING: CHEM 5201.03

CHEM 4203.03: Environmental Chemistry. 
The first part of this class consists of a brief review of methods used to model the interactions of organic chemicals in the environment. These include the distribution of chemicals between air and water, the decomposition of chemicals by hydrolysis, photolysis, and aquatic bio. The second part of this class describes the equilibrium involved in metal interactions in the environment. These equilibria include a discussion of acid/base chemistry (including alkalinity), the solubility of metal oxides, sulphides, and carbonates, redox chemistry (Eh-pH diagrams), and adsorption interactions with metal oxides, clay, and humic materials. The class ends with a brief review of analytical methodology for chemical speciation of metals in the environment. 
INSTRUCTOR(S): Staff 
FORMAT: Lecture 3 hours PREREQUISITE: CHEM 3201.03 or 3202.03, or instructor's consent CROSS-LISTING: CHEM 4202.03

CHEM 4204.03: Nuclear Analytical Chemistry. 
This class introduces basic concepts of nuclear chemistry and nuclear analytical methods. The class includes: discovery of radioactivity; radioisotopes and natural decay chains; decay modes; discovery of radioactivity; nuclear reactions; research reactor instrumentation; instrumental, preconcentration and radiochemical neutron activation analysis; and two laboratory sessions on NAA. INSTRUCTOR(S): Staff 
PREREQUISITE: CHEM 3201.03 
CROSS-LISTING: CHEM 6204.03

CHEM 4205.03: Chemometrics. 
The ability to design experiments and interpret measurements is a critically important skill for any scientist. This class examines some of the statistical and mathematical tools necessary for planning and analysis of scientific measurements, with a strong emphasis on chemical applications. Topics include basic statistics and probability, propagation of errors, hypothesis testing, analysis of variance, experimental design, regression, signal processing, multivariate calibration, pattern recognition, response surface modelling and simplex optimization. Most assignments are done in the MatLab programming environment, which is introduced in the class. The class is intended to provide a broad introduction applicable to many fields. Statistics, linear algebra and computer programming are among the areas involved in the class, but only a rudimentary background in these areas is assumed. INSTRUCTOR(S): P.D. Wentzell 
PREREQUISITE: CHEM 2201.03 ignited CHEM 6205.03

420 Chemistry
CHEM 4206.03: Analytical Mass Spectrometry. This class offers a thorough treatment of modern mass spectrometry, including the principles, instruments, and applications of MS for chemical and biochemical analysis. Techniques for ionization, and basic instrumentation are reviewed, including a look at modern hybrid tandem MS systems. The MS applications described in this course are directed at the life sciences, including the analysis of pharmaceuticals, proteins, and carbohydrates. Ionization theory, reaction mechanisms, and spectral interpretation are briefly discussed, but are not the main emphasis of this course.

FORMAT: Lecture, 3 hours per week
PREREQUISITE: One of CHEM 3202 or CHEM 3201, or consent of the instructor
CROSS-LISTING: CHEM 6502.03

CHEM 4301.03: Theory of Chemical Bonding. This class discusses chemical bonding within the framework of molecular quantum mechanics, the science relating molecular properties to the motions and interactions of electrons and nuclei. The emphasis is on the qualitative features and physical basis of molecular orbital theory and its application to chemistry. The symmetry properties of molecular orbitals are discussed within the context of group theory. Computer based assignments are included.

INSTRUCTOR(s): Staff
FORMAT: Lecture 3 hours
PREREQUISITE: CHEM 3001.03 or instructor's consent
CROSS-LISTING: CHEM 5301.03

CHEM 4304.03: Kinetics and Catalysis. This class relates the properties of molecules 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 2002.03 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 molecular systems are emphasised and an overview of modern techniques is also given.

INSTRUCTOR(s): Staff
FORMAT: Lecture 3 hours
PREREQUISITE: CHEM 3001.03 and MATH 2001.03, or instructor's consent
CROSS-LISTING: CHEM 5305.03

CHEM 4306.03: Magnetic Resonance. The basic principles of magnetic resonance will be discussed and reinforced with examples of applications to problems in chemistry and chemical physics. Topics to be discussed include: the magnetic Hamiltonian, chemical shielding, nmr in solids, quantum mechanical approach to spectral analysis of nmr spectra in liquids, one and two dimensional nmr. Students will be assigned problems on a regular basis.

FORMAT: Lecture 3 hours
PREREQUISITE: CHEM 3001.03 or instructor's consent
CROSS-LISTING: CHEM 5306.03

CHEM 4401.03: Synthesis in Organic Chemistry. The prerequisite classes provide a foundation of knowledge of many organic reactions that are useful for bringing about specific functional group transformations. This class expands this foundation and shows how these reactions can be combined in well planned, multi-step strategies to synthesize complex molecules. The thought processes involved are illustrated with examples chosen from recently reported syntheses of natural products. All students will make oral presentations to the class.

INSTRUCTOR(s): Staff
FORMAT: Lecture 3 hours
PREREQUISITE: CHEM 3401.03 or equivalent, or instructor's consent
CROSS-LISTING: CHEM 5401.03

CHEM 4402.03: Organic Structure Determination. This class continues the study of molecular structure and conformation begun in CHEM 3402.03, using methods and results from nuclear magnetic resonance spectroscopy and mass spectrometry. Topics include the correlation of structure and conformation with chemical shifts and coupling constants, analysis of nmr spectra, the theory and application of multiple irradiation experiments, and the vector model of 1D and 2D experiments. Combined spectroscopic methods are used in solving structural problems.

INSTRUCTOR(s): Staff
FORMAT: Lecture 3 hours, lab 3 hours alternate weeks
PREREQUISITE: CHEM 3402.03
CROSS-LISTING: CHEM 5402.03

CHEM 4403.03: Organic Reaction Mechanisms. The fundamental concepts of bonding, structure, and dynamic behaviour of organic compounds are discussed. Methods for determining the mechanisms of organic reactions are discussed. Topics considered may include molecular orbital theory and molecular mechanics calculations, applications of kinetic data, linear free energy relationships and acid and base catalysis, concerted reactions and the importance of orbital symmetry, steric effects, solvent effects, and isotope effects.

INSTRUCTOR(s): Staff
FORMAT: Lecture 3 hours
PREREQUISITE: CHEM 3401.03 and 3402.03 or equivalents, or instructor's consent
CROSS-LISTING: CHEM 5403.03

CHEM 4502.03: Polymer Science. This class will cover aspects of synthesis, analysis, characterization, structure and uses of synthetic and naturally occurring macromolecules. Emphasis will be on the application of standard methods of organic synthesis, analytical separations, and photo-chemical characterization. There is no laboratory, but students will do an independent literature project.

INSTRUCTOR(s): Staff
FORMAT: Lecture 3 hours
PREREQUISITE: CHEM 2201.03 and 2301.03 and 2302.03 and 2402.03 or 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 2101.03 and 2102.01 and 2301.03 and 2402.03 or equivalent

CHEM 4595.03: Atmospheric Chemistry. This class will discuss the reactions that govern the distribution of chemical species in the troposphere and stratosphere. It will include such topics as the ozone layer and the reasons for its depletion over Antarctica the formation of acid rain, and photochemical smog. It is desirable for students to have taken "Introduction to Meteorology", or have some other exposure to Atmospheric Science.

FORMAT: Lecture, 3 hours
PREREQUISITE: Permission of the instructor
CROSS-LISTING: PHSC 4595.03, OCEA 4595.03, OCEA 5955.03

Chemistry 421
CHEM 4601.03: Principles of Biomolecular and Drug Molecule Design.
An introductory level course in biomolecular design, drug design, and medicinal chemistry. The course 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 potential therapeutics for the disease in question." Students in chemistry are strongly recommended to take Chemistry 3601 prior to registering in this class.

PREREQUISITE: CHEM 2402 or permission of the instructor

CROSS-LISTING: CHEM 5601

CHEM 4801.03: Research Project in Chemistry I.
This class is designed for those students who wish to participate in scientific research. It will consist of a literature, experimental, or theoretical research project carried out under the supervision of a faculty member on some aspect of chemistry in which the student has an interest and the appropriate background. The results of the research will be submitted to the Department as a report that will be graded. Students must meet with the Coordinator of Honours and Major projects before undertaking their project. The consent and signature of the Coordinator are required.

INSTRUCTORS: T.S. Cameron

PREREQUISITE: CHEM 2101.03, 2201.03, 2301.03, 2302.03, 2401.03 and 2402.03 plus at least one full credit at the 3000 or 4000 level in the area of interest with an average grade of at least B-, or consent of the Coordinator.

EXCLUSION: CHEM 4801X/Y.06

CHEM 4802.03: Research Project in Chemistry II.
This class is intended for those students in the Major program with an appropriate background who wish greater exposure to independent scientific research. It will consist of a research project carried out under the supervision of a faculty member containing some original component on any aspect of chemistry. The results of the research will be submitted to the Department as a report that will be graded. The student must also make an oral presentation of this work to the Department. Students wishing to enter this class must have already demonstrated their research abilities by successfully completing CHEM 4801.03. Students must meet with the Coordinator of Honours and Major projects before undertaking their project. The consent and signature of the Coordinator are required.

INSTRUCTORS: T.S. Cameron

PREREQUISITE: CHEM 4801.03, and consent of the Coordinator.

EXCLUSION: CHEM 4801X/Y.06

CHEM 4880.00: Advanced Chemistry Seminar.
A non-credit seminar class to be given by invited speakers. Attendance at all seminars is required of all fourth-year Honours Chemistry students.

CHEM 4901X/Y.06: Honours and Major Research Project.
This class is required for those students in the honours program. It will consist of a research project carried out under the supervision of a faculty member and will contain some original component on any aspect of chemistry. The results of the research will be submitted to the Department as a report that will be graded. The student must also make oral presentations of this work to the Department. Students wishing to enter this class must have an appropriate background in Chemistry and must meet with the Coordinator of Honours projects before undertaking their project. The consent and signature of the Coordinator are required.

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

INSTRUCTORS: T.S. Cameron

PREREQUISITE: At least four full credits in chemistry at the 2001, 3000, or 4000 level from those credits required for the honours program, with an average grade of at least 3.0, or consent of the Coordinator.

Co-operative Education in Science

Telephone: (902) 494-3944
Fax: (902) 494-6643
Email: sciencecoop@dal.ca
Website: www.sciencecoop.dal.ca

Manager
McKinnon, A., BSc (MSc), BEd (SMU) (494-3758)

Student/Employer Coordinator
Dainton, A. (494-1768)

Employer Development Coordinator
Myra, T. (494-6446)

Academic Director
Levi, M.R., BS, MS (Dal), PhD (Dal)

Co-op Academic Advisors
Cyrus, T., Economics (494-6802)
Gordley, T., Chemistry (494-3401)
Gu, H., Statistics (494-7161)
Janssen, J., Mathematics (494-8851)
Labrie, D., Physics (494-2222)
McAllister-Elvin, N., Marine Biology (494-3818)
McLoud, R., Biochemistry (494-7005)
Muskat, P.W., Environmental Science (494-8086)
Oulton, M., Biology (494-7046)
Pollock, D., Microbiology/Immunology (494-2580)
Wach, G., Earth Sciences (494-8019)

I. Science Co-operative Education

Science Co-operative Education (Science Co-op) is an academic program where academic study is combined with career related work experience. Students complete three to four work terms throughout their academic study terms and graduate with a Bachelor of Science, Co-op. A work term is a period of study conducted in an employment environment and each work term is offered as a class listing within each academic discipline for registered Science Co-operative Education students only. Science Co-op is available in Biochemistry & Molecular Biology, Biology, Chemistry, Earth Sciences, Environmental Science, Economics, Marine Biology, Mathematics, Microbiology/Immunology, Physics and Atmospheric Sciences, and Statistics. Students may choose a combined Honours or Double Major when only one of the disciplines is a recognized Science Co-operative Education program.

Students who are accepted into Science Co-op generally begin their first work term in January or May of Year I. Work terms are paid employment related to the student’s field of study. The program includes three to four work terms and a minimum of eight academic terms comprising 20 academic credits. The Science Co-operative Education degree program normally takes approximately four and a third years, depending upon the field of study chosen.

Students in Science Co-op must plan their academic class load carefully under the guidance of the departmental Co-op Academic Advisor. Science Co-op students have limited opportunity to take certain numbered classes and the choice of classes in the summer academic term may be limited. It is important that students realize that successful completion of the work terms is an integral part of their academic studies and degree.
A. Eligibility

Students must be eligible to work in Canada and demonstrate sufficient academic potential (B average or better, consult departmental listings). Students apply to this program and permission of the academic department and Science Co-op Office is required for entry. Applications must be received by the deadline 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 week. 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 (1.00 GPA) overall may be required to withdraw from the Science Co-op program. Academic departments may, at their discretion, allow a probationary period before the requirement to withdraw is enforced. During this probationary period, the student may not undertake any new work term commitments but may honour pre-existing arrangements.

B. Science Co-op Seminar Series, SCIE 2800.00

This class is a mandatory component of the Science Co-op program. All Science Co-operative Education students are required to register for, and attend this class, upon acceptance into the program. A grade of Pass is required before students undertake the first work term experience. This class is designed to introduce Science Co-op students to aspects of career development and preparation for their work terms. More detailed information about the class may be found at www.sciencecoop.dal.ca. SCIE 2800.00 is a required non-credit class which is offered in the fall term only. Students must register for this class in the fall term of the year they join Science Co-op.

C. Work Terms

Although the Science Co-op office has an outstanding job posting record, it is ultimately the responsibility of the student to arrange their work term. Students who turn down a job offer through the Co-op office will lose the privilege of office assistance. During their work term, the student is an employee in matters pertaining to the conditions of employment and is a student for the purpose of academic evaluation. The university accepts no liability for the working environment of the students' work term. Students are remunerated according to employer policy and the labour laws of the province in which the work term takes place. Students must be remunerated, unpaid work terms are not permitted. Upon accepting a job the student must sign a Work Term Acceptance Agreement which acknowledges awareness of Co-op regulations, their responsibility to register for the work term, pay a Co-op Fee* for the work term 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 receive contact from a Co-op staff member or the Co-op Academic Advisor to ensure that the academic objectives of the work term are being met.

*Please Note: The Co-op Fee is a program fee, not a “work term” fee.

Work terms must be a minimum of 13 weeks at 32.5 hours per week, or an equivalent combination of hours and weeks worked. 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 program. Any request for change of work term sequence must be approved by the departmental Co-op Academic Advisor and the Manager. Science Co-op. Requests must be made at 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.

E. Work Term Reports

At the end of each work term, each student must submit an acceptable work term report. Specific guidelines for writing this report and submission deadlines are available on the Science Co-op website (www.sciencecoop.dal.ca). Satisfactory work term reports are required for continuation and graduation in the Science Co-op program. Satisfactory performance in the work place is also required and Co-op employers submit an Employer Evaluation for students in the program. The grade for the work term is based upon the work term report, consideration is also given to the employer and student evaluations of the work term, and the work site visit. Failure to complete the work term requirements will result in the student being required to withdraw from the Science Co-op program and a failure mark would be given for the work term.

F. Fees

Science Co-op students are required to register for their work terms and pay Co-op Fees (program fee) regardless of whether the services of the Co-op office are used. This Co-op Fee is a program fee, not a Workterm Fee, and is due and payable even if the student withdraws, or is required to withdraw, from their workterm once employment has begun. Consult the Science Co-op office for complete details.
I. Introduction

DISP is an alternative and more interdisciplinary way for a science student to complete first-year of a BSc degree. Foundation concepts and techniques from the different first-year introductory-level classes are integrated in DISP. Science topics, problems, and issues are addressed by presenting relevant scientific knowledge from the different science disciplines, to encourage DISP students to think across discipline boundaries. Classes are organized around central themes in science: measurement, structure, energy, conservation, change, and information. Relationships among disciplines are emphasized, and mathematical and statistical methods are applied to questions across the sciences.

All of the DISP options will satisfy the full first-year Writing Class requirement at Dalhousie University. DISP students concurrently take PHIL 1050 (Ethics in Science), a fully integrated and complementary half-credit humanities class for DISP students. PHIL 1050 provides an introduction to ethical questions that arise in the practice of science, using examples that relate to the specific scientific topics studied within DISP. Regular instruction, practice, and feedback in writing are integrated across the program. A breakdown of marks is provided, upon request, for the purpose of transferring to professional programs or other universities, and when applying for jobs or other positions. Students wishing to enter this program normally must have a minimum Grade 12 or OAC average of 80%, with a minimum of 80% in Mathematics and 70% English, and a minimum of 75% in Grade 12 or OAC Chemistry plus either Biology or Physics. High School calculus is recommended but not essential. It is recommended that DISP candidates be highly motivated and have a strong interest in science.

II. Choosing a DISP Option

The different options are designed to prepare students for a certain range of degree programs. As each of the DISP options incorporates a different suite of disciplines, some options are better than others for preparing students most effectively and efficiently for particular programs.

Disciplines common to all five DISP options include Biology, Chemistry, Mathematics, and Statistics. Certain options also include one or two of the following: Earth Sciences, Physics, or Psychology. SCIE 1502 and 1503 are less math-intensive and include only a half-credit of Calculus.

All DISP options satisfy the full-year distribution requirements for science students at Dalhousie University in terms of full-year, first-year Life Sciences, Physical Science, Math, and Writing Class requirements. Only the DISP options with a Psychology component also satisfy the Social Science requirement.

Before graduating with a science degree, DISP students are required to take another half-credit Humanities or Language class because, PHIL 1050 satisfies half of the full-credit requirement.

First-year Prerequisites satisfied by each DISP option

<table>
<thead>
<tr>
<th>Component</th>
<th>Biology</th>
<th>Chemistry</th>
<th>Calculus (half-credit)</th>
<th>Calculus (full-credit)</th>
<th>Earth Sciences</th>
<th>Physics</th>
<th>Statistics</th>
<th>Writing Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sciences</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Social Sci</td>
<td>✔️</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 only offered as a one-term or half-credit class.

Pharmacy: SCIE 1503 plus an additional half-credit Humanities or Language class is recommended. The DISP writing class will serve in lieu of ENGL 1000 for entry into Pharmacy.

Double majors, joint honours or Environmental Science: Students intending to undertake a double major or combined honours in a science plus a non-science discipline should take SCIE 1502 or SCIE 1503, which leave space to take a full-credit introductory-level class in their other subject. Students intending to major in Environmental Science will need to take a full-credit in first-year Economics in either first or second year. Whenever it is taken, this full-credit in Economics will satisfy the Social Science requirement.

Note: With permission of the DISP Director and Dean’s office, students can switch between certain DISP options.

See our website: disp.science.dal.ca for more information. To contact us, email disp@dal.ca. Curriculum details may be discussed with program director, Dr. Cindy Staicer.
### Dalhousie Science Degree as Professional Urban Program

<table>
<thead>
<tr>
<th>Program</th>
<th>SCIE 1501</th>
<th>SCIE 1502</th>
<th>SCIE 1503</th>
<th>SCIE 1504</th>
<th>SCIE 1505</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atmospheric Science</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental &amp; Molecular Biology</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Environmental &amp; Microbial Ecology (joint Emphasis)</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Biology</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Biological Engineering</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Chemistry</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Computer Science</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Earth Sciences</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Mathematics</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Marine Biology</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Statistics &amp; The Environment</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Physical Science</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Environmental Engineering</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Food Science</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Neuroscience</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Neurology</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Law</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Marine Biology</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Mathematics</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Physics</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Philosophy</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Statistics</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

- **Recommended option**
- *may need Physics later
- **must enter first year

### III. Class Descriptions

#### SCIE 1501X/Y.27: DISP for Biomedical Science.

This program provides particularly good first-year preparation for the full range of degree programs in the biomedical sciences at Dalhousie. Concepts and techniques at the first-year introductory level are integrated across six subjects: Biology, Chemistry, Mathematics, Physics, Psychology, and Statistics. A few field trips are included, but this option lacks a formal Earth Sciences component. SCIE 1501 includes a full year of Calculus and Physics, and it satisfies the full Social Science requirement and the full Writing Class requirement. This 3.5 credit DISP program, combined with the half-credit PHIL 1050, is a 5.0 full credits, a full class load.

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

**FORMAT:** Writing requirement; Lecture 14 hours/lab and other activities 3 hours (optional).

#### SCIE 1502X/Y.21: DISP for Environmental Science.

A recommended route into the Environmental Science degree, this program integrates concepts and techniques at the first-year introductory level across five subjects: Biology, Chemistry, Earth Science, Mathematics, and Statistics. Field trips are an important component of this DISP option. This option provides particularly good first-year preparation for degrees in Biology, Marine Biology, and Earth Sciences, as well as the Biology, Earth Sciences, Ecology, and Marine Biology Areas of Emphasis of Environmental Science. Students interested in other Areas of Emphasis (Chemistry and the Environment, Statistics and the Environment, and Atmospheric Science), or degrees in Chemistry, Environmental Engineering, Mathematics, or Oceanography may need to take additional first-year classes in Physics and Mathematics in subsequent years. SCIE 1502 satisfies the first-year Math requirement (through one term of Calculus plus one term of Statistics) and the first-year Writing Class requirement. This 3.5 credit DISP program, combined with the half-credit PHIL 1050, is a 4.0 full credits. This option provides flexibility for DISP students to take an elective or a lighter load if they work part-time.

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

**FORMAT:** Writing requirement; Lecture approx. 10 hours/lab and other activities approx. 7 hours/tutorials 1 hour.

**CROSS-LISTING:** BIOC 1011.03, CHEM 1011.03 and CHEM 1012.03, MATH 1001.03 and MATH 1002.03, PHYS 1000.03 and PHYS 1010.03, PSYO 1001.03 and PSYO 1002.03 or PSYO 1001.03 and PSYO 1002.03, STAT 1060.03 and STAT 1061.03

**CON-REQUISITE:** PHIL 1050.03

#### SCIE 1503.21: DISP for Life Science.

This program prepares for students 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 Sciences component. Students interested in degree programs in Biochemistry, Chemistry, Mathematics, Neurosciences, or Oceanography still need to take additional first-year classes in Mathematics and Physics in subsequent years. SCIE 1503 satisfies the first-year Math requirement (through one term of Calculus plus one term of Statistics), the first-year Writing Class requirement, and the Social Science requirement. This 3.5 credit DISP program, combined with the half-credit PHIL 1050, is a 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.

---

**Dalhousie Integrated Science Program (DISP)** 425
SCIE 1504.27: DISP for Life Sciences.
This program provides comprehensive preparation for the Life Sciences at Dalhousie. Concepts and techniques at the first-year introductory level are integrated across six subjects: Biology, Chemistry, Earth Sciences, Mathematics, Psychology, and Statistics. Field trips and other hand-on activities are important components of this class. SCIE 1504 includes a full year of Calculus, and it satisfies the full Social Science requirement and the full Writing Class requirement. SCIE 1504 does not include Physics, so it is not recommended for students intending to continue in the Physical Sciences (e.g., physics, chemistry, engineering). Students will have all of the first-year science and math prerequisites for a major or honours degree in Biology, Marine Biology, Microbiology and Immunology, and Psychology. This 4.5 credit DISP program, combined with the half-credit PHIL 1050, is 5.0 full credits, a full class load.

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

FORMAT: Writing requirement: Lecture 13 hours / labs and other activities 7 hours / tutorials 2 hours (optional)
CROSS-LISTINGS: BIOL 1010.03 and 1011.03, CHEM 1011.03 and 1012.03, EARTH 1000.03 and 1010.03, MATH 1000.03 and 1010.03, PSYO 1011.03 or 1012.03 or PSYO 2011.03 or 2012.03 and STAT 1060.03
CO-REQUISITE: PHIL 1050.03

SCIE 1510X/Y.33: Dalhousie Integrated Science Program.
This program provides comprehensive first-year preparation for any science major or honours degree, including any area of emphasis of Environmental Science, as well as Oceanography, Biological or Environmental Engineering, and Medicine. SCIE 1510 is the most challenging DISP option; it leaves a student’s options wide open for second-year science, and it provides the broadest background of all the DISP options. Concepts and techniques at the first-year introductory level are integrated across seven disciplines: Biology, Chemistry, 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 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 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 13 hours / labs and other activities 7 hours / tutorials 2 hours (optional)
CROSS-LISTINGS: BIOL 1010.03 and 1011.03, CHEM 1011.03 and 1012.03, EARTH 1000.03 and 1010.03, MATH 1000.03 and 1010.03, PSYO 1011.03 or 1012.03 or PSYO 2011.03 or 2012.03 and STAT 1060.03
CO-REQUISITE: PHIL 1050.03

Earth Sciences
Location: Life Sciences Centre, Room 3106
Halifax, NS B3H 4J1
Telephone: (902) 494-2358
Fax: (902) 494-6889
Email: earth.sciences@dal.ca
Website: http://earthsciences.dal.ca

Dean
Taylor, K., BSc (St. FX), PhD (U. of Alberta)
Chair of Department
Gabling, M.B.
Undergraduate Advisor
Ryall, P.J.C. (494-3460)
Co-op Advisor
Wach, G. (494-8019)

Graduate Coordinator
Calahan, N. (494-3501)

Professors Emeriti
Cook, H.R.S., MSc, DSc (Witswatersrand)
Medlicott, F.S., PhD (Parme)
Milligan, G.C., MSc (Dal), PhD (Harv)
Zornhill, M., BSc (Chilcay), PhD (Queen’s), P.Caes

Professors
Gabling, M.B., BA (Queen’s), PhD (Ottawa)
Jamieson, R.A., BSc (Dal), PhD (MUN)
Scott, D.B., BSc (Washington), PhD (Dal)
Wach, G.D., BA (Western Ontario), MSc (South Carolina), DPhil (Oxford)

Associate Professors
Calahan, N., BA (Neeles), PhD (Ottawa)
Gow, J.C., BSc (MUN), PhD (Lehigh University)
Gouge, D., BSc (Belgrade), PhD (ETH Zurich)
Nadimovic, M., BSc (Belgrade), MSc (Toronto), PhD (Toronto)
Ryall, P.J.C., BSc (Dal), MSc (Alta), PhD (Dal), P.Caes

Assistant Professors
Fedorchuk, Y., PhD (Univ of Victoria)
Plag, L., BA (McGill), PhD (Univ of Alaska - Fairbanks)

Senior Instructors
Green, M., BSc (Univ of Idaho), MSc (Dal)
Ryan, A. M., BSc (Univ College Dublin), MSc (Ardac), MEd (Mt. St. Vincent), PhD (Dalhousie)
Wallace, P., BSc, MSc (McMaster)
Walls, C., BSc, MSc (Dalhousie)

Adjunct Professors
Adam, J., Dip in Geology (Univ of Clausthal), PhD (Tech. Univ of Berlin), Dalhousie Univ
Andersen, A., BSc (Univ of Windsor), MSc (Manitoba), PhD (Queen’s), St. Francis Xavier
Bar, S., BSc (UNB), PhD (UCC), Acadia University
Beltrami, H., BSc (Winnipeg), MSc (Queens), PhD (U de Quebec à Montreal), St. Francis Xavier Univ
Calder, J., BSc (SMU), PhD (Dal), NS Dept of Natural Resources
Clarke, B., BSc, MSc (London), PhD (Edinburgh)
Debor, S., BSc (Calgary), MSc, PhD (UCC), BSc

426 Geology (see Earth Sciences)
II. Degree Programs in Earth Sciences

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

A. 20-credit Honours Degree in Earth Sciences

An Honours degree is almost essential for any professional work in earth sciences, and for graduate study. Students must take the required classes listed below. See “Degree Requirements” section for complete information. Dalhousie Integrated Science Program (see separate entry in this calendar) is an appropriate preparation for entry into the second year of an Earth Sciences program.

Departmental Requirements

1000 level

Recommended:
- ERT 1000.03 and any other 1st year ERT course, ERT 1000 recommended or SCIE 1021.03 or SCIE 1042.03 or SCIE 1511.03

2000 level

- ERT 2000.03: Earth Sciences Field School
- ERT 2001.03: Earth Materials Science I
- ERT 2002.03: Earth Materials Science II
- ERT 2100.03 (Prerequisite: ERT 2000.03): Field Methods
- ERT 2203.03: Sediments and Sedimentary Rocks
- ERT 2205.03: Introduction to Palaeontology
- ERT 2270.03: Introduction to Applied Geophysics

3000 level

- ERT 3000.01: Computing Camp
- ERT 3010.03: Igneous Petrology
- ERT 3020.03: Metamorphic Petrology
- ERT 3140.03: Structural Geology
- ERT 3302.03: Quaternary Sedimentary Environments
- ERT 3303.03: Stratigraphy

4000 level

- ERT 4000.03: Advanced Field School
- ERT 4203.04: Honours Thesis
- ERT 4303.03: 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
- PHYC 1100.03, 1101.03
- CHEM 1011.03, 1012.03

Other requirements

Two full credits in any subject other than the honours subject (applies to BA students only).

NOTE: PHYC 1100.03 and a Mathematics class are prerequisites for ERT 2201.03, which fits best into Year II of the program.

Students in the geophysics stream will take ERT 3207.03.

To satisfy the requirement concerning the Honours Qualifying Examination, a student will complete a thesis as ERT 4203.04/3/3.03, followed by an oral examination, based on the general subject area of the thesis. This oral examination will carry credits for the thesis and the Honours Qualifying Examination.

Theses must be completed by the posted deadline in March of fourth-year. Students who complete after this date must re-register for the following academic year in ERT 4203.04/3/3.03, pay the fees, and graduate at the spring convocation of the next academic year.

Each advanced class in the second, third and fourth year, except electives, must be passed with a grade of C or better.
In five of the advanced classes, a grade of B- or better must be achieved, and in three additional advanced classes, a grade of B- or better is required.

A grade of B- or better must be achieved on the Honours Qualifying Examination.

For First-Class Honours, students must achieve a GPA of 3.70 for classes in the honours subject. For BA students, a grade of C- is also required for the two credits in a single subject outside the honours subject. A grade of A- or better is required on the Honours Qualifying Examination.

B. Combined Honours

Students wishing to take combined Honours in Earth Sciences and another subject, should discuss their program in detail with the undergraduate advisor. Students must attend the field schools normally taken at the beginning of second-year (ERTH 2000.015) and third-year (ERTH 3000.015).

C. Combined Honours: Earth Sciences and Biology

Earth Sciences Honours Program should be followed during Years I-III and students should take either a Biology class or ERTH 4020.03 in place of ERTH 3001.03/3020.03. For Biology classes, consult Biology Department.

D. Combined Honours: Earth Sciences and Physics

Students should follow the Earth Sciences Honours Program in years I to III, including ERTH 2300.03 and ERTH 3200.03, but should take a Physics class in place of ERTH 3001.03/3020.03. For Physics classes, consult Physics Department. MATH 2001.03/2002.03 should also be taken in either Year II or III and MATH 3101.03/3201.03 in Year III or IV.

E. Combined Honours: Earth Sciences and Chemistry

Students should follow the Earth Sciences Honours Program in Years I-III, but should take 3000 level Chemistry classes in place of ERTH 3001.03/3020.03. For Chemistry classes, consult Chemistry Department.

F. Combined Honours: Earth Sciences and Oceanography

Students should follow the Earth Sciences Honours Program in years one and two. In your two years you should start the Oceanography component by taking OCEA 2000.06. Students should also take CHEM 1011.03/1021.03 and PHYC 1100.06, preferably in their first year. In the third and fourth years students will take a combination of ERTH and OCEA classes, with a minimum of four credits in OCEA, which may include the Honours thesis.

G. Co-op Education in Earth Sciences

Co-operative Education in Science (Co-op) is a program where academic study is combined with paid career related work experience. Students alternate three to four workterms throughout their academic study terms and graduate with a Bachelor of Science Co-op. Science Co-op enables students to apply their knowledge directly while providing them with work experience that assists in making educated career choices. Students apply to join Science Co-op before their second year of study. If accepted into the Science Co-op program, students are required to register for and attend the Science Co-op Seminar Series (SCIE 2001.03) 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 requirements, eligibility, how to apply, deadlines and other related information.

Co-op Academic Advisor in Earth Sciences: Dr. Wach (404-8019)
Email: grant.wach@dal.ca

H. 20-credit Major

Departmental Requirements

1600 level

- ERTH 1080 and any other 1st year ERTH course; ERTH 1090 recommended or SCIE 1022.21 or SCIE 1504.27 SCIE 1510.33

2000 level

- ERTH 2000.015: Earth Sciences Field School
- ERTH 2001.03: Earth Materials Science I
- ERTH 2002.03: Earth Materials Science II
- ERTH 2103.03 (Prerequisite: ERTH 2000.015): Field Methods
- ERTH 2203.03: Sediments and Sedimentary Rocks
- ERTH 2205.03: Introduction to Palontology

3000 level

- ERTH 3001.015: Computing Camp
- One year-preliminary in Earth Sciences above the 1000 level
- Four (4) additional credits in Earth Science beyond the 2000 level

Other required classes

- MATH 1001.03
- MATH 1010.03 or STAT 1060.03

A grade of D or an Earth Sciences class precludes admission to classes for which the class is a prerequisite. Where several classes are listed as prerequisites, and a grade of C- or better was not obtained in all, the instructor's consent may be the basis for admission. Students must satisfy the Faculty of Science Writing Requirement and Mathematics Requirement.

I. 20-credit Major Co-op

Departmental Requirements

Same as for the Major above plus the work described in the Co-op program section previously stated.

J. 15-credit BSc with Concentration in Earth Sciences

Three-year programs with a concentration in Earth Sciences are suitable for students who intend to take other professional training or to enter fields where they are likely to need their geological training as background. A 15-credit degree is of little value as a qualification for a professional career in the earth sciences. It does not meet requirements for Professional Registration.

Departmental Requirements

1600 level

- ERTH 1080 and any other 1st year ERTH course; ERTH 1090 recommended or SCIE 1022.21 or SCIE 1504.27 or SCIE 1510.33

2000 level

- ERTH 2000.015: Earth Sciences Field School
- ERTH 2001.03: Earth Materials Science I
- ERTH 2002.03: Earth Materials Science II
- ERTH 2103.03 (Prerequisite: ERTH 2000.015): Field Methods
- ERTH 2203.03: Sediments and Sedimentary Rocks
- ERTH 2205.03: Introduction to Palontology

3000 level

- ERTH 3001.015: Computing Camp
- One year-preliminary in Earth Sciences above the 1000 level
- Four (4) additional credits in Earth Sciences credits beyond the 2000 level
- ERTH 1080.03/2000.03 must be passed with a grade of B- or better to continue in the program.

A grade of D in an Earth Sciences class precludes admission to classes for which the class is a prerequisite. Students must satisfy the Faculty of Science Writing Requirement and Mathematics Requirement.
K. Other Programs

Minor in Business
A Minor in Business may be completed as part of an Honours or Major degree in Earth Sciences, each of which involves 20 credits. Consult the Degree Requirements section, page 65 for details.

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

Minor in Community Design
The minor in community design is available to students registered in the BA, BSc 20-credit major and honours programs. The requirements are as for the appropriate degree program with completion of the following classes:
- PLAN 1001.03 and PLAN 1002.03
- Either PLAN 2001.03 or PLAN 2002.03
- Seven additional half-classes (21 credit hours) in PLAN classes. See page 86 for further details.

Minor in Computer Science
The minor in computer science is available to students registered in the BSc 20-credit major and honours programs. The requirements are as for the appropriate program with the completion of the following classes:
- One of CSCI 1100.03 or CSCI 2102.03
- CSCI 2101.03
- CSCI 2110.03
- CSCI 2120.03
- CSCI 2130.03
- Two of CSCI 3110.03, CSCI 3120.03, CSCI 3130.03, and CSCI 3171.03
- Five additional CSCI full-credit classes above the 2000 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 Programs section of this calendar, page 441 for details.

III. Programs and classes for those whose Major is not Earth Sciences

These classes are specially designed for those who want to know something about the Earth, but whose major field of study at Dalhousie will lie elsewhere, e.g., an economics student concerned with resources, a history student interested in the role played by Canada’s geological history, a biology student interested in faunal environments on the seafloor.

A. Elective Classes
- ERTH 1001.03: Introduction to Physical Geography, a class for anyone who wants to learn more about the Earth, its subsystems and regions
- ERTH 1002.03: Earthquakes, Volcanoes and Natural Disasters, a class aimed for non-specialists, investigates these natural disasters.
- ERTH 2401.03: Environmental and Resource Geology, open to those with the above prerequisite
- ERTH 2402.03: Dinosaurs: Origin, Evolution and Extinction, open to those with the above prerequisite
- ERTH 2403.03: Forensic and Medical Geology.

B. Other Programs

Concurrent BSc/DipEng
The Faculty of Engineering and the Faculty of Science have agreed to offer a combined BSc/DipEng degree program. This program allows students to complete requirements for the BSc (15-credit) and BEng degrees in as little as five years. Consult the Degree Requirements section, page 65 for details.

Bachelor of Computer Science with Minor in Earth Sciences.
Students taking a BCS with a minor in Earth Sciences should take: ERTH 1001.03 and ERTH 1002.03 as well as ERTH 2001.03, ERTH 2002.03, 2203.03, 2110.03, either ERTH 2271.03 or 2410.03 and at least 3 half-credits at the 3000 level or higher.

IV. Special Information for Earth Sciences Programs

A. Field Work
Field excursions are part of many classes and are conducted at appropriate times during the session. In addition, some optional field excursions may be held each year. Note that some mandatory field trips may be held on Saturdays or Sundays. Field Schools are offered for about 10 days in late August, just before the start of the university Fall term.

B. Professional Registration
Professional Registration of Geoscientists (geologists and geophysicists), usually in a joint Association with engineers, is in place in Nova Scotia and across Canada. You should be aware that a program which meets our degree requirements does not necessarily meet criteria for registration. The educational requirements for the professional associations is a four-year degree with a minimum of 9 geoscience credits after first year. Your Honours degree meets this requirement. A Major degree can, if 9 Earth Sciences credits are taken after first year. Students should note that, in addition to Earth Sciences classes, Registration boards require students to have taken some half credits in fundamental science which includes: first-year Chemistry, ECHM 1011.03 (1012.03), Calculus (MATH 1000.03 and 1001.03) and Physics (PHYS 1100/Y.06). For more information, consult the Earth Sciences Undergraduate Advisor.

C. Certificate in IT (Earth Sciences)
To recognize students who have completed classes with a substantial Information Technology component, and to provide 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 Information Technology to students who meet the following requirements:
- Completion of the 20-credit Major or Honours program in Earth Sciences;
- Completion of the following classes, with a minimum grade of B, identified by the Department of Earth Sciences as teaching a set of IT skills particularly relevant to geoscientist:
  - ERTH 2001.03
  - ERTH 2271.03 or ERTH 3400.03
  - ERTH 5000.03
  - ERTH 7000.03
  - ERTH 4201.03 or ERTH 4410.03
  - ERTH 4520.03 or ERTH 4530.03 or ERTH 4450.03
  - CSCI 1100.03 and MATH 2400.03

To register, complete the registration form found under “IT” at the Faculty of Science URL: http://adminweb.ucis.dal.ca/science/contents.cfm and send your completed form to ScienceENR 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 course 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.
they're not a prerequisite for other courses.

PREREQUISITE: ERTH 1080 or permission of instructor.
EXCLUSION: Credit will be given for only one of ERTH 1090.03, ERTH 1091.03, or 1092.03.

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 1090.03 or permission of instructor.

EXCLUSION: Credit will be given for only one of ERTH 1090.03, ERTH 1091.03, or 1092.03.


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 cliff sections and outcrops. Skills taught are rock, mineral and fossil identification, basic geological map making and report writing. The class is held at the end of summer before regular classes in the fall term and should normally be taken by those enrolling in second-year or Earth Sciences classes: ERTH 2001.03, 2002.03, 2101.03, 2203.05.

INSTRUCTOR(S): P. Wallace

FORMAT: Off-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 recommended; SCIE 1502.21, 1504.27, 1510.33

ERTH 2001.03: Earth Materials Science I.

Materials from the Earth - including rocks, soils, and the one and petroleum resources they contain - form the basis of our industrial society and are vital to the Canadian economy. EIRTH 2001.03, 2002 are intended to introduce students to the origin, distribution, and chemical and physical properties of some important Earth materials. Lectures in the fall term focus on minerals as naturally occurring crystalline materials. Special attention will be paid to the fundamental structure and composition of common rock-forming minerals such as quartz, feldspar, and mica, and to materials with special value to society, including iron, copper, and gemstones. Labs include the identification of minerals in hand sample, elements of crystallography, and an introduction to the use of the petrographic microscope. Students will gain practical experience in the use of instrumental techniques such as X-ray diffraction and/or electron microprobe analysis to identify one or more unknown minerals. A formal field trip may be included. This class is a prerequisite for ERTH 2002 and most third-year Earth Science classes. Students who have not already taken CHEM 1301 or equivalent are strongly encouraged to take this concurrently.

INSTRUCTOR(S): R. Jamieson

FORMAT: Lecture 3 hours; lab 3 hours; weekend field trip

PREREQUISITE: ERTH 1080 and one other 1st year ERTH course; 1090 recommended; or SCIE 1502.21, 1504.27, 1510.33, and CHEM 1011.03, 1012.03 or CHEM 1011.03, 1012.03. Chemistry majors should consult the department.

ERTH 2002.03: Earth Materials Science II.

This class explores the relationships between minerals and rocks, building on the knowledge of mineral chemistry, crystal structure, and identification techniques gained in EIRTH 2001. Lectures will cover topics such as simple phase diagrams and their application to mineral chemistry and texture, crystal defects and their role in deformation of minerals and rocks, and reducitivity in minerals and its use in geochronology. The use of mineral assemblages and textures to classify rock types will be discussed in class and labs. In the labs, students will use the petrographic microscope to look at a variety of igneous, sedimentary, and metamorphic rocks in thin section, with an emphasis on gaining familiarity with their constituent minerals and diagnostic textures. Students will also be introduced to the use of reflected light microscopy to identify opaque (non-forming) minerals. This class is a prerequisite for some third-year Earth Science classes.

INSTRUCTOR(S): D. Grego

FORMAT: Lecture 3 hours; lab 3 hours; field trip

PREREQUISITE: ERTH 2001.03

430 Earth Sciences
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. Culluaw

FORMAT: Lecture 3 hours/ lab 3 hours/ field trips

PREREQUISITE: ERTH 2000.015

ERTH 2203.03: Sediments and Sedimentary Rocks.
This class deals with physical and biological processes which generate modern siliciclastic, carbonate and evaporite sediments. Materials associated with Quaternary glacial events are discussed. The formation of sedimentary rocks is examined and their petrology illustrated using laboratory techniques. Weekend field trips to selected modern and ancient sedimentary deposits in Nova Scotia take place in the first month of classes.

INSTRUCTOR(S): M. Cushing

FORMAT: Lecture 3 hours/ lab 3 hours

PREREQUISITE: ERTH 1080 and one other 1st year ERTH course; ERTH 1090 recommended.

ERTH 2205.03: Introduction to Paleontology.
This class will encompass an introduction to all the major invertebrate groups that are important in the fossil record. It will begin with introduction of the first life forms, basic taxonomy and uses of fossils followed by lectures and laboratories on each major group.

INSTRUCTOR(S): D. Scott

FORMAT: Lecture 3 hours, lab 3 hours, possible field trip

PREREQUISITE: ERTH 2205.03 or permission of the instructor

ERTH 2270.03: Introduction to Applied Geophysics.
An Introduction to using physical principles to explore the Earth's subsurface, with an emphasis on near-surface applications. Topics will include seismic, gravity, magnetic, electrical, and electromagnetic sounding techniques, with application in prospecting, hydrogeology, environmental assessments, and well-logging. The geophysics field school, normally conducted during the last week of April, is an integral part of this class.

INSTRUCTOR(S): M. Nadimoric

FORMAT: Lecture 3 hours, lab 2 hours, 3-day field school

PREREQUISITE: First year Mathematics and PHYS 1105/1106

ERTH 2380.03: Geochemistry.
A basic understanding of Geochemistry is essential to a professional geoscientist. This class deals 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 will begin with an overview of atoms, ions, and isotopes, and the principles that govern their distribution on the Earth and other planets. This will be followed by a discussion of high- and low-temperature aqueous geochemistry, and the applications of chemistry to igneous and metamorphic systems. A section on mineral deposits will examine the formation of hydrothermal ore deposits, and geochemical exploration methods. The latter half of the term will concentrate on low-temperature geochemistry, with an emphasis on processes that control the release, mobility, and fate of contaminants in the environment. Computer models and case studies will be used to illustrate the importance of geochemical data for solving real-world environmental problems. Students will also be introduced to a number of closely-related disciplines including surface science, geomicrobiology, and medical geology.

FORMAT: Lecture

PREREQUISITE: ERTH 1080/1090, ERTH 2001 & CHEM 1011/1012 or equivalent, or permission of the instructor

ERTH 2410.03: Environmental and Resource Geology.
Note: This class is not offered every year. Please consult the department in the spring for further information.

Geology lies behind many of the environmental problems facing humanity today. In this course we consider topics such as energy and mineral resources, geological hazards such as earthquakes, landslides, and volcanic eruptions, the relationship of geology in the fields of pollution and waste disposal, and the role that water plays in its various guises. This course 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): Staff

FORMAT: Lecture 3 hours

PREREQUISITE: ERTH 1080 and one other 1st year ERTH course; ERTH 1090 recommended; or SCIE 1502.21, 1504.27 or 1510.33

EXCLUSION: This class is not available for Earth Sciences Majors

ERTH 2420.03: Dinosaurs.
This class will consider the origin, evolution and extinction of non-avian dinosaurs. What are dinosaurs? Why were some dinosaurs so big? What did dinosaurs eat? How fast could dinosaurs run? Were dinosaurs warm-blooded? Did dinosaurs have feathers? Were dinosaurs good parents? In attempting to answer these apparently simple questions, we will investigate the methods for gathering evidence from bones and surrounding rocks to reconstruct not only the physiology of these startlingly modern organisms but also less tangible characteristics such as behaviour.

INSTRUCTOR(S): M. Graves

FORMAT: Lecture 3 hours

PREREQUISITE: ERTH 1080.03 or any two of ERTH 1010, 1020, 1030, 1040, 1041, 1050, 1060, 1090, 1091, or SCIE 1502.21, 1504.27 or 1510.33, or permission of instructor

ERTH 2430.03: Forensic and Medical Geology.
Note: This class is not offered every year. Please consult department in the spring for further information.

Designed for non-earth sciences majors (the non-specialist), this course explores the evolving fields of forensic and medical geology. These new fields within the realm of geosciences share a common thread in that both forensic and medical geology depend upon identifying potential geologic sources of evidence, and applying this information to solve larger problems, either legal or health-related. The forensic geology portion of the course will use case studies to explore topics such as the recognition and identification of soil, rock, glass, and other earth materials used in criminal activities, as well as a look at case studies of fraud and misrepresentation of information related to economic resources and natural geologic hazards. The medical geology component explores the possible connection between disease, health, and the geologic environment, also using a case study and problem-solving approach. We will examine how the presence of a natural contaminant (such as arsenic, mercury, or naturally-occurring radioactive materials), or, on the other hand, the absence of elements (such as calcium or iodine for example), can lead to health conditions that are a direct result of the nature of the rock, soil, nature of the landscape, or water in the region.

INSTRUCTOR(S): A.M. Ryan

FORMAT: Lecture/tutorial

PREREQUISITE: ERTH 1080 and one other Earth Sciences course or instructor's permission.

ERTH 3000.015: Computing Camp.
This class is required for BSc Major, and Honours programs and is designed to provide the computing skills necessary to meet today's challenges. These skills will be learned through a field-mapping project using computers to manipulate data and prepare geologic maps. The class will be held the week before classes begin in the third year of a program.

INSTRUCTOR(S): P. Wallis, C. Walls

FORMAT: Off Campus

PREREQUISITE: ERTH 2000.015, 2001.03, 2110.03, 2130.03, 2213.03, 2225.03
ERTH 3010.03: Igneous Petrology.
The study of the field relations, mineralogy, texture, and geochemistry of volcanic and plutonic rocks. Lectures discuss the classification, graphical representation, modes of production, differentiation, and emplacement of igneous rocks, and their grouping into co-magmatic provinces. Practical work consists of three field trips and related laboratory investigations.
INSTRUCTOR(S): Y. Fedorouchou
FORMAT: Lecture 3 hours / lab 3 hours / field trips
PREREQUISITE: ERTH 2200.03 and 2202.03

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 tectono-chemical environment. Metamorphic reactions, deformation and recrystallization, the stability relations of minerals and mineral assemblages under various physical and chemical conditions, and the concept of metamorphic facies are discussed. The relationship of metamorphism to other geological processes is considered. In the labs, microscopic mineralogy and texture are used to decipher the metamorphic history of rocks.
INSTRUCTOR(S): R. Jamieson
FORMAT: Lecture 3 hours / lab 3 hours
PREREQUISITE: ERTH 3010.03

ERTH 3140.03: Structural Geology.
An introduction to the behaviour of rocks during deformation, stressing the geometrical aspects of rock structures on the scale normally encountered by the geologist, and their interpretation.
INSTRUCTOR(S): D. Grejic
FORMAT: Lecture 3 hours / lab 3 hours, possible field trips
PREREQUISITE: ERTH 2200.03, ERTH 2202.03, ERTH 2110.03, ERTH 2203.03, ERTH 2205.03

ERTH 3270.03: Solid Earth Geophysics.
The class will explore the Earth as a unified dynamic system. The class will include topics such as seismology, earthquakes, mantle convection, crustal accretion and subduction, and Earth's magnetic fields. There will be discussions of radioactivity and the Earth's heat budget, as these are essential to understanding our planet.
INSTRUCTOR(S): P. Ryan
FORMAT: Lecture 3 hours, tutorial 2 hours
PREREQUISITE: ERTH 2205.03
CROSS-LISTING: PHYC 3270.03

ERTH 3302.03: Quaternary Sedimentary Environments.
The class deals with facies models for Quaternary glacial, coastal, deep sea, and alluvial sediment. Emphasis is placed on sedimentation processes typical of each depositional setting and the geometry of the resulting deposits. Ancient deposits, including those resulting from glacial events, are examined, and their association with hydrocarbons, coal, and sedimentary oun 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 2205.03, ERTH 2203.03

ERTH 3303.03: Stratigraphy.
Stratigraphy is the backbone of the geological sciences; it brings together sedimentology, palaeontology, 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 chronostatigraphy). We will survey the impact of sea-level change, tectonics and climate on sediment accumulation, with emphasis on seismic and sequence stratigraphy. Case studies will focus on sediments across Canada, and practical work includes laboratory and class exercises, as well as field excursions.
INSTRUCTOR(S): G. Wach

ERTH 3400.03: Fundamentals of Hydrogeology.
The availability of clean water is absolutely essential for the development and maintenance of modern societies. This class will deal with the mathematical description of groundwater movement, geophysical and geological methods for groundwater exploration, regional occurrence and chemical quality of groundwater, and the effects of waste disposal on chemical quality. Laboratory work stresses familiarity with techniques employed in the assessment and exploration of groundwater resources, as well as the analysis and interpretation of water quality data.
INSTRUCTOR(S): Staff
FORMAT: Lecture 3 hours, lab 3 hours
PREREQUISITE: ERTH 2201.03, ERTH 2202.03, ERTH 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 3410.03. However, this class is designed specifically for students with a strong background in geology, equivalent to that of a third year Earth Sciences major. Selected topics are explored at greater depth using the accumulated geological 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 2201.03, ERTH 2202.03
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: Geochemy of Aquatic Environments.
Given the abundance of water at the earth’s surface and the wide use both humans and other organisms make of aquatic environments, it becomes imperative for environmentally-oriented scientists to understand the chemical composition 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 chemical quality 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 alteration-burial changes, and the global cycles of carbon, nitrogen, and sulfur. Students will be taught to approach problems quantitatively through the principles of mass action (Eh-pH and activity-diagram) and of mass balance (box models and conservation equations).
FORMAT: Lecture 3 hours
PREREQUISITE: CHEM 1011.03 or 1021.03 or equivalent and ERTH 1080/1091 or ERTH 1010.03;
CROSS-LISTING: OCEA 3420.03

432 Earth Sciences
ERTH 3440.03: Geomorphology.

The quantitative study of Earth's surface processes and landforms applies to geology, civil engineering, hydrology, and physical geography. Slope stability, weathering and soils development, sediment production, storage, and deposition and environments, fluvial processes, tectonic landslides, glacier and periglacial processes, hypsometry, and fractal dimension are shown to be influenced by rock properties, climate, and temporal scales. Laboratory and field experiences emphasize geomorphometry, describing, analyzing, and interpreting soils and sediment records, the local Quaternary record of glaciation and stream incision, and incorporate field and remotely sensed data and digital terrain data to solve questions related to the environment and various processes.

INSTRUCTOR(S): Plug, L., Goose, J.
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 SCIE 1502, 3504, 3510 or permission of instructor AND completion or concurrent enrolment of a 1000 level mathematics class, a 1000 level physics class and a 1000 level chemistry class.
CROSS-LISTING: GEGC 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 patterns of processes is important. GIS plays a significant role a wide range of applications, from modeling, to analysis and prediction, to decision making. The course is aimed at a broad base of potential users and draws on examples of the role of GIS in global climate change, mineral exploration, preservation of biodiversity, coastal zone management, resource depletion, and many other present and future environmental issues. The course material will be of interest to those studying geoscience, environmental science, ecology, marine biology, oceanography, epidemiology, urban and rural planning, civil engineering, and any other field involving spatial data. Laboratory exercises emphasize the principles of raster and vector GIS, and the integration of databases and GPS (global positioning systems) data into GIS. Exercises draw on the diversity of GIS applications in a number of application areas.

INSTRUCTOR(S): C. Walls
FORMAT: Lecture 3 hours, lab 3 hours
PREREQUISITE: Two years of university study or equivalent or instructor's permission
CROSS-LISTING: GEGC 3500, ENV 3500
EXCLUSION: Credit will only be given for one of ERTH 3500.03, ERTH 5600.03, GEGC 3500.03, SCIE 3600.03 or SCIE 5600.03

ERTH 4000.03: Advanced Field School.

The course is a field excursion of 7 to 14 days duration which is designed to give the student a regional perspective. Locations visited will vary from year to year. It appears on transcripts and is compulsory for all Honours students. Attendance and completion of this class will be part of the Honours Qualifying Examination.
FORMAT: Off campus, 7 - 14 days

ERTH 4100XY.06: Research Project.

This class allows students who are not in an Honours program to do a research project. See class description for ERTH 4200XY.06.

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

INSTRUCTOR(S): P. Nyall
FORMAT: Lecture 3 hours

ERTH 4110.03: Introduction to Geological Oceanography.

This class is intended to give a broad survey of topics in marine geology and geophysics for new students in Oceanography at a graduate level. The previous background in Geology or Geophysics is required. The class concentrates on recent methods and observations with quantitative applications to an understanding of geophysical and geological processes. Some topics covered in Part 1 are plate tectonics and seismic, heat flow, gravity, and magnetic methods. In Part 2 patterns and processes of sediment transport and deposition are explored. Some laboratory exercises augment the lectures, including a field cruise to Bedford Basin.
FORMAT: Lecture 3 hours
CROSS-LISTING: OCEA 4100.03, OCEA 4101.05

ERTH 4141.03: Applied Geology, Mineralogy and Geochemistry.

Note: This class is not offered every year. Please consult department in the spring for further information.

This class is an introduction to various concepts and techniques used by geoscientists in the search for and evaluation of mineral concentrations, in mining and metallurgy, as well as in environmental aspects of these activities. The successive stages of a mineral exploration project are analyzed, from reconnaissance through exploration geochemistry, claim staking, drilling, mining, estimation of reserves, grades and tonnages, economic aspects, to mine site rehabilitation. Fundamentals of applied 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 background 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 2200.03, ERTH 2200.02, ERTH 2210.03, ERTH 2200.05
EXCLUSION: Credit will only be given for one of ERTH 4141.03, ERTH 4141.02
CROSS-LISTING: ERTH 5141.03

ERTH 4151.03: Mineral Deposits.

Note: This class is not offered every year. Please consult department in the spring for further information.

This class is an introduction to the geology of metallic ore deposits (e.g. gold, copper) and some industrial mineral concentrations (e.g. Diamonds, borite), 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 3010.03, 3140.03
CROSS-LISTING: ERTH 5151.03

ERTH 4153.03: Petroleum Geology.

The course provides an advanced-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, and well log sequence stratigraphy and depositional facies analysis, coal geology, oil sands geology, biostratigraphy, drilling and completions, petrophysics and well log analysis in addition to other topics including alternative energy sources.

INSTRUCTOR(S): G. Wach
FORMAT: Lecture 3 hours, lab 3 hours
PREREQUISITE: ERTH 2200.03, ERTH 3440.03, ERTH 3300.03
CROSS-LISTING: ERTH 5153.03

ERTH 4156.03: Petroleum Geology - Field Methods and Economic Evaluation.

The course provides an advanced-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 faces analysis, coal geology, oil sands geology, biostratigraphy, drilling and completions, petrophysics and well log analysis in addition to other topics including alternative energy sources.

INSTRUCTOR(S): G. Wach
FORMAT: Lecture 3 hours, lab 3 hours
PREREQUISITE: ERTH 2200.03, ERTH 3440.03, ERTH 3300.03
ERTH 4200.03: Honours Thesis. This class deals with many aspects of written and oral communication of scientific and technical material. In particular, it covers the scientific method, the elements of scientific style (clarity, precision, conciseness, and objectivity), the logical organization and development of ideas and arguments, and the role of logic in scientific writing. Some attention will also be given to techniques of oral presentation. This is a compulsory class for students writing an Honours thesis in Earth Sciences, but is open to students from other disciplines. Field work may be part of thesis research.

INSTRUCTOR(S): P. Ryall
FORMAT: Lecture 3 hours

ERTH 4350.03: Tectonics. This is a required class for Earth Sciences honours students. It is intended to synthesize the various aspects of geology covered in the third year core program. The focus of the class is on tectonic processes and the ways in which these processes create and modify the Earth's crust. We will cover the fundamental geological, geophysical, and geochemical controls that operate today, including plate tectonics, and the ways in which these might have differed in the geological past. The tectonic evolution of specific orogenic belts will be discussed, including both modern and ancient examples in Canada and other parts of the world.

INSTRUCTOR(S): N. Culshaw
FORMAT: Lecture 3 hours
PREREQUISITE: ERTH 2200/3, 3140.03
CROSS-LISTING: ERTH 5350.03

ERTH 4400.03: Advanced Metamorphic Petrology. This class deals with selected topics in metamorphism and microtectonics, chosen to reflect current topics of interest in the disciplines and/or specific interests of participants. The focus is on the interaction of metamorphisms and deformation, and on the constraints provided by microstructural and metamorphic data on tectonic processes in general. Examples of topics that may be covered include: porphyroblast-matrix relationships in metamorphic rocks; quantitative P-T methods in metamorphism; geochronology of metamorphic rocks; construction and interpretation of metamorphic P-T-t paths; intracrystalline deformation, recrystallisation, and deformation mechanisms in some common rock-forming minerals; origin and interpretation of lateral/oriented orientation; natural microstructures. The class is offered as number warrant (4 students minimum). It is suitable for students who are doing honours or graduate work in the general areas of metamorphic and/or structural geology and/or tectonics.

INSTRUCTOR(S): R. Jamieson, D. Gracies
FORMAT: Lecture 3 hours
PREREQUISITE: ERTH 3270/3, ERTH 3440.03 (or equivalent), or permission of instructors.
CROSS-LISTING: ERTH 5400.03

ERTH 4400.03: Geomorphology and Landscape Evolution. This class is not offered every year. Please consult department in the spring for further information.

Ripple to mountain range-scale landforms evolve under predictable internal and external forces that are modulated by the physical and chemical properties of the rock. The purpose of this course is to provide a thorough examination of the development of landscapes by tectonics and surficial processes involving weathering, mass wasting, streams, and glaciers. The concepts of equilibrium, climate and vegetation change, and rock character are recurring themes throughout the course. Dating and thermochronometry methods are discussed in the context of rates of landscape change. Early classic viewpoints of landform development are contrasted with the latest numerical simulations of landscape evolution. The labs are mostly field-oriented with emphasis on Quaternary stratigraphy, describing and interpreting soils, local geomorphology, and geomorphometrics.

INSTRUCTOR(S): J. Couse
FORMAT: Lecture 3 hours/ Lab 3 hours
PREREQUISITE: ERTH 380 and any 1st year ERTH class, ERTH 3900 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. This class is not offered every year. Please consult department in the spring for further information.

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 diffusions, 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
CROSS-LISTING: ERTH 5450, GEOG 4450

ERTH 4470.03: Introduction to Seismic Imaging. This class teaches the basic techniques of the reflection seismic method for imaging of earth structures such as those used in hydrocarbon exploration. Lectures introduce concepts and techniques that are applied in computer lab to the processing of multi-channel seismic dataset. Concepts covered include: source and receiver geometry, digital filtering, deconvolution, velocity analysis, stacking, and migration.

INSTRUCTOR(S): M. Nadimovic and K. Louden
FORMAT: Lecture, lab
PREREQUISITE: ERTH 3270/3 or consent of instructor
CROSS-LISTING: ERTH 5470, GEOG 4470

ERTH 4480.03: Advanced Seismic Imaging. This class is not offered every year. Please consult department in the spring for further information.

This class teaches more advanced techniques of seismic imaging of earth structures. Lectures introduce techniques that will be applied in the computer lab to the processing of multi-channel reflection and wide-angle refraction seismic datasets. Concepts covered include: multiple removal, pre-stack migration in time and depth, amplitude analysis, velocity modeling and inversion.

NOTE: This class is not offered every year. Please consult department in the spring for further information.

INSTRUCTOR(S): M. Nadimovic and K. Louden
FORMAT: Lecture 3 hours, lab 3 hours
PREREQUISITE: ERTH 4470/3 or consent of instructor
CROSS-LISTING: OCEA 4480.03

ERTH 4500.03: Micropaleontology and Global Change. 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. Quantitative paleo-geomorphology and faunal distribution is examined on knowledge of the tolerances of the living organisms.
CROSS-LISTING: GEOG 4530.03, ERTH 5530.03

PREREQUISITE: ERTH 3500.03, GEOG 3500.03, ENVS 3500.03 or ERTH 3500.03

FORMAT: Lecture 3 hours, lab 3 hours

INSTRUCTOR(S): C. Walls

Prerequisites for this course include having completed courses in geographic information systems (GIS) and understanding the fundamentals of remote sensing. GIS is a tool that can be used for environmental and geologic analysis. Remote sensing involves the use of satellites and other platforms to collect data from Earth's surface. This class will provide an introduction to GIS and remote sensing, and its applications in environmental and geologic sciences.

Note: This class is not offered every year. Please consult the department for more information.

ERTH 4510.03/4511.03: Directed Reading

PREREQUISITE: Permission of Department

FORMAT: As required

INSTRUCTOR(S): D. Scott

This class is intended for students who wish to explore a specific topic in depth. The class is supervised by a regular faculty member, and the student will work on a project or research topic under their guidance. This class is not offered every year, so students should consult the department for more information.

ERTH 4520.03: GIS Applications to Environmental and Geologic Sciences

This course will focus on the use of GIS in environmental and geologic sciences. Students will learn how to use GIS to analyze and interpret environmental and geologic data. The course will cover topics such as data management, spatial analysis, and environmental assessment.

Note: This class is not offered every year. Please consult the department for more information.

ERTH 4530.03: Environmental Remote Sensing

Note: This class is not offered every year. Please consult the department for more information.

The goal of this class is to introduce students to the role of remote sensing in environmental and geologic sciences. The class will focus on the use of satellite systems to collect data from Earth's surface. Students will learn how to use GIS to analyze and interpret remote sensing data.

VI. Co-op Workterms

Each work-term is a prerequisite to the succeeding work-term. Work-term registration requires a signature from the Science Co-op Coordinator.

Economics

Location: 6206, 6214 and 6220 University Avenue
Halifax, NS B3H 1X1
Administrative Offices:
6214 University Avenue
Telephone: (902) 494-2026

Dean
Taylor, K., BSc (McGill), PhD (U of Alberta), Professor (Mathematics & Statistics)

Chairperson of Department
Osberg, L.

Faculty Advisors
Cyrus, T., Undergraduate Coordinator, Co-op Academic Advisor
Lesser, B., Graduate Coordinator (494-2026)

Professors Emeriti
Cornwall, J.L., BA (Iowa), MSc (London), PhD (Harvard), FSBSE
Sinclair, A., BA (Dal), MA, PhD (Oxford), PhD (Harvard)

Professors
Barton, P., BSc (Saskatchewan), MA (UBC), PhD (UBC);
Daugaga, S., BA (Calcutta), MA (Dalhousie), MA, PhD (Rochester)
Irion, T., BA (Middle East Tech.), MA, PhD (Cornell)
Lesser, B., BSc (Dalhousie), MA, PhD (Cornell)
Osberg, L., BA Hons (Queen’s), MA (Dalhousie), PhD (Yale), McCallum Professor of Economics and University Research Professor;
Phipps, S.A., BA Hons (Victoria), MA, PhD (UBC), Maxwell Chair of Economics
Xu, K., Dip. (British Teachers’ Univ.), MBA, PhD (Concordia)

Associate Professors
Cross, M.L., AA (Dawson College), BA (Montana), MA (UBC), PhD (Texas A&M)
Cyrus, T., BA (UCLA), PhD (Berkeley)

Assistant Professors
Adshade, M., BA (Montreal), MA, PhD (Queen’s)
Fendt, R., BSc (Biology), MSc (Dalhousie), MA (Queen’s), PhD (Simon Fraser)
Källberg, S.A., Dip. Software Eng (Lund Poly. Inst.), BSc (U of Illinois - Urbana), PhD (McGill)

Adjunct Professors
Amarick, T.L., BA Hons (Stellenbosch), MA, PhD (Southern California)

Assistant Professors
Amrich, D.W., BA Hons (Stellenbosch), MA, PhD (Dalhousie), MBA
Bradfield, F.M., BSc (McMaster), PhD (McGill)
Cornwall, J.L., BA Hons (Dalhousie), MA (London), PhD (Harvard), Professor Emeritus
Cornwall, J.L., BA Hons (Dalhousie), MA, PhD (Harvard), Professor Emeritus

Dean
Taylor, K., BSc (St. FX), PhD (U of Alberta), Professor (Mathematics & Statistics)

Chairperson of Department
Osberg, L.

Faculty Advisors
Cyrus, T., Undergraduate Coordinator, Co-op Academic Advisor
Lesser, B., Graduate Coordinator (494-2026)

Professors Emeriti
Cornwall, J.L., BA (Iowa), MSc (London), PhD (Harvard), FSBSE
Sinclair, A., BA (Dal), MA, PhD (Oxford), PhD (Harvard)

Professors
Barton, P., BSc (Saskatchewan), MA (UBC), PhD (UBC), PhD (UBC);
Daugaga, S., BA (Calcutta), MA (Dalhousie), MA, PhD (Rochester)
Irion, T., BA (Middle East Tech.), MA, PhD (Cornell)
Lesser, B., BSc (Dalhousie), MA, PhD (Cornell)
Osberg, L., BA Hons (Queen’s), MA (Dalhousie), PhD (Yale), McCallum Professor of Economics and University Research Professor;
Phipps, S.A., BA Hons (Victoria), MA, PhD (UBC), Maxwell Chair of Economics
Xu, K., Dip. (British Teachers’ Univ.), MBA, PhD (Concordia)

Associate Professors
Cross, M.L., AA (Dawson College), BA (Montana), MA (UBC), PhD (Texas A&M)
Cyrus, T., BA (UCLA), PhD (Berkeley)

Assistant Professors
Adshade, M., BA (Montreal), MA, PhD (Queen’s)
Fendt, R., BSc (Biology), MSc (Dalhousie), MA (Queen’s), PhD (Simon Fraser)
Källberg, S.A., Dip. Software Eng (Lund Poly. Inst.), BSc (U of Illinois - Urbana), PhD (McGill)

Adjunct Professors
Amarick, T.L., BA Hons (Stellenbosch), MA, PhD (Southern California)
I. Introduction
Economics is a social science—a science because it involves a rigorous intellectual effort to derive logical conclusions from basic facts and propositions; a social science because it has human beings and their welfare as its ultimate concern. The basic facts of Economics cannot be knowable and measurable with the same precision as those of the physical sciences—human society and its motivations are far too complex to permit this—but none of the sciences surpasses economics in its relevance to our needs, problems and goals.

Economics analyzes the equity, efficiency, and sustainability of human behaviour in the production, distribution, and consumption of commodities. Economics is not an easy science; indeed it is one of the most complex, difficult (and fascinating) areas of study when you pursue it beyond its elementary levels, but some basic knowledge of economics is essential for any educated person. A more extensive knowledge of the subject is an invaluable complement to other fields of specialization such as law, commerce, politics and other studies in social sciences or humanities, and a specialization in the field can lead to a variety of interesting career opportunities.

II. Degree Programs
The department offers BA and BSc programs, described below. A student may graduate with either a BA or a BSc degree but not both. In all programs the student must ensure that the classes selected satisfy the overall faculty requirements for the relevant general degree (BA or BSc).

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

A. General Principles
Two principles have particular weight: (a) students should strike a balance between breadth of coverage among disciplines and depth of specialization in economics; (b) students taking economics as a minor or as a component of another specialization should be allowed a reasonable degree of flexibility in their choice of economics classes.

B. 20-credit BA Honours Degree in Economics
Departmental Requirements
1000 level
- ECON 1101.03
- ECON 1102.03
2000 level
- ECON 2200.03
- ECON 2201.03
3000 level
- ECON 3338.03
- ECON 3339.03
- ECON 3700.03
- One half credit in ECON 3310.03 or ECON 3349.03 or ECON 2233.03 or 2239.03
4000 level
- ECON 4100.03
- ECON 4420.03
- ECON 4421.03
- Three to four other Economics credits at or above the 2000 level for a total of nine advanced Economics credits

Other required classes
- MATH 1000.03
- MATH 1010.03
- MATH/STAT 1060.03
- MATH 2100.03
- MATH/STAT 2280.03 (ECON 2280.03)
- An Honours Thesis is also required

C. 20-credit BSc Honours Degree in Economics
Departmental Requirements
1000 level
- ECON 1101.03
- ECON 1102.03
2000 level
- ECON 2200.03
- ECON 2201.03
3000 level
- ECON 3338.03
- ECON 3339.03
- ECON 3700.03
- One half credit in ECON 3310.03 or ECON 3349.03 or ECON 2233.03 or 2239.03
4000 level
- ECON 4100.03
- ECON 4420.03
- ECON 4421.03
- Three to four other Economics credits at or above the 2000 level for a total of nine advanced Economics credits.

Other required classes
- MATH 1000.03
- MATH 1010.03
- MATH/STAT 1060.03
- MATH 2100.03
- MATH/STAT 2280.03 (ECON 2280.03)
- An Honours Thesis is also required

D. Combined Honours
Combined honours programs, BA or BSc, may be arranged with other departments such as Biology, Earth Sciences, History, Mathematics, Political Science, Statistics, or Sociology. For combined Honours programs with Economics, students must also consult the other departments concerned.

If Economics is the primary field in the combined honours, the student is required to take all the courses that are required for single honours. If Economics is the secondary field in the combined honours, the student must take at least 4 credits beyond the introductory level, including ECON 3338.03 and 1.5 additional credits beyond the 2000 level.

E. 20-credit BSc Major in Economics
Departmental Requirements
1000 level
- ECON 1101.03
- ECON 1102.03
2000 level
- ECON 2200.03
- ECON 2201.03
- One other economics credit at or above the 2000 level
3000 level
- ECON 3338.03
- 3.5 other economics credits at or above the 3000 level for a total of 7 advanced credits in Economics
Other required classes

- MATH 1010.03
- MATH 1020.03
- MATH/STAT 1060.03
- MATH 2010.03
- MATH/STAT 2000.03 (ECON 2290.03)

A student who wants the option of converting a Major to an Honours degree should select classes in accordance with the list of honours core classes given above and should consult regulations 11.4 and 22. Besides additional core classes, the Honours program requires an honours thesis and a higher academic standing than the Major. An Honours program can be converted to a Major at the student’s discretion. The Major, however, allows a maximum of only nine credits in economics while the Honours program allows a maximum of eleven.

F. 20-credit BA Major in Economics

Departmental Requirements

1000 level
- ECON 1101.03
- ECON 1102.03

2000 level
- ECON 2200.03
- ECON 2201.03
- Two other credits in Economics at or above the 2000 level

3000 level
- Three credits in Economics at or above the 3000 level

Other required classes

- MATH 1000.03
- STAT 1000.03

While the total number of credits required for the Major is the same as for an Honours degree, the honours program in economics requires an honours thesis and includes a larger core of classes in economics. In addition, the Honours program requires a higher academic standing than does the Major. However, the Major provides a comprehensive program not available with the 15-credit program. Major students are strongly encouraged to consult with members of the department to ensure an integrated and coherent program.

A student who wants the option of converting a Major to an Honours degree should select classes in accordance with the list of honours core classes and should consult regulations 11.4 and 22. An Honours program can be converted to a Major at the student’s discretion. The Major allows a maximum of only nine credits in economics while the honours program allows a maximum of eleven.

Combined programs may also be arranged with economics as the major or minor subject in association with other fields such as political science, sociology, history, earth sciences, biology, mathematics, statistics—and possibly others.

G. 15-credit BA with Concentration in Economics

Departmental Requirements

1000 level
- ECON 1101.03
- ECON 1102.03

2000 level
- ECON 2200.03
- ECON 2201.03
- At least one other credit in Economics at or above the 2000 level

3000 level
- At least two credits at or above the 3000 level

Students who wish to keep open the option of transferring into the Honours or Majors programs should select classes consistent with the requirements of these programs.

H. 15-credit BSc with Concentration in Economics

Departmental Requirements

1000 level
- ECON 1101.03
- ECON 1102.03

A minimum of four advanced credits in Economics are required which must include:

2000 level
- ECON 2200.03
- ECON 2201.03

3000 level
- ECON 3300.03
- At least 1.5 other Economic credits at or above the 3000 level

Other required classes

- MATH 1000.03
- MATH 1010.03
- MATH 1020.03
- MATH 1000.03
- STAT 2000.03 (ECON 2290.03)

I. Co-op Education in Economics

Co-operative Education in Science (Science Co-op) combines academic study with paid career-related work experience. The program integrates eight academic terms with three to four workterms. Workterms are normally 13-16 weeks in length. With four workterms, the program normally requires 4 1/2 years to complete. On completion of a Science Co-op program, a student graduates with a Bachelor of Science Co-op degree and is eligible for registration as a chartered professional accountant in the province of Nova Scotia. Science Co-op students are strongly encouraged to consult with members of the department to ensure an integrated and coherent program.

A student who wants the option of converting a Major to an Honours degree should select classes in accordance with the list of honours core classes and should consult regulations 11.4 and 22. An Honours program can be converted to a Major at the student’s discretion. The Major allows a maximum of only nine credits in economics while the honours program allows a maximum of eleven.

Combined programs may also be arranged with economics as the major or minor subject in association with other fields such as political science, sociology, history, earth sciences, biology, mathematics, statistics—and possibly others.

J. Interdisciplinary Opportunities

Economics students interested in obtaining an Emphasis in Canadian Studies along with their Major or Minor in Economics should consult the Canadian Studies calendar entry for information on requirements and for a list of Economics classes approved with Canadian Studies.

Both a Minor in Business and a Minor in Environmental Studies are available to BSc Major (20-credit) or Honours students. A Minor in Film Studies is available for students registered in a BSc Major (20-credit) only. A Double Major (20-credit) or Combined Honours degree is available with Concentration in Environmental Science.

A Minor in Economics is available to Bachelor of Computer Science students. The requirement for the minor are the same as those for a 15-credit BSc (see section H. above).

K. Graduate Studies

The Department offers a graduate program leading to the MA, MDE and PhD degrees. Details of these programs, including a list of graduate classes, are given in the Calendar of the Faculty of Graduate Studies.
Senior undergraduates may be admitted to some graduate classes at the discretion of the instructors concerned.

III. Class Descriptions

Not all classes are offered on a regular basis. Please consult the department for details.

ECON 1101.03: Principles of Microeconomics.
This class is taken as the first in a series of classes in economics or as a background elective. Emphasis is on developing the basic analytical tools and applying them in the context of contemporary, and generally Canadian, economics problems, emphasizing the behaviour and analysis of individual agents in the economy (consumers, producers, markets). Prerequisite: ECON 1102.03. Format: Lecture 3 hours.

ECON 1102.03: Principles of Macroeconomics.
This class is taken as the first in a series of classes in economics or as a background elective. Emphasis is on developing the basic analytical tools and applying them in the context of contemporary, and generally Canadian, economics problems, emphasizing aggregate economic behaviour at the national level. ECON 1101.03 is not required before taking ECON 1102.03. ECON 1101.03 and 1102.03 (together) satisfy the Principles of Economics requirement for Economics majors and for Bachelor of Commerce and Bachelor of Management students. Format: Lecture 3 hours.

ECON 2200.03: Intermediate Microeconomics.
An extension of microeconomic theory and its applications that satisfies the minimum microeconomic theory requirements for majors in economics. Serves as the microeconomic prerequisite for higher-level classes in economics. Note: Credit cannot be received for both ECON 2200.03 and ECON 2210.03. Format: Lecture 3 hours. Prerequisite: ECON 1101.03 (grade of C- or better) and ECON 1102.03.

ECON 2201.03: Intermediate Macroeconomics.
Inflation, unemployment, exchange rate and related macro problems, with emphasis on Canadian policy experience in these areas. An extension of macroeconomic theory and its applications that satisfies the minimum macroeconomic theory requirements for majors in economics. Of interest to commerce students or others not requiring in economics, it serves as the macroeconomic prerequisite for higher-level classes in economics. Format: Lecture 3 hours. Prerequisite: ECON 1101.03 (grade of C- or better) and ECON 1102.03.

ECON 2206.03: Economics of Global Warming.
Combating fossil fuels creates greenhouse gases causing global warming. Coastlines recede as polar ice melts, species are extinguished, food and water supplies are jeopardized, tropical disease vectors migrate, and more. Large and rapid reduction in the greenhouse gas emissions are required to stabilize the Earth's temperature. But, what are the benefits and costs of various time paths for abating emissions? How do we assign costs and benefits? This course examines the contrasting development patterns of various industrialized European countries during and after their industrial revolutions. 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 1102.03.

ECON 2213.03: Health Economics.
How to ensure health care is accessible to all? How do we pay for health services? Should the private sector play a greater role in providing and paying for health care? Do markets in health work and what is the role of government? How do we set priorities if we have limited resources? Economists have increasingly become involved in influencing health policy and programs. This course looks at the economics of health, using Canadian and international experiences, including developing countries. The course examines how health systems work, the nature of market failure, and methods of economic evaluation, including cost-effectiveness and cost-benefit analyses. Format: Lecture 3 hours. Prerequisite: ECON 1101.03 and 1102.03.

ECON 2216.03: Economics of Global Warming.
Combating fossil fuels creates greenhouse gases causing global warming. Coastlines recede as polar ice melts, species are extinguished, food and water supplies are jeopardized, tropical disease vectors migrate, and more. Large and rapid reduction in the greenhouse gas emissions are required to stabilize the Earth's temperature. But, what are the benefits and costs of various time paths for abating emissions? How do we assign costs and benefits? This course examines the contrasting development patterns of various industrialized European countries during and after their industrial revolutions. 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 1102.03.

ECON 2218.03: The Canadian Economy in the New Millennium: Economic Policy Debates for the Next Decade.
A century ago, Prime Minister Wilfred Laurier declared: “The twentieth century belongs to Canada.” Since then, Canada’s economy has grown from $840 billion to approximately $1 trillion. But Canada’s economy today also faces many important policy issues: unemployment, productivity, income distribution, environmental protection, trade relations, federal-provincial fiscal relations, maintenance of social programs, etc. What are the main economic policy debates which Canada faces in the new millennium? What are Canada’s prospects for resolving these debates? What is the appropriate policy role for government? Approved with Canadian/Studies. Format: Lecture 3 hours. Prerequisite: ECON 1101.03 and ECON 1102.03.

ECON 2219.03: Euros and Cents: From Common Market to European Union.
The European Union (EU) is a grand experiment of uniting countries in a single market. The stepwise evolution from customs union to common market and, beyond, to economic and monetary union with a single currency, the Euro, will be reviewed and analyzed. Particular attention will be paid to EU policies re: trade, agriculture, and regional development as well to the European Monetary System. Come and learn more about an economic integration that is unparalleled in history. Format: Lecture 3 hours. Prerequisite: ECON 1101.03.

ECON 2231.03: Health Economics.
Is health care accessible to all? How can we pay for health services? Should the private sector play a greater role in providing and paying for health care? Do markets in health work and what is the role of government? How do we set priorities if we have limited resources? Economists have increasingly become involved in influencing health policy and programs. This course looks at the economics of health, using Canadian and international experiences, including developing countries. The course examines how health systems work, the nature of market failure, and methods of economic evaluation, including cost-effectiveness and cost-benefit analyses. Format: Lecture 3 hours. Prerequisite: ECON 1101.03 and 1102.03.

ECON 2233.03: Canadian Economic History.
An examination of the economic history of Canada from the time of Confederation to the present. 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 1102.03.

ECON 2239.03: European Economic History.
A self-contained class examining the contrasting development patterns of various industrialized European countries during and after their respective industrial revolutions and up to about 1990. The focus is on the development of hypotheses regarding the causes and effects of differences in the experience of growth of mature economies. Format: Lecture 2.5 hours. Prerequisite: ECON 1101.03 and 1102.03.

ECON 2260.03: Statistics I.
See class description for MATH 2600.03, in Mathematics section of this calendar. Cross-listing: MATH 2600.03, STAT 2800.03.

ECON 2280.03: Statistics II.
See class description for MATH 2800.03, in Mathematics section of this calendar. Cross-listing: MATH 2800.03, STAT 2800.03.
ECON 2334.03: Globalization and Economic Development: Current Debates.
Economists have long debated whether the task of development should be entrusted largely to market forces, or whether there was role for the state in directing a nation’s economic affairs. These debates over development continue. Does the current market-friendly “Washington consensus” systematically destroy the environment, indigenous populations, social cohesion, the rights of women? We will assess critiques of the economic analysis of development. Students will be encouraged to debate these issues among themselves and come to their own conclusions. FORMAT: Lecture 3 hours
PREREQUISITE: ECON 1101.05 and ECON 1102.05

ECON 2336.03: Regional Development.
Most countries have richer and poorer regions. Economic development issues, policies, and theories facing more industrialized nations are analyzed with particular focus on Canada (especially the Atlantic region), the European Economic Community, U.S.A., Japan, and Australia. Approved with Canadian Studies. In addition to the prerequisites, the student is advised to take one class in Political Science and one class in Canadian History before taking ECON 2336. FORMAT: Lecture/seminar 3 hours
PREREQUISITE: ECON 1101.05 and 1102.03 CROSS-LISTING: GIOC 2336.03 EXCLUSION: ECON 3336.03

ECON 3310.03: Economic Growth in Historical Perspective.
What are the determinants of long run growth and why have some countries grown faster than others? Market failure; the transmission of technologies across geographical space; adoption of foreign institutions; changes in social norms, individual identity and culture; fertility and population characteristics; the nature of production and natural resources; all may play a role in the development of economies over time. This course seeks to examine the sources of long-run growth in a historical perspective, from Roman to Modern times. FORMAT: Lecture 3 hours
PREREQUISITE: ECON 2200.03 or 2210.03, 2201.03

ECON 3315.03: Labor Economics.
This course provides an overview of basic ideas in labor economics. We will cover the theory of provided labor, all from a Canadian perspective. Examples of topics to be covered include: How do childcare costs affect desired hours of paid work by parents? Why do some people moon-light at a lower wage while others receive over-time wage premia for extra hours? How does EI affect the Canadian labor market? Do minimum wages reduce employment? What is economic discrimination and does it exist in Canada? How well do immigrants fare in the Canadian labor market? FORMAT: Lecture 3 hours
PREREQUISITE: ECON 2200.03 or 2210.03, 2201.03

ECON 3317.03: Poverty and Inequality.
Why are some people poor while others are rich? Why do some nations have more poverty, and more inequality than others? What can be, or should be, done? The extent of poverty and the distribution of income and wealth in contemporary societies are discussed. Most data are drawn from Canada but international evidence is introduced for comparative purposes. The theories underlying alternative measures and explanations of economic inequality are emphasized. Approved with Canadian Studies. The student is advised to take ECON 3315 before taking ECON 3317. FORMAT: Lecture 3 hours
PREREQUISITE: ECON 2200.03 or 2210.03

ECON 3319.03: Industrial Organization.
The course provides an overview of industrial organization, the study of the organization of production. Market structure, firm conduct, and performance affect each other in complex ways. For example, market structure, including the size distribution of firms and degree of horizontal and vertical integration, affects firm conduct, such as the ability to set prices. Governments evaluate market performance and regulate firms in order to reduce socially harmful anticompetitive behaviour. FORMAT: Lecture 3 hours
PREREQUISITE: ECON 2200.03 or 2210.03

ECON 3326.03: Money and Banking.
The class concerns the nature and operation of the financial system, with particular reference to Canadian experience. It treats financial instruments (including money) and institutions and the social control of the supply of money and credit. Approved with Canadian Studies. FORMAT: Lecture 3 hours
PREREQUISITE: ECON 2200.03

ECON 3330.03: International Trade.
This course examines the theory and empirics of international trade. It covers the standard historical trade theories as well as the more recent theory of scale-economies, and discusses the evidence regarding these theories. The course goes on to investigate factor movements, the welfare effects of trade policies in both industrial and developing countries, and the institutions that have developed to regulate those policies. Policies relevant to Canada, such as those of NAFTA and the World Trade Organization, are discussed in detail. FORMAT: Lecture 3 hours
PREREQUISITE: ECON 2200.03 or 2210.03

ECON 3331.03: International Finance.
This course covers the theory and empirics of international macroeconomics. It examines the effect of exchange rates on trade flows, capital flows, speculation, and risk; the effectiveness of fiscal and monetary policy in an open economy; modern international policy coordination; and the determination of the current account, the balance of payments, and net foreign assets. FORMAT: Lecture 3 hours
PREREQUISITE: ECON 2200.03

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: ECON 2100.03, 2201.03, 2210.03

ECON 3333.03: Theories of Economic Development.
This class surveys current applications of microeconomic and macroeconomic theory to the problem of economic development in Asia, Africa, and Latin America. As such, this class is complementary to classes in applied development economics. Topics covered include recent advances in theory of economic growth, theories of poverty and inequality and their relation to economic performance, theories of fertility and population growth, and the microeconomics of present agriculture. The class is meant to prepare students to be intelligent consumers of economic theory, and thus emphasizes the assumptions underlying particular economic theories and their implication for development policy. FORMAT: Lecture 3 hours
PREREQUISITE: ECON 2200.03 or 2210.03, 2211.03

ECON 3335.03: Environmental Economics.
This class serves as an introduction to environmental economics. Topics include social decision making, externalities and public goods, regulatory approaches (standards, charges, tradable permits), forms of value derived from the environment and measurement techniques. FORMAT: Lecture 3 hours
PREREQUISITE: ECON 2200.03 or 2210.03

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 basis. Emphasis is placed on practical econometric problems by requiring students to conduct their own research projects.

**ECON 3339.03: Econometrics II.** This class is an extension of ECON 3338.03 and covers a range of econometric methods that are used in economic research. The topics for this class include: Logit, Probit, Tobit, Distributed Lags, Panel Data, Simultaneous Equations and Time Series.

**FORMAT:** Lecture 3 hours

**PREREQUISITE:** MATH 1000.03 and ECON 2280.03/MATH 2080.03/STAT 2080.03

**ECON 3344.03: Public Finance.** This class studies the economics of public expenditure, tax and transfer programs in a federal state such as Canada. The core issue addressed is when and how public policy can (or cannot) improve equity and efficiency. Approved with Canadian Studies. In addition to the prerequisites, the student is advised to take ECON 2210.03 before taking ECON 3344.03.

**FORMAT:** Lecture 3 hours

**PREREQUISITE:** ECON 2210.03 or 2210.03

**ECON 3349.03: History of Economic Thought.** This course will examine theories of value, production, distribution, and growth as developed in classical political economy and neoclassical economics. Theories of equilibrium and stability, the links between classical political economy and macroeconomic theory, and reactions to classical and neoclassical economics will be considered as time permits.

**FORMAT:** Lecture 3 hours

**PREREQUISITE:** ECON 2200.03 or 2201.03, 2202.03

**ECON 3500.03: Public Economics.** Public economics analyzes the role of government when there is market failure. The course concentrates on the theory of 'public goods' and 'social choice', a rich framework of coexisting possibilities of cooperation and conflict, and studies interesting questions of rational decision making, individual and collective, and devising imaginative solutions to incentive problems for guiding and implementing society's choices, such as: How and when do individuals work together in making decisions? Is group action sustainable? What kind of incentives can make individuals and institutions work in solidarity when there are goods with collective ownership such as water, the atmosphere and fisheries? The course includes mathematical methods of general equilibrium, welfare economics and game theory. Optional Students of applied areas will find in the course the theoretical underpinnings of a wide range of applied fields such as education, health, regulation, common property resources, consumer policy, environment. A background of ECON 3700 may be helpful but is not a prerequisite.

**FORMAT:** Lecture 3 hours

**INSTRUCTOR:** S. Dasgupta

**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 3 hours

**PREREQUISITE:** ECON 2200.03 or 2210.03, MATH 1000.03 or instructor permission

**ECON 3700.03: Mathematics for Economists.** This course is intended to present mathematical methods used in modern micro- and macroeconomics. The lectures will concentrate on the basic concepts of analysis, comparative statics and optimization theory, combined with relevant economic models. The topics include an introduction to set theory and matrix algebra, the implicit function theorem and its applications, unconstrained optimization, constrained optimization with equality and inequality constraints, and intertemporal choice.

**FORMAT:** Lecture 3 hours

**PREREQUISITE:** ECON 2200.03 or 2210.03, 2210.03, MATH 1000.03 or permission of the instructor

**CROSST-LISTING:** MATH 3501.03

**ECON 3800.03: Financial Economics.** This class is an introduction to decision making by investors under uncertainty, portfolio theory, asset pricing, financial markets, and instruments. The course covers both the theoretical and practical aspects of investment, surveys the techniques available for economists, and emphasizes 'hands-on' learning using Canadian and international case studies. This course is suitable for those who wish to broaden their understanding of financial markets, and pursue a career in finance.

**FORMAT:** Lecture 3 hours

**PREREQUISITE:** ECON 2200.03 or 2210.03, 2210.03

**CROSST-LISTING:** MATH 3501.03

**ECON 3900.03: Financial Mathematics.** See class description for MATH 3900.03 in the Mathematics section of this calendar.

**ECON 4100.03: Honours Seminar.** This is a required class for honours students. The class is devoted to:

- (a) Preparation and presentation of honours papers;
- (b) Discussion of policy issues; and
- (c) Lectures and discussion by faculty members and invited guests.

In addition to the prerequisites, the student must complete ECON 3300.03 prior to ECON 4100.03 or during the fall term in which he or she is taking ECON 4100.03.

**FORMAT:** Seminar 1.5 hours for both terms

**PREREQUISITE:** ECON 2200.03 or 2210.03, 2210.03 and MATH 2000.03

**ECON 4420.03: Microeconomic Theory.** Emphasizes the working of an economy as a system of interdependent decision makers. Deals in detail with a selection of topics from the theory of choice as applied to consumers and firms, general equilibrium, welfare, linear models in economic analysis, choice under uncertainty, game theory, alternative solution concepts for competitive economies, social choice, stability, optimal growth. Students who have taken courses which are adjudged to be equivalent to the prerequisites, and/or who plan to take such courses during the same term (as co-requisites), may be allowed to take this class, at the discretion of the instructor. Students may find that some background in Economic Theory/Linear Algebra, at the level of MATH 2020 for example, is useful.

**FORMAT:** Lecture 3 hours

**PREREQUISITE:** ECON 2200.03 or 2210.03, 3700.03 and MATH 1000.03 and 1100.03

**ECON 4421.03: Macroeconomic Theory.** This class provides students with the analytic tools in macroeconomics needed to either advance to a graduate level program or move into the workforce in the capacity of a trained economist. Students will be introduced to contemporary issues in dynamic macroeconomics and will survey some of the conventional and current topics, including aggregate growth accounting, classical and neoclassical growth models, active monetary policy, inflation and unemployment; theories of consumption and investment; and international trade and exchange rates. Mathematical methods are applied extensively throughout the course (students will be expected to apply calculus to largely linear models) and their application to economic problems will be stressed at both the theoretical and intuitive levels.

**FORMAT:** Lecture 3 hours

**PREREQUISITE:** ECON 2201.03, 3700.03 and MATH 1100.03, 1010.03

**ECON 4446.03: Contemporary Liberalism, and Democracy.** See class description for PHIL 4470.03, in the Philosophy section of this calendar.

**CROSST-LISTING:** PHIL 4470.03, POLI 4479.03

---

440 Economics
Environmental Programs

Location:  LSC 822 (8th Floor)  
Halifax, NS  B3H 4J1  
Telephone:  (902) 494-7137  
Fax:  (902) 494-1123  
Website:  www.dal.ca/environment

Deans  
Binkley, M.E., BA, MA, PhD (Toronto)  
Taylor, K., BSc (St. FX), PhD (U of Alberta)

Director  
Wright, T., PhD (University of Alberta)  
Telephone:  (902) 494-5663  
Email:  tara.wright@dal.ca

Faculty  
Bard, S., PhD (M.I.T., Woods Hole)  
Telephone:  (902) 494-2296  
Email:  shannon.bard@dal.ca  

Mushkat, P., LLB (Dalhousie)  
Telephone:  (902) 494-6766  
Email:  pwm@dal.ca  

Tae, K., MSc (University of Alaska, Fairbanks)  
Telephone:  (902) 494-4530  
Email:  kaarin.tae@dal.ca

Undergraduate Advisors  
Tara Wright  
Kaarin Tae

Administrative Assistant  
Hall, Dawn  
Telephone:  (902) 494-7117  
E-mail:  dhall@dal.ca

Elizabeth May Chair in Sustainability and Environmental Health  
Telephone:  (902) 494-6663  
Email:  omaychair@dal.ca

Supporting Faculty  
Environmental Programs draws on faculty from the departments below:  
Biology  
Chemical Engineering  
Chemistry  
Earth Sciences  
Economics  
Environmental Engineering  
International Development Studies  
Mathematics  
Oceanography  
Philosophy  
Physics and Atmospheric Science  
Political Science  
School for Resource and Environmental Studies  
School of Planning  
Sociology and Social Anthropology

NOTE: This field is rapidly expanding. Students interested in these types of programs should ask about classes related to the environment other than those listed on the following pages through the departmental contacts noted above.
I. Introduction
Environmental Programs in the Faculty of Science offers a BSc Honours/ Major in Environmental Science, a Minor in Environmental Studies, a Double Major in Environmental Science and Community Design, and a Double Major or Combined Honours in Environmental Science and any Major. Honours subject in the Faculty of Arts and Social Sciences (FASS). The Faculty of Arts and Social Sciences (FASS), the Faculty of Science, the Faculty of Computer Science and the Faculty of Architecture and Planning offer a Minor in Environmental Studies which is administered through Environmental Programs.

Environmental Science applies the findings and principles from multiple disciplines to environmental questions and problems. Environmental Science, by nature, is multidisciplinary and interdisciplinary. Most environmental scientists develop expertise in a particular discipline, and work co-operatively with specialists in other disciplines to solve environmental problems. They work in a variety of institutions in both the public and private sectors: municipal, provincial and federal government departments, consulting and engineering companies, development aid organizations in the non-governmental sector and activist community organizations. In all of these institutions they must integrate their scientific knowledge into the prevailing political, economic and legal systems.

The classes required for the BSc Environmental Science stress the links among the fields of study that the students acquire. Thus, students graduate with a combination of depth and breadth of knowledge and the ability to solve problems in the real world. Working on environmental problems usually involves teamwork with others from related and unrelated fields. At least two of our core classes in this field stress group work, with both multi- and interdisciplinary components.

II. Degree Programs
A strong high school background in as many sciences (mainly Biology, Chemistry, Physics) as possible is an asset, as are senior high school classes in Geography, Mathematics and English. For those considering these programs it is important to keep a number of options open as long as possible by taking the appropriate classes in Year 1. In each of the Science degree programs outlined below, the Dalhousie Integrated Science Program (DISP) is highly recommended. In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 65 of this calendar.

A. BSc (20 credit) Environmental Science
The requirements for a BSc Environmental Science are the following:

1. First Year
Students have the option to take DISP or the Environmental Science Foundation Program.

2. Common Core Classes - 7 Credits
Completed at various times over a 4 year degree program, the Common Core Classes introduce students to the scope and magnitude of environmental science and are designed to provide students with an appreciation of the scientific, cultural, economic, historic, legal and social aspects of environmental issues. These classes involve 5 credits in ENVS, 1 credit in ECON to satisfy the Social Science requirement and 1 credit in PHIL to satisfy the Humanities requirement.

3. Area of Emphasis (AOE) - 4 Credits
After completing the first year, students must choose an Area of Emphasis within the Faculty of Science. Students may choose from:

- Earth Sciences
- Environmental Economics
- Marine Biology
- Biology
- Ecology
- Chemistry and the Environment
- Statistics and the Environment
- Atmospheric Science
- Oceanography

A listing of the required courses for each Area of Emphasis is available from the Director of Environmental Programs or from the Environmental Programs website (www.dal.ca/environment).

4. Electives
By presenting a wide range of topics inherent in the theme of human-environment relationships in the Common Core and Area of Emphasis classes, students will be encouraged to assess their own interests and learning goals. Through the selection of electives, students can prepare themselves for learning experiences and careers that will meet their individual needs.

Suggested template and Required Courses for BSc Environmental Science

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall Term</td>
<td>Winter Term</td>
</tr>
<tr>
<td>BIOL 1010</td>
<td>BIOL 1011</td>
</tr>
<tr>
<td>BIOL 1020</td>
<td>BIOL 1022</td>
</tr>
<tr>
<td>ECON 1101</td>
<td>ECON 1102</td>
</tr>
<tr>
<td>ECON 1102</td>
<td>ECON 1103</td>
</tr>
<tr>
<td>ENVS 1001</td>
<td>ENVS 1002</td>
</tr>
<tr>
<td>ENVS 1002</td>
<td>ENVS 1003</td>
</tr>
<tr>
<td>ENVS 1003</td>
<td>ENVS 1004</td>
</tr>
<tr>
<td>ENVS 1004</td>
<td>ENVS 1005</td>
</tr>
<tr>
<td>ENVS 1005</td>
<td>ENVS 1006</td>
</tr>
<tr>
<td>ENVS 1006</td>
<td>ENVS 1007</td>
</tr>
<tr>
<td>ENVS 1007</td>
<td>ENVS 1008</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>Year 3</th>
<th>Year 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall Term</td>
<td>Winter Term</td>
</tr>
<tr>
<td>ENVS 3001</td>
<td>ENVS 3002</td>
</tr>
<tr>
<td>ENVS 3002</td>
<td>ENVS 3003</td>
</tr>
<tr>
<td>ENVS 3003</td>
<td>ENVS 3004</td>
</tr>
<tr>
<td>ENVS 3004</td>
<td>ENVS 3005</td>
</tr>
<tr>
<td>ENVS 3005</td>
<td>ENVS 3006</td>
</tr>
<tr>
<td>ENVS 3006</td>
<td>ENVS 3007</td>
</tr>
<tr>
<td>ENVS 3007</td>
<td>ENVS 3008</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.

<table>
<thead>
<tr>
<th>Year 3</th>
<th>Year 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall Term</td>
<td>Winter Term</td>
</tr>
<tr>
<td>ENVS 4001</td>
<td>ENVS 4002</td>
</tr>
<tr>
<td>ENVS 4002</td>
<td>ENVS 4003</td>
</tr>
<tr>
<td>ENVS 4003</td>
<td>ENVS 4004</td>
</tr>
<tr>
<td>ENVS 4004</td>
<td>ENVS 4005</td>
</tr>
<tr>
<td>ENVS 4005</td>
<td>ENVS 4006</td>
</tr>
<tr>
<td>ENVS 4006</td>
<td>ENVS 4007</td>
</tr>
<tr>
<td>ENVS 4007</td>
<td>ENVS 4008</td>
</tr>
</tbody>
</table>

442 Environmental Programs
Honours Program: Students must have a minimum of 9 and maximum of 12 credits of ENVS courses above the 1000 level. Students who have not fulfilled this requirement in their Common Core and Area of Emphasis Credits must choose enough electives from the list of Approved Environmental Science Equivalent Courses to meet this requirement (courses do not have to have an ENVS designation, but must be picked from a list of approved electives to count toward the minimum and maximum requirements for the program). A list of approved Environmental Science Equivalent Courses is available from the Director of Environmental Programs or online (www.dal.ca/environment). Each ENVS, ENVS-equivalent and Area of Emphasis credit above the 1000 level must be passed with a grade “C” or better, and the cumulative GPA for these classes must be at least 3.00 (“B”).

Major Students: Students must have a minimum of 7 and maximum of 10 credits of ENVS courses above the 1000 level. Students who have not fulfilled this requirement in their Common Core and Area of Emphasis credits must choose enough electives from the list of Approved Environmental Science Equivalent Courses to meet this requirement (courses do not have to have an ENVS designation, but must be picked from a list of approved electives to count toward the minimum and maximum requirements for the program). A list of approved Environmental Science equivalent courses is available from the Director of Environmental Programs or online (www.dal.ca/environment).

B. BSc (20 credit) Double Major in Environmental Science and Community Design

The requirements for the BSc Double Major in Environmental Science and Community Design are the following:

1. 1000-level
   Students are required to take the following credits:
   - BIOL 1010.03/1011.03 or 1020.03/1021.03
   - MATH 1000.03
   - MATH 1010.03 or MATH 2000.03 or STAT 1060.03
   - SCIE 1111.03 or another approved writing requirement class.
   - PLAN 1001.03
   - PLAN 1002.03
   - ECON 1101.03 (usually taken in second year)
   - ECON 1102.03 (usually taken in second year)
   - 1 full credit in a first year single subject chosen from (chemistry, physics, earth sciences, oceanography, environmental science)

2. Core Requirements
   Completed at various times over a 4 year degree program, the Core Requirements introduce students to the scope and magnitude of environmental science and community design (see template).

3. Electives
   By presenting a wide range of topics inherent in the theme of human-environment relationships in the Common Core classes, students will be encouraged to assess their own interests and learning goals. Through the selection of electives, students can prepare themselves for learning experiences and careers that will meet their individual needs.

Suggested template and required courses for BSc Double Major in Environmental Science and Community Design:

Year 1

<table>
<thead>
<tr>
<th>Fall Term</th>
<th>Winter Term</th>
</tr>
</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 1010 or 2030 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>
<td></td>
</tr>
</tbody>
</table>

Year 2

<table>
<thead>
<tr>
<th>Fall Term</th>
<th>Winter Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 1101</td>
<td>ECON 1102</td>
</tr>
<tr>
<td>BIOL 2060</td>
<td>STAT 2060 OR STAT 2080</td>
</tr>
<tr>
<td>PLAN 2002</td>
<td>PLAN 2005</td>
</tr>
<tr>
<td>PLAN 2001</td>
<td>PHL 2480</td>
</tr>
<tr>
<td>elective</td>
<td>ENVS 3001</td>
</tr>
</tbody>
</table>

Year 3

<table>
<thead>
<tr>
<th>Fall Term</th>
<th>Winter Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVS 3501</td>
<td>ENVS 3502</td>
</tr>
<tr>
<td>ENVS 3200</td>
<td>PLAN 3005</td>
</tr>
<tr>
<td>BIOL 3060</td>
<td>PHL 2485</td>
</tr>
<tr>
<td>PLAN 3001</td>
<td>elective</td>
</tr>
<tr>
<td>elective</td>
<td>elective</td>
</tr>
</tbody>
</table>

Year 4

<table>
<thead>
<tr>
<th>Fall Term</th>
<th>Winter Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLAN 3002</td>
<td>PLAN 3006</td>
</tr>
<tr>
<td>PLAN elective</td>
<td>ENVS elective</td>
</tr>
<tr>
<td>ENVS 4001</td>
<td>ENVS elective</td>
</tr>
<tr>
<td>elective</td>
<td>elective</td>
</tr>
<tr>
<td>elective</td>
<td>elective</td>
</tr>
</tbody>
</table>

C. BSc (20 credit) Double Major or Combined Honours in Environmental Science

Students may complete a BSc Double Major/Combined Honours in Environmental Science and any Major/Honours subject from the Faculty of Arts and Social Science (FASS). The requirements are as follows:

1. First Year
   Students have the option to take DISP or the Environmental Science Foundation Program (see template).

2. Core Requirements
   a) General STAT 2060.03 or STAT 2080.03
   b) Subject A: A minimum of 6 and maximum of 9 credits above 1000-level in Environmental Science are required including
      - BIOL 2060.03
      - BIOL 3060.03
      - PHL 2480.03
      - PHL 2485.03
      - ENVS 2001.03
      - ENVS 3001.03
      - ENVS 3200.03
      - ENVS 3501.03
      - ENVS 3502.03
      - ENVS 4001.03
   c) Subject B: Chosen from any Major/Honours subject in the Faculty of Arts and Social Sciences. A minimum of 4 and maximum of 7 credits above 1000-level are required. See Subject B department for specific requirements.
3. Electives

By presenting a wide range of topics inherent in the theme of human-environment relationships in the Common Core classes, students will be encouraged to assess their own interests and learning goals. Through the selection of electives, students can prepare themselves for learning opportunities and careers that will meet their individual needs.

Suggested template and required courses for BSc Double Major in Environmental Science and FASS subject.

**Year 1**

<table>
<thead>
<tr>
<th>Fall Term</th>
<th>Winter Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVS 1000</td>
<td>ENVS 1001</td>
</tr>
<tr>
<td>BIOL 1010 or 1020</td>
<td>BIOL 1011 or 1021</td>
</tr>
<tr>
<td>MATH 1000</td>
<td>MATH 1000 or STAT 1001</td>
</tr>
</tbody>
</table>

First year class in Subject B if required for upper-level classes (1 full credit)

3 full credit in each of 2 science subjects chosen from Chemistry, Physics, Environmental Science, Earth Sciences, Oceanography, and Economics.

**Year 2**

<table>
<thead>
<tr>
<th>Fall Term</th>
<th>Winter Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVS 1101</td>
<td>ENVS 1102</td>
</tr>
<tr>
<td>PHIL 2480</td>
<td>PHIL 2485</td>
</tr>
<tr>
<td>BIOL 2000</td>
<td>STAT 2060 or STAT 2080</td>
</tr>
</tbody>
</table>

Subject B Subject B

**SCIE 1111** if unit requirement was not satisfied with first year subject B class

ENVS 2001 - Week Environmental Science Foundation Program in late April or late August

(1) Students who have taken ENVS 1101 and 1102 in Year One are required to substitute ENVS 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 3501</td>
<td>ENVS 3502</td>
</tr>
<tr>
<td>ENVS 3500</td>
<td>Subject B</td>
</tr>
<tr>
<td>BIOL 3500</td>
<td>Subject B</td>
</tr>
</tbody>
</table>

Subject B Subject B

<table>
<thead>
<tr>
<th>Fall Term</th>
<th>Winter Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVS elective*</td>
<td>ENVS elective*</td>
</tr>
</tbody>
</table>

Subject B Subject B

**Year 4 Double Majors**

<table>
<thead>
<tr>
<th>Fall Term</th>
<th>Winter Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVS 4000</td>
<td>ENVS 4001</td>
</tr>
</tbody>
</table>

Subject B Subject B

ENVS elective* electives

Subject B Subject B

<table>
<thead>
<tr>
<th>Fall Term</th>
<th>Winter Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVS elective*</td>
<td>ENVS elective*</td>
</tr>
</tbody>
</table>

Subject B Subject B

**Year 4 Combined Honours**

<table>
<thead>
<tr>
<th>Fall Term</th>
<th>Winter Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVS 4901</td>
<td>ENVS 4902</td>
</tr>
</tbody>
</table>

Subject B Subject B

ENVS elective* electives

Subject B Subject B

---

*Any ENVS or ENVS equivalent class from the Faculty of Science

**D. BA, BSc, BCD (20-credit), BSc with Minor in Environmental Studies**

Students in the following 20-credit degree programs may do a Minor in Environmental Studies:

- Major or Honours Bachelor of Science, except Environmental Science
- Major or Honours Bachelor of Arts
- Honours Bachelor of Community Design
- Major or Honours Bachelor of Computer Science, with/without Co-op
- Double Major or Combined Honours in any two departments in the Faculty of Arts and Social Science or the Faculty of Science, except Environmental Science.

Students doing a Minor in Environmental Studies must get approval of their class selections from the Director of Environmental Programs. The rules governing the selection of classes are given below.

1. **BA with Minor in Environmental Studies**

See listing in Faculty of Arts and Social Sciences section of this calendar (page 110).

2. **BSc with Minor in Environmental Studies**

BSc students must take three full credits of required classes, plus two full credits from the approved list of elective classes below. Note: In planning their programs students must take into account the prerequisites which apply to many of the elective classes listed below. The following rules apply to the selection of classes for the Minor:

- No class can fulfil a requirement of both the Major or Honours subject and the Minor.
- A maximum of one half-credit class in the Major/Honours subject (i.e., a class beyond those required for the Major/Honours) can count toward the Minor.
- At least one half credit beyond the required classes must be at the 3000 level or above.

Additions to the Electives list will be made as relevant classes become available.

**Required Classes:**

- ENVS 1000: Introduction to Environmental Studies OR Dalhousie Integrated Science Program, SCIE 1100, 1101, 1102
- PHIL 2480: Environmental Ethics
- ENVS 3001: Environmental Problem Solving I
- ENVS 3002: Environmental Problem Solving II
- ENVS 3003: Introduction to Environmental Law

Electives (2 full credits from the list)

- BIOL 2601: The Flora of Nova Scotia
- BIOL 2603: Introduction to Marine Biology
- BIOL 3020: Plants in the Human Landscape
- BIOL 3200: Economic Botany, Plants and Civilization
- BIOL 3201: Nature Conservation
- BIOL 3xxx: Any ecology-related class at 3000 level or above
- BIOC 4001: Sustainability and Global Change
- BIOC 4002: Environmental Microbiology
- BIOC 4003: Environmental Microbiology
- CHEM 2505: Environmental Chemistry
- CHEM 4201: Environmental Chemistry
- CHEM 4202: Atmospheric Chemistry
- CTMP 3220: The Aesthetics of Nature
- CTMP 3225: Sediments and Sedimentary Rocks
- CTMP 3240: Environmental and Resource Geology I
- CTMP 3260: Quaternary Sedimentary Environments
- CTMP 3400: Fundamentals of Hydrogeology
• ERTH 3420.03: Practical Hydrology
• ERTH 3410.03: Environmental Geology 2
• ERTH 3200.03: Geochemistry of Aquatic Environments
• ERTH 3440.03: Geomorphology
• ERTH 3500.03: Geoscience Information Management
• ERTH 4490.03: Principles of Geochemistry
• ERTH 4490.03: Introduction to Landscape Simulation
• ERTH 4100.03: Micropaleontology and Global Change
• ERTH 4102.03: GIS Applications to Environmental and Geological Sciences
• ERTH 4103.03: Environmental Remote Sensing
• ECON 2160.03: Economics of Global Warming
• ECON 2363.03: Regional Development
• ECON 3032.03: Resource Economics
• ECON 3355.03: Environmental Economics
• ENVS 2401.03: Analytical Environmental Science and Social Responsibility
• ENVS 3401.03: Environmental Science Internship
• ENVS 401.03: Environmental Law II: Natural Justice and Unnatural Acts
• ENVS 3220.03: International Law for Environmental Scientists
• ENVS 3225.03: Plants in the Human Landscape
• ENVS 3226.03: Economic Botany, Plants and Civilization
• ENVS 3401.03: Environmental Site Investigation
• ENVS 3301.03: Pollution Prevention
• ENVS 3300.03: Human Health and Sustainability
• ENVS 3500.03: Geoscience Information Management
• ENVS 3415.03: Methods in Ecology
• ENVS 3602.03: Applied Field Methods in Fish Ecology
• ENVS 3401.03: Directed Readings in Environmental Science
• ENVS 4401.03: Environmental Impact Assessment
• GEOL 2000.03: Climate Change
• HIST 3502.03: Technology and History in North America
• HIST 3510.03: The Fisheries of Atlantic Canada
• INTD 2001.03: Introduction to Development I
• INTD 2002.03: Introduction to Development II
• INTD 3504.03: Sustainable Development in Cuba
• MARIT 3005.03: Introduction to Marine Biology.
• MIRC 4004.03: Marine Microbiology
• OCEA 2000.06: The Blue Planet
• OCEA 2400.03: Climate Change
• OCEA 4110.03: Introduction to Geologic Oceanography
• OCEA 4120.03: Introduction to Physical Oceanography
• OCEA 4150.03: Introduction to Biological Oceanography
• PHL 2450.03: Justice in Global Perspective
• PHL 2460.03: Ethics and the Environment
• PHYS 2450.03: Astronomy I: The Sky and Planets
• PHYS 2480.03: Climate Change
• PHYS 2510.03: Conservation and the Environment
• PLAN 3005.03: Land Use and Urban Planning
• PLAN 3100.03: Urban Ecology
• PLAN 3200.03: Landscape Design
• PLAN 4105.03: Transportation Planning
• POLI 3305.03: Politics of the Environment
• POLI 3300.03: Politics of the Sea I
• POLI 3305.03: Politics of the Sea II
• POLI 3502.03: Environment and Culture
• POLI 3503.03: Environment and Culture
• HIST 3211.03: Continuity and Change in Rural Society
• SOAS 3210.03: Coastal Communities in the North Atlantic
• STAT 3345.03: Environmental Risk Assessment

Possible template for Science students with Minor in Environmental Studies.

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>ENVS 1000 or DISP (SCIE 1502.21, SCIE 1504.27, or SCIE 1510.33)</td>
<td></td>
</tr>
<tr>
<td>Year 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 3</td>
<td></td>
<td>ENS 3200</td>
</tr>
<tr>
<td>Year 4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Bachelor of Community Design with Minor in Environmental Studies

See listing in Faculty of Architecture and Planning section of this calendar (page 57).

4. BCSc with a Minor in Environmental Studies

BCSc students must take three full credits of required classes, plus two full credits from the approved list of elective classes below. Note: In planning their programs students must take into account the prerequisites which apply to many of the elective classes listed below. The following rules apply to the selection of classes for the Minor:

- No class can fulfill a requirement of both the Major or Honours subject and the Minor.
- At least one half credit beyond the required classes must be at the 3000 level or above.
- Additions to the following lists will be made as relevant classes become available.

**Required classes:**
- ENVS 1000.06: Introduction to Environmental Science OR DISP (SCIE 1502.21, 1504.27 or 1510.33)
- ENVS 2400.03: Environmental Ethics
- ENVS 3001.03: Environmental Problem-Solving I
- ENVS 3502.03: Environmental Problem-Solving II
- ENVS 3220.03: Introduction to Environmental Law

**Electives (2 full credits from the list):**
- BOL 2605.03: Introduction to Marine Biology
- BOL 3225.03: Plants in the Human Landscape
- BOL 3226.03: Economic Botany, Plants and Civilization
- BOL 3601.03: Nature Conservation
- BOL 4005.03: Sustainability and Global Change
- CHEM 2350.03: Environmental Chemistry I
- CHEM 4320.03: Environmental Chemistry
- CHEM 4595.03: Atmospheric Chemistry
- ECON 2205.03: Agricultural Economics
- ECON 2420.03: Environmental and Resource Science I
- ERTH 2420.03: Environmental and Resource Science I
- ERTH 3440.03: Geomorphology
- ERTH 4445.03: Introduction to Landscape Simulation
- ENVS 2480.03: Environmental Ethics
- ENVS 3300.03: Environmental Science Internship
- ENVS 3502.03: Environmental Law II: Natural Justice and Unnatural Acts
- ENVS 3220.03: International Law for Environmental Scientists
- ENVS 3225.03: Plants in the Human Landscape
- ENVS 3226.03: Economic Botany, Plants and Civilization
- ENVS 3300.03: Human Health and Sustainability
- ENVS 3500.03: Geoscience Information Management
- ENVS 3415.03: Methods in Ecology
- ENVS 3602.03: Applied Field Methods in Fish Ecology
- ENVS 3401.03: Directed Readings in Environmental Science
- ENVS 4401.03: Environmental Impact Assessment
- GEOL 2000.06: The Blue Planet
- GEOL 2400.03: Climate Change
- GEOL 4110.03: Introduction to Geologic Oceanography
- GEOL 4120.03: Introduction to Physical Oceanography
- GEOL 4150.03: Introduction to Biological Oceanography
- PHIL 2450.03: Justice in Global Perspective
- PHIL 2460.03: Ethics and the Environment
- PHYS 2450.03: Astronomy I: The Sky and Planets
- PHYS 2480.03: Climate Change
- PHYS 2510.03: Conservation and the Environment
- PLAN 3005.03: Land Use and Urban Planning
- PLAN 3100.03: Urban Ecology
- PLAN 3200.03: Landscape Design
- PLAN 4105.03: Transportation Planning
- POLI 3305.03: Politics of the Environment
- POLI 3300.03: Politics of the Sea I
- POLI 3305.03: Politics of the Sea II
- POLI 3502.03: Environment and Culture
- SOAS 3210.03: Coastal Communities in the North Atlantic
- STAT 3345.03: Environmental Risk Assessment

Environment Programs 445
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 ethical, economic, technical, and social aspects of these problems, and explores the role of decision makers in these situations. Students will visit Nova Scotia for observation and gathering data. Each activity will be supported and evaluated by a professional scientist.

ENVS 1000X/Y.06: Introduction to Marine Biology

The course content will cover the diversity of marine life, from plankton to whales. Special emphasis will be placed on the role of the oceans in the Earth's ecosystem. The course will be taught in a laboratory setting, with a field component.

ENVS 1001.03: Environmental Science Field School

This class is an extensive field course delivered the first week after spring break. This course 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 their papers at the end of the week.

ENVS 1000.06: Environmental Studies, Honours/Major/Double Major/Combined Honours in Environmental Science

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 their papers at the end of the week.

ENVS 1000.06: Environmental Studies

This course introduces students to the concepts and methods for analyzing environmental science issues. The course is a survey of the interdisciplinary and multidisciplinary approaches in Environmental Science. Students will need to become both educated and skilled. The objective of the course is to introduce analytical approaches for defining and resolving environmental problems and issues; introduce students to the requirements of scholarly research and communication; and introduce the Environmental Science Program, culture, and associated faculty members. Students will apply their analytical knowledge in class lessons, tutorials, assignments, and exams.

ENVS 3000.03: Environmental Science Internship

This class is an intensive field course. The course 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 their papers at the end of the week.

ENVS 3001.03: Analytical Environmental Science and Social Responsibility

This course introduces students to the concepts and methods for analyzing environmental science issues. The course is a survey of the interdisciplinary and multidisciplinary approaches in Environmental Science. Students will need to become both educated and skilled. The objective of the course is to introduce analytical approaches for defining and resolving environmental problems and issues; introduce students to the requirements of scholarly research and communication; and introduce the Environmental Science Program, culture, and associated faculty members. Students will apply their analytical knowledge in class lessons, tutorials, assignments, and exams.
ENV 3210.03: Environmental Law II: Natural Justice and Unnatural Acts.
Offered every second year. Next offered winter 2009. Environmental Science in Canada is largely defined by statutes and regulations. Environmental Law II expands on the Introduction to Environmental Law.

ENV 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.

ENV 3220.03: International Environmental Law for Scientists.
Offered every second year. Next offered winter 2010. This is a ‘strange law’ because under the doctrine of international law there is no inherent enforcibility; the problems posed by environmental issues are global requiring solutions that are only achievable through multi-lateral collaboration; the resulting harms is potentially catastrophic and is experienced on a local level. Over the past 20 years, we have witnessed an explosion of international agreements intended to either redress or avoid environmental disasters. Some of these are based on sound science, some on politics. How do these two elements mix at the international level? Can international law accommodate the inherent uncertainty in scientific hypotheses? This course will explore the relationship of modern states in a world where political boundaries are disappearing in the realms of commerce, communication and the environment.

ENV 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.

ENV 3226.03: Economic Botany, Plants and Civilization.
The course examines the botany, domestication, development, distribution, production, processing, history and economic and social impacts of plants which have become major world crops. Topics include the cereals (corn, rice and wheat), flowers (tulips and orchids), fruits (apple, blueberry, citrus, grape, olive, pineapple and strawberry), vegetables (alliums, beets, legumes, lettuce, potato and tomatoes) and industrial crops (cotton, hemp, nuber and sugar), and the development of novel bioproducts (bio-fuels, etc) from plant sources. Course includes field trips and laboratories.

ENV 3301.03: Pollution Prevention.
Offered every second year. Next offered winter 2009. Identification and management of contaminated sites can impact our world from environmental and socio-economic perspectives. Over the past several decades, awareness of contaminated sites has increased in our society. Legislation, professional standards and liability have followed suit. Today, it is key for environmental scientists, engineers and planners to have a basic understanding of the issues surrounding environmental site investigation. In this class, we will use case studies to learn the components of environmental site assessments, risk assessments, site remediation and monitoring. We will also examine the regulatory context and environmental liability associated with contaminated sites. Research projects and guest speakers focusing on current examples will augment the class discussions. There will be a minimum of two field trips to reinforce learning objectives and provide practical experience.

ENV 3303.03: Environmental Site Investigation.
Offered every second year. Next offered winter 2009. Identification and management of contaminated sites can impact our world from environmental and socio-economic perspectives. Over the past several decades, awareness of contaminated sites has increased in our society. Legislation, professional standards and liability have followed suit. Today, it is key for environmental scientists, engineers and planners to have a basic understanding of the issues surrounding environmental site investigation. In this class, we will use case studies to learn the components of environmental site assessments, risk assessments, site remediation and monitoring. We will also examine the regulatory context and environmental liability associated with contaminated sites. Research projects and guest speakers focusing on current examples will augment the class discussions. There will be a minimum of two field trips to reinforce learning objectives and provide practical experience.

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 corroding the environmental conditions required to sustain human beings as well as the many species with whom we share this planet. Weekly laboratory sessions will address a variety of topics (biogeochemistry (C2S, G2F, remote-sensing), and epidemiological tools can be used to assess the links between the health of human populations and the environment. The course emphasizes the practical aspects of these tools and methods.
and the health of the environment, and how to use these tools for environmental health research.

INSTRUCTOR(S): Staff
FORMAT: Lecture 3.0 hours, Lab 1.5 hours
PREREQUISITE: Must be a third year student or have permission of instructor

ENVS 3500.03: Geoscience Information Management.
Geographic Information Systems (GIS), as a tool for the management of georeferenced data, have become indispensable for disciplines where location of objects and patterns of processes is important. GIS plays a significant role in a wide range of applications, from modeling, to analysis and prediction, to decision making. The course is aimed at a broad base of potential students and classes 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 water and vector GIS, and the integration of databases and GPS (global positioning systems) data into GIS. Exercises focus 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 5600

ENVS 3501.03: Environmental Problem Solving I.
This course 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 course will illustrate the interrelationships among environmental issues that are often perceived to be isolated from one another, but in fact are linked in ecological, economic, and social systems.

INSTRUCTOR(S): T. Wright
PREREQUISITE: ENVS 1000.06 (with a grade of B or better) or ENVS 2003.03. Must be a 3rd year student OR have permission of instructor

ENVS 3502.03: Environmental Problem Solving II: The Campus as a Living Laboratory.
In this course students apply the skills and tools of interdisciplinary research and problem solving to current real-life problem on Dalhousie University’s campus. The campus serves as a living laboratory for identifying, evaluating, and assessing indicators of progress toward greater campus sustainability. Working in groups, students apply the environmental problem-solving models to chosen case studies. Materials introduced in the course will illustrate the interrelationships among environmental issues that are often perceived to be isolated from one another, but in fact are linked in ecological, economic, and social systems. Students then make recommendations for improvements on the basis of their analysis. Upon completion of the course, students should be well prepared to apply their expertise to environmentally related problems, take on the challenges of proposal-writing, systems analysis, research design and implementation, and report preparation required for successful completion of ENVS 4500.

INSTRUCTOR(S): T. Wright
PREREQUISITE: ENVS 3501.03 or permission of instructor

ENVS 3615.03: Methods in Ecology.
This hands-on class provides practical experience in various skills needed to conduct ecological research and prepare scientific papers. Through participation in several class projects, students gain experience conducting field studies and laboratory experiments. Projects, designed by the instructor, include a wide range of ecological questions, techniques, organisms, and ecosystems. Specific topics may include the spatial distributions of organisms, animal orientation and movement, disturbance and succession in forests, function of animal behavior, and microbial ecology. Students collect, analyze, and interpret their own data and summarize their findings in formal scientific reports. Evaluation of students is based on written assignments and participation. No exams are given. This class enables students to put into practice what they have learned in lecture-based classes. Lectures are limited to background and techniques necessary to conduct each project and comprehensive lists of articles are provided for each project. Instruction includes use of computer packages for data analysis (e.g., Excel, Statat, Primer) and writing (e.g., Formatting papers using Word). This course is recommended for any student interested in fields such as, environmental science, field sampling, and graduate studies in ecology. Third-year honours students will find this class useful for conducting their own field research. The class replaces BIOL 3614 (Field Ecology). Additional fees are charged to cover the cost of field trip transportation.

FORMAT: Field and lab intensive
PREREQUISITE: BIOL 2001, STAT 1000 and STAT 2080 and at least one diversity class (e.g., BIOL 2003, 2002 or 2003)
CROSS-LISTING: BIOL 3615
EXCLUSION: BIOL 3614

ENVS 3624.03: Urban Freshwater Systems.
Urban ecology is a new branch of environmental science that concentrates on understanding the natural systems of urban areas and the stresses that face them. Waterscourses often can be the richest of urban wildlfe sites. This summer field class will introduce students to the ecology of freshwater systems in the context of their urban watersheds. This course applies ecology course is field-intensive, and will concentrate on the lakes and rivers of the assess ecosystem health in several lakes and rivers. In the field, they will monitor water quality and characterize resident communities of plants and animals. Some sampling will involve boats and canoes, and a unit on boating safety will be included. Evaluation will be based on individual and group research reports which will be written up as scientific papers and presented to the class. An extra fee will be charged to cover the costs of transportation and field expenses.

CROSS-LISTING: BIOL 3624.03
FORMAT: Field and lab intensive
PREREQUISITE: BIOL 2006.03 and (STAT 1000.03 or DSP 1006.03)
EXCLUSION: BIOL 3614

ENVS 3632.03: Applied Field Methods in Fish Ecology.
This summer class prepares students for designing and conducting field research on lakes. Fieldwork will concentrate on data trips to streams and shallow water marine/freshwater habitats. Topics covered will include techniques for collecting fish, designing and conducting surveys, studying fish behavior, 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 (data quality, quantity, costs and ethical) and environmental considerations. Students will keep field notebooks, generate computer files of collected data, take problem-solving quizzes, and write a methodological research proposal. The class includes a two-night camping trip and additional fees to cover transportation and camping expenses.

FORMAT: Field intensive. Lecture and lab.
PREREQUISITE: BIOL 2006.03 and STAT 1000.03 or their equivalents or permission of instructor
CROSS-LISTING: MAR 3623.03, BIOL 3623.03

ENVS 3664.03: Intertidal Ecology and Diversity.
This class explores ecological concepts as they apply to a variety of intertidal habitats, including rocky shores, tidal flats and sandy beaches. Primary emphasis is placed on description and quantification of diversity with the appropriate sampling techniques for flora and fauna. Generally, field sampling and measurements will be followed by further analysis, e.g., identification of successes and invertebrates, in the laboratory. Proper use of identification literature and understanding of trophicomic relationships between the laboratory. Proper use of identification literature and understanding of trophicomic 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.
Environmental Programs   449

Faculty of Science

through application in the field. The course format incorporates introductory lectures, field work and laboratory analysis. Assessment will be through reports of selected lab and field work, oral presentations and in-class discussions, and a final independent project on a topic of choice relating to marine benthic biodiversity. Also, students are introduced to the ‘Marine Invertebrae Diversity Initiative’, and will each contribute a species profile.

CROSS-LISTING: BIOE 3664.03

ENVS 3801.03: Directed Readings in Environmental Science.

This class is intended for third and fourth-year students who wish to study in an area of environmental science not covered in other classes offered at the university. The class involves independent study, and should be supervised by a regular faculty member. The class content and marking scheme must be submitted to and be approved by Director of Environmental Programs in the Faculty of Science during the first week of the academic term in which the credit is being sought. It is the student’s responsibility to consult with Environmental Programs at least 2 weeks prior to the term in which the Directed Readings course will take place.

PREREQUISITE: ENVS 1000X/Y.06 or ENVS 3801.03 and third year student status.

CROSS-LISTING: BIOL 3664.03

ENVS 3802.03: Directed Readings in Environmental Science.

ENVS 4001.03: Environmental Impact Assessment.

This class provides an opportunity for the students to explore all aspects of environmental impact assessment (EIA) as practiced in Canada and in other countries. The class traces the development of EIA over the past 30 years and critically examines the scientific, procedural and political dimensions. NOTE: Students must be enrolled in a BSc major with Minor in Environmental Studies, or BSc Honours/Major/Combined Honours/ Double Major in Environmental Science Program.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: ENVS 1000X/Y.06 or ENVS 2001.03

CROSS-LISTING: ENV 5001.03, CHEE 4772.03

ENVS 4700.03: Environmental Toxicology.

The objective of this course is to introduce students to the principles of environmental toxicology including the sources, fate, and effects of chemicals in the environment. Environmental effects of chemicals will be examined at multiple levels including that of the ecosystem, population, organism, cellular, and molecular mechanism of chemical action. Students will learn about the major groups of contaminants that organisms, including humans, are exposed to in their environment. Students will master fundamental toxicological concepts including dose-response relationships, chemical exposure pathways, bioavailability, distribution and storage of toxicants, biomagnification and elimination of toxicants, target organ toxicity, and bio-concentration through the food web. The role of contaminants in teratogenesis, mutagenesis, and carcinogenesis will be examined through risk assessment. Through this course, the students will acquire a deep understanding of the molecular mechanism by which contaminants impact the environment.

INSTRUCTOR(S): S. Bard

FORMAT: Lecture/seminar

PREREQUISITE: CHEM 1011.03 and CHEM 1012.03 or DISP, BIOL 2060.03 and BIOL 3060.03 or permission of instructor

ENVS 4901.03: Honours Thesis Part A.

Mastery of the basic skills of problem definition, proposal preparation and project implementation is the key to dealing with a wide range of ‘real-life’ situations, both on and off the career path. This class is required for students in the Honours Environmental Science degree program. The course will include lectures and tutorials that take students through the stages of proposal writing, including research design and choice of methodologies, and an independent environmental science research project carried out under the supervision of an approved faculty member.

ENVS 4902.03: Honours Thesis Project Part B.

Independent research project carried out under the supervision of an approved faculty member or affiliated research scientists.

FORMAT: Independent research

PREREQUISITE: ENVS 4901.03

ENVS 4950.03: Advanced Topics in Environmental Science.

This class will address current interdisciplinary issues in environmental science with topics varying each semester. Details as to the content of the class will be announced by Environmental Programs at least one month in advance of the course offering. The course will be taught by Dalhousie faculty, and/or visiting scholars.

FORMAT: Lecture/seminar

PREREQUISITE: This class is restricted to students in the Honours/ Major/Double Major in Environmental Science, or permission of the Director of Environmental Programs.

IV. Co-op Workterms

Each workterm is a pre-requisite of the succeeding workterm. Workterm registration requires a signature from the Science Co-op Coordinator. See Environmental Programs Co-op Advisor for details.

ENVS 8891.00: Co-op Workterm 1.

ENVS 8892.00: Co-op Workterm 2.

ENVS 8893.00: Co-op Workterm 3.

ENVS 8894.00: Co-op Workterm 4. (optional)
Faculty of Science

450 Geography

science of finding one's way through both natural and built landscapes. Maps, which are visual representations of our world, are essential aids to GEOG 2000.3: Cartography.

CROSS-LISTING: ERTH 1060.03
FORMAT: Lecture 3 hours plus occasional field trips
PREREQUISITE: ECON 1101.03 or 1102.03
NOTE: This class cannot be used to meet the life or physical science subject requirement for the BA degree.

GEOG 2011.03: Landscape Analysis.
Designers and planners need to understand the influence of physical, biological, and cultural systems on landscape evolution, and the relevance of that information in analysing land capability. Students develop inventory and analysis tools for understanding environmental processes and their implications for design and planning. There will be field trips and a lab component.

INSTRUCTOR(S): P. Manuel
FORMAT: Lecture/lab 3 or 4 hours
PREREQUISITE: Recommended EDTH 1010.03, 2010.03, or 3010.03
CROSS-LISTING: PLAN 2011.03

GEOG 2070.03: Area Studies on Mexico and Central America.
Following an examination of the indigenous heritage, and the colonial legacy of the conquistadors, the class deals principally with the contemporary period, examining the Mexican Revolution and its aftermath, the Somocas 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: HSB 2305.03

GEOG 2100XY.06: Environment and Culture.
Concerns 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 effects of actions 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 1000.06 or SOSA 1100.06 or SOSA 1200.06
CROSS-LISTING: SOSA 2100.06

GEOG 2336.03: Regional Development.
Most countries have rich and poorer regions. Economic development policies, issues, and theories facing more industrialized nations are analyzed with particular focus on Canada (especially the Atlantic region), the European Economic Community, U.S.A., Japan, and Australia. Approved with Canadian Studies. In addition to the prerequisites, the student is advised to take one class in Political Science and one class in Canadian History before taking ECON 3336.

FORMAT: Seminar 2.5 hours/tutorials
PREREQUISITE: ECON 1101.03 and 1102.03
CROSS-LISTING: ECON 2336.03

This class primarily uses hands-on assignments to investigate how maps are constructed and interpreted (including concepts of spatial reference systems, scale, projections, symbols, and design), how maps can distort perceptions, and can influence one's decisions. Students also study navigation by compass, global positioning systems (GPS), and dead reckoning. One-day weekend field trips in urban and/or wilderness regions of Halifax Regional Municipality are a required part of the class.

INSTRUCTOR(S): L. Plug
FORMAT: Lecture 3 hours plus occasional field trips
PREREQUISITE: ERTH 1060.03 or ECON 1102.03
CROSS-LISTING: ECON 2336.03

GEOG 1030.03: Introduction to Physical Geography.
This course is designed as a science course with no lab for non-science majors, and assumes no special science background. Physical geography develops an understanding of the surface of the physical earth, including the atmosphere, the hydrosphere, and the earth's surface features themselves. We examine the nature of the atmosphere, including variables in weathering and climate throughout the world. We explore the earth's surface features and processes, including landforms created by volcanoes, earthquakes (and the internal processes contributing to their development), rivers, oceans, glaciers, winds, and gravity. We review briefly the major rock types, how they form, and the process of weathering and soil development. We conclude by looking at the interaction between these subsystems and our interaction with them. An integral component of the course is an exploration of the representation and interpretation of physical geographic data through the examination of a variety of maps.

NOTE: Students may take this class in addition to any other first year Earth Sciences class.

INSTRUCTOR(S): A.M. Ryan, L. Plug
FORMAT: Lecture-class 3 hours each week, and 1 hour tutorial every second week; some classes may include map work
CROSS-LISTING: ERTH 1000.03

GEOG 1035.03: Introduction to Human Geography.
Human geography examines the ways that people perceive, use, and alter the landscapes they occupy. Two themes run throughout the class. One theme deals with the aspects of culture that characterize different social groups. These are matters of material culture as well as group behaviour, and belief systems. The second theme has to do with the systems of societies with each other and their environments. The class introduces the principal tools of human geographers: maps, demography, and analysis of cultural patterns.

NOTE: This class cannot be used to meet the life or physical science subject requirement for the BA degree.

INSTRUCTOR(S): J. Boosal
FORMAT: Lecture 3 hours
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 20th century to natural variability, and those that attribute the warming to increased human emission of greenhouse gases.

INSTRUCTOR(S): G. Lasins
FORMAT: 3 hours
CROSS-LISTING: FFVC 2800.03

GEOG 3001.03: Landscape Ecology. Landscapes reflect the interaction of natural and cultural processes. This course introduces the principles of ecology to landscape analysis. It explores relationships between environmental components in the landscape to inform community design and land use planning applications.

INSTRUCTOR(S): P. Manuel
FORMAT: Lecture/lab 3 or 4 hours
PREREQUISITE: PLAN 2801.03 or GEOG 2801.03 or permission of the instructor.
CROSS-LISTING: PLAN 3001.03

GEOG 3005.03: Cities and the Environment. The contemporary landscape reflects a long history of human activities on the land and design and planning interventions through time. Civilizations rise and fall, often because of their degradation of the ecosystems that support them. This course examines the relationship of cities with the environment to enhance our understanding of landscape urban form and patterns in human settlements through the ages.

INSTRUCTOR(S): J. Grant
FORMAT: Lecture/semester 3 hours
CROSS-LISTING: PLAN 3005.03

GEOG 3006.03: Reading the Landscape. Any landscape reflects its natural and cultural history. This course employs diverse 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.

INSTRUCTOR(S): S. Guppy
FORMAT: Lecture/lab 3 or 4 hours
PREREQUISITE: SOCA 1000X/Y.06, 1000X/1000X.06, 1000X/100X.Y.06, 1200X/120X.Y.06
CROSS-LISTING: SOCA 3165.03

GEOG 3220.03: Coastal Communities in the North Atlantic. Coastal communities as a social/ecological type are examined as populations, and social structures (territorial, economic, occupational, political) as they have developed in response to particular ecological and social circumstances. Various perspectives which have been applied to coastal communities are examined with regard to the contributions they may make to understanding the dynamics of these communities. The focus is on North Atlantic communities.

FORMAT: Lecture
PREREQUISITE: One of SOCA 1000X/Y.06, 1000X/1000X.06, 1100X/Y.06 or 1200X/120X.Y.06
CROSS-LISTING: SOCA 3220.03

GEOG 3370.03: North American Landscapes. Landscapes are the product of human culture ordering nature for economic, social, political, religious, recreational, and artistic purposes. Landscape history analyzes and interprets the use and design of such features as fields and woodlands, roads and waterways, settlements and buildings, towns and suburbs, and parks and cities. This class examines the use and meaning of the spatial environment among the various societies in North America from the sixteenth to the twentieth centuries. Among the topics are the meaning of land resources for indigenous peoples, the occupation and settlement of colonial populations, transportation and continental expansion, town planning, the politics of water and land in the West, preservation movements, scenic tourism, and the literary and artistic stylization of landscapes. The class welcomes non-hispanic students with an interdisciplinary interest in issues regarding planning and design, cultural ecology, and the governance of resources.

INSTRUCTOR(S): C. Campbell
FORMAT: Lecture/discussion 3 hours
CROSS-LISTING: HIS 3370.03

GEOG 3440.03: Geomorphology. The quantitative study of Earth’s surface processes and landforms applies to geology, civil engineering, hydrology, and physical geography. Slope stability, weathering and soils development, sediment production, storage, and deposition in and environments, fluvial processes, tectonic landforms, glacial and periglacial processes, hypsometry, and fractal dimension are shown to be influenced by rock properties, climate, and temporal scales. Laboratory and field experiences emphasize geomorphometry, describing, analyzing, and interpreting soils and sediment records, the local Quaternary record of glaciation and stream incision, and incorporate field and remotely sensed data and digital terrain data to solve questions related to the environment and various geomorphic systems.

INSTRUCTOR(S): L. Fink, J. Gowen
FORMAT: Lecture 3 hours/lab 3 hours, including mandatory field trips
PREREQUISITE: ERTH 1080 and one other 1st year ERTH course; 1090 recommended, or SCI 1021.21, or SCI 1031.21, or SCI 1042.27, or SCI 3110.33 or permission of the instructor AND completion or concurrent enrollment of a 1000-level mathematics class, a 1000-level physics class, and a 1000-level chemistry class.
CROSS-LISTING: ERTH 3440.03

GEOG 3500.03: Exploring Geographic Information Systems. Geographic Information Systems (GIS), as a tool for the management of georeferenced data, have become indispensable for disciplines where location of objects and pattern of processes is important. GIS plays a significant role in a wide range of applications, from modeling, to analysis and predictions, to decision making. The course begins at a broad base of potential users and drawn on examples of the role of GIS in global climate change, mineral exploration, preservation of biodiversity, coastal zone management, resource depletion, and many other present and future environmental issues. The course material will be of interest to those studying geoscience, environmental science, ecology, marine biology, oceanography, epidemiology, urban and rural planning, civil engineering, and any other field involving spatial data. Laboratory exercises emphasize the principles of raster and vector GIS, and the integration of databases and GPS (global positioning systems) data into GIS. Exercises draw on the diversity of GIS applications in a number of application areas.

INSTRUCTOR(S): C. Wells
FORMAT: Lecture 3 hours/lab 3 hours
PREREQUISITE: Two years of university study or equivalent or instructor’s permission
CROSS-LISTING: ERTH 3500, ERTH 5500, ENV 3500
EXCLUSION: Credit will only be given for one of GEOG 3500, SCIE 3500, ERTH 3500, ERTH 5500, ENV 3500
GEOG 4440.03: Geomorphology and Landscape Evolution.
Ripple-to mountain range-scale landforms evolve under predictable internal and external forces that are modulated by the physical and chemical properties of the rock. The purpose of this course is to provide a thorough examination of the development of landscapes by tectonics and surficial processes involving weathering, mass wasting, streams, and glaciers. The concepts of 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 stratigraphy, describing and interpreting soils, local geomorphology, and geomorphometrics.

INSTRUCTOR(S): J. Gosse
FORMAT: Lecture 3 hours/lab 3 hours
PREREQUISITE: ERTH 1080 and one other 1st year ERTH course; 1090 recommended. Must be a 4th year Science student familiar with excel, or with instructor's permission.
CROSS-LISTING: ERTH 4440.03

GEOG 4450.03: Introduction to Landscape Simulation.
Spatially-extended computer models are tools for the investigation of landscape form and change, and for prediction of the response of landforms to ongoing changes in climate and human land use practices. This course examines and compares different approaches to modelling, including reductionist analytical and numerical approaches and top-down rule-based approaches. Selection of variables, sensitivity testing, and methods for testing models against nature are discussed. Recent models are used as examples, including those for erosion and deposition in braided rivers, topographic and thermal diffusion, cratering on Mars, fracture patterns in rock and permafrost, and slider-block models for faults. Programming experience is useful but not essential; class emphasis lies in understanding the utility and limits of landscape models rather than numerical methods. Advanced students will develop simple models pertinent to their own research interests as a final project.

INSTRUCTOR(S): L. Plug
FORMAT: Lecture 3 hours/lab
PREREQUISITE: ERTH 2440.03, MATH 1010 or 1400, PHYC 1100X/Y and three courses at the 3000 level in the physical sciences (chemistry, earth science, physics) or with consent of instructor.
CROSS-LISTING: 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 providing 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 labs, students will use computerized techniques of digital image enhancement and thematic information extraction to process images derived from optical, radar, and hyperspectral remote-sensing systems. The integration of remote-sensing information with GIS (Geographic Information Systems) will be stressed in both the labs and lectures.

INSTRUCTOR(S): C. Walls
FORMAT: Lecture 3 hours/lab 3 hours
PREREQUISITE: ERTH 5600.03, ENVYS 5300.03, or ERTH 5600.03 or SCIE 3600.03 or GEOG 5600.03
CROSS-LISTING: ERTH 4530.03

Humanistic Studies in Science

Attention is drawn to the following classes, offered in several departments. All of these classes are concerned with the humanistic aspects of scientific thought and its development. For complete class descriptions please consult the appropriate department listing in this calendar.

NOTE: Not all classes are offered every year. Please consult the current timetable for this year’s offerings.

History of the Sciences
- BIOL 3503.06, HSTC 2300.06, SCIE 2000.06: Introduction to the History of Science
- BIOL 4644.03/OCES 4351.03/SCIE 4001.03/HIST 3073.03/HSTC 3301.03: History of Marine Sciences

Philosophy of the Sciences
- PHIL 3420.03, BIOL 3580.03: Philosophy of Biology. R. Campbell
- PHIL 2560.03: Minds & Machines: Introduction to cognitive Science. M. Cash
- PHIL 2660.03: Logic: Understanding Scientific Reasoning. R. Campbell, R. Martin
- BIOL 3611.03: Nature Conservation. M. Willison
Marine Biology

Location: Biology Department, Life Sciences Centre, 1355 Oxford Street, Halifax, N.S. B3H 3J1
Telephone: (902) 494-3822
Fax: (902) 494-3756
Website: http://marinebiology.dal.ca

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

Program Co-ordinator
Pinder, A. (902-494-3822) (alan.pinder@dal.ca), Regular Honours
McAllister-Irwin, N. (902-494-3818) (nancy.mcallister-irwin@dal.ca), Co-op
Scheibling, R. (902-229) (robert.scheibling@dal.ca), Regular Honours
Herbinger, C. (902-299-200) (christophe.herbinger@dal.ca), 20-credit majors

Program Advisors
Herbinger, C (902-299-200) (christophe.herbinger@dal.ca), Regular Honours
Pinder, A. (902-494-3822) (alan.pinder@dal.ca), Regular Honours

I. Introduction

The Marine Biology Program is an integral part of the Biology department at Dalhousie. Students obtain a basic grounding in Biology in their first two years, and use their third and fourth years to study in greater depth the diversity, ecology, physiology, and other aspects of marine animals and plants. Marine Biology students often also take classes in the biology, chemistry or physics of the ocean, offered through the Oceanography department. A Combined Honours in Marine Biology and Oceanography is available. "Ocean studies" is an area of special emphasis for Dalhousie University, and thus many faculty members have active research programs in marine science. In addition, many marine scientists at local research institutions, including the Bedford Institute of Oceanography and the Institute for Marine Biosciences are affiliated with us, and serve as supervisors of our Honours and graduate students. Our students thus participate in research on a broad range of marine-related topics; examples can be viewed on our website.

The Biology department is located adjacent to the sea in the Life Sciences Centre. All eight floors have running sea water, and we have a 15m pool tank and a 10m deep tower tank. Within a 30 km radius there are salt marshes, rocky shores, estuaries, and sand beaches for field work.

We offer Honours and 20-credit major degree programs in both a regular and Co-operative Education format in Marine Biology. The 20-credit major degree prepares students for technical positions in government laboratories, research institutes, scientific consultants, and aquaculture facilities. The Honours degree requires more Marine Biology credits, a GPA of 3.0 or higher, a research project or thesis in the final year, and should be taken by students wishing to continue on to graduate studies.

The Co-operative Education degree provides an integrated program of eight academic terms with three to four workterms 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.

II. Degree Programs

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

A. Co-operative Education BSc Program in Marine Biology (20-credit), Honours and Major

Co-op Academic Advisor in Marine Biology: N. McAllister-Irwin
Email: nancy.mcallister-irwin@dal.ca

Co-operative Education in Science (Science Co-op) is a program where academic study is combined with paid career related work experience. Students alternate three to four work terms throughout their academic study terms and graduate with a Bachelor of Science Co-op. Science Co-op enables students to apply their knowledge directly while providing them with work experience that assists in making educated career choices. Students apply to join Science Co-op before their second year of study. If accepted into the Science Co-op program, students are required to register for and attend the Science Co-op Seminar Series (SCIE 2800.00) in the fall term of the year they join.

See the “Co-operative Education in Science” section of this calendar, or www.sciencecoop.dal.ca, for information on Science Co-op such as Science Co-op requirements, eligibility, how to apply, deadlines and other related information.

Marine Biology Work-Study Program

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AT</td>
<td>AT</td>
<td>Free</td>
</tr>
<tr>
<td>2</td>
<td>AT</td>
<td>AT</td>
<td>WT1</td>
</tr>
<tr>
<td>3</td>
<td>AT</td>
<td>WT2</td>
<td>AT</td>
</tr>
<tr>
<td>4</td>
<td>WT3</td>
<td>AT</td>
<td>WT4</td>
</tr>
<tr>
<td>5</td>
<td>AT</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

AT = Academic Term
WT = Work Term

The academic program and required classes for Honours and Major Co-op students are essentially the same as those for the non co-op program (listed below). Students in the third and fourth year of their Science Co-op program will have difficulty taking full year classes during the academic year because of their work terms. The one required full-credit third-year biology class, MARI 3073 (Y.06), is split into 3074.03 (A term) and 3076.03 (B term) so that students can take 3074.03 in the fall term of their third year and 3076.03 in the winter term of their fourth year.

To ensure employment opportunities, Science Co-op students may include some classes (or minor) in biochemistry, business, computer science, environmental science, or microbiology as employers are often seeking expertise in these areas.

ADMISSION to the Marine Biology Science Co-op program should be sought after first year grades are submitted but before entering the second year of study and submitted by August 1.

Science Co-op applications forms for Marine Biology are available from the Marine Biology Co-op Academic Advisor and on the Science Co-op website: www.sciencecoop.dal.ca. A limited number of students will be accepted into the program each year to reflect the current job availability. Students must be eligible to work in Canada. Students wishing to apply for the Honours and Major Co-op programs should have at least an overall GPA of 3.0 or higher from all first year classes and a grade of B- in BIOL 1010.03/1011.03 or equivalent. Successful applicants will be informed before the beginning of the fall term.

For further information, please see www.sciencecoop.dal.ca.
B. 20-credit BSc Honours in Marine Biology

Program Advisors: A. Pinder (494-3922), C. Herbinger (494-1397)
Email: Alan.Pinder@dal.ca, christophe.herbinger@dal.ca

Honours students must take a minimum of 9 and a maximum of 11 credits in their honours subject (Marine Biology/Biology) above the 1000 level in addition to the general rules of the College of Arts and Science (see degree requirements in the College of Arts and Science section of this calendar). It is the responsibility of all students to arrange for supervisors for their research. Honours theses may be supervised by a faculty member within the Biology department, or by an external scientific investigator, subject to the approval of the honours committee. Students not in co-op should begin to search for a potential supervisor during their 3rd year of study and should have completed arrangements by May of their 3rd year. Co-op students will normally do their Honours research in the summer of their 4th year or in their 5th year and should consult with their advisor. If students wish to be supervised by someone external to the department, they must consult with their honours advisor to determine the potential supervisor’s eligibility prior to starting their research. For the standing required for Honours please see “Graduation Standing” section “Academic Regulations” given earlier in this calendar.

PLEASE NOTE: A B average must be attained in the following 2000 and 3000 level required classes:

- BCK 2003.03
- BCK 2004.03
- BCK 2020.03
- BCK 2030.03
- BCK 2040.03
- BCK 2060.03
- MARI 3074.X/Y.03 or 3075.03 or 3076.03 or BCKL 3080.03

A maximum of two of these required classes may be repeated in an attempt to achieve this GPA.

Departmental Requirements

1000 level
- BCKL 1010.03 or 1020.03 (C- or better)
- BCKL 1011.03 or 1021.03 (C- or better)
- CHEM 1041.03/1042.03 or (1011.03/1012.03)
- COMM 1501.03 or COMM 1502.03 (recommended for students not fully familiar with microcomputers, but not required)
- MATH 1000.03 or MATH 1215.03
- STAT 1000.03

OR
- DSP (SCIE 1500.X/Y, 1501.X/Y, 1502.X/Y, 1503.X/Y, 1504.X/Y or 1510.X/Y) (C- or better)

2000 level
- BCKL 2003.03
- BCKL 2004.03
- BCKL 2020.03
- BCKL 2030.03
- BCKL 2040.03
- BCKL 2060.03
- OSEA 2000.03 or 2001.03 or 2002.03
- STAT 2000.03

*Co-op students must complete these classes in their second year

3000 and 4000 level
- MARI 3067.03
- MARI 3071.X/Y or BCKL 3074.03 or BCKL 3075.03 or BCKL 3076.03 or BCKL 3090.03
- MARI 3212.03 or 3221.03 (strongly recommended but not required)
- MARI 3291.03
- MARI 3292.03
- MARI 4003.X/Y.06 or 4004.03 or 4005.03 or 4006.03 or 4007.03
- MARI 4005.00

In addition to the required Biology credits (3.0) and Marine Biology credits (3.5 - 4.5), students must select 3.5 - 2.5 more full credits from the list of Marine Biology (MARI) classes or BCKL classes with some marine emphasis to fulfill the university requirement of a minimum of 9 credits beyond the 1000 level in the Honours subject.

Classes in Biology taken to satisfy the Marine Biology requirement cannot be counted towards the 2 full credits which are to be taken in a single subject outside the Honours subject (requirement is for BA students only).

Other Biology classes with some marine emphasis: BCKL 3042.03, 3050.03, 3065.03, 3066.03, 3101.03, 3102.03, 3126.03, 3615.03, 4061.03, 4063.03, 4074.03, 4661.03

C. Honours Co-op BSc in Marine Biology

Departmental Requirements

Same as for regular Marine Biology Honours as above in addition to the following:
- SCIE 2001.00 (Science Co-op Seminar Series)
- MARI 8891.00, 8892.00, 8893.00, 8894.00 (Co-op Work terms)
- Co-op students must take BCKL 2013 and BCKL 2046 in their second year.

Co-op students will normally do their Honours research in the summer of their 4th year or in their 5th year and should arrange this with the Honours co-op advisor. To obtain the Honours research and thesis credit, co-op students normally attend and register for MARI 4901.03 in the Winter term of their fourth year and MARI 4902.03 in the Fall term of their fifth year to accommodate their work-terms. If students wish to be supervised by someone external to the department, they must consult with the honours advisor, prior to starting the research, to determine supervisor’s eligibility.

D. Combined Honours BSc in Marine Biology and Another Subject

Students planning a Combined Marine Biology program should consult with a Marine Honours advisor before registering for their third year classes.

Departmental Requirements

If Marine Biology is chosen as the primary subject in Combined Honours degree, at least 6 and no more than 9 credits in Biology and Marine Biology beyond the 1000 level including the following classes:

1000 level
- BCKL 1010.03 and BCKL 1011.03 or BCKL 1020.03 and BCKL 1021.03, CHEM 1041.03/1042.03 or CHEM 1011.03/1012.03, MATH 1000.03 or MATH 1215.03, STAT 1000.03 or SCIE 1500.03, 1501.27, 1502.21, 1503.21, 1504.27, or 1510.35 (with a minimum grade of C-)

2000 level
- BCKL 2003.03, 2004.03, 2020.03, 2030.03, 2040.03 and 2050.03

3000 level
- Minimum of at least 2.5 full credits at or above the 3000 level in Marine Biology (MARI) normally including MARI 3067.03, MARI 3212.03 or MARI 3221.03, MARI 3301.03 and MARI 3741.03.

If Marine Biology is the secondary area in a Combined Honours degree, the same requirements apply as when Marine Biology is the primary subject except that 2 full credits are required at or above the 3000 level.

A Combined Honours degree, with Oceanography as the second subject, is described in the Oceanography section of this calendar.

Please note: A B average must be attained in the same classes as listed for the 20-credit Honours in Marine Biology (above) when 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 BSc Major in Marine Biology

Program Advisors:
R. Scheibling (494-2206), C. Carlett (494-7016)
Email: robert.scheibling@dal.ca, chris.carlett@dal.ca

Major students are required to take a minimum of 7 and a maximum of 10 credits above the 1000 level in their subject of concentration (Marine Biology) including 4 credits above the 2000 level, in addition to the general rules for Majors which are listed in the degree requirements section of the College of Arts and Science regulations in this calendar.

Classes required in Major

1000 Level
- BIOL 1010.03 or 1020.03 (C- or better)
- BIOL 1011.03 or 1021.03 (C- or better)
- CHEM 1041.03 or 1042.03 (or 1011.03 or 1012.03)
- COMG 1500.03 or COMG 1502.03 (recommended for students not fully familiar with microorganisms)
- MATH 1000.03 or MATH 1215.03
- STAT 1000.03
- OR
  - DSP (SCIE 1500X/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 2029.03
- BIOL 2040.03
- BIOL 2060.03
- OCEA 2000.06

3000 and 4000 Level
Minimum of four (4) full credits, or an equivalent number of half credits, to be selected from Marine Biology (MARI) classes or any “marine emphasis” field class offered by our summer field class institute, SEASIDE, or any other recognized field class institute/station in Canada or overseas.

F. 20-credit BSc Major Co-op in Marine Biology

Departmental Requirements
Same as for regular Major in Marine Biology as above in addition to the following:
- SCIE 2401.00 (Science-Co-op Seminar Series)
- MARI 8891.00, 8892.00, 8893.00, 8894.00 (Co-op Work terms)
- Co-op students must take BIOL 2003 and BIOL 2004 in their second year.

G. 20-credit BSc Double Major in Marine Biology

Department Requirements
If Marine Biology is chosen as the primary subject in a Double Major degree, at least 5 and no more than 9 credits in Marine Biology beyond the 1000 level including the following classes.

1000 Level
- BIOL 1010.03 and BIOL 1011.03 or BIOL 1020.03 and 1021.03 and CHEM 1041.03 or 1042.03 (or CHEM 1011/1021.03) MATH 1000.03 or MATH 1215.03, MATH/STAT 1003.03 or SCIE 1500X/Y, 1502X/Y, 1503X/Y, 1504X/Y or 1510X/Y (C- or better)

2000 Level
- BIOL 2003.03, 2020.03, 2021.03, 2040.03 and 2060.03

3000 and 4000 Level
- Minimum of 2.5 full credits at or above the 3000 level from Marine Biology (MARI) classes.
- Please note: A double major in Marine Biology and Biology is not offered.

III. Class Descriptions

The normal entry requirement for upper level classes in Biology and Marine Biology is a grade of C or better in both 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
CROSS-LISTING: BIOL 3003.03, OCEA 3003.03

MARI 3007.03: 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, behavior, 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 2020.03
CROSS-LISTING: BIOL 3007.03

MARI 3074.03/3076.03: Physiology of Marine Animals, Part I and II.
The problems of animals in a marine environment are quite different from those found in air or fresh water, but the "physiological principles" are similar. This class deals with the same principles as 3076, but emphasizes the study of organisms that live in marine environments and the techniques necessary to study them in laboratories and classrooms.

All students must take both MARI 3074.03 and 3076.03.

INSTRUCTOR(S): N. McAllister-Irwin, A. Pinder, S. Iverson
FORMAT: *Writing Intensive, lecture 3 hours, lab 2.5 hours
PREREQUISITE: BIOL 2801.03 or BIOL 2802.03 or BIOL 3003.03, 2004.03
EXCLUSION: BIOL 3074X/Y, 3076X/Y, MARI 3071X/Y, 3072X/Y

MARI 3212.03: Biology of the Algae.
A non-taxonomic examination of the cellular, organismic, population and community organizations of benthic and planktonic algae. This course uses WebCT.

INSTRUCTOR(S): E. Kenchington
FORMAT: Lecture 2 hours, lab 3 hours
PREREQUISITE: Grade B or better in BIOL 2001.03, or BIOL 2003.03, BIOL 2040.03 or permission of instructor
CROSS-LISTING: BIOL 3212.03

MARI 3221.03: Diversity of Algae.
The organisms known collectively 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 phycologists. Lectures cover the organization of algal diversity into the Linnean framework of taxa, for simple species...
MARI 3301.03: Invertebrate Biology.
A survey of the diversity, ecology, and evolutionary history of the major invertebrate groups. Lectures will emphasize phylogenetics and the diversity of body plans. Labs will emphasize identification and anatomy through short field trips to local sites, computer aided learning, and group projects to construct food webs for local invertebrate communities.

INSTRUCTOR(S): L. T. Bresnan
FORMAT: Lecture 3 hours, lab 3 hours
PREREQUISITE: BIOL 2060.03 and BIOL 3062.03
CROSS-LISTING: BIOL 3301.03
EXCLUSION: BIOL 3321X/Y.06

MARI 3600.03: Aquaculture.
Through lectures and field trips, this course offers an introductory overview of aquaculture: the culturing and raising of aquatic plants and animals. Lectures will deal with the following topics: general overview of aquaculture; physical and chemical properties of the aquatic environment; aquatic engineering; site selection; fish culture; mussel culture; crustacean culture; seaweed culture; health and pathology; nutrition; genetics and reproduction; legal, economical and social considerations.

INSTRUCTOR(S): C. Hartinger
FORMAT: Lecture 3 hours, Lab 3 hours, Field trips (2 Sundays)
PREREQUISITE: BIOL 2001.03 or BIOL 2003.03
CROSS-LISTING: BIOL 3600.03

MARI 3623.03: Applied Coastal Ecology.
This is a field-oriented course which will teach students about the application of ecological principles in the coastal zone. Students will also learn about the impacts of anthropogenic inputs on basic ecosystem function. Field work will concentrate on developing frameworks to assess ecosystem health in several types of coastal ecosystems including marshes, salt marshes, mudflats, estuaries, and bayous. This class carries an additional fee to cover the cost of field trip transportation.

INSTRUCTOR(S): C. Hartinger
FORMAT: Field and Lab
PREREQUISITE: BIOL 2003.03 and STAT 1060.03
CROSS-LISTING: BIOL 3623.03, ENVIS 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 the behavior of marine mammals in the marine environment. Laboratory work will consist of computer-based analysis of data and exposure to the marine mammal literature. Field work will be conducted on weekends as well as weekdays. Students will write and present a field report, prepare laboratory reports, and take examinations on lecture material. This intensive field class will take place during the last two weeks of August and the first week of September. An extra fee will be charged to cover the costs of transportation.

FORMAT: Lab and field intensive
PREREQUISITE: BIOL 2003.03 and BIOL 3062.03 (or similar behaviour class), STATS 1060.03
CROSS-LISTING: BIOL 3626.03

MARI 3632.03: Applied Field Methods in Fish Ecology.
This summer class prepares students for designing and conducting field research on fishes. Fieldwork will concentrate on day trips to streams and shallow water marine/freshwater habitats. Topics-covered will include techniques for collecting fish, designing and conducting surveys, studying behaviour, measuring phenotypic variation, quantifying temporal and spatial variation, and planning for statistical analysis. Informal lectures and laboratories will complement field exercises. The major focus will be on practical techniques and tradeoffs between data quality, quantity, costs and ethical/environmental considerations. Students will keep a field notebook, generate computer files of collected data, take problem-solving quizzes, and write a methodological research proposal. The class includes a two night camping trip and additional fees to cover transportation and camping expenses.

FORMAT: Field intensive. Lecture and lab.
PREREQUISITE: BIOL 2003.03 and STAT 1060.03 or their equivalents or permission of instructor.
CROSS-LISTING: BIOL 3632.03, ENVIS 3632.03

MARI 3664.03: Intertidal Ecology and Diversity.
This class explores ecological concepts as they apply to a variety of intertidal habitats, including rocky shores, tidal flats, and sandy beaches. Primary emphasis is placed on description and quantification of diversity with the appropriate sampling techniques for flora and fauna. Generally, field sampling and measurements will be followed by further analysis, e.g., identification of seaweeds and invertebrates, in the laboratory. Proper use of identification literature and understanding of taxonomic relationships between the major phyla is a key component of this course. Secondly, major aspects of population and community ecology, such as plant-animal interactions, will be investigated in the different environments. Basic skills in experimental design and related statistical analyses will be learned through application in the field. The course format incorporates introductory lectures, field work and laboratory analysis. Assessment will be through reports of selected lab and field work, oral presentations and in-class discussions, and a final independent project on a topic of choice relating to marine benthic biodiversity. Also, students are introduced to the Marine Invertebrate Diversity Initiative, and will each contribute a species profile.

FORMAT: Field and Lab intensive
PREREQUISITE: BIOL 2003.03 and (STAT 1060.03 or DISP)
CROSS-LISTING: BIOL 3664.03
EXCLUSION: BIOL 3663.03, 3665.03

MARI 3680.03: Scientific Diving Methods for Marine Ecology.
This class will emphasize the practicalities of doing field ecological experiments under water using SCUBA. It will also cover aspects of experimental design, data analysis from ecological experiments, some local natural history necessary to identify and quantify marine organisms, and the regulations governing scientific diving. The class will include at least 12 dives in various habitats, both from shore and from boats. Specific topics will include expedition logistics, site choice, site mapping, equipment installation, experimental manipulations, various censusing methods (transects, quadrats, video, photographs), dive logs and data recording, capture, methods (transects, quadrats, video, photographs), dive logs and data recording, capture, release, and sampling methods for animals, plants, and bottom samples. This class will use diving, but will not teach diving. Students must be certified divers (preferably at least advanced open water, > 10 recent open water dives), have completed a full diving medical, be admitted to the Dalhousie Scientific Diving Program (contact the University Diving Officer), and be comfortable under water in cold water equipment.

INSTRUCTOR(S): R. Scheibling, A. Pinder, J. Lindley
FORMAT: Field Lab and Lecture
PREREQUISITE: BIOL 2003.03 or BIOL 3003.03, STAT 1060.03, internationally recognized diving certification, diving physical; recommended: MARI 3321X/Y.06
CROSS-LISTING: BIOL 3680.03
MARI 3761.03: Marine Ecology.
This course gives an introduction to marine ecology by emphasizing ecological processes and evolutionary adaptations that determine the structure and dynamics of marine ecosystems globally. Building upon an understanding of basic ecological principles and a familiarity with major invertebrate and algal/plant groups, the course examines processes operating at the population, community and ecosystem level (e.g., primary and secondary productivity, food web structure and trophodynamics, recruitment, competition, predation, parasitism and disease) in a variety of marine communities/habitats (e.g., intertidal and subtidal habitats of temperate shores, tropical coral reefs and seagrass beds, the open ocean, and the deep sea). Additional topics of special interest such as hydrothermal vents and cold seeps.

INSTRUCTOR(S): R. Schelling
FORMAT: Lecture, Lab
PREREQUISITE: BICE 2040.03, BIML 2031.03 or BICE 2032.03
CROSS-LISTING: BICE 3761.03

MARI 4060.03: Marine Mammalogy.
The class will examine the characteristics that mammals brought with them when they returned to the ocean, the evolution of the different groups of marine mammals, some of their special adaptations, the roles of marine mammals in oceanic ecosystems and general principles of the marine mammal population biology. Students will use information on the biology of marine mammals to explore conservation/management issues.

INSTRUCTOR(S): D. Austin, T. Winnem
FORMAT: Lectures 3 hours
PREREQUISITE: BICE 2040.03
CROSS-LISTING: BICE 4060.03

MARI 4075.03: Nutrition in Aquaculture.
Not offered in 2008/2009. The focus will be on application of nutrition to fish, crustacean and molluscan culture. Topics will include lipids and essential fatty acids, macro and trace elements, vitamins, proteins and biochemistry, carbohydrates, and digestion in aquatic animals.

INSTRUCTOR(S): N. McAllister-Town
FORMAT: Lecture
PREREQUISITE: BICE 4075.03
CROSS-LISTING: BICE 4075.03

MARI 4335.03: Marine Impacts.
Marine environments are subject to a variety of environmental impacts caused by resource extraction 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 modeling of impacts and ecosystems will be undertaken using Stella graphical modeling software as well as other tools. The course will examine practical solutions to environmental assessment, monitoring, and prediction using modeling, data collection, and analysis. Classes will include lectures, modelling examples (computer projection), and discussion of research papers. Course requirements will consist of problem sets and a student modelling project.

INSTRUCTOR(S): J. Grant
FORMAT: Lecture 3 hours
PREREQUISITE: BICE 2040.03 or 2041.03, BICE 2061.03, MATH 1000.03, STAT 1060.03 or permission of instructor.
CROSS-LISTING: OCEA 4335.03, BICE 4075.03

MARI 4369.03: Fisheries Oceanography.
Students who are not competent with fundamental population dynamics, ecology, physical oceanography, calculus, statistics, and computerized analysis should not enroll. The class focuses on the ecology of marine fish (including significant advances made in freshwater systems) and on the biotic and abiotic influences on marine fish population dynamics and production, distribution and abundance. Lectures include reproduction, early life history, feeding, growth, metabolism, mortality, and recruitment variability and forecasting. Emphasis is placed on: 1) hydrological and meteorological processes influencing the above and on 2) the primary literature, current problems and hypotheses, and fruitful research directions, approaches and techniques. Some emphasis is also placed on the application of scientific insights to fishery management techniques.

INSTRUCTOR(S): C. T. Taggart
FORMAT: Lecture 3 hours, some practicums/tutorials
PREREQUISITE: OCEA 2000.06 or 2001.03 or 2002.03 or BICE 2040.03 and/or 3077.03. Enroll as equivalent or instructor's consent.
CROSS-LISTING: BICE 4069.03, OCEA 4460.03, OCEA 5460.03

MARI 4370.03: Deep Sea Biology.
The class examines the biology of organisms inhabiting deep sea environments. We will explore physiological adaptations to the physical, chemical and geological environmental characteristics; describe spatial and temporal distributional patterns of the biological assemblages; examine regulatory factors of these patterns, such as ocean circulation, food availability, reproduction and recruitment; and derive into habitats of special interest such as hydrothermal vents and cold seeps.

INSTRUCTOR(S): A. Metaxas
PREREQUISITE: At least 2 of BICE 2040.03, BICE 2060.03 or 2061.03 or BICE 3067.03 or OCEA 2000.06
CROSS-LISTING: BICE 4370.03, BICE 3570.03, OCEA 4370.03, OCEA 5370.03

MARI 4651.03: 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 oceanography and 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 as current attempts and strategies to address them. Students will demonstrate their accomplishment of these objectives by satisfactory performance on two examinations, completion of assignments including an original research proposal, problem solving, and satisfactory participation in class discussion. Students should be competent in mathematics through calculus.

INSTRUCTOR(S): J. Cullen
FORMAT: Lecture 3 hours
PREREQUISITE: Instructor's consent
CROSS-LISTING: OCEA 4480.03

MARI 4662.03: Biology of Phytoplankton.
The role of phytoplankton as primary producers of organic material in the sea, and as agents of biogeochemical transformations, explored in the context of interactions with physical and chemical oceanographic processes. Emphasis is on the current literature. INSTRUCTOR(S): M. Lewis
FORMAT: Lecture 3 hours
PREREQUISITE: Instructor's consent
CROSS-LISTING: BICE 4662.03, OCEA 5290.03, OCEA 4230.03

MARI 4664.03: History of Marine Sciences.
The class describes the development of the marine sciences from biological, chemical 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: BICE 4664.03, OCEA 4331.03, 5331.03, HIST 3073.03, HIST 3331.03, SCIE 4803.03

Marine Biology 457
MARI 4666.03: Benthic Ecology.
An advanced level graduate class concentrating on the major problems of benthic ecology, such as how food is supplied to benthic animals, what factors control the structure of biological communities, and how the benthos is related to geomicrobiological processes in the sediments. The class is heavily oriented to the current literature. Classes consist of two lectures per week and one journal paper discussion session. The last three weeks of the class are devoted to a class research project. Students are required to have a background in ecology, statistics and invertebrate zoology.
INSTRUCTOR(S): J. Grant
FORMAT: Lecture 3 hours
PREREQUISITE: Instructor’s consent
CROSS-LISTING: BIOC 4666.05, OCEA 5501.05, OCEA 4330/03
MARI 4800X/Y.06: Special Topics in Marine Biology.
Available as 4806.03, 4807.03, 480X/Y.06, 480Y.03, 4801.03. These classes involve independent study and are intended for fourth-year Marine Biology students who wish to study an area of marine biology not covered in other classes. The topic of study must be different from the student’s honours thesis. Students should first consult with a faculty member to arrange the topic of study. An outline of the class content must be submitted to and approved by the chair of the curriculum committee. Only the Chairperson of the Curriculum Committee can sign the approval form. For more information and forms see http://biology.dal.ca/classes/classes/sptopics.html
NOTE: Students taking 4800X/Y.06 must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
MARI 4900X/Y.06 and 4901.03/4902.03 (Parts I and II): Honours Research and Thesis.
This class is required of all students in the Marine Biology Honours programs. It consists of a research project carried out under the supervision of a faculty member or research scientist at Dalhousie or elsewhere as well as weekly meetings of the class (1.5 - 3.0 hrs). Students that wish to be supervised by someone external to the department must consult with their Honours advisor before starting their research to determine their supervisor’s eligibility (see Biology Web site, http://www.dal.ca/~biology2/index.html for more details). Students supervised by a department member or external professor/scientist must also submit a research proposal to the Biology Honours committee to determine the project’s eligibility before starting their research. The results of the research will be submitted as a thesis for a letter grade. The rest of the grade will come from an oral presentation of your research to the Honours class, and another presentation or poster of your research or a Co-op work term at the annual Honours Cameron conference.
NOTE: Regular Honours students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively. Marine Biology Co-op students taking this class normally attend and register for MARI 4901 in the Winter term of their 4th year and MARI 4902 in the Fall term of their 5th year to accommodate their work terms.
INSTRUCTOR(S): P. Collins, A. Pinder, B. Pohajdak
FORMAT: Weekly class meetings (1.5 - 3.0 hrs) and an independent research project
RESTRICTION: Honours students normally in their final year of study.
Honours Qualifying Examination.
This is an additional requirement of all Biology and Marine Biology Honours students and is normally taken concurrently with MARI 4900X/Y.06 or 4901.03/4902.03. Students are required to attend weekly seminars for two academic terms where they and other students in BIOC 4900X/Y.06 or 4901.03/4902.03 give oral presentations of their Honours research projects. Instructional seminars in thesis writing, oral presentations, poster preparation, and other skills are also given. Registrations for this class is not required but it does appear on your final transcript as a Pass/Fail grade and attendance is recorded at all seminars. Marine Biology Co-op students who are on workterms during the Fall term of their 4th year normally attend these seminars during the Winter term of their 4th year and Fall term of their 5th year.
Mathematics & Statistics

Location: Chase Building
Halifax, NS B3H 4B2

Telephone: (902) 494-2572
Fax: (902) 494-5130
Email: chair@mathstat.dal.ca
Website: http://www.mathstat.dal.ca

Dean
Taylor, K., BSc (St. FX), PhD (Alberta)

Chairperson of Department
Dilcher, K., PhD (Queen's)

Professors Emeriti
Field, C.A., MSc, PhD (Northwestern)
Fillmore, P.A., MSc, PhD (Minn), FRSC
Greinerfelder, L., PhD (ETH Zurich)
Radjavi, H., MA, PhD (Bielefeld)
Swaminathan, S., MA, MSc, PhD (Madras)
Thompson, A.C., PhD (Newcastle upon Tyne)

Professors
Borwein, J., BA, MSc, PhD (Oxford), FRSC
Brown, J., MSc, PhD (Toronto)
Coley, A.A., PhD (London)
Dilcher, K., MSc, PhD (Queen's)
Dilcher, K., MSc, PhD (Queen's)
Hamilton, D., MA, PhD (Queen's) (Director of Statistics)
Nevakivioli, R., MSc, PhD (Calgary) (Graduate Advisor Math)
Paré, R., MSc, PhD (McGill)
Smith, B., MA (Calgary), PhD (Berkeley)
Tan, K.C., PhD (UBC)
Taylor, K., BSc, MSc, PhD (Alberta)
Thompson, K., PhD (Liverpool) (CRC Chair) (jointly with Oceanography)
Wood, R.J., MSc, PhD (Dal)

Associate Professors
Frazer, A., MSc (Toronto), PhD (Oxford) (jointly with Chemistry)
Ga, H., MSc (Peking), PhD (Hong Kong) (Undergraduate & Co-op Advisor)
Horberinger, C., MSc (Paris), PhD (Dal) (jointly with Biology)
Jansson, J.C., PhD (Leipzig) (Director of Mathematics and Co-op)
Johnson, K.P., MSc (Toronto), PhD (Brandon)
Milson, R., MSc, PhD (McGill) (Honours Advisor)
Mimitzaki, A., PhD (Leningrad Inst. Mech. Eng.) (cross appointment with Dept. of Medicine)
Peukert, D., PhD (Utrecht)
Selinger, P., PhD (U. Pennsylvania)
Suzuki, E., PhD (Waterloo) (Graduate Advisor Stats)
Zhao, Y., MSc (Western Kentucky), PhD (British Columbia) (cross appointment with Management)

Assistant Professors
Beiko, R., PhD (Ottawa) (jointly with Computer Science)
Belanko, L., MA, PhD (Texas A & M Univ) (jointly with Biology)
Bowd, M., MBA, MSc, PhD (Dal)
Bourici, S., MA (Bratislava), PhD (Michigan)
Finnemore (Miller), J., MSc (TUNS), PhD (Dal)
Hillburn, B., BSc, MSc, PhD (Washington)
Iron, D., MSc, PhD (UBC)
Kolokolnikov, T., MSc, PhD (UIB)
Smirnov, R., BSc (Kiev), PhD (Queen's)

Lecturers
Barger, J., BSc (Pace NY), BEd, MA (Dal)
Cameron, E., MA (Dal)
Sundwall, A., MA (U. Maine), AB (Boston)

Postdoctoral Fellows
Bramham, Trish (Stockholm)
Chan, G-Y Kwok (Illinois)
Hiervik, S., PhD (Cambridge)
Jensen, Ian (Alberta)
Kenney, Toby (Cambridge)
Marino, Dante (Tokyo)
Mitsopoulos, G.O. (Athens)
Patel, Pavol (Adam Mickiewicz)
Wang, H., PhD (Osaka)

Learning Centre Director
Stevens, P., MSc (Dal)

Statistical Consultant
Grever, V.

Adjunct Professors
Ashkan, T. (NSAC)
Beattie, M. M.D. (Dal)
Bonato, A. (Willifird Laurier)
Bunnie, H. (Memorial)
Chippman, H. (Acadia)
Clarke, N. (Acadia)
Clements, J. (UBC)
Cole, D. (University of British Columbia)
Corr, R. (Acadia)
Davidson, R. (UM)
Fitzpatrick, B. (LUCS)
Fry, R. (Dal)
Grant McLaughlin, J. (UNB)
Guerra, P. (Dal)
Hartwell, R. (UM)
Haynes, R. (Acadia)
Hines, P. (UBC)
Hunt, D. (UBC)
Kerst, D. (Dal)
Kennedy, R. (Waterloo)
Miller, M. (Mt. Saint Vincent)
Muir, P. (SMU)
Roseborough, B. (Dal)
Sauve, C. (Dal)
Sutherland, W.R.S. (Dal)
Trevor, W. (U.S. Naval Academy)
varlamov, Hooper, R. (St. FX)
Weide, H. (St. John's University)

Research Associate
Pecineros, B. (Dal)

Information concerning programs and classes in Mathematics follows immediately below. For Statistics, please refer to the Statistics section on page 333.

Assistant Professors
Beiko, R., PhD (Ottawa) (jointly with Computer Science)
Belanko, L., MA, PhD (Texas A & M Univ) (jointly with Biology)
Bowd, M., MBA, MSc, PhD (Dal)
Bourici, S., MA (Bratislava), PhD (Michigan)
Finnemore (Miller), J., MSc (TUNS), PhD (Dal)
Hillburn, B., BSc, MSc, PhD (Washington)
Iron, D., MSc, PhD (UBC)
Kolokolnikov, T., MSc, PhD (UIB)
Smirnov, R., BSc (Kiev), PhD (Queen's)
Mathematics

Faculty of Science

460 Mathematics

visit the department website: http://www.mathstat.dal.ca

For general advising and career information, students are encouraged to

III. Student Advising

page 65 of this calendar.

In addition to the departmental requirements listed below, students must

electives.

Note that many programs include MATH 2060.03/2080.03. These classes

I. General Interest Classes

The Division offers several classes for non-majors who would like to know

something about Mathematics.

- 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 1100.03/1101.03. This course emphasizes the application of calculus to

the life sciences.

- MATH 1215.03: This course introduces students to the basic ideas of

statistics and linear algebra, topics of importance in many fields,

among them economic, biological, and physical sciences.

II. Degree Programs

One full credit in Mathematics is required for a BSc degree but none of the

following classes may be used to satisfy this requirement:

- MATH 1001.03/1002.03

These core calculus classes are the starting point for any degree program in the sciences.

- MATH 1000.03/1002.03: A class designed especially for B.A. students

and others who wish to know something about the historical and cultural aspects of mathematics.

- MATH 1060.03: An introduction, through examples drawn from a wide

variety of disciplines, to the basic ideas of statistics.

- MATH 1115.03: Linear algebra and calculus arranged to meet the needs

of commerce students, but of interest to anyone wishing a brief

introduction to either of these topics.

- MATH 1215.03: This course emphasizes the application of calculus to the

life sciences.

- MATH 2112.03: Whereas calculus deals with continuous phenomena,

this class deals with discrete objects, especially varieties of ways to

count.

- MATH 2120.03/2120.03: An introduction to matrix theory, linear

equations and linear algebra, topics of importance in many fields.

A. 20-credit BSc Honours in Mathematics

In addition to satisfying the Faculty of Science regulations for Honours

Programs, all Honours programs in mathematics must include the following classes.

Departmental Requirements

2000 level

- MATH 2001.03/2002.03

- MATH 3045.03

- MATH 3110.03/3120.03

- MATH 3070.03

- MATH 3080.03

- MATH 3090.03

- MATH 3100.03

- MATH 3110.03/3120.03

- MATH 3130.03

- MATH 3140.03

- MATH 3150.03

- MATH 3160.03

- MATH 3170.03

- MATH 3180.03

- MATH 3190.03

- MATH 3200.03

- MATH 3210.03

- MATH 3220.03

- MATH 3230.03

- MATH 3240.03

- MATH 3250.03

- MATH 3260.03

- MATH 3270.03

- MATH 3280.03

- MATH 3290.03

- MATH 3300.03

- MATH 3310.03/3320.03

- MATH 3330.03

- MATH 3360.03

- MATH 3370.03

- MATH 3400.03

- MATH 3410.03

- MATH 3420.03

- MATH 3430.03

- MATH 3440.03

- MATH 3450.03

II. Degree Programs

One full credit in Mathematics is required for a BSc degree but none of the

following classes may be used to satisfy this requirement:

- MATH 1001.03/1002.03

- MATH 2001.03/2002.03

- MATH 2135.03

- MATH 2505.03

- MATH 2030.03/2040.03

Students in any Mathematics program are strongly urged to include CSCI

1100.03, 1101.03.

Note that many programs include MATH 2060.03/2080.03. These classes

may also be taken as STAT 2060.03/2080.03 and can then count as

electives.

In addition to the departmental requirements listed below, students must

satisfy the requirements outlined in the Degree Requirements section,

page 65 of this calendar.

III. Student Advising

For general advising and career information, students are encouraged to

visit the department website: http://www.mathstat.dal.ca and click on

“Student Advising.”
Students contemplating a combined honours program in Mathematics and another subject should bear in mind that the work in either subject would probably be insufficient for admission to a regular graduate program. A qualifying year would usually be necessary.

C. 20-credit BSc Major in Mathematics

Departmental Requirements - Major

2000 level
- MATH 2001.03 and 2002.03
- MATH 2103.03 and 2040.03 (or 2353.03)
- At least one of MATH 2112.03, 2501.03, 2505.03, or 2540.03
- One additional half-credit at or above 2000 level
- One STAT course at or above 2000 level

3000 level
- Four other mathematics credits at or above the 3000 level. This selection may not include MATH 3700, MATH 3800.

Students wishing to concentrate in Applied Mathematics should choose the extra mathematics classes from
- MATH 2060.03/MATH 2080.03
- MATH 2051.03
- MATH 2001.03 and 2002.03
- MATH 2060.03/MATH 2080.03
- MATH 3040.03

Students wishing to concentrate in Pure Mathematics should choose the extra mathematics classes from
- MATH 2060.03/MATH 2080.03
- MATH 3040.03
- MATH 3170.03
- MATH 3100.03
- MATH 3300.03
- MATH 3330.03

 Students contemplating a career in Mathematics Education should choose the extra mathematics classes from
- MATH 2060.03/MATH 2080.03
- MATH 2103.03
- MATH 2112.03
- MATH 3030X/Y.06
- MATH 3040.03
- MATH 3150.03
- MATH 3070.03
- MATH 3080.03
- MATH 3140.03
- MATH 3130.03
- MATH 3100.03
- MATH 3150.03

Students wishing to do a double major in Mathematics and another Science subject, or Minor in Mathematics with BCS Degree

2000 level
- MATH 2001.03 and 2002.03
- MATH 2103.03 and 2040.03 (or 2353.03)
- At least one of MATH 2112.03, 2501.03, 2505.03, or 2540.03

3000 level
- Two other mathematics credits at or above the 3000 level. This selection may not include MATH 3700, MATH 3800.

D. Co-op Education in Mathematics

Cooperative Education in Science (Science Co-op) is a program where academic study is combined with paid work related work experience. Students alternate three to four work term concurrently 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 2681.00) in the fall term of the year they join.

See the “Co-operative Education in Science” section of this calendar, or www.sciencecoop.dal.ca, for information on Science Co-op such as Science Co-op requirements, eligibility, how to apply, deadlines and other related information.

There are three Major and three Honours Co-op programs available within the Department, in the areas of:
- Mathematics
- Statistics
- Combined programs

A Combined Honours Co-op degree, combining Mathematics or Statistics and Computer Science or another appropriate subject, is possible and may be appropriate for many students. Students interested in such a program should consult the Mathematics Co-op Academic Advisor or the Science Co-op office.

For further information, please see www.sciencecoop.dal.ca

Co-op Academic Advisor in Mathematics: Dr. Janssen (494-8851)
Email: janssen@mathstat.dal.ca

E. Other Programs

Minor in Business

A Minor in Business may be completed as part of an Honours or Major degree, each of which involves 20 credits. Consult the Degree Requirements section of this calendar for details.

Minor in Canadian Studies

The Minor in Canadian Studies is available to students registered in the BSc 20-credit major and honours programs. The requirements are as for the appropriate degree program with one full credit in French at the 1000 level (or a transfer credit in an aboriginal language), plus four full credits above the 1000 level (or a transfer credit in an aboriginal language). Consult the Degree Requirements section of this calendar for details.

Minor in Community Design

The minor in community design is available to students registered in the BA, BSc 20-credit major and honours programs. The requirements are as for the appropriate degree program with completion of the following classes:
- PLAN 1001.03 and PLAN 1002.03
- Either PLAN 2001.03 or PLAN 2002.03
- Seven additional half-classes (21 credit hours) in PLAN classes. See page 86 for further details

Minor in Computer Science

The minor in computer science is available to students registered in the BSc 20-credit major and honours programs. The requirements are as for the appropriate program with completion of the following classes:
- One of CSCI 1100.03, CSCI 1101.03, CSCI 2110.03, CSCI 2112.03, CSCI 3100.03, CSCI 3112.03, CSCI 3133.03, and CSCI 3171.03

Mathematics
Minor in Environmental Studies
A Minor in Environmental Studies may be completed as part of an Honours or Major degree, each of which involves 20 credits. Consult the Environmental Programs section of this calendar, page 441 for details.

Minor in Film Studies
A Minor in Film Studies is available as part of a BA, BSc Major (20-credit) and BFA Honours degree. Consult the Degree Requirements section of this calendar, page 65 for details.

Concurrent BSc/DipEng
Eligible students may combine an Engineering program with a 15-credit BSc program with concentration in Mathematics, as outlined in Section "Degree Requirements" II-E of the calendar. The departmental requirements for this program are as outlined above for the 15 credit BSc. For students with a strong background in mathematics it may be possible to replace certain required courses. The course selection must be approved by the Mathematics advisor.

Certificate in Actuarial and Financial Mathematics
This program addresses many of the learning objectives and fundamental mathematical and statistical skills required to complete the first two courses and examinations of the Society of Actuaries accreditation program. This program also prepares students for employment in general financial institutions where modeling, quantitative risk analysis, management of investment instruments, asset and liability management, life contingencies and insurance assessment, and other complex mathematical calculations are required. You must register your intent to complete the requirements with the department before graduation. The requirements are:
1. Completion of the 20 credit Major or Honours program in Mathematics and/or Statistics.
2. Completion of the following mathematics classes: MATH 1000, MATH 1010, MATH 2001, MATH 2002, MATH 2030, MATH 2600, MATH 3300 and MATH 3360.
3. Completion of the followinig four statistics classes STAT 2060, STAT 2100, STAT 3540 and STAT 3560.

Certificate in Applied and Computational Mathematics
This program is concerned with the development of the core mathematical and computational skills required in science, government and industry. Areas of application include everything from mathematical modeling to cryptography to software development. You must register your intent to complete the requirements with the department before graduation. The requirements are:
1. Completion of the 20 credit Major or Honours program in Mathematics or an equivalent program.
2. Completion of the following mathematics classes: MATH 2400, MATH 1000, MATH 1010, MATH 2001, MATH 2002, MATH 2030, MATH 2600, MATH/CSCI 2112.
3. Completion of at least three of:
   • MATH 3090, MATH 3100, MATH 3110, MATH 3120, MATH 3130, MATH 3300, MATH 3400.
4. Completion of at least three of:
   • MATH 3410, MATH 3420, MATH 3430, MATH 3450, MATH 4520.
Additional recommended courses: MATH 1200, STAT 2060, STAT 2800.

IV. Class Descriptions
Class descriptions for Statistics can be found in the calendar under Statistics.

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 limits, differentiation of polynomial, trigonometric, exponential and logarithmic functions, product, quotient and chain rules, applications of differentiation, antiderivatives and definite integrals, substitution. A sequel to this course is MATH 1001:03.

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.

MATH 0009:00 Academic Math. This non-credit grade 12 math class is intended for students who want to upgrade their math skills for admission to the Bachelor of Commerce, Management or Nursing programs or the pre-calculus plus math course. The course begins with a review of algebra and problem solving skills, then continues with a thorough investigation of linear, quadratic, exponential and logarithmic functions, Probability and geometry topics round out this course, which is taught in a relaxed and patient environment.

MATH 0010:00 Pre-Calculus. This full year 1 term course has been designed for calculus bound students who have a firm grasp of grade 11 and 12 math skills. Focus is placed on key pre-calculus concepts, such as derivatives and limits. Composite, inverse, Polynomial and Rational functions, exponential functions with base e, and trigonometry using radian measure are studied.

MATH 0011:00 Pre-calculus Plus (NS Grade 12 pre-calculus). This full year course has been designed for the majority of students, either requiring Pre-calculus for admission to the Dalhousie BSc program or as preparation for Calculus 1000. In addition to a more in depth coverage of the pre-calculus topics presented in Math 0010:00, a review of the relevant math 11 and 12 material and area under the curve is studied. Algebra and applied geometric problem solving skills needed for calculus are emphasized throughout the course. Note also that Math 0011:00 is offered as a single term class in both fall and winter terms) and as a full year class.

MATH 0012:00 Pre-calculus Plus I (NS Grade 12 pre-calculus). This course is offered as a one semester course, students wishing to complete the full year pre-calculus course can register in Math 0011:00 in the winter term.

MATH 0013:00 Pre-calculus Plus II (NS Grade 12 pre-calculus). This course is offered as a one semester course, students wishing to complete the full year pre-calculus course can register in Math 0011:00 in the fall term.

MATH 2400, MATH 1000, MATH 1010, MATH 2001, MATH 2002, MATH 2030, MATH 2600, MATH/CSCI 2112.

MATH 3090, MATH 3100, MATH 3110, MATH 3120, MATH 3130, MATH 3300, MATH 3400.

MATH 3410, MATH 3420, MATH 3430, MATH 3450, MATH 4520.

Additional recommended courses: MATH 1200, STAT 2060, STAT 2800.
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 1002.03 and 1002.05 may be taken for credit. This class cannot be used to partially satisfy the BSc mathematics requirement.
FORMAT: Lecture 3 hours, MLC

MATH 1010.03: Differential and Integral Calculus II.
A continuation of the study of calculus with topics including: Riemann sums, techniques of integration, elementary differential equations and applications, parametric equations and polar coordinates, sequences and series, Taylor series. NOTE: Please note that section 7 of Math 1000 and Math 1010 is set aside for students who want a stronger foundation in calculus. Students contemplating a majors or honors program in mathematics or a related field such as physics or chemistry, etc. are encouraged to consider registering in this section. Sections 5 and 6 are for students enrolled in engineering.
FORMAT: Lecture 3 hours, tutorial 1 hour, MLC

MATH 1060.03: Introductory Statistics for Science and Health Sciences.
See class description for STAT 1060.03 in the Statistics section of this calendar.
NOTE: Please note that MATH 1115.03 below replaces MATH 1100.03 and MATH 1120.03 as one way to satisfy the Mathematics requirement for the B. Comm. program. MATH 1115.03 will be offered for the first time in September 2004. Each time MATH 1110.03 and MATH 1120 will cease to be offered.

MATH 1115.03: Mathematics for Commerce.
An introduction to matrices, linear programming, mathematics of finance, probability and differential calculus. All topics are taught with an emphasis on applications to business.
This class may not be used to partially satisfy the BSc Mathematics requirement.
FORMAT: Lecture 3 hours, MLC
PREREQUISITE: Nova Scotia Advanced Mathematics 11 or 12 or equivalent
EXCLUSION: MATH 1100.03, MATH 1120.03
* This class may not be used to partially satisfy the BSc Mathematics requirements.
** Students who have received credit for both MATH 1000 and MATH 2030 may not register for MATH 1115.

MATH 1215.03: Life Sciences Calculus.
This course emphasises the application of calculus to the life sciences. The concepts and content covered include derivatives, techniques of differentiation, logarithmic and exponential functions, optimization, basic ordinary differential equations, integration, and techniques and applications of integration.
NOTE: Students who have already received credit for MATH 1215.03 cannot subsequently receive credit for MATH 1115.03. Students who obtain a B- or higher in MATH 1215 may use the course as a prerequisite for MATH 1010.
FORMAT: Lecture 3 hours, MLC
PREREQUISITE: Nova Scotia Advanced Mathematics 11 and 12 or pre-calculus is highly recommended.
EXCLUSION: MATH 1000, MATH 1500

MATH 1280.03: Engineering Mathematics I.
This class offers a self-contained introduction to differential and integral calculus for Engineering students. The topics include functions, differentiation of polynomial, trigonometric, exponential and logarithmic functions, product, quotient and chain rules, applications of differentiation, antiderivatives and definite integrals, Riemann sums, integration by substitution, integration by parts, Taylor series approximations, and numerical approximations of integrals. This course has a strong Engineering design component. Examples of applications from several engineering disciplines are introduced and students will learn to solve them by applying the material taught in the course, aided by sophisticated computational tools such as MATLAB. A sequel to this class is MATH 1290.03.
NOTE: Students who have already received credit for MATH 1280.03 cannot subsequently receive credit for MATH 1000.03 or MATH 1115.03
FORMAT: Lecture/tutorial 3hrs.
PREREQUISITE: Nova Scotia Mathematics advanced 11 and 12 or pre-calculus.
PRE-REQUISITE: Must be taken concurrently with Math 1290.03.

MATH 1290.03: Engineering Mathematics II.
This class is a sequel to MATH 1280. The basic Calculus techniques learned there will be treated in more depth, and it is taught how they can be used in mathematical modelling. Trigonometric functions and complex numbers will be treated in depth. Elementary differential equations and applications will be introduced, and both analytical and numerical solution techniques will be taught. Other topics are parametric equations and polar coordinates, sequences and series, and a revising of Taylor series.
NOTE: Students who have already received credit for MATH 1280.03 cannot subsequently receive credit for MATH 1000.03.
FORMAT: Lecture/tutorial 3hrs.
PREREQUISITE: MATH 1280.03

MATH 1500.XXY.05: Calculus.
This class is intended primarily for students who anticipate taking an honours program in the physical or mathematical sciences. The topics of MATH 1000 and MATH 1010 are covered, but in greater depth. MATH 1500 is equivalent as a credit to MATH 1000/MATH 1010.
FORMAT: Lecture 3 hours
PREREQUISITE: Nova Scotia Mathematics advanced 11 and 12 or pre-calculus.
PRE-REQUISITE: Must be taken concurrently with Math 1590.03.
EXCLUSION: Credit can be given for only one of MATH 1000/MATH 1010 and MATH 1500.

MATH 2001.03/2002.03: Intermediate Calculus I and II.
The topics of these two classes include dot product, cross product, equations of lines and planes, functions of 2 or 3 variables, partial derivatives, Lagrange multipliers, double integrals, triple integrals, change of variables in multiple integrals, line integrals, Green’s theorem, Stokes’s theorem, Divergence theorem, topics in second-order differential equations.
FORMAT: Lecture 3 hours, MLC
PREREQUISITE: MATH 1280.03 and MATH 1500.

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 advanced 11 or 12

MATH 2040.03: Matrix Theory and Linear Algebra II.
This class is a continuation of MATH 2030.03. Topics include: Vector spaces and linear transformations, eigenvalues and eigenvectors, similarity and diagonalization, inner product spaces and orthogonal transformations, diagonalization of symmetric matrices and quadratic forms.
FORMAT: Lecture 3 hours, MLC
EXCLUSION: MATH 1000.03 and 1002.03
PRE-REQUISITE: Must be taken concurrently with Math 2030.03.

MATH 2051.03: Problems in Geometry.
This is a basic class for students interested in geometry. Topics from Euclidean and non-Euclidean geometry may include transformation geometry, symmetry groups, knots, tilings, wallpaper groups and the crystallographic restrictions, similarities, projective geometry and the
classical theorems of Mersenne, Ceva, Desargues, Pappus, Pascal; hyperbolic geometry. 

MATH 2060.03: Introduction to Probability and Statistics I.
See class description for STAT 2060.03 in the Statistics section of this calendar.

MATH 2080.03: Statistical Methods For Data Analysis & Inference.
See class description for STAT 2080.03 in the Statistics section of this calendar.

MATH 2112.03: Discrete Structures I.
This class together with MATH 2113.03 offers a survey of the following areas: set theory, mathematical induction, number theory, relations, functions, algebraic structures and introductory graph theory. The topics to be discussed are fundamental to most areas of Mathematics and have wide applicability to Computer Science.

MATH 2113.03: Discrete Structures II.
This class continues CSC2112.03/MATH2112.03. This class covers some basic concepts in discrete mathematics which are of particular relevance to students of computer science, engineering, and mathematics. The topics to be covered will include: Solution of Recursion relations, Generating Functions, Number Theory, Chinese remainder theorem, Trees and graphs, Finite state machines, Abstract Algorithms, Boolean algebra.

MATH 2135.03: Linear Algebra.
MATH 2135.03 is a second class in linear algebra oriented towards mathematics honours students (although Physics, Chemistry, Economics, and Mathematics majors may find it useful). As such, the class emphasizes the foundations of the theory of vector spaces, rather than applications. Topics include: the axioms of vector and inner product spaces, linear transformations, the dual of a vector space, tensor algebras, determinants, quadratic and bilinear forms, orthogonal, symmetric, and skew-symmetric transformations, the characteristic polynomial, eigenvalues, canonical forms, the Hamilton-Cayley theorem.

MATH 2300.03: Mathematical Modelling.
This class is designed to provide a bridge between introductory calculus and the applications of mathematics to various fields. By using fundamental calculus concepts in a modelling framework, the student investigates meaningful and practical problems chosen from common 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.

MATH 2305.03: Introductory Analysis.
MATH 2305.03: Introductory Analysis.

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 graphing software on UNIX stations and on PCs; scientific computing libraries and using the web to obtain solutions to scientific computing problems.

MATH 2505.03: Introductory Analysis.
For honours students and other serious students of mathematics. Topics include: the axioms for the real number system, geometry and topology of Euclidean space, limits, continuity, differentiability, the inverse and implicit function theorems.

MATH 2600.03: Theory of Interest and Life Contingencies.
This course comprises a detailed examination of simple and compound interest as well as the theory of life contingencies and life insurance premiums. The syllabus includes material on which EXAM 2 (Interest Theory, Economics and Finance, Life Contingencies) in the Society of Actuaries accreditation examination series is based. Some of the topics are: nominal and effective rates of interest and discount, force of interest, annuities, perpetuities, price of bonds, callable bonds, life annuities and life insurance premiums. Some special topics in economics and finance such as game theory may also be explored. The spreadsheet application Excel 97 will be introduced and some of its capabilities utilized.

MATH 2800.03: 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, developable surfaces.

MATH 2900.03: Theory of Numbers.
MATH 2900.03: Theory of Numbers.

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.

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 reciprocity; Legendre, Jacob and Kronecker symbols, arithmetic functions; algebraic fields; algebraic numbers and integers; uniqueness of factorization, definitions and elementary properties of ideals; ideal classes and class number.

MATH 3080.03: Theory of Numbers.

MATH 3112.03: Numerical Computation.

MATH 3135.03: Linear Algebra.

MATH 3200.03: Abstract Algebra.

MATH 3203.03: Abstract Algebra.

MATH 3400.03: Introduction to Numerical Computing.
MATH 3080.03: Introduction to Complex Variables. An introduction to the basic elements of complex analysis. Topics include: complex numbers, functions, differentiation and integration in the complex plane, some special mappings, series in general, Taylor and Laurent Series, residues, some principles of conformal mapping theory. FORMAT: Lecture 3 hours. PREREQUISITE: MATH 2022.03

MATH 3110.03: Differential Equations. One of the aims of this class is to give students the ability to analyze and solve a number of different types of differential equations. Wherever possible, applications are drawn from the fields of physics, chemistry, biology, and other areas. The class is intended mainly for mathematics and science 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 2022.03

MATH 3120.03: Differential Equations. The topics discussed are of great importance to any student interested in applied mathematics. Areas include Fourier series, orthogonal polynomials, Sturm-Liouville problems, the classical partial differential equations, and some applications to physics, chemistry and engineering. FORMAT: Lecture 3 hours. PREREQUISITE: MATH 3110.03

MATH 3140.03: Introduction to Wavelets. This course is an introduction to wavelets and their scientific applications. It should be of interest both to students from applied fields seeking a better understanding of the ideas and connections which underlie tools used in their field, and also to students in mathematics curious about a beautiful and fascinating area of great theoretical depth which nevertheless has numerous applications in the modern world. Wavelet analysis provides an extremely powerful and highly flexible tool for the compression, denoising, and recognition of both audio and image signals. In the last two decades it has had immense impact in many fields as diverse as engineering, medicine, seismology, speech analysis, and fingerprint analysis, to name but a few. This course will develop many of the core mathematical concepts of Fourier analysis and wavelets. Haar wavelets will be described in detail, leading up to the concept of a multiresolution analysis, and the construction of a wavelet basis. Further topics may include the passage from the continuous domain to the discrete, and the Daubechies wavelets which are largely responsible for much of the recent explosion of applications that wavelets have seen. Many applications will also be discussed and examined. FORMAT: Lecture. PREREQUISITE: MATH 2022.03 and MATH 2030.03

MATH 3150.03: Intro Nonlinear Dynamics. This course aims to provide students with a basic understanding of the qualitative analysis of nonlinear dynamical systems. Local bifurcations of both one and two-dimensional flows will be considered. Chaos will be studied with the Smale horseshoe map, the discrete logistic equation and the Lorenz equations. Emphasis will be placed on applications of the theory from such areas as mechanical vibrations, population dynamics, nonlinear oscillators, etc. PREREQUISITE: MATH 2022 and MATH 2030. RESTRICTION: Third year and above.

MATH 3170.03: Introduction to Numerical Linear Algebra. See class description for CSCI 3110.03, in the Computer Science section of this calendar.

MATH 3300.03: Optimization. An introduction to the concepts and applications of linear and nonlinear programming. Topics include the simplex method for linear programming, duality and sensitivity analysis, convex programming, Kuhn-Tucker and Lagrange multiplier conditions, numerical algorithms for unconstrained and constrained problems. Some of these topics are illustrated by means of interactive computer packages. FORMAT: Lecture 3 hours. PREREQUISITE: MATH 2002.03 and 2040.03

MATH 3330.03: Applied Graph Theory. This course offers an introduction to graph theory, with an emphasis on applications and modelling. Topics include paths and cycles, shortest route problem, connectivity and trees, minimum spanning trees, network flow, planar graphs, matchings, assignment problem, graph colouring and applications to scheduling, Hamilton cycles and the Travelling Salesman Problem. PREREQUISITE: MATH 2112 or MATH 2020

MATH 3340.03: Regression and Analysis of Variance. See class description for STAB 3550.03, in the Statistics section of this calendar. CROSS-LISTING: STAT 3340.03

MATH 3350.03: Design of Experiments. See class description for STAT 3550.03, 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-cooperative solutions, Prisoner's dilemma, Chicken, Newcomb's problem. There will be applications to many areas including anthropology, biology, business, economics and philosophy. FORMAT: Lecture. PREREQUISITE: MATH 2030, or permission of the instructor.

MATH 3460.03: Intermediate Statistical Theory. See class description for STAT 3460.03 in the Statistics section of this calendar. CROSS-LISTING: STAT 3460.03

MATH 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, Arzela-Ascoli theorems, 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 2155.03, 2305.03

MATH 3700.03: Mathematics for Economics. See class description for ECON 3700 in the Economics section of this calendar. CROSS-LISTING: ECON 3700.03

MATH 3800.03: Financial Economics. See class description for ECON 3800.03 in the Economics section of this calendar. CROSS-LISTING: ECON 3800.03
MATH 3000.03: Financial Mathematics.
This class is an introduction to derivative pricing. Topics include binomial tree model, stochastic calculus, Ito calculus, Black-Scholes model, market price of risk, log-normal models.
PREREQUISITE: MATH 2600.03 or permission of the instructor
CROSS-LISTING: ECON 3005.03
CO-REQUISITE: MATH 3110.03 or permission of the instructor

MATH 4010.03: Introduction to Measure Theory and Integration.
A discussion of Lebesgue's theory of measure and integration on the real line. The topics include the extended real number system and its basic properties, the definition of measurable sets, Lebesgue measure and the existence of non-measurable sets; the Lebesgue integral, differentiation of monotonic functions (e.g. the Cantor function), absolute continuity, the classical Lebesgue spaces.
FORMAT: Lecture 3 hours
PREREQUISITE: MATH 3000.06
CROSS-LISTING: MATH 5010.03

MATH 4020.03: Analytic Function Theory.
A second half-class in complex function theory. Topics include review of analytic complex functions including topological properties of the plane, Mobius mappings, exponential, logarithmic, trigonometric and related functions, integration, and the Cauchy theorem. Cauchy's integral formula, residues, harmonic functions, analytic continuation, entire and meromorphic functions, some results of conformal mapping, including the Riemann mapping theorem.
PREREQUISITE: MATH 3002 (MATH 3080 recommended)

MATH 4025.03: Commutative Algebra I.
This introduction to commutative algebra includes a selection of the following topics: prime and maximal ideals, primary decomposition, Noetherian rings, Hilbert's Basis Theorem and the Nullstellensatz.
FORMAT: Lecture, 3 hours
PREREQUISITE: MATH 3010.06 or equivalent
CROSS-LISTING: MATH 5025.03

MATH 4045.03: Advanced Algebra I.
Topics may include: structure of groups, rings, fields, and modules; Galois theory. Other topics of special interest may be covered.
FORMAT: Lecture 3 hours
PREREQUISITE: MATH 3030.06
CROSS-LISTING: MATH 5045.03

MATH 4055.03: Advanced Algebra II.
Topics may include: Algebras over a field, classical representation theory of groups and algebras, lattices, Boolean algebra. Additional topics may be covered at the discretion of the instructor.
FORMAT: Lecture 3 hours
PREREQUISITE: MATH 3030.06
CROSS-LISTING: MATH 5055.03

MATH 4065.03: Algebraic Geometry.
This is a first course in algebraic geometry and will introduce students to the basic properties of affine and projective varieties. Topics covered will include a selection from: local properties of plane curves, elliptic curves, Bezout's Theorem, Riemann-Roch Theorem.
FORMAT: Lecture 3 hours
PREREQUISITE: MATH 3010.06
CROSS-LISTING: MATH 5065.03

MATH 4066.03: Advanced Statistical Theory I.
CROSS-LISTING: MATH 5066.03
STAT 4066.03/7066.03

MATH 4070.03: Topics in Number Theory.
The class is intended to give an introduction to both analytic and algebraic number theory. Following a short review of basic notions from elementary number theory, there will be a detailed discussion of quadratic reciprocity and some of its applications and extensions. The main topics from analytic number theory will be arithmetic functions and Dirichlet L-series, resulting in a proof of Dirichlet's theorem on primes in arithmetic progressions. Finally, some fundamental properties of algebraic number fields will be discussed, with some emphasis on quadratic and cyclotomic fields.
FORMAT: Lecture 3 hours
PREREQUISITE: MATH 3070.03
CROSS-LISTING: MATH 5070.03

MATH 4090.03: Probability.
See class description for STAT 4090.03 in the Statistics section of this calendar.
CROSS-LISTING: STAT 4090.03

MATH 4110.03: Number Theory.
A discussion of Lebesgue's theory of measure and integration on the real line. topics include the extended real number system and its basic properties, the definition of measurable sets, Lebesgue measure and the existence of non-measurable sets; the Lebesgue integral, differentiation of monotonic functions (e.g. the Cantor function), absolute continuity, the classical Lebesgue spaces.
FORMAT: Lecture 3 hours
PREREQUISITE: MATH 3010.06
CROSS-LISTING: MATH 5110.03

MATH 4116.03: Cryptography.
This class is an introduction to modern cryptographic techniques and its mathematical foundations. The material covered includes: elementary number theory and algebra; classical cryptosystems; probability; the Data Encryption Standard; prime number generation and primality tests; public key cryptosystems; further applications, such as digital signatures and identification. The class ends with a brief overview of other cryptosystems, such as elliptic curve cryptography.
PREREQUISITE: MATH 3030.05, 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, functors, natural transformations and adjunctions are introduced with emphasis on examples drawn from undergraduate Mathematics and theoretical Computer Science. The calculus of diagram chasing, limits, colimits and Kan extensions is explored in detail.
FORMAT: Lecture 3 hours
PREREQUISITE: MATH 3030.06 or permission of the instructor.
CROSS-LISTING: MATH 5135.03

MATH 4136.03: Topics in Category Theory.
Topics of current interest in category theory will be discussed with an emphasis on open problems. No previous knowledge of category theory is required. The necessary concepts will be discussed at the context of their applications. However, a certain familiarity with the basic concepts of modern abstract mathematics such as found in courses on algebra and topology would be an asset.
PREREQUISITE: MATH 3030.03 and consent of instructor
CROSS-LISTING: MATH 5136.03

MATH 4140.03: Introduction to Functional Analysis.
An introduction to the basic principles of functional analysis including the following topics: infinite dimensional vector spaces, normed spaces, inner-product spaces, Banach and Hilbert spaces, linear and continuous linear functionals, the Hahn-Banach Theorem, the principle of uniform boundedness, dual spaces, weak*, weak* topology, and the Alaoglu theorem, the open mapping and closed graph theorems, and consequences and applications.
FORMAT: Lecture 3 hours
PREREQUISITE: MATH 2135.03 and 3500X/Y.06
CROSS-LISTING: MATH 5140.03

MATH 4145.03: 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 3500.03 or permission of instructor.
CROSS-LISTING: PHYC 4145.03

MATH 4170.03: General Topology.
An introduction to topological spaces that includes the following topics: open sets, closed sets, compactness, connectedness, product spaces, Tychonoff theorem, compactifications, Tychonoff spaces, metrizability.

466 Mathematics
MATH 4175.03: Topics in Combinatorics.
PREREQUISITE: MATH 3120.03, 3130.03, 3140.03, 3150.03, 5120.03, 5130.03, 5140.03, 5150.03
FORMAT: Lecture 3 hours
This course is intended for math and computer science students. Items to be selected from graphs; graphs and matrices, graphs and groups, network analysis, extremal graph theory, enumeration problems, algebraic methods in graph theory.
CROSS-LISTING: MATH 5320.03
MATH 4320.03: Combinatorial Optimization.
PREREQUISITE: MATH 2000, MATH 2002, MATH 2030
FORMAT: Lecture
Various graph algorithms will be presented and analyzed. Specifically, we will treat the algorithms for the problems: minimum spanning tree, shortest path, maximal flow, minimum cost flow, maximum matching. For each problem, various algorithms will be presented and compared. Correctness will be proved and complexity bounds given. The link with Linear Programming, especially LP-Duality, will receive special attention. The theory of Linear Programming will be reviewed for this purpose. Algorithm complexity will be treated in context. The complexity classes P and NP will be loosely introduced and discussed through the comparison of examples such as matching vs. traveling salesman.
CROSS-LISTING: MATH 5320.03
MATH 4330.03: Topics in Graph Theory.
PREREQUISITE: MATH 4300.03, 5300.03
FORMAT: Lecture 3 hours
This class is intended for math and computer science students. Items to be selected from graphs and matrices, graphs and groups, network analysis, extremal graph theory, enumeration problems, algebraic methods in graph theory.
CROSS-LISTING: MATH 5330.03, CSCI 4115.03
MATH 4340.3: Discrete Random Structures.
The combination of probability theory and combinatorics has given rise to both a rich new theory, as well as a variety of applications. The so-called probabilistic method, namely, the application of probabilistic techniques to combinatorial problems, has given a new perspective on classical combinatorics. Probability is now also used successfully in the design of discrete algorithms. A combination of probability and combinatorics is often needed when modeling discrete processes and networks that occur in nature. This course will explore the use of probability on discrete structures. It will contain an introduction to probability and stochastic processes, and then focus on one or two research areas where probability and combinatorics interact.
CROSS-LISTING: MATH 5340.03
MATH 4350.03: Combinatorial Modeling.
This course introduces a common framework for combinatorial structures (graphs, digraphs, hypergraphs, posets, preorders, lattices, finite topologies, simplicial complexes), with an emphasis on how to model these structures with other fields of mathematics, such as matrix theory and linear algebra, commutative algebra, topology, analysis, probability and logic. The modeling process shows how important and fundamental concepts in various branches of mathematics can be used to prove results in combinatorics that are not easily (or perhaps at all) provable without the connections derived.
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 geometrical model is a model of the universe, as a whole, on the largest scales; the emphasis of the class will be on the modelling aspects of cosmology.
FORMAT: Lecture 3 hours
PREREQUISITE: Instructor’s permission
CROSS-LISTING: MATH 5410.03, PHYC 4660.03/5660.03
MATH 4530.03: Differential Geometry.
This class is an introduction to differential and Riemannian geometry. It serves advanced undergraduates and graduate students with interests in geometry and mathematical physics, and in particular general relativity. There are 4 major topic areas.
1. Elements of Surface Theory. First and second fundamental form; curvature; theorema egregium; intrinsic versus extrinsic geometry; parallel transport; geodesics.
2. Tensors. Tensor spaces and duals; invariance; covariance; contra-covariance; exterior and tensor algebra.
4. Riemann Geometry. The metric tensor; length of curves and volume. The Levi-Civita connection; parallel transport and geodesics; curvature; covariant differentiation; the Laplacian and the gradient operators.
FORMAT: Lecture 3 hours
PREREQUISITE: MATH 3651.03
CROSS-LISTING: MATH 5530.03
MATH 4600.03: 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 3641.03 or permission of the instructor
CROSS-LISTING: MATH 5600.03, PHYC 4660.03/5660.03
MATH 4660.03: Automata and Computability.
See class description for CSCI 4112.03, in the Computer Science section of this calendar.
PREREQUISITE: CSCI 2112.03, CSCI 3136.03
CROSS-LISTING: CSCI 4122.03
MATH 4680.03: Topics in Logic and Computation.
This course covers topics of current interest in logic and/or the foundations of computation. Suitable topics include: formal logic, soundness and completeness, Godel’s incompleteness theorem; formal set theory, the Zermelo-Frankel axioms; non-standard models, independence of axioms; lambda calculus and foundations of functional programming languages, proof theory, semantics.
NOTE: Please consult the instructor for the topics offered in a particular year. This course is suitable for advanced undergraduates and graduate students from both mathematics and computer science.
FORMAT: Seminar
PREREQUISITE: MATH 3030.03 OR MATH 3560.03, OR CSCI 3110 AND CSCI 3316, or permission of the instructor.
Suggested prerequisites for math students are algebra or analysis at honors undergraduate level. Students from computer science should be familiar with formal language theory and concepts of programming languages. All students should be comfortable with writing mathematical proofs. When in doubt about prerequisites, please consult the instructor.
CROSS-LISTING: MATH 5680.03
MATH 4800.03: Introduction to Mathematical Research.
This class is intended to introduce students to the science and methodology of research in the mathematical sciences. The class will be organized around topics from a wide spectrum of mathematics from which students will be guided to investigate open problems. Conjectures will be formulated and evidence will be developed. Computational tools (such as Maple V) will be incorporated for both pure and applied problems. This class will also introduce students to methods for researching the literature. Students will be expected to record their work in personal journals that are typed in LaTeX.
FORMAT: Lecture 3 hours
PREREQUISITE: MATH 3020.03, 3040.03 or 2355.03, MATH 3530X/Y:0.06 or permission of the instructor
CROSS-LISTING: MATH 5800.03, CSCI 4800
MATH 4900.03: Combinatorial Game Theory.
This course looks at 2-player games of strategy where there are no chance devices and both players have perfect information—Go, Chess, Checkers and Dots-And-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 2040.03/2041.03, 2001.03/2002.03
CROSS-LISTING: MATH 5900.03
MATH 4950.03: Honours Research Project.
The course is required for students in the honours program. It will consist of a research project carried out under the supervision of a faculty member. The results of the research will be submitted to the department as a written report. The student will also make an oral presentation of this work to the department. Students wishing to enroll in this class must have a suitable background in mathematics, and must meet with, and obtain the approval of, the mathematics honours co-ordinator before undertaking their project.
NOTE: Students will be required to take two full 4000-level classes in addition to this one.
MATH 8891.00: Co-op Work-Term I.
PREREQUISITE: SCIE 2700.03
MATH 8892.00: Co-op Work-Term II.
PREREQUISITE: MATH 8891.00
MATH 8893.00: Co-op Work-Term III.
PREREQUISITE: MATH 8892.00
MATH 8894.00: Co-op Work-Term IV.
PREREQUISITE: MATH 8893.00
**Microbiology & Immunology**

**Location:** Sir Charles Tupper Medical Building, Halifax, NS B3H 4H7

**Telephone:** (902) 494-2597

**Fax:** (902) 494-5125

**Dean**

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

**Head of Department**

Marshall, J.

**Undergraduate Advisors**

Barnes, C. (494-2123)

Stoltz, D. (494-2590)

Email: dstoltz@dal.ca

**Co-op Academic Advisor**

Stoltz, D. (494-2590)

Email: dstoltz@dal.ca

**Professors**

Anderson, R., PhD (Cologne), (Viral Pathogenesis)

Duncan, R., PhD (Guelph), Graduate Studies Coordinator (Molecular Virology)

Forward, K.R., MD (Memorial), FRCP(C), Pathology (Antimicrobial Resistance; Clinical Diagnostic Microbiology)

Hokson, D.W., PhD (McGill), Tumour Immunology; Cancer Biology

Issekutz, T.B., MD (Dal), FRCP(C), Prof., Pediatrics (Lymphocytes in Autoimmune Disease)

Johnston, G.C., PhD (York), Molecular Genetics: Regulation of Gene Expression

Lee, P.W.K., PhD (Alberta), Molecular Virology; Cancer Biology

Richardson, C.D., PhD (British Columbia), Molecular Virology

Stoltz, D.B., PhD (McMaster) (Biology of Parasitic Insects; Host-Parasite Interactions)

Stoltz, D., PhD (McMaster) (Intestinal Inflammation; Cytokines)

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

**Associate Professors**

Barnes, C. (494-2123), Molecular Genetics

Faulkner, G., PhD (Dal) (Ultrastructural Analysis of Infection and Cancer Cells)

Garduno, R., PhD (Victoria), Intracellular Pathogens

Haldane, D.J.M., MBChB (Dundee), FRCP(C), Medical Microbiology

Issekutz, A.C., MD (Dal), FRCP(C), Prof., Pediatrics (Immunology, Herbal Medicine)

McDowell, C., PhD (Dal) (Mucosal Vaccines)

Marshall, J.S., PhD (Manchester), Mast Cells in Inflammation and Cancer

McDowell, C., PhD (Dal), Molecular Virology

Stoltz, D.B., PhD (McMaster), Biology of Parasitic Insects; Polydnaviruses

**Senior Instructor**

Murray, L.E., PhD (Dal) (Molecular Genetics)

**I. Introduction**

The Department of Microbiology & Immunology is involved in teaching and research in several vital areas of biomedical endeavour including molecular and medical microbiology, virology, immunology and microbial genetics.

The program is designed to familiarize students with the biology and pathogenesis of viruses, bacteria, yeast and multicellular parasitic organisms. Advanced classes deal specifically with selected aspects of virology, molecular mechanisms of pathogenesis, microbial genetics, cell and molecular biology.

A set of classes in molecular genetics has been identified to meet the needs of honours Microbiology or Biochemistry students who hope to pursue further study in molecular and genetic approaches to fundamental problems. These classes provide solid grounding in bacterial and eukaryotic gene structure and function, regulation and evolution, and both practical and theoretical presentations of recombinant DNA methods (genetic engineering).

They can be taken along with classes in metabolism, enzymology, bacteriology, virology and immunology and provide a good practical grounding for fields as diverse as genetic diagnosis and gene therapy, forensics, industrial microbiology and molecular evolution (see below and the Biochemistry listings and consult departmental advisors).

The Department also has a significant teaching program in Cellular and Molecular Immunology. The Immunology program is designed for students interested in fundamental questions in molecular immunology, tumour immunology, autoimmunity or inflammation, and defenses against microbial infection.

These programs provide the education needed for graduate studies or for professional activities after graduation in microbiology and/or immunology.

**II. Degree Programs**

There are 20-credit Major and Double Major programs in Microbiology & Immunology but no 15-credit degree is offered. MICI 2100.03 is a prerequisite for most other microbiology classes offered in this Department. Students interested in an Honours program (see below) must consult a departmental advisor, preferably prior to registration for 2nd year classes. Biology Majors are advised that many classes in Microbiology & Immunology do count toward a BSc in Biology even though they are not cross-listed with the Biology Department.

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

The Department wishes to draw the attention of students to the class, SCIE 1111.03, which fulfills the writing class requirement for BSc students.

II. Degree Programs

There are 20-credit Major and Double Major programs in Microbiology & Immunology but no 15-credit degree is offered. MICI 2100.03 is a prerequisite for most other microbiology classes offered in this Department. Students interested in an Honours program (see below) must consult a departmental advisor, preferably prior to registration for 2nd year classes. Biology Majors are advised that many classes in Microbiology & Immunology do count toward a BSc in Biology even though they are not cross-listed with the Biology Department.

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

The Department wishes to draw the attention of students to the class, SCIE 1111.03, which fulfills the writing class requirement for BSc students.

A. 20-credit BSc Honours in Microbiology & Immunology

This program is designed to give students the best possible preparation for future graduate work or a professional career in microbiology or immunology. Students applying for admission to this program must normally have obtained a grade of B or better in first year BIOL and/or CHEM and/or an above median grade in DPRI (Dalhousie Integrated Science Programs) and must, in their 2nd year, obtain a grade of at least B in MICI 2100.03 (BDOL 2004.03). Students must consult an undergraduate advisor.
Departmental Requirements

1000 level
- BIOC 1010.03, 1011.03 or BIOC 1020.03, 1021.03
- CHEM 1011.03, 1012.03 or CHEM 1041.03, 1042.03
- MATH 1001.03 or MATHS 1215.03 and MATH 1010.03 or STAT 1060.03

2000 level
- MICI 2100.03
- BIOC 2030.03
- BIOC 2040.03
- BIOC 2300.03 and 2610.03
- CHEM 2401.03 and CHEM 2402.03

3000 level
- BIOC 3400.03
- MICI 3033.03
- MICI 3114.03
- MICI 3115.03
- MICI 3119.03 (or BIOC 3113.03 or MICI 3118.03)

4000 level
- MICI 4900.06

A minimum of two and one-half additional credits (to make a total of 9) are to be taken from the list provided below (the classes listed are all considered to belong to the discipline of microbiology and/or immunology):
- MICI 3115.03, 3204.03, 4027.03, 4102.03, 4114.03, 4115.03, 4116.03, 4117.03, 4302.03, 4601.06
- BIOC 4010.03, 4602.03, 4604.03, 4604.03, 4801.03, 4805.03
- BIOC 2040.03, 3010.03, 3020.03, 3115.03, 3222.03, 4010.03, 4104.03
- FOX 3003.03, BIOC 3241.03

Notes:
1. In the following core classes, MICI 2100.03, 3033.03, 3114.03, 3115.03, 3118.03 (or equivalent) and MICI 4900.06 — you must achieve a minimum grade of B in five and a minimum grade of B- in the sixth class.
2. If you take both MICI 2100 and BIOC 2030 and receive a grade of B- or lower in MICI 2100, you need to obtain a B+ in BIOC 2030 for the BIOC course to count as the MICI departmental core course requirement.
3. The honours research thesis (MICI 4900.06) can be done in either the Microbiology & Immunology, Biochemistry & Molecular Biology or Biology Departments (or in other departments in the Faculty of Science or Medicine if approved by the departmental Undergraduate Studies Committee). The thesis work, however, must be relevant to the interests of this Department.
4. Students should be aware of Academic Regulation 17. Students should also note that certain advanced classes require that a particular grade be achieved in the prerequisite class and/or that permission of the instructor be obtained for registration in the class, or both.
5. If you do not meet the prerequisites listed for a class (or fail to obtain permission from an instructor), the Registrar’s Office will be informed and your name will be deleted from the class list.

B. BScs with Combined Honours in Microbiology & Immunology and Biochemistry & Molecular Biology

Students in this program must complete 11 credits above the 1000 level in Microbiology & Immunology and Biochemistry & Molecular Biology. Departmental Courses Required at Upper Levels

- CHEM 2401.03 and 2402.03
- BIOC 2300.03 and 2610.03
- MICI 2100.03 or BIOC 2030.03
- MICI 3033.03, 3114.03, 3115.03, 3118.03 or alternates
- MICI 4601.06 or BIOC 4601.06
- one credit from BIOC 40XX, 43XX, 44XX, 45XX, or 47XX

Either MICI 4900.06 or BIOC 4604.03 and MICI 4605.03 (either of which, with approval, can be carried out in either department).

C. BSc with Combined Honours in Microbiology & Immunology and Biology

Students in this program must complete the core requirements of each department. Students are required to maintain an average grade of B in core classes with no grade lower than B- (see note 2 above). BIOC 1010.03, 1031.03 or MICI 1015.03, 1025.03 or MICI 1016.06 should be taken in year 1, and MICI 2100.03 in year 2. Research thesis work can be carried out in either Department, subject to approval of the Undergraduate Studies Committee.

D. 20-credit Major and Double Major in Microbiology & Immunology

Students should consult a departmental Undergraduate Studies Advisor.

Departmental Core Courses Required

1000 level
- BIOC 1010.03, 1011.03 or BIOC 1020.03, 1021.03
- CHEM 1011.03, 1012.03 or CHEM 1041.03, 1042.03

2000 level
- MICI 2100.03, BIOC 2030.03, BIOC 2040.03, BIOC 2300.03, BIOC 2610.03
- CHEM 2401.03 and CHEM 2402.03

3000 level
- BIOC 3400.03, MICI 3033.03, MICI 3114.03, MICI 3115.03 and MICI 3119.03 (or BIOC 3113.03 or MICI 3118.03) with a grade of C- or better.

Notes:
- Students should be aware that certain advanced classes require a particular grade to be achieved in the prerequisite class and/or permission of the instructor to be obtained for registration in the class or both.

E. Co-op Education in Microbiology & Immunology

Co-operative Education in Science (Science Co-op) is a program in which academic study is combined with career related work experience. Students alternate three to four work terms throughout their academic study terms and graduate with a Bachelor of Science (Co-op). Science Co-op enables students to apply their knowledge directly while providing them with work experience that assists in making educated career choices. Students typically apply to join Science Co-op before their second year of study. If accepted into the Science Co-op program, students are required to register for and attend the Science Co-op Seminar Series (SCIE 2800.00) in the fall of the 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 requirements, eligibility, how to apply, deadlines and other related information. Note that not all students who apply will be admitted; much will depend on predicted job availability. Admission into Microbiology & Immunology Co-op requires permission from the Microbiology & Immunology Co-op Academic Advisor and Science Co-op Manager. In addition, a GPA of 3.30 in first year classes is required, as is a grade of at least B in MICI 2100.03. Students must also maintain a cumulative GPA of 3.30 for continuance in the program. Please consult with the Microbiology & Immunology Co-op Academic Advisor regarding possible work term sequences.

For further information, please visit the Co-op website at www.sciencecoop.dal.ca.

Co-op Academic Advisor in Microbiology & Immunology: Dr. Stultz (944-2500).
Email: dstoltz@dal.ca.

III. Class Descriptions

NOTE: Owing to the combined pressures of student numbers and a dearth of available space, the names of students absent from the first day of class may be deleted from class lists; students are therefore advised that being signed into a class is no guarantee of continued registration.

470 Microbiology & Immunology
MICI 1050.03: Basic Microbiology and Immunology for Pharmacy.
This class is strictly for students in pharmacy. Microbiology is learned over a three-week period by way of PBL tutorials, lectures and laboratory sessions. It addresses some basic principles of microbial structure, physiology, and antigenic relationship to disease. 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, culture and control of microorganisms.
INSTRUCTOR(S): L. Morley
FORMAT: Lecture 3 hours, tutorial 6 hours; 3 weeks
PREREQUISITE: BIOC 1005/1.06 or instructor's consent

MICI 1100.03: Health Science Microbiology.
Elementary bacteriology and immunology includes a study of the structure and physiology of microorganisms, the ways microorganisms cause disease in man and the way they affect man's well-being.
INSTRUCTOR(S): D. Haldane
FORMAT: Lecture 3 hours
RESTRICTION: This class is restricted to students in 2nd Year Nursing, Knowledge and Diagnostic Cytology.

MICI 1200.03: Introduction to General and Oral Microbiology.
See class description in the Dental Hygiene section of the Dentistry, Law and Medicine Calendar (DEHY 2301.03).

MICI 2100.03: Introductory Microbiology and Immunology.
An introduction to the basic concepts of microbiology and immunology through lectures, laboratory sessions and demonstrations. Topics include the structure, genetics and life cycles of microorganisms and viruses, as well as basic immunology. This is a normally a required class for Microbiology and Immunology majors/honours students (although BIOC 2004 is allowed as an alternative option), as such, it is directed primarily to second year students. In fact, roughly three out of four laboratory spaces will be reserved for second year students; it is suggested that students take BIOC 2100.03 concurrently with MICI 2100.03, if feasible. Final laboratory assignments are made during the first lecture period. Consequently, because of limits to lab space, students not attending that lecture may be denied admission to the class even if they are already registered. Students wishing to repeat the class must have approval to do so from the class coordinator. MICI 2100.01 is the preferred route into other MICI offerings.
NOTE: Students cannot enter this class after labs have commenced.
INSTRUCTOR(S): D.B. Stoltz
FORMAT: Lecture 2 hours, lab 3 hours
PREREQUISITE: Grade of B or better in BIOC 1010.03 and 1011.03 and first year chemistry (full credit) or an above median grade in the Biology and Chemistry components of the Dalhousie Integrated Science Program. Students lacking such prerequisites will be removed from the class list.

MICI 2115.03: Human Organs and Tissues.
Using a histology approach, students are expected to learn the fundamental associations that exist between essential body processes and the microscopic and molecular characteristics of cells, tissues and their main products. In general terms, the subject matter deals firstly with basic tissue types: the structure and function of their cells and products - and then considers the various ways in which tissues and organs are constructed and function at the cellular level normally and, when appropriate, in disease. The course is not intended to cover all typical topics of histology. Instead, the specific subject matter has been selected for its relevance and potential for complementing advanced courses in Microbiology and Immunology (e.g., MICI 3114, 3115 and 3118). This course is not appropriate for students who are taking or have previously taken other human histology courses.
INSTRUCTOR(S): G. Faulkner, G. Rowden, K. West, R. Livoski
FORMAT: Lecture 3 hours
PREREQUISITE: Grade of B or better in MICI 2100.03 or BIOC 2004.03

MICI 3024.03: Microscopy.
The class is concerned with biological ultrastructural analysis concentrating on transmission and scanning electron microscopy. The importance of a proper understanding of the physical and chemical principles governing technical procedures such as fixation, staining, tissue-section, colloidal gold probes, autoradiography, x-ray microanalysis and photography is emphasized. During laboratory periods students have the opportunity through individual projects to participate in some of the techniques covered in the lectures.
FORMAT: Lecture 3 hours, lab project
PREREQUISITE: Grade of B or better in MICI 2100.03 (or BIOC 2004.03) and BIOC 2020.03
CROSS-LISTING: BIOC 3024.03

MICI 3033.03: Microbial Genetics.
Heredity in bacteria and their viruses, with principal emphasis on mutation, gene transfer, molecular approaches to genetic analysis and regulation of gene expression on microorganisms.
INSTRUCTOR(S): C. Barnes
FORMAT: Lecture 3 hours
PREREQUISITE: Includes all of MICI 2100.03 (or BIOC 2004.03), BIOC 2030.03 and BIOC 2040.03, BIOC 2020.03 and BIOC 2030.03 and BIOC 3400.03 (a B average in these classes with a minimum B- in any one)

MICI 3114.03: Virology.
Viruses are extremely efficient nucleoprotein complexes that have played, and continue to play, significant roles in the analysis of gene organization and expression, cancer biology, molecular pathogenesis, cell biology, biotechnology, gene therapy and molecular evolution. This introductory class is designed to give the student an appreciation for the diversity of viruses and their biological interactions with the host at both a cellular and organismal level. Topics discussed include virus structure, assembly, characterization, gene organization and expression, host-cell interactions, cell transformation and pathogenesis. The lecture material revolves around concepts introduced in BIOC 2200.01, BIOC 2020.03 and BIOC 2030.03 and complements material presented in other classes such as immunology, cell biology, biochemistry, genetics, physiology and general expression.
INSTRUCTOR(S): R. Anderson, R. Dunsmuir, D.B. Stoltz
FORMAT: Lecture 3 hours, tutorial 1 hour
PREREQUISITE: Includes all of MICI 2100.03 (or BIOC 2004.03), BIOC 2030.03 and BIOC 2040.03, BIOC 2020.03 and BIOC 2030.03 (a B average in these classes with a minimum B- in any one). BIOC 3400.03 must be taken concurrently with this class; the same grade requirement applies.

MICI 3115.03: Immunology.
This class is designed to provide the student with an understanding of the fundamental principles of cellular and molecular immunology. Lectures focus on mechanisms governing the generation and regulation of cell-mediated and humoral immune responses. Topics discussed include cells and tissues of the immune system, the structure and synthesis of antibodies, complement pathways, T cell subsets and their functions, hypersensitivity reactions and the genetics of the immune response.
INSTRUCTOR(S): D.W. Hookin, A. Mundy, T. Lee
FORMAT: Lecture 3 hours
PREREQUISITE: Includes all of MICI 2100.03 (or BIOC 2004.03), BIOC 2030.03 and BIOC 2040.03, BIOC 2020.03 and BIOC 2030.03 (a B average in these classes with a minimum B- in any one except BIOC 2004.03 which requires a minimum B+)

MICI 3118.03: Medical Bacteriology.
This class is designed to give a strong background in medical bacteriology. Lectures address the identification and typing of bacterial pathogens, mechanisms of disease transmission, toxins and antibiotics, and provide a detailed survey of most bacterial pathogens. Laboratory sessions, supplemented with computer software, complement the lecture topics and focus on the identification of select groups of bacteria of medical significance.
INSTRUCTOR(S): TBA
FORMAT: Lecture 2 hours, lab 3 hours
PREREQUISITE: Minimum grade of B in MICI 2100.03 or BIOC 2400.03

Microbiology & Immunology 471
MICI 3119.03: Physiology of the Prokaryotic Cell.
The course is designed to provide students with some fundamentals of bacteriology and in particular give students an appreciation of the complex physiological processes that are needed for interactions with other organisms and the environment. Topics discussed will include molecular architecture and assembly of cell parts, metabolism and energy production, utilization of energy for cell activities, adaptation responses to host and environmental challenges, and host-pathogen interactions. INSTRUCTOR(S): S. F. Lee, R. Davidson

PREREQUISITE: MICI 2108 or (BIOC 2004, BIOC 2300 and BIOC 2610, BIOC 2020 and 2035, (a B average in these classes with a minimum B- in any one)

MICI 4027.03: Molecular Mechanisms of Cancer.
The course focuses on the molecular mechanisms of cancer and consists of lectures and student presentations. Topics include: receptors and downstream signaling, oncogenes and tumor suppressors, cancer metastasis and angiogenesis, cell cycle control and apoptosis. INSTRUCTOR(S): P. Lee and D. Weisman

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 5207.03/PATH 5207.03/BIOC 4027.03

MICI 4100.03: Processes and Mediators of Inflammation.
To provide students with an in depth understanding of the major mechanisms of inflammation at a molecular and cellular level, to introduce students to the current research questions and emerging methods of treatment for inflammation; to develop students critical appraisal skills as they relate to the current scientific literature in this area. INSTRUCTOR(S): B. Johnston and J. Marshall

FORMAT: Lecture/presentation/discussion
PREREQUISITE: MICI 3155.03 with a grade of B- or better and instructor’s consent is required

CROSS-LISTING: MICI 5001.03 PATH 5001.03

MICI 4114.03: Advanced Topics in Molecular and Medical Virology.
A class for advanced students designed to look in detail at selected aspects of molecular and medical virology. The class is based on student presentation of current literature, in combination with introductory lectures and paper discussions. INSTRUCTOR(S):

FORMAT: Lecture/presentation/discussion 3 hours
PREREQUISITE: Students enrol in the Fall semester, but must attend the first class scheduled until admittance is determined. Restricted enrollment based on performance in MICI 3141.03 (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 research articles and research papers taken from the current literature in immunology. Particular emphasis is placed on mechanisms involved in the host immune response to pathogens and tumour cells. However, other major areas of immunology such as allergic inflammation and transplantation immunology are also covered. INSTRUCTOR(S): D.W. Hoskin and Microbiology and Immunology faculty members

FORMAT: Lecture/discussion 3 hours
PREREQUISITE: Minimum grade of B- in MICI 3155.03 or instructor’s consent

MICI 4116.03: Current Topics in Mucosal Immunology.
The mucosal immune system maintains a state of tolerance to environmental antigens while mounting a rapid and robust specific immune response to infectious agents. This balance has led to certain physical and functional characteristics unique to mucosal sites. This course is intended to accent these properties of the mucosal immune system, drawing on experimental and human examples. The course consists of lectures and student-led presentations and discussions of current publications (chosen by the course coordinator). Each week focuses on a single theme but covers topics in the gastrointestinal, respiratory and genitourinary systems. Students typically present two publications in the course. Evaluations are based on student presentations (30%), participation in the discussions of other student presentations (15%) and a 20 page double-spaced research report or grant on a topic chosen by the student (35%). There are no exams. INSTRUCTOR(S): A. Osborn

PREREQUISITE: MICI 3155.03 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 course uses selected bacterial pathogens to develop basic principles regarding genes encoding virulence factors, their regulation and the molecular function of their gene products in surface-activation, invasion, intracellular growth and toxin production. The class includes student presentations of original research papers, and emphasises the use of modern molecular biological tools in problem solving. INSTRUCTOR(S): R. Hershko

PREREQUISITE: MICI 3033.03

CROSS-LISTING: MICI 5118.03

MICI 4302.03: Molecular Immunology.
An advanced class which investigates the molecular involvement in the generation and expression of immune responses. Topics typically include the molecular regulation of cytokines, the generation of antibody diversity by immunoglobulin gene rearrangement, class switching, the structure and function of cell surface Fc receptors such as the T cell antigen receptor, MHC and adhesion molecules, receptor signaling and the genetics of immune regulation. The course consists of lectures and student-led presentations and discussions of current publications (chosen by the course coordinator). Students typically present two publications in the course. Evaluations is based on student presentations (30%), 5 page double-spaced written summaries of the discussion following (their own) presentations (20%), participation in the discussions of other student presentations (15%) and a 20 page double-spaced research report or grant on a topic chosen by the student (35%). There are no exams. INSTRUCTOR(S): A. Sadykh

FORMAT: Lecture, student presentations, discussion
PREREQUISITE: MICI 3114.03 with a grade of B- or instructor’s consent

CROSS-LISTING: BIOC 4302.03/PATH 5302.03, MICI 5302.03

MICI 4403.03: Genes and Genomes.
See class description for BIOC 4403.03 in the Biochemistry and Molecular Biology section of this calendar.

MICI 4404.03: Gene Expression.
See class description for BIOC 4404.03 in the Biochemistry and Molecular Biology section of this calendar.

MICI 4601.03: Laboratory Techniques in Molecular Biology I.
This class consists of 2 scientific writing modules (15 hours in total of tutorials and computer-based assignments) and one laboratory module (4 weeks duration, one full day per week) organized collaboratively by the departments of Biochemistry & Molecular Biology, and Microbiology & Immunology. A choice of modules is offered in lab sections covering techniques used in the study of molecular biology, protein structure-function, and specific metabolic processes. This class is open to senior undergraduate students in the Science Co-op Program only and the number of places in the class is limited. Priority for enrolment is given to undergraduate students for whom this is a required class for their degree program. Students may not necessarily be assigned to the modules of their first choice but every effort will be made to accommodate those needing the techniques provided in a specific module. Students must obtain a class outline from the Biochemistry & Molecular Biology Office prior to registration and attend an organizational meeting, the date of which will be indicated in the Registration Timetable.
This class consists of a series of laboratory modules (3 modules each of 4 weeks duration, one full day per week) organized collaboratively by the Departments of Biochemistry & Molecular Biology, and Microbiology & Immunology. A choice of modules is offered in 2 half-semester covering techniques used in the study of molecular biology, protein structure-function, and specific metabolic processes. This class is open to senior undergraduate students in the Science Co-op Program only and the number of places in the class is limited. Priority for enrolment is given to undergraduate students for whom this is a required class for their degree program. Students may not necessarily be assigned to the modules of their first choice but every effort will be made to accommodate these needing the techniques provided in a specific module. Students must obtain a class outline from the Biochemistry & Molecular Biology Office prior to registration and attend the organizational meeting, the date of which will be indicated in the Registration Timetable.

INSTRUCTOR(S): Undergraduate Studies Coordinator

FORMAT: Laboratory (64 hours total)

PREREQUISITE: MICI 3033.03 and BIOC 3400.03 (grade of B or better) and consent of the coordinator

MICI 4610.06: Scientific Writing and Advanced Laboratory in Biochemical Techniques.

This class consists of a series of laboratory modules (5 modules each of 4 weeks' duration, 1 day per week or 72 hours in total with limited flexibility to accommodate the need to attend other classes) and tutorials with computer-based assignments designed to teach scientific writing techniques (15 hours in total). The class is organized collaboratively by the Departments of Biochemistry & Molecular Biology, and Microbiology & Immunology. A choice of modules is offered in 3 sections covering techniques used in the study of molecular biology, protein structure-function and specific metabolic processes. This class is open to senior undergraduate students and the number of places in the class is limited. Priority for enrolment is given to undergraduates for whom this is a required component of their degree program. Students may not necessarily be assigned to a module of their first choice but every effort is made to accommodate those needing techniques provided by a specific module. Students must obtain a class outline from the Biochemistry & Molecular Biology Department office prior to registration and attend the organizational meeting, the date of which will be indicated in the Registration Timetable.

COORDINATOR: L. Murray

INSTRUCTOR(S): Faculty members of the Departments of Biochemistry & Molecular Biology, and Microbiology & Immunology

FORMAT: Twelve 6-8 hour labs and four 3.5-hour tutorials/computer assignments

PREREQUISITE: BIOC 3400.03 and MICI 3033.03 (Grade B or higher).

NOTE: for Science Co-op Students, MICI 4601 and MICI 4602 is equivalent to MICI 4610

CROSS-LISTINGS: MICI 5610.06, BIOC 5610.06, BIOC 4610.06, BIOC 403.03, BIOC 5610.06

MICI 4700X/Y.06: Directed Research Project.

This class is in most respects equivalent to MICI 4900X/Y.06. Students are required to spend at least one day per week performing laboratory research. A final report on the research project must be submitted at the end of the academic year. This course is NOT intended for students in a regular BSc program.

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

INSTRUCTOR(S): Undergraduate Studies Committee

FORMAT: Lab 1 day per week

PREREQUISITE: Permission of the Undergraduate Studies Committee and a member of the Department who will serve as a supervisor. At least a B average for MICI 3033.03, 3114.03, 3115.03 and 3119.03 (or equivalent)

MICI 4701.03/4702.03: Advanced Topics in Microbiology and Immunology

This is an independent studies class intended to correct a deficiency in a student's program.

INSTRUCTOR(S): Undergraduate Studies Committee

FORMAT: Independent study

PREREQUISITE: Permission of the Undergraduate Studies Committee and a member of the Department who will supervise the independent study program

MICI 4900X/Y.06: Honours Research and Thesis.

This class requires at least one day per week of laboratory research. A final report on the research must be submitted at the end of the academic year.

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

INSTRUCTOR(S): Undergraduate Studies Coordinator

FORMAT: Lab 1 day per week

PREREQUISITE: Permission of the Undergraduate Studies Committee and a member of the Department who will serve as a supervisor.

MICI 4901.03/4902.03: Honours Research and Thesis.

See description for MICI 4900X/Y.06

MICI 8891.00: Co-op Work Term I.

MICI 8892.00: Co-op Work Term II.

MICI 8893.00: Co-op Work Term III.

MICI 8894.00: Co-op Work Term IV.

MICI 8895.00: Co-op Work Term V.
Neuroscience

Faculty of Science
474 Neuroscience

thesis research (e.g., background reading, learning laboratory methodology, submission of ethics forms), no later than during the summer preceding the thesis year. The supervisor should be a member of (or eligible for membership in) the Neuroscience Institute.

Grade Requirements
All students wishing to take Psychology / Neuroscience classes numbered 2000 or above for which Introductory Psychology or Introductory Biology is a prerequisite must have a grade of B- in two half credits (or a full credit) of Introductory Psychology classes (PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03) or Introductory Biology classes (BIOC 1011.03/1012.03 or BIOC 1021.03/1022.03 or SCIE 1510X/Y.27, 1500X/Y.27, or 1510X/Y.33. An A- average is typically required for admission to Honours.

Students taking SCIE 150X/Y.21 (OBP for Environmental Science) and wish to enter into a Neuroscience program should consult one of the Neuroscience advisors.

Departmental Requirements

1000 level

• MATH 1001.03
• One other half credit in Mathematics (ideally, but not necessarily, MATH 1001.03)
• BIOC 1011.03/1012.03 or BIOC 1021.03/1022.03
• CHRM 1011.03/1022.03
• Either PSYO 1010.03/1012.03 or PSYO 1021.03/1022.03 or PSYO 1021.03/1022.03
• Or in lieu of the above, SCIE 1510X/Y.27, 1500X/Y.27, 1510X/Y.33

Students are strongly recommended to take both PSYO 1010X/Y.06 or 1012X/Y.06 and PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03 prior to finishing their degree.

2000 level

• NESC 2001.03
• NESC 2002.03
• CHEM 1011.03/1012.03, or equivalents, are required as prerequisites for this class.
• Two half credits from: NESC 2130.03, 2140.03, 2160.03, 2170.03, 2270.03, BIOC 2200.03, BIOC 2210.03, PHVC 2250.03

3000 level

• Two half credits from: NESC 3002.03, 3137.03, 3170.03
• Two half credits from: NESC 3131.03, 3132.03, 3133.03, 3134.03, 3135.03, 3161.03, 3167.03, 3227.03, 3237.03, 3260.03, 3270.03, 3670.03, 3770.03, 3780.03, 3810.03, BIOC 3200.03, BIOC 3220.03

4000 level

• NESC 4000X/Y.06
• Two half credits from: NESC 4010.03, 4170.03, 4170.03, 4171.03, 4172.03, 4173.03, 4174.03, 4175.03, 4176.03, 4177.03, 4178.03
• Two half credits from: NESC 4000–4000 level classes

H. 20-credit BSc with Combined Honours in Neuroscience

It is possible for students to take an Honours degree combining Neuroscience with another Science subject (other than Psychology) such as Biology or Biochemistry. Students proposing to take such a course of study must consult with an Honours advisor in both departments to arrange program details.

If Neuroscience is chosen as the primary subject in a Combined Honours degree, the following classes are required.

474 Neuroscience
1000 level
- MATH 1000.03
- One other half credit in Mathematics (ideally, but not necessarily, MATH 1001.03)
- BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03
- CHEM 1010.03/1011.03
- PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03
- Or, in lieu of the above, SCE 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 1001.03)
- BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03
- CHEM 1010.03/1011.03
- PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03
- Or, in lieu of the above, SCE 1501X/Y.27, 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33

Note: The following can be counted as NESC classes: BIOC 2200.03, BIOL 2030.03, PHYC 2250.03

3000 level
- Two half credits of laboratory classes selected from NESC 3044.03, 3137.03, 3260.03, 3270.03, 3577.03
- PSYO 3921.03
- At least one additional half credit selected from SCE 3055.03, 3063.03, 3064.03, 3065.03, 3066.03, 3069.03, 3070.03, 3125.03, 3131.03, 3132.03, 3133.03, 3134.03, 3137.03, 3165.03, 3190.03, 3227.03, 3260.03, 3261.03, 3270.03, 3670.03, 3770.03, 3790.03, BIOC 3200.03, BIOL 3020.03

4000 level
- NESC 4400X/Y.06
- Two half credits selected from NESC 4000.03, 4050.03, 4070.03, 4130.03, 4160.03, 4170.03, 4207.03, 4574.03, 4676.03, 4777.03, 4778.03

Faculty of Science
Faculty of Science

 degree, the following classes are required.

**Neuroscience** will be presented conceptually in lectures, and then practically in the form of supervised laboratory experiments where students will implement in the lab what they encountered first in lectures. The fundamentals of research design and analysis will be taught in the context of each method presented. Students will compose written reports detailing the experiments described in lectures and performed in the laboratory. This class is required for students in a Neuroscience degree.

**INSTRUCTOR(S):** K.R. Duffy and S. Gadbois

**FORMAT:** Writing intensive, lecture 2 hours, research lab 2 hours

**PREREQUISITE:** PSYO 1011.03 or PSYO 1021.03, or SCIE 1501X/Y.27, 1502X/Y.21, 1503X/Y.27, or PSYO 1001X/Y.06, or BIOL 1010.03 or BIOL 1020.03 (with a grade of B- or better)

**EXCLUSION:** PSYO 2000.03

**NESC 2130.03: Introduction to Cognitive Psychology.** Lectures focus on the processes involved in transforming sensory information into the meaningful, coherent world of everyday experience we know. Initially, emphasis is on the visual system, and how information within that system is structured and organized, followed by a consideration of the character of the internal representations used in thinking and remembering.

**INSTRUCTOR(S):** T. Taylor-Helmick

**FORMAT:** Lecture 3 hours

**PREREQUISITE:** PSYO 1011.03 or PSYO 1021.03 or SCIE 1501X/Y.27, 1502X/Y.21, 1503X/Y.27, or PSYO 1001X/Y.06, or BIOL 1010.03 or BIOL 1020.03 (with a grade of B- or better)

**CROSS-LISTING:** PSYO 210.03

**NESC 2140.03: Learning.** This class traces the experimental study of learning from the turn-of-the-century research of Pavlov and Thorndike to the present. Development of the field of animal learning is described in terms of the ways in which particular conceptions of the learning process have guided experimentation, and have in turn been revised on the basis of the outcomes of that experimentation. Some important concepts discussed are: association, attention, behavioral constraints on learning, classical conditioning, discrimination, expectancies, law of effect, learning-performance distinction, operant conditioning, S-S and S-R bonds, and stimulus control. The value of various approaches is discussed with respect to several goals: (1) providing general principles of learning; (2) understanding the behaviour of particular species; (3) direct application to human problems. Emphasis is on understanding why researchers in animal learning do what they are currently doing (given the goals and the historical context), rather than learning a number of facts about animal learning.

**INSTRUCTOR(S):** V. LaLonde

**FORMAT:** Lecture 3 hours

**PREREQUISITE:** PSYO 1011.03 or PSYO 1021.03 or SCIE 1501X/Y.27, 1502X/Y.21, 1503X/Y.27, or PSYO 1001X/Y.06, or BIOL 1010.03 or BIOL 1020.03 (with a grade of B- or better)

**CROSS-LISTING:** PSYO 2130.03

**NESC 2160.03: Animal Behaviour.** Using concepts from evolutionary theory, neuroscience, endocrinology and psychology, animal behaviourists attempt to explain why animals behave the way they do. The class will examine topics such as mate choice, the evolution of behavior, and animal communication. We will study the behaviour of a wide range of animals.

**INSTRUCTOR(S):** S. Adams or S. Gadbois

**FORMAT:** Lecture 3 hours

**PREREQUISITE:** PSYO 1011.03 or PSYO 1021.03 or SCIE 1501X/Y.27, 1502X/Y.21, 1503X/Y.27, or PSYO 1001X/Y.06, or BIOL 1010.03 or BIOL 1020.03 (with a grade of B- or better)

**CROSS-LISTING:** PSYO 2160.03

**NESC 2170.03: Hormones and Behaviour.** An introduction to chemical signals of the neural, endocrine, and immune systems and the ways in which these 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 behavioural development.
development, sexual, aggressive and maternal behaviour. Other topics covered are: hormone receptors in the brain; the menstrual cycle and human reproduction; puberty; sex differences in the brain; neurotransmitters; pheromones; stress.

INSTRUCTOR(s): R.E. Brown

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03 or SCIE 1501X/Y.27. 1502X/Y.21, 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33 or BRL 1010.03/1011.03 or BRL 1020.03/1021.03 (with a grade of B- or better)

CROSS-LISTING: PSYO 2730.03

NESC 2470.03: Introduction to Neuroscience I. Brain Systems

This lecture class is intended to provide an introduction to the gross structures and functions of the brain. The class treats the brain as a set of neural systems, each with relatively well-defined anatomical substrates and functional roles. The class examines each neural system one at a time, exploring its anatomical architecture, connections and function. These systems may include the peripheral nerves, the mechanisms of sensation and motor control, the cranial nerves, the brainstem, cerebral cortex and cerebellum. For each of the neural systems, the class examines some of the clinical consequences of injury or pathology. Introduction is also provided to recent advances in brain imaging and brain chemistry. This class does not cover cellular or molecular mechanisms of brain function in any detail; students wishing explicit instruction in these fields should see the Calendar entries for NESC/PSYO 2701.03 and/or NESC/PSYO 3701.03, respectively.

INSTRUCTOR(s): D. Phillips

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03 or SCIE 1501X/Y.27, 1502X/Y.21, 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33 or BRL 1010.03/1011.03 or BRL 1020.03/1021.03 (with a grade of B- or better)

CROSS-LISTING: PSYO 2730.03

NESC 2701.03: 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 electrical 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 glut only and other neurotransmitters. Cellular phenomena relevant to neurological dysfunction will be discussed.

INSTRUCTOR(s): N. Crowder

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2470.03 or instructor’s consent

CROSS-LISTING: PSYO 2750.03


For Honours students wishing further experience in neuroscience research. Students not in the Honours program normally will be expected to have a grade of B or better in PSYO 2000.03, a high level of performance in other Neuroscience classes, and an overall B+ (GPA 3.33) average. A student wishing to take this class must find a faculty member who is prepared to supervise a directed research project. Before registering for this class, a student must provide the coordinator of the class with a letter from the faculty member describing the project and agreeing to serve as supervisor. Class approval will not be given until this is done.

COORDINATOR: B. Earhardt

NOTE: This class cannot be used to fulfill the department’s research laboratory requirement.

EXCLUSION: PSYO/NESC 3000X/Y.06

NESC 3005.03: Perceptual Processes.

Perception deals with the way in which our senses provide us with information about our environment. This class focuses on the processes by which sensory experiences are coded, how they are interpreted by the nervous system, and how experience modifies perception.

INSTRUCTOR(s): N. Crowder

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2701.03 and one of PSYO/NESC 2470.03, previous or concurrent enrolment in two other NESC/PSYO 3000-level classes, and Coordinator’s consent.

CROSS-LISTING: PSYO 3005.03

EXCLUSION: PSYO/NESC 3000X/Y.06

NESC 3010X/Y.06: Advanced General Psychology.

For the advanced student, a review of general Psychology with the aim of consolidating the student’s knowledge. The method is unconventional. With the assistance of the instructor, the student prepares material assigned to PSYO 1012.03 and 1022.03 students at a level which enables him or her to instruct introductory students in tutorial lab classes. The class is designed primarily for Honours students, or other advanced Psychology or Neuroscience students who may be suitably qualified. Prospective students are advised to consult the instructor in the spring of the preceding year.

NOTE: 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

INSTRUCTOR(s): H. Schellinck

FORMAT: Lecture/seminar 2 hours, tutorial lab 1 hour, skills lab

PREREQUISITE: PSYO 2000.03 or SCIE 2140.03 or PSYO/NESC 2470.03, advanced classes in Psychology or Neuroscience, and instructor’s consent.

CROSS-LISTING: PSYO 3010X/Y.06

NESC 3043.03: Neurobiology of Learning.

This class provides examination of the various forms of learning and neurological systems associated with these processes. Topics will include imprinting, song learning by birds and classical and operant conditioning. We will also discuss the biological significance and evolutionary origins of these systems.

INSTRUCTOR(s): L. Phillmore

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2701.03, and one of PSYO/NESC 2470.03 or PSYO/NESC 2750.03

CROSS-LISTING: PSYO 3043.03

Neuroscience 477
NESC 3044.03: Laboratory Methods of Learning and Conditioning.

Students will learn hands-on several methods of examining learning and memory in animals, while also understanding some of the neurobiological 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 writes his or her own reports on the experiments completed; students will also complete a final, independent paper.

INSTRUCTOR(S): L. Phillmore
FORMAT: Research lab 4 hours
PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and one of PSYO/NESC 2470.03 or PSYO 2770.03
CROSS-LISTING: PSYO 3044.03
EXCLUSION: PSYO 3005.03

NESC 3051.03: Sensory Neuroscience I. Vision.

Because our visual perceptions are rich, varied and with few exceptions, arise quickly, fluidly 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 difficulties with which the performance of our biological visual system can be matched by artificial systems. Beginning with a description of the information available in the retinal image, this class will examine the neural basis for the perception of light, colour, movement, depth and form as a variety of species chosen to illustrate common as well as specialized mechanisms of neural processing. In addition, the class will describe the development of perception and discuss the extent to which performance at any age is constrained by the anatomical and physiological development at various levels within the visual pathway.

INSTRUCTOR(S): K. Duffy
FORMAT: Lecture 3 hours, research lab 1 hour
PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and one of PSYO/NESC 2130.03 or NESC/PSYO 2470.03 or PSYO 2770.03
CROSS-LISTING: PSYO 3051.03

NESC 3052.03: Sensory Neuroscience II. Hearing and Speech.

Hearing and speech are two behavioral 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, hearing disorders, and/or audiology. The class emphasizes normal hearing and speech mechanisms, but will address some pathological evidence from pathological subjects is pertinent to understanding normal function. Class content: introductory acoustics; structure and function of the outer and middle ears; structure and function of the vocal tract; physiological properties of the vocal tract; neural mechanisms of hearing; sensory processing of sound; an introduction to psychological models of speech perception and production.

INSTRUCTOR(S): D.P. Phillips
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and NESC/PSYO 2470.03
CROSS-LISTING: PSYO 3052.03

NESC 3125.03: Biology of Excitable Cells.

Nurons (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 their morphologies, 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 training in cell biology that are specific to excitable cells. Topics will include ion channels, protein trafficking, myelin and glia, mechanism of neurotransmitter release, ionic and metabolic neurotransmitter receptors, secondary messengers, gene expression, neural pathfinding, and synaptic plasticity.

Another goal is to introduce participants to critical scientific thinking. At this end, a large component of the class will involve discussing original research papers in class.

INSTRUCTOR(S): P. Cote
FORMAT: Lecture 1.5 hours, seminar 1.5 hours
PREREQUISITE: BIOL 2010.03 or better, or permission of instructor
CROSS-LISTING: BIOL 3125.03

NESC 3131.03: Research Methods in Attention.

Most closely associated with selection (our ability to focus on some things to the exclusion of others), attention is an umbrella term that also covers the concepts of alertness, arousal, preparation and control. Neglected by mainstream Psychology for the first half of the 20th century, this gateway to awareness has since returned to centre stage. In this laboratory class, we will explore the methods, findings and theories that have driven recent advances in our understanding of attention. While laboratories will emphasize 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, brain stimulation, 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 2770.03, and one of PSYO/NESC 2130.03 or PSYO/ NESC 2310.01 or PSYO/NESC 2350.03 or PSYO/NESC 3005.03
CROSS-LISTING: PSYO 3131.03
EXCLUSION: PSYO/NESC 3130.06

NESC 3132.03: Research Methods in Visual Cognition.

Visual cognition is the study of how meaning is extracted from visual information in the environment: how it is represented in memory, transformed as knowledge, and used to direct our behaviour. It involves the processes of perception, memory, attention and motor response. This class will investigate object, face and word recognition as revealed by normal behavioural, neuroimaging techniques and neuropsychological studies of brain-damaged individuals who have lost these recognition abilities.

INSTRUCTOR(S): P. McCullum
FORMAT: Lecture 3 hours research lab 3 hours
PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO 2770.03, and one of PSYO/NESC 2130.03 or PSYO/NESC 2310.01 or PSYO/NESC 2350.03 or PSYO/NESC 3005.03
CROSS-LISTING: PSYO 3132.03
EXCLUSION: PSYO/NESC 3130.06

NESC 3133.03: Research Methods in Memory.

This class will focus on the study of human memory from the perspective of cognitive psychology and, to a lesser extent, cognitive neuroscience. Topics may include, but will not be limited to: Sensory memory, the modal model, working memory models, processing perspectives, forgetting, implicit memory, autobiographical memory, amnesia, and reconstructive processes. The lectures will emphasize cognitive behavioral approaches to the study of memory with an explicit focus on experimental research methods, data, and interpretation of results.

INSTRUCTOR(S): T. Taylor-Helmick
FORMAT: Lecture 3 hours, research lab 2 hours
PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO 2770.03, and one of PSYO/NESC 2130.03 or PSYO/NESC 2310.01 or PSYO/NESC 3005.03
CROSS-LISTING: PSYO 3133.03
EXCLUSION: PSYO/NESC 3130.06

NESC 3134.03: Research Methods in Psycholinguistics.

This class builds on the fundamentals of Psycholinguistics covered in PSYO/NESC 3100.03, providing students with hands-on experience using various methodologies employed in the study of language acquisition, processing, and using these to explore topics in Psycholinguistics in greater depth. Labs will provide hands-on experience with numerous psycholinguistic methods including reaction time, priming, self-paced
reading, computational modeling, corpus-based research, and event-related brain potentials. Topics include processing at the phonological, morphological, syntactic, and semantic levels; reading; signed language; and computational modeling of language processing. Students will serve as experimenters and participants in class experiments.

INSTRUCTOR(S): A. Newman
FORMAT: Lecture 3 hours, research lab 2 hours
PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO 2501.03, and PSYO/NESC 3190.03
EXCLUSION: PSYO/NESC 3190.06

NESC 3137.03: Research Methods in Cognitive Neuroscience.

Cognitive neuroscience aims at understanding the neural bases of perception, cognition, and action through the integration of behavioral and neuroimaging techniques. This class will focus on the various techniques used in this endeavor, including the technologies available, the methodologies employed, and the limitations of these techniques. Examples from various areas of inquiry (e.g., language, vision, attention, memory) will be used to illustrate both applications and limitations. Techniques to be covered include event-related potentials (ERPs), functional magnetic resonance imaging (fMRI), diffusion MRI tractography (DTI), magnetoencephalography (MEG), positron emission tomography (PET), near-infrared optical imaging (NIRS), transcranial magnetic stimulation (TMS), and intracranial electrical recording and stimulation. The laboratory component will include experience in the recording and analysis of ERP data and in the analysis of fMRI data, as well as demonstrations of fMRI data acquisition. Students will serve as experimenters and participants in class experiments.

INSTRUCTOR(S): A. Newman
FORMAT: Lecture 3 hours, research lab 2 hours
PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO 2501.03, and PSYO/NESC 3191.03

NESC 3165.03: Neuroethology.

Neuroethology explores how assemblies of neurons work together to produce behaviour. This new scientific discipline lies at the intersection of behavioural ecology and Neuroscience. In this class, we will examine the neural control of selected behaviours taken from a wide range of animals, including insects, invertebrates, and vertebrates. From the earliest developmental events such as neuronal growth cones, cell death, and migration will be discussed. Special attention will then be given to the neural bases of behaviour, including cell lineage analysis, and neuronal differentiation, movement and migration. All of the experiments in the laboratory component of the class will involve insects. Students will need to handle the insects during the lab.

INSTRUCTOR(S): S. Adamo
FORMAT: Lecture 2 hours, research lab 2 hours
PREREQUISITE: PSYO 2000.03 or NESC 2007.03 or RCOL 3062.03, and PSYO/NESC 2570.03 or RCOL 3070.03 or MARI 3071.06, and PSYO 2000.03 or NESC 2007.03 or any of following Biology classes: 2003.03, 2004.03, 2008.03, 2010.03, 2030.03, 2060.03)
CRB/LISTING: PSYO 3165.03

NESC 3190.03: Psycholinguistics.

Psycholinguistics requires the integration of numerous perceptual and cognitive processes and is a skill unique to humans. This class will explore the cognitive and neural bases of natural human language processing. Topics will include: comparisons of human language with other communication systems; processing at the phonological, morphological, lexical, sentential, and discourse levels; first and second language acquisition; the relationship of language processing to more general cognitive functions such as attention and memory, as well as to music and mathematics; and the processing of signed languages such as American Sign Language as well as non-linguistic gesture.

INSTRUCTOR(S): A. Newman
FORMAT: Lecture 2 hours, research lab 2 hours
PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and PSYO/NESC 2130.03
EXCLUSION: PSYO/NESC 3190.06

NESC 3227.03: Principles of Human Neuropsychology.

This survey class examines how higher cognitive, emotional, and social functions are organized in the human brain. Topics covered include: What happens to these abilities when parts of the brain are damaged or disease? 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. McGlone
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and one of PSYO/NESC 2270.03 or PSYO 2470.03 or PSYO 2770.03, PSYO/NESC 2131.03 or PSYO/NESC 2134.03, and one of PSYO/NESC 2130.03, 2170.03, 2271.03, 2470.03, 2751.03, or PSYO 2771.03
CROSS-LISTING: PSYO 3227.03

NESC 3237.03: Drugs and Behaviour.

An introduction to behavioural psychopharmacology. The lectures involve basic anatomy, physiology and chemistry of the nervous system. Behavioural effects and underlying mechanisms of various psychoactive drugs will be discussed. Specific topics will cover alcohol, tobacco, amphetamines, cocaine, opiates, hallucinogens, tranquilizers and antipsychotic drugs.

INSTRUCTOR(S): J. Stamp
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and one of PSYO/NESC 2131.03, 2170.03, 2271.03, 2470.03, 2751.03, or PSYO 2771.03
CROSS-LISTING: PSYO 3237.03

NESC 3260.03: Biological Rhythms.

The temporal structure of animal and human physiology is governed by both homeostatic mechanisms and by a system of biological clocks. These internal clocks generate rhythms with various periods in virtually every physiological and behavioral system. Daily (circadian) clocks are the most prominent; they generate rhythms in sleep, reproduction, intellectual performance and many other functions. This class examines the nature of these biological clocks and their physiological substrates, with an emphasis on the neural mechanisms involved in rhythm generation and synchronization in a variety of species. It also explores the hypothesized role of circadian mechanisms in sleep disorders, jet lag and delirium.

INSTRUCTOR(S): B. Raads
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 2000.03 or NESC 2007.03, or both RCOL 3010.03 or HISE 3011.03, or RCOL 3020.03, 3021.03, and either NESE/PSYO 2171.03 or NESE/PSYO 2471.03
CRB/LISTING: PSYO 3260.03

NESC 3270.03: Developmental Neuroscience.

This class introduces students who are already familiar with the structural organization and functional properties of the mature nervous system to aspects of normal 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 proliferation, cell lineage analysis, and neuronal differentiation, movement and migration will be discussed. Special attention will then be given to later developmental events such as neuronal growth cones, cell death, growth factors, axon and dendrite growth and synapse formation using invertebrate and vertebrate examples.
INSTRUCTOR(S): K. Duffy
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and NESC/PSYO 2470.03 and NESC/PSYO 2570.03
CROSS-LISTING: NESC 3370.03

NESC 3370.03: Neuroscience Laboratory I.
The two classes NESC/PSYO 3370.03 and 3371.03 (see next entry) are coordinated and provide introduction to several techniques used in contemporary neuroscience. The following information applies to these classes as a pair, between which the exact distribution of experimental approaches may vary from year to year according to availability of equipment and material, and numbers enrolled. Usually, electrical recording methods from several types of preparation are emphasized in 3370.03, while detailed neuroanatomically-based approaches are favoured in 3371.03. Regularly scheduled labs with students working in groups of 2 or 3 under supervision are supplemented by occasional lectures, in both classes. Students become familiar with electrical recording and stimulation methods and related techniques, currently using both sensory and motor system preparations. Neuroanatomical analysis is introduced by way of techniques usually selected from the following: Golgi impregnation of neurons, immunocytochemistry, dyne-tracing of connections, and electronmicroscopy of the visual system or central nervous system.
INSTRUCTOR(S): Staff
FORMAT: Lab 3 hours
PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO/PSYO 2470.03 and 2570.03, or 3270.03, and instructor’s consent
CROSS-LISTING: PSYO 3370.01

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 closely tied with 3370.03. Lab II usually, but not always, runs in the second term and develops different research approaches.
SIGNATURE REQUIRED
INSTRUCTOR(S): J. Meierhuizen
FORMAT: Lab 3 hours
PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO/PSYO 2470.03 and 2570.03, or PSYO/NECS 3270.03, and instructor’s consent
CROSS-LISTING: PSYO 3371.03

NESC 3440.03: Neuroanatomy.
This class consists of a survey of the histology, development and organization of the human central nervous system (brain and spinal cord), with emphasis on the organization of sensory and motor systems. The classic approach is divided into two major components: an introductory module for neurobiology classes in Physiotherapy and Occupational Therapy, and the lecture and laboratory component for the graduate class ANAT 5100 Human Neuroanatomy. ORGANISER: R.A. Leslie
BACKUP ORGANISER: J. Smith
OTHER INSTRUCTORS: Members of the Department of Anatomy & Neurobiology
FORMAT: Lecture/lab 3 hours per week
PREREQUISITE: BCL 2020.03 or permission of the instructor

NESC 3670.03: Genes, Brain and Behaviour.
This class will examine the application of genetic techniques to the study of brain and behaviour in animals and humans. The class will consist of four sections: basic genetics, neurogenetics, neurogenetic analysis of animal behaviour, and neurodevelopmental analysis of human behaviour. During the class, topics in bioinformatics and neuroinformatics and the use of genetic data bases will be considered. Substantial attention will be given to transgenic laboratory mouse models of human neurological and behavioural disorders. Students will acquire information about the genetic basis of cognitive abilities, psychopathology, personality disorders, and ethical issues in genetic research. The role of genetic factors in eating and drug abuse problems, as well as methods used to study gene-environment interactions will also be explored.
INSTRUCTOR(S): T. Perrot-Sinal
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO/PSYO 2470.03 or PSYO 2773.03, and BIOL 1010.03/1111.03 or BCL 1020.03/1021.03 or SCE 1501X/1502X or SCE 1501X/Y.21 or SCE 1502X/Y.21 or SCE 1541X/Y.27; BIOL 2031.03 and BIOL 2031.03 are useful
CROSS-LISTING: PSYO 3670.03
EXCLUSION: NESC/PSYO 2670.03

NESC 3770.03: Behavioural Neuroscience.
Behavioural neuroscience concerns itself with the neural mechanisms underlying a variety of behavioural phenomena. Its subject matter includes the neural mechanisms controlling a variety of regulatory and motivational systems, including: feeding, drinking, reward, sexual and parental behaviour, temperature regulation, sleep and wake, motor and sensory system function, learning and other forms of behavioural plasticity, memory, and the physiological mechanisms underlying behavioural disorders. Students should be familiar with experimental research methods, and have some background in biological or neural aspects of psychology.
INSTRUCTOR(S): S. Geddes
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and PSYO/NECS 3440.03 or PSYO 2471.03
CROSS-LISTING: PSYO 3770.03

NESC 3775.03: Behavioural Neuroscience Laboratory.
The purpose of this laboratory class is to expose students who are motivated to pursue a career in neuroscience, or in a related biomedical discipline, direct experience of research involving studies of the nervous system in relation to behaviour. Students will be expected to acquire skills in animal handling, animal care, recovery surgery, behavioural observations, and histological analysis of the brain. Acquisition of these methods during the class should facilitate students’ research efforts in their honours theses.
SIGNATURE REQUIRED
INSTRUCTOR(S): T. Perrot-Sinal
FORMAT: Research lab 3+ hours
PREREQUISITE: PSYO 3370.03 and instructor’s consent
CROSS-LISTING: PSYO 3775.03

NESC 3790.03: Neurolinguistics.
The class will cover: 1) brain damage and language disorders, 2) aphasia, 3) localization of lesions in the human brain, 4) neuromapping, 5) intracranial electric stimulation experiments, 6) event related potential experiments, 7) PET, fMRI and other studies, and 8) models of language processing.
INSTRUCTOR(S): Staff
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO/PSYO 2470.03 or PSYO 2770.03
CROSS-LISTING: PSYO 3770.03

NESC 3970.03: Molecular Neuroscience.
This class continues concepts introduced in NESC/PSYO 2570.03, from the cellular/molecular basis of neuronal function to the role of gene expression in development, maintenance, and pathology of the nervous system. Models of normal and pathological neuronal function are presented and dissected to the level of messengers, receptors, intracellular signaling cascades, transcription factors, and genes. The mechanisms underlying normal neuronal function are presented using both developmental and adult model systems. The role of genetic versus epigenetic factors in development of the functioning nervous system is covered. As well, the importance of gene products like neurotrophic factors usually selected from the following: Golgi impregnation of neurons, immunocytochemistry, dye-tracing of connections, and electronmicroscopy of the visual system or central nervous system.
INSTRUCTOR(S): T. Perrot-Sinal
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO/PSYO 2570.03
CROSS-LISTING: PSYO 3970.03

480 Neuroscience
NESC 4374.03: Introduction to Pharmacology I.

This introductory class is designed to acquaint students with the actions of drugs on physiological and biochemical functions in mammals including humans. Factors which affect the blood levels of drugs (absorption, distribution, metabolism, and elimination) will be considered, together with the mechanisms by which drugs act and their potential uses. The interaction of drugs with various body systems will be covered, including the central and peripheral nervous systems and the cardiovascular system. Drugs that assist or regulate host defence mechanisms will also be studied.

COORDINATOR: S.E. Howlett
FORMAT: Lecture 3 hours
PREREQUISITE: A previous course in physiology and biochemistry is recommended. Extra reading may be required for students without these courses.

CROSS-LISTING: PHAC 5406.03, BIOC 4804.03, and BIOL 4404.03

NESC 4376.03: Introduction to Pharmacology II.

This class is intended to cover specific aspects of drug action not covered in NESC 4374.03. The class includes: drug receptor signaling, ion channels, second messengers, G-proteins, plus specific consideration of drugs used for pain, inflammation, cancer, diabetes, asthma, and diseases of the thyroid, eye and gastrointestinal tract. Special pharmacological topics including over-the-counter drugs, herbal medicine, drug abuse, and industrial development of new drugs, plus a section on how drug actions and handling are altered in pregnancy, the elderly, and in children are included.

NESC 4377.03: Introduction of Pharmacology III.

This class will present practical aspects of how experimental data related to fundamental questions in the field of pharmacology are obtained. Basic pharmacologic concepts: e.g., drug absorption and distribution, receptor binding, concentration-response relationships, antagonism, post-receptor events will be emphasized and presented in a variety of preparations (cells, isolated tissues, whole animals). In addition to the set laboratories, more extensive exercises based on themes presented in groups of laboratories may be assigned as experimental problems: e.g., unknowns or as written exercises (literature-based problems, computer simulations). The class will relate pharmacologic methodologies to related areas of neuroscience, biochemistry and biochemistry.

COORDINATOR(S): J. Downie
FORMAT: Lab 3 hours
PREREQUISITE: BOC 4804.03 or BIOL 4404.03 or NESC 4374.03, and permission of the instructor

CROSS-LISTING: BOC 4805.03 or BIOL 4405.03 or NESC 4376.03

NESC 4500/X/Y.06: Honours Thesis.

The purpose is to acquaint the student with a current problem and the related research procedures in experimental neuroscience. Each student works with a staff member who advises the student about research in the area of interest, and closely supervises an original research project carried out by the student. The students meet together occasionally throughout the year to describe their proposed research and their progress. Each student must submit a formal written report of the completed research. The oral final 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.

COORDINATOR(S): Staff
CROSS-LISTING: PSYO 4000/X/Y.06
RESTRICTION: Restricted to Honours students in their graduating year

4000-level Seminars

The following seminars (4000-4440) are intended for fourth-year Honours students. Third-year Honours students are eligible provided they obtain permission from the instructor, and the needs of all the fourth-year Honours students have been met. The topics covered in these classes vary from year to year. Consult the department for the specific class descriptions.

NESC 4000.03: Senior Seminar.
See class description for PSYO 4000.10 in the Psychology section of this calendar.
FORMAT: Seminar 2 hours
CROSS-LISTING: PSYO 4000.03

NESC 4050.03: Topics in Perception.
FORMAT: Seminar 2 hours
PREREQUISITE: PSYO 3051.03 or instructor's consent
CROSS-LISTING: PSYO 4050.03

NESC 4070.03: Neuroscience Seminar.
FORMAT: Seminar 2 hours
PREREQUISITE: PSYO 2470.03, 2570.03 or 3270.03, or instructor's consent
CROSS-LISTING: PSYO 4070.03, ANAT 5070.03

NESC 4130.03: Topics in Human Information Processing.
FORMAT: Seminar 2 hours
CROSS-LISTING: PSYO 4130.03

NESC 4160.03: Topics in Behavioural Biology.
FORMAT: Seminar 2 hours
CROSS-LISTING: PSYO 4160.03

NESC 4170.03: Topics in Behavioural Neuroendocrinology.

Topics in Behavioural Neuroendocrinology will consist of discussions of the most current literature relating to the role of steroids in development, maintenance, pathology, and aging of the brain. We will discuss how the brain is affected by steroids at both cellular and systems levels and how this ultimately impacts on a diverse range of behaviours from reproduction to cognition. Students will be assessed with regard to their ability to actively engage in discussions during class time, provide insightful reviews of particular topics in the form of written papers, and present scientific papers to the class.

FORMAT: Seminar 2 hours
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, perception and associative attractor networks, and system-level organisations such as invariant representations and complementary memory systems. This class also includes an introduction to the MATLAB programming environment and numerical techniques. The class requires basic programming and mathematical skills.

COORDINATOR(S): T. Trappenberg
FORMAT: Seminar
PREREQUISITE: Intended for third- or fourth-year Neuroscience students. Permission of the instructor required.

NESC 4230.03: Human Performance Topics.
FORMAT: Seminar 2 hours
CROSS-LISTING: PSYO 4230.03

NESC 4234.03: Introduction to Pharmacology I.

This introductory class is designed to acquaint students with the actions of drugs on physiological and biochemical functions in mammals including humans. Factors which affect the blood levels of drugs (absorption, distribution, metabolism, and elimination) will be considered, together with the mechanisms by which drugs act and their potential uses. The interaction of drugs with various body systems will be covered, including the central and peripheral nervous systems and the cardiovascular system. Drugs that assist or regulate host defence mechanisms will also be studied.

COORDINATOR: S.E. Howlett
FORMAT: Lecture 3 hours
PREREQUISITE: A previous course in physiology and biochemistry is recommended. Extra reading may be required for students without these courses.

CROSS-LISTING: PHAC 5406.03, BIOC 4804.03, and BIOL 4404.03

NESC 4376.03: Introduction to Pharmacology II.

This class is intended to cover specific aspects of drug action not covered in NESC 4374.03. The class includes: drug receptor signaling, ion channels, second messengers, G-proteins, plus specific consideration of drugs used for pain, inflammation, cancer, diabetes, asthma, and diseases of the thyroid, eye and gastrointestinal tract. Special pharmacological topics including over-the-counter drugs, herbal medicine, drug abuse, and industrial development of new drugs, plus a section on how drug actions and handling are altered in pregnancy, the elderly, and in children are included.

NESC 4377.03: Introduction of Pharmacology III.

This class will present practical aspects of how experimental data related to fundamental questions in the field of pharmacology are obtained. Basic pharmacologic concepts: e.g., drug absorption and distribution, receptor binding, concentration-response relationships, antagonism, post-receptor events will be emphasized and presented in a variety of preparations (cells, isolated tissues, whole animals). In addition to the set laboratories, more extensive exercises based on themes presented in groups of laboratories may be assigned as experimental problems: e.g., unknowns or as written exercises (literature-based problems, computer simulations). The class will relate pharmacologic methodologies to related areas of neuroscience, biochemistry and biochemistry.

COORDINATOR(S): J. Downie
FORMAT: Lab 3 hours
PREREQUISITE: BOC 4804.03 or BIOL 4404.03 or NESC 4374.03, and permission of the instructor

CROSS-LISTING: BOC 4805.03 or BIOL 4405.03 or NESC 4376.03

NESC 4500/X/Y.06: Honours Thesis.

The purpose is to acquaint the student with a current problem and the related research procedures in experimental neuroscience. Each student works with a staff member who advises the student about research in the area of interest, and closely supervises an original research project carried out by the student. The students meet together occasionally throughout the year to describe their proposed research and their progress. Each student must submit a formal written report of the completed research. The oral final 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.

COORDINATOR(S): Staff
CROSS-LISTING: PSYO 4000/X/Y.06
RESTRICTION: Restricted to Honours students in their graduating year
NESC 4740.03: Topics in the Neurobiology of Learning and Memory.

This seminar class will examine current research in the study of the neurobiology of learning and memory through presentations and discussions of journal articles. Classes will consist of review papers and research papers. Students will present the research papers and direct the class in the discussion. Grades will be given for presentations and participation in discussion and for an essay, which will be a critical enquiry into one of the topics covered in the class.

FORMAT: Seminar 2 hours

PREREQUISITE: NESC/PSYO 2470.03, NESC/PSYO 2140.03
CROSS-LISTING: PSYO 4740.03

Oceanography

Location: Life Sciences Centre
Halifax, NS B3H 4J1

Phone: (902) 494-3557
Fax: (902) 494-3877
Email: Oceanography@Dal.ca
Website: http://www.dal.ca/oceanography

Dean
Taylor, K., BSc (St. FX), PhD (U of Alberta)
Chairperson of Department
Boudreau, B.P. (902-494-3557)

Graduate Advisor
Kelley, D. (904-1694)

Professors Emeriti
Bowen, A.J., MA (Cantab), PhD (Scripps), FRSC
Fournier, R.O., MSc (Wm. & Mary), PhD (URI)
Mills, E., BSc (CARL), MS, PhD (Yale), FLS

Professors
Beaumont, C., BSc (Sussex), PhD (Dal) (Canada Research Chair)
Bentzien, P., BSc (McGill), MSc (UBC), PhD (McGill) (cross appointment with Biology), DFO Chair in Fisheries Resource Conservation Genetics
Boudreau, B.P., BSc (UBC), MS (Texas A & M), PhD (Yale)
Cullen, J., BSc (Dal), PhD (Scripps) (NSERC/Salaberry Research Chair)
(Killam Chair in Ocean Studies)
Grant, I., BSc (Dal), PhD (North Carolina)
Gunther, H.J., BSc (Liverpool), PhD (Cambridge) (NSERC/MARTEC/AES Research Chair)
Hav, A., BSc, MSc (Western), PhD (UBC)
Hill, P.S., LLB (Dalhousie), MSc, PhD (Washington)
Howes, M.R., BSc (Dalhousie), PhD (Dal)
Louden, K.E., BA (Oberlin), MEd (Temple), PhD (Dartmouth)
Moore, K.M., BA (Oriental), PhD (Southampton)
Ruddick, B.R., BSc (UVic), PhD (MIT)
(Thompson, R.E., BSc, MSc (UMac), PhD (Livingston) (jointly with Mathematics and Statistics) Canada Research Chair

Associate Professors
Finn, R., BSc (Dal), MSc, PhD (Toronto) (cross appointment with Department of Physics and Atmospheric Science)
Kelley, D. BSc (Dal), PhD (Dal)
Metaxas, A., BSc (McGill), MSc (UBC), PhD (Dal) (NSERC UFA)
(Atwater Chair in Ocean Studies)

Assistant Professors
Fennel, K., BSc, PhD (Rostock), Canada Research Chair
Gentilhomme, W.C., BSc (McGill), PhD (Dartmouth) (cross appointment with Engineering Mathematics)
Kienast, M., BSc (Carleton), MSc (York), PhD (McGill)
(Thompson, R.E., BSc (Dal), MSc (UMac), PhD (Livingston) (jointly with Mathematics and Statistics) Canada Research Chair

Honorary Adjunct Professors
Azato-Scott, K., BSc, MSc (Japan), PhD (Dal)
Grundl, T., BSc, PhD (Dal)
DiBacco, C., BSc, MSc (Dal), PhD (Scripps)
Frank, K.T., BSc, PhD (Toronto)
Helleo, J., BSc (Montreal), MSc, PhD (UBC)
Holmes, R.S., MSc, PhD (Ottawa)
Johnson, B., BSc (North Carolina), PhD (Dal)
LeVasseur, M., BSc, MSc (Laval), PhD (UBC)
Li, V.K.W., BSc (UBC), PhD (Dal)
Moshier, D.C., BSc (Acadia), MSc (MUN), PhD (Dal)
Oksanen, N., BSc (McGill), MSc (Dal), PhD (McMaster)
Piper, D.J.W., BA, MA, PhD (Carleton)
Ritchie, H., BSc (Mt. A.), BA (Mon), MSc (McGill)
Sathyendranath, S., BSc (St. Thomas), College, PhD (Univ. P&M Curie)
Smith, F.C., BSc, MS (Brown), PhD (MIT/WHOI)
Vezina, A., BSc (Laval), PhD (McGill)
Wright, D., BSc (Laurentian), PhD (UBC)

I. Introduction
Oceanography is an inter-disciplinary science that includes studies of tides and currents, the chemistry of sea water, plants and animals that live in the sea, and ocean bottom sediments and underlying crustal structures. Career oceanographers are employed in Canadian universities, in various federal laboratories that are engaged in both basic research and applied problems which meet a national need, such as fisheries investigations, exploration for offshore mineral resources, and studies of ice in navigable waters, and in a number of private companies interested in marine environmental protection or exploration.

The Department of Oceanography offers undergraduate training in Oceanography as part of Combined Honours Degrees with the Departments of Biology and Marine Biology, Chemistry, Earth Sciences, Mathematics, Statistics, and Physics and Atmospheric Science. Honours students in these Combined Honours Programs have an opportunity to complement their training in their chosen scientific field with a background in Oceanography, thus enhancing their career and employment opportunities. Students considering graduate study in Oceanography should also consider a Combined Honours degree. Further training in Oceanography occurs at the graduate level only.

In addition, many of the classes listed below can be taken, as part of a Minor in Environmental Studies or included within the Concentration in Environmental Science. Consult the Environmental Programs section of this calendar for details. Some of the classes listed here are required for students seeking a Diploma in Meteorology. Details for this course of study are found in the Physics and Atmospheric Science section of this calendar.

Oceanography is an inter-disciplinary science that includes studies of tides and currents, the chemistry of sea water, plants and animals that live in the sea, and ocean bottom sediments and underlying crustal structures. Career oceanographers are employed in Canadian universities, in various federal laboratories that are engaged in both basic research and applied problems which meet a national need, such as fisheries investigations, exploration for offshore mineral resources, and studies of ice in navigable waters, and in a number of private companies interested in marine environmental protection or exploration.

The Department of Oceanography offers undergraduate training in Oceanography as part of Combined Honours Degrees with the Departments of Biology and Marine Biology, Chemistry, Earth Sciences, Mathematics, Statistics, and Physics and Atmospheric Science. Honours students in these Combined Honours Programs have an opportunity to complement their training in their chosen scientific field with a background in Oceanography, thus enhancing their career and employment opportunities. Students considering graduate study in Oceanography should also consider a Combined Honours degree. Further training in Oceanography occurs at the graduate level only.

In addition, many of the classes listed below can be taken, as part of a Minor in Environmental Studies or included within the Concentration in Environmental Science. Consult the Environmental Programs section of this calendar for details. Some of the classes listed here are required for students seeking a Diploma in Meteorology. Details for this course of study are found in the Physics and Atmospheric Science section of this calendar.

A good background in basic science is a necessary prerequisite for students wishing to prepare for studies in Oceanography. There are introductory classes which survey the entire field and advanced classes in each of the major specialties -- physical, chemical, geological, biological oceanography, and meteorology. Students are encouraged to select electives from the 3000 and 4000 level classes below as appropriate to their interests.

The courses currently required by the Marine Biology Program in Chemistry, Mathematics, and Statistics are unchanged; however, the Oceanography Department strongly recommends completion of higher level mathematics and statistics courses.

II. Degree Programs

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

A. Combined Honours Program: Marine Biology/Oceanography
Oceanography is intended to be the second or 4-credit honours subject and Marine Biology is intended to be the primary or 7-credit honours subject. The requirements for a combined honours program in Marine Biology/Oceanography are that the students take a minimum of 11 credits beyond 1000 level in two the subjects with not more than 7 nor fewer than 4 in either. Core Biology requirements for the current Marine Biology Program (e.g. 1000-3000 level courses in the Calendar) are unchanged. Other courses currently required by the Marine Biology Program in Chemistry,
• *OCEA 3003.03 Introduction to Physical Oceanography
• *OCEA 3002.03 Introduction to Chemical Oceanography
• OCEA 3001.03 Introduction to Biological Oceanography
• OCEA 3004.03 The Last Billion Years
• OCEA 3402.03 Geochemistry of the Aquatic Environment
• OCEA 4101.03 Ocean Dynamics
• OCEA 4311.03 History of Marine Sciences
• OCEA 4470.03 Introduction to Oceanography
• OCEA 4200.06 Honours Thesis *

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 Geosciences (recommended)
• ERTH 3001.03 Igneous Petrology
• ERTH 3201.03 Metamorphic Petrology
• ERTH 3302.03 Quaternary Sedimentary Environments
• ERTH 3501.03 Exploring GIS
• ERTH 4570.03 Fossil Fuels
• ERTH 4201.03 Applied Geophysics
• ERTH 4410.03 Quaternary Dating and Palaeoclimatology
• ERTH 4503.03 Micropaleontology and Global Change
• ERTH 4502.03 GIS Applications to Environmental...
• ERTH 4530.03 Environmental Remote Sensing

D. Combined Honours Program: Mathematics/ Oceanography

Mathematics is intended to be the primary or 7-credit honours subject and Oceanography the second or 4-credit subject. The requirements for a combined honours program in Mathematics/Oceanography are that the students take a minimum of 11 and a maximum of 13 credits beyond the 100 level in the two subjects with not more than 7 nor fewer than 4 in each. Oceanography classes must be chosen in consultation with the Honours Project advisors.

Recommended Mathematics Courses

• MATH 3101.03/3121.03 Differential Equations
• MATH 3170.03 Introduction to Numerical Linear Algebra
• MATH 3201.03 Introduction to Numerical Analysis
• MATH 3122.01/3122.02/4122.01/4122.02 Differential Equations
• MATH 4270.03 Numerical Software

Remaining Oceanography Electives Should Be Chosen From

• OCEA 2001.03/2002.03 Intermediate Calculus
• OCEA 2030.06 Linear Algebra
• MATH 2011.03 Analysis
• One of:
  • MATH 3101.06 Abstract Algebra or
  • MATH 3501.06 Analysis
• One full credit in MATH at 4000 level
• OCEA 3001.03 Introduction to Physical Oceanography
  • (Plus MATH 4950 or OCEA 4200 [Honours Research Project])

Recommended Oceanography Courses

• MATH 3101.03/3121.03 Differential Equations
• MATH 3170.03 Introduction to Numerical Linear Algebra
• MATH 3201.03 Introduction to Numerical Analysis
• MATH 3122.01/3122.02/4122.01/4122.02 Differential Equations
• MATH 4270.03 Numerical Software
E. Combined Honours Programs: Physics/Oceanography

Oceanography is designated as the 4-credit component of the Combined Honours Degree. As a minimum, students must choose 13 credits beyond the 1000 level in two subjects, with no more than 7 nor fewer than 4 credits in either. At a maximum, the student will choose 13 credits beyond the 1000 level in two subjects, with no more than 9, nor fewer than 4 in either. Oceanography classes must be chosen in consultation with the Honours Project supervisors.

Required Oceanography Classes:

- 4222.03: Estuary, Coast and Shelf Dynamics
- 4221.03: Ocean Dynamics
- 4220.03: Numerical Modelling of Atmospheres and Oceans
- 4210.03: Time Series Analysis in Oceanography and Meteorology
- 4209.03: Advanced Chemical Oceanography
- 4208.03: Fluid Dynamics I
- 4205.03: Benthic Ecology
- 4204.03: Environmental Impacts in Marine Ecosystems
- 4203.03: Marine Geophysics
- 4202.03: Deep Sea Biology
- 4201.03: Marine Modelling

Elective Oceanography courses
taken from the following list so that the total number of OCEA credits is at least 4:

- 4203.03: Marine Modelling
- 4202.03: Deep Sea Biology
- 4201.03: Marine Modelling

F. Combined Honours Program: Statistics/Oceanography

Oceanography is designated as the 4-credit component of the Combined Honours Degree. As a minimum, students must choose 13 credits beyond the 1000 level in two subjects, with no more than 7 nor fewer than 4 credits in either. At a maximum, the student will choose 13 credits beyond the 1000 level in two subjects, with no more than 9, nor fewer than 4 in either. Oceanography classes must be chosen in consultation with the Honours Project supervisors.

Required Oceanography Credits taken from:

- OCEA 2001.03: The Blue Planet
- OCEA 401.03: The Moving Ocean

Elective Oceanography courses
taken from the following list so that the total number of OCEA credits is at least 4:

- OCEA 200.03: Climate Change
- OCEA 302.03: Introduction to Chemical Oceanography
- OCEA 303.03: Introduction to Biological Oceanography
- OCEA 304.03: The Last Billion Years
- OCEA 411.03: Geological Oceanography
- OCEA 414.03: Biological Oceanography
- OCEA 416.03: Fisheries Oceanography
- OCEA 420.03/STAT400.01: Time Series Analysis in Oceanography and in Meteorology
- OCEA 422.03: Numerical Modelling of Atmospheres and Oceans
- OCEA 424.03: Ocean Dynamics
- OCEA 422.03: Estuary, Coast and Shelf Dynamics
- OCEA 425.03: Acoustical Oceanography
- OCEA 426.03: Advanced Chemical Oceanography
- OCEA 431.03: Fluid Dynamics I
- OCEA 435.03: Benthic Ecology
- OCEA 436.03: Environmental Impacts in Marine Ecosystems
- OCEA 439.03: Marine Geophysics
- OCEA 470.03: Deep Sea Biology
- OCEA 490.03: Marine Modelling

Required Statistics/Mathematics Courses

- MATH 1000.03/1010.03: Differential and Integral Calculus I/II
- MATH 2001.03/2002.03: Intermediate Calculus I/II
- MATH 2010.03: Matrix Theory and Linear Algebra I (MATH 2135.03: Linear Algebra or MATH 2300.03: Mathematical Modelling I or MATH 2400.03: Introduction to Numerical Computing)
- MATH 3110.03/3210.03: Differential Equations I/II

A full-credit class in scientific computer programming (e.g. PHYC 2550: Computer Simulations in Science) is recommended to be taken before the end of the second year.

5 The 2nd honours projects (PHYC480.03) can be a continuation of the first one (PHYC 485.03). The projects need to have a strong oceanographic component, with a supervisor or co-supervisor chosen from the faculty members in the Department of Oceanography.

The Oceanography component is comprised of the following classes:

Required Oceanography Courses:

- 4203.03: Physical Oceanography
- 431.03: Fluid Dynamics

The following classes are available to fill the remaining OCEA credits:

- 4130.03: Chemical Oceanography
- 4210.03: Time Series Analysis in Oceanography and Meteorology
- 4209.03: Advanced Chemical Oceanography
- 4208.03: Fluid Dynamics I
- 4205.03: Benthic Ecology
- 4204.03: Environmental Impacts in Marine Ecosystems
- 4203.03: Marine Geophysics

Elective Oceanography courses
taken from the following list so that the total number of OCEA credits is at least 4.

- 4203.03: Marine Modelling
- 4202.03: Deep Sea Biology
- 4201.03: Marine Modelling

Required Statistics/Mathematics Courses

- MATH 1000.03/1010.03: Differential and Integral Calculus I/II
- MATH 2001.03/2002.03: Intermediate Calculus I/II
- MATH 2010.03: Matrix Theory and Linear Algebra I (MATH 2135.03: Linear Algebra or MATH 2300.03: Mathematical Modelling I or MATH 2400.03: Introduction to Numerical Computing)
- MATH 3110.03/3210.03: Differential Equations I/II

A full-credit class in scientific computer programming (e.g. PHYC 2550: Computer Simulations in Science) is recommended to be taken before the end of the second year.

The following classes are available to fill the remaining OCEA credits:

- 4130.03: Chemical Oceanography
- 4210.03: Time Series Analysis in Oceanography and Meteorology
- 4209.03: Advanced Chemical Oceanography
- 4208.03: Fluid Dynamics I
- 4205.03: Benthic Ecology
- 4204.03: Environmental Impacts in Marine Ecosystems
- 4203.03: Marine Geophysics

Elective Oceanography courses
taken from the following list so that the total number of OCEA credits is at least 4.

- 4203.03: Marine Modelling
- 4202.03: Deep Sea Biology
- 4201.03: Marine Modelling

Required Statistics/Mathematics Courses

- MATH 1000.03/1010.03: Differential and Integral Calculus I/II
- MATH 2001.03/2002.03: Intermediate Calculus I/II
- MATH 2010.03: Matrix Theory and Linear Algebra I (MATH 2135.03: Linear Algebra or MATH 2300.03: Mathematical Modelling I or MATH 2400.03: Introduction to Numerical Computing)
- MATH 3110.03/3210.03: Differential Equations I/II

At least two half-credit courses chosen from:

- STAT 4066.03: Advanced Statistical Theory I
- STAT 4350.03: Applied Multivariate Analysis
- STAT 4620.03: Data Analysis
- STAT 490.03/OCEA4210.03: Time Series Analysis I

Elective Statistics/Mathematics courses taken from the following list so that the total number of OCEA and STAT credits is at least 11.

- STAT 4066.03: Advanced Statistical Theory I
- STAT 4350.03: Applied Multivariate Analysis
- STAT 4620.03: Data Analysis
- STAT 490.03/OCEA4210.03: Time Series Analysis I
OCEA 3001.03: Introduction to Physical Oceanography.

This course introduces the Physics of the Ocean, focusing on issues of interest to undergraduates in ocean-related disciplines. The course starts with a sketch of seawater properties and air-sea interactions, and then moves on to address the dynamics of ocean flows in both general and specific terms. A wide variety of scales will be discussed, from centimeter-scale turbulence to the global "conveyor belt" popularized in recent films. Although some general themes are certain to be covered - e.g., the importance of the ocean to climate and the connection between ocean Physics and ocean Biology and Geochemistry - there is plenty of room for flexibility. The class is tailored to the interests of the students, from year to year.

INSTRUCTOR(S): D. Kelley
FORMAT: Lecture 3 hours
PREREQUISITE: OCEA 2000
EXCLUSION: OCEA 3170

OCEA 3002.03: Introduction to Chemical Oceanography.

Why is the sea salty? Why is the dominant salt in the Oceans NACL? Has it always been that way? Do the salts affect life in the oceans? Does life affect the chemistry of the oceans? Can the chemistry of oceans affect climate? Can man change the chemistry of the Ocean? This course is intended to answer such questions by giving students an understanding of the composition of seawater and the processes that leads to this composition. This understanding will be both qualitative and quantitative through the use of thermodynamic, kinetic and box models to describe the balances that produce the observed chemical distributions in the sea.

INSTRUCTOR(S): H. Thomas
FORMAT: Lecture 3 hours
PREREQUISITE: CHEM 1011 and CHEM 1012 or equivalents, and OCEA 2000
EXCLUSION: OCEA 3170

OCEA 3003.03: Introduction to Biological Oceanography.

This course explores the interactions between living organisms in the sea and the ocean environment. The course material provides first a basic background to dynamical biological processes, such as absorption of light, photosynthesis, nutrient uptake, respiration, grazing, microbial degradation, production/decomposition of organic particles, and physiological and population level adaptation to variations in the marine environment. These processes are then considered in the context of the physics and chemistry of large scale oceanographic ecosystems such as upwelling regions, the oligotrophic gyres, coastal environments, and the high latitude oceans. The emphasis is on a quantitative approach.

INSTRUCTOR(S): M. Lewis
FORMAT: Lecture 3 hours
PREREQUISITE: OCEA 2000
CROSS-LISTING: MARI 3003.03, BIOC 3103.03

OCEA 3004.03: The Last Billion Years.

This class examines major events during the last billion years of Earth history. The geological evidence of major events will be described, and the hypothesized causes of the events will be examined critically in the context of that evidence. The goal of this course is to develop on the part of students an understanding of the functioning of the earth/ocean/ atmosphere system, with emphasis on the connections among various processes that regulate and record Earth's biogeochmical cycles. Students will receive basic instruction in plate tectonics, in dating methods, and in the use of stable isotopes as environmental proxies. Examples of events to be studied include the Neoproterozoic "Snowball Earth," mass extinctions at the close of the Paleozoic and Mesozoic eras, Mesozoic ocean anoxic events, the Cenozoic cooling, the Mesozoic salinity crisis, the onset of ice ages in the Pleistocene, and glacial outflow floods. The course will have two field trips.

INSTRUCTOR(S): P. Hill
PREREQUISITE: OCEA 2000/3 and ERTH 1010 and ERTH 1130 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 by humans and by other organisms 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 geochemical cycles. This course 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 altered changes, and the global cycles of carbon, nitrogen, and sulfur. Students will be taught to approach problems quantitatively through the principles of mass action (fE-pH and activity-diagrams) and of mass balance (box models and conservation equations).
INSTRUCTOR(S): M. Kiesow
FORM: Lecture 3 hours
PREREQUISITE: CHEM 1011.03/1012.03 or equivalent and ERTH 1000.03/1010.03
CROSS-LISTING: ERTH 5420.03

OCEA 4110.03: Geological Oceanography.
This class is intended to give a broad survey of topics in marine geology and geophysics for new students in Oceanography at a graduate level. No previous background in Geology or Geophysics is required. The class covers current methods and observations with quantitative applications to an understanding of prehistoric 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 seafloor transport and deposition are explored. Some laboratory exercises augment the lectures, including a field cruise to Bedford Basin.
INSTRUCTOR(S): K. Louen
FORM: Lecture 3 hours
PREREQUISITE: Instructor's consent
CROSS-LISTING: OCEA 5110.03, ERTH 4110.03

OCEA 4120.03: Physical Oceanography.
This class explores the physical forces driving the oceans, and describes the responses of ocean water to these forces. Scales of ocean motion discussed range from currents of oceanic dimensions, like the Gulf Stream, through eddies 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
FORM: Lecture 3 hours
PREREQUISITE: MATH 1000.03, MATH 1010.03, classical calculus or equivalent, and permission of the instructor
CROSS-LISTING: OCEA 5120.03
RESTRICTION: Third- and fourth-year students only

OCEA 4130.03: Chemical Oceanography.
This course is an introduction to the chemistry of the oceans. 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 radioactive dating methods, stable isotope studies, chemical speciation and chemical models of sea water.
INSTRUCTOR(S): R.M. Moore
FORM: Lecture 3 hours, some lab
PREREQUISITE: OCEA 2000, OCEA 3010 or instructor's consent
CROSS-LISTING: OCEA 5130.03

OCEA 4140.03: Biological Oceanography.
Biological oceanography is a quantitative science. Its goal is to describe how physical, chemical and biological processes interact to determine the species composition, biogeochemical activities, and trophic structure of marine communities. At the conclusion of this introduction to biological oceanography, students should possess a basic knowledge of biological oceanographic processes, and how they interact with the Earth's physical and chemical environment. Outstanding problems currently facing biological oceanographers and earth systems scientists will be discussed, as 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): J. Cullen
PREREQUISITE: Instructor's consent
CROSS-LISTING: OCEA 5140.03, BIOL. 4661.03, 5661.03, MARI 4661.03

OCEA 4160.03: Fisheries Oceanography.
Students who are not competent with fundamental population dynamics, ecology, physical oceanography, calculus, statistics, and computerized analysis should not enroll. The class focuses on the ecology of marine fish (including significant advances made in freshwater systems) and on the biotic and abiotic influences on marine fish population dynamics and production, distribution and abundance. Lectures include reproduction, early life history, feeding, growth, metabolism, mortality, and recruitment variability and forecasting. Emphasis is placed on 1) hydrological and meteorological processes influencing the above and on 2) the primary literature, current problems and hypotheses, and fruitful research directions, approaches and techniques. Some emphasis is also placed on the application of scientific insights to fishery management techniques. Students are required to write a primary publication-style research paper.
INSTRUCTOR(S): C.T. Taggart
FORM: Lecture 3 hours, some practicums/tutorials
PREREQUISITE: OCEA 2000.03 or 2002.03, BIOL. 2040.03 and/or 2080.03 or equivalent, and instructor's consent.
CROSS-LISTING: BIOL. 4600.03, MARI 4600.03, OCEA 5160.03

OCEA 4200X/Y.06: Honours Research.
This class is required for those students in the honours program. It will consist of a research project carried out under the supervision of a faculty member and will contain some original component on any aspect of oceanography. The results of the research will be submitted to the Department as a report that will be graded. The student must also make oral presentations of this work to the Department. Students wishing to enter this class must have an appropriate background in Chemistry or Earth Sciences and Oceanography, and they must meet with the Coordinator of Honours projects before undertaking their project. The consent and signature of the Coordinator are required. In addition, a research advisor must be identified among the faculty members of the Oceanography Department, and that person's written consent is also required.
NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed successfully.
PREREQUISITE: This class is open only to students enrolled in the Combined Honours in Chemistry and Oceanography, the Combined Honours in Mathematics and Oceanography or the Combined Honours in Statistics and Oceanography or the Combined Honours in Earth Sciences and Oceanography. Students enrolled in the Combined Honours in Marine Biology and Oceanography must enroll in BIOL 4600.
Chemistry students must also be enrolled in CHEM 4880 and participate in all activities associated with that class. All Earth Science students must simultaneously attend all classes and activities associated with ERTH 4200.
All Mathematics students must simultaneously attend all classes and activities associated with MATH 4900. All Statistics students must...
simultaneously attend all class and activities associated with STAT 4950.

Students will have completed all OCEA 3000 level courses and have the consent of the Oceanography Undergraduate Coordinator.

**OCEA 4210.03: Time Series Analysis in Oceanography and Meteorology.**

Time series analysis in both time and frequency domain is introduced. The class is applied and students are required to develop their own computer programs in the analysis of time-series drawn from real problems. Topics to be discussed include the nature of time series, stationarity, auto and cross-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):** K. Thompson

**FORMAT:** Lecture 3 hours

**PREREQUISITE:** Instructor's consent

**CROSS-LISTING:** STAT 4900.03, STAT 5900.03, OCEA 5210.03

**OCEA 4220.03: Numerical Modelling of Atmospheres and Oceans.**

This class is intended for students who will benefit from an in-depth knowledge of numerical modelling techniques for simulating atmospheric and oceanic circulations. Material includes review of derivation of the governing equations; finite difference, finite element, and spectral methods of solving spatial partial differential equations; Eulerian, semi-implicit and semi-Lagrangian time integration techniques; accuracy and computational stability analysis; 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 4231.03: Ocean Dynamics.**

An advanced class for graduate students in Physical Oceanography and Atmospheric Science that studies the basic equations governing rotating geophysical flows, plus applications. Topics include geostrophy, conservation of potential vorticity, quasi-geostrophic dynamics, waves of frequency f, response to surface forcing (steady and unsteady), baroclinic/barotropic instability, quasi- and semi-geostrophic frontogenesis, and tropical dynamics.

**INSTRUCTOR(S):** B. Ruddick

**FORMAT:** Lecture, 3 hours

**CROSS-LISTING:** OCEA 5231.03

**OCEA 4222.03: Estuary, Coast and Shelf Dynamics.**

This class discusses the physical processes that operate on continental shelves to create long waves, tides, tidal mixing, thermohaline circulation, wind forcing, upwelling, etc. Both observations and models for these processes are discussed.

**INSTRUCTOR(S):** J. Sheng

**FORMAT:** Lecture, 3 hours

**PREREQUISITE:** OCEA 4210.03

**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 current literature.

**INSTRUCTOR(S):** M. Levas; J. Cullen

**FORMAT:** Lecture 3 hours, some labs

**PREREQUISITE:** Instructor’s consent

**CROSS-LISTING:** BIOC 4662.03, OCEA 5200.03, 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.
OCEA 4335.03: Environmental Impacts in Marine Ecosystems.
Marine environments are subject to a variety of environmental impacts caused by resource extracting and utilization as well as waste disposal. These impacts arise from oil and gas production, ocean dumping, coastal habitat alteration and eutrophication, effluent inputs, urbanization, shipping, fisheries, and aquaculture. This course will review the effects of these types of activities on marine environments, with a focus on ecosystem level influences including dispersion, elemental fluxes, benthic impacts, food webs, and biodiversity. Approaches to quantifying these processes and predicting impacts will be explored. Specifically, simulation modelling of impacts and ecosystems will be undertaken using Stella graphical modelling software as well as other tools. The course will examine practical solutions to environmental assessment, monitoring, and prediction using modelling, data collection, and analysis. Classes will include lectures, modelling examples (computer projection), and discussion of research papers. Course requirements will consist of problem sets and a student modelling project.

INSTRUCTOR(S): J. Grant
FORMAT: Lecture
CROSS-LISTING: OCEA 5335.03
CO-REQUISITE: BIOL 2001.03, 2060.03, MATH 1000.03, STAT 1060, or permission of the instructor.

OCEA 4370.03: Deep Sea Biology.
The class examines the biology of organisms inhabiting deep sea environments. We will explore physiological adaptations to the physical, chemical and geological environmental characteristics; describe spatial and temporal distributional patterns of the biological assemblages; examine regulatory factors of these patterns, such as ocean circulation, food availability, reproduction and recruitment; and delve into habitats of special interest such as hydrothermal vents and cold seeps.

INSTRUCTOR(S): A. Metaxas
PREREQUISITE: At least 2 of BIOL 2060.03, BIOL 2001.03 or OCEA 2850.03
CROSS-LISTING: BIOL 4350.03, BIOL 5370.03, MARI 4370.03, OCEA 5370.03

OCEA 4380.03: Marine Modelling.
A graduate level survey of modelling techniques applied to biological-physical problems in oceanography. Lecture material includes: philosophy of modelling, dimensional analysis, parameterization of unresolved processes, numerical representation of ordinary or partial differential equations, model validation and fundamental limits to predictability and frequency domain analysis. Students are given the opportunity to study special topics in the current literature, e.g. prey-predator models, spatial patchiness models, models of the biomass size spectrum, models of pollutant dispersal, etc.

INSTRUCTOR(S): K. Fennel
FORMAT: Lecture 3 hours
PREREQUISITE: OCEA 4120.03, MATH 2420.03 and Instructor's consent
CROSS-LISTING: OCEA 5380.03

OCEA 4411.03: Atmospheric Dynamics I.
See class description for PHYC 4411.03 in the Physics and Atmospheric Science section of this calendar.

OCEA 4412.03: Atmospheric Dynamics II.
See class description for PHYC 4412.03 in the Physics and Atmospheric Science section of this calendar.

OCEA 4470.03: Introduction to Seismic Imaging.
See class description for ERTH 4470.03 in the Earth Sciences section of this calendar
CROSS-LISTING: ERTH 4470.03

OCEA 4480.03: Advanced Seismic Imaging.
See class description for ERTH 4480.03 in the Earth Sciences section of this calendar.
CROSS-LISTING: ERTH 4480.03

OCEA 4500.03: Atmospheric Physics I.
See class description for PHYC 4500.03 in the Physics and Atmospheric Science section of this calendar.

OCEA 4510.03: Atmospheric Physics II.
See class description for PHYC 4510.03 in the Physics and Atmospheric Science section of this calendar.

OCEA 4520.03: Introduction to Atmospheric Science.
See class description for PHYC 4520.03 in the Physics and Atmospheric Science section of this calendar.

OCEA 4541.03: Synoptic Meteorology I.
See class description for PHYC 4540.03 in the Physics and Atmospheric Science section of this calendar.

OCEA 4550.03: Synoptic Meteorology II.
See class description for PHYC 4550.03 in the Physics and Atmospheric Science section of this calendar.

OCEA 4595.03: Atmospheric Chemistry.
See course description for PHYC 4595 in the Physics and Atmospheric Science section of this calendar.
INSTRUCTOR(S): R. Martin
FORMAT: Lecture 3 hours
PREREQUISITE: Instructor's consent
CROSS-LISTING: OCEA 5595.03, PHYC 4595.03, PHYC 5595.03, CHEM 4595.03
Physics and Atmospheric Science

Location: Sir James Dunn Science Building
Halifax, NS B3H 3J5

Telephone: (902) 494-2337
Fax: (902) 494-5191
Website: www.physics.dal.ca
Email: physics@dal.ca

Chair of Department
Rotermund, H.H. (494-2342)

Undergraduate Advisor
Tindall, D.A. (494-2340)
Email: david.tindall@dal.ca

Graduate Coordinator
Danlap, R.A. (494-2394)
Email: r.a.danlap@dal.ca

Coordinator, Atmospheric Science
Drummond, J.R. (494-2326)
Email: james.drummond@dal.ca

Coordinator, Diploma in Meteorology
Folkins, I. (494-1292)
Email: ian.folkins@dal.ca

Advisor, Co-op Program
Labrie, D. (494-2322)
Email: danlabrie@dal.ca

Professors Emeriti
Beth, P.D., BSc, MSc (Dal), PhD (McGill), FRSC - Research
DeSouza, G.B., PhD (Dal), primary appointment in the School of Biomedical Engineering

Professors
Dobos, J.R., BSc (Dal), MSc, PhD (UK), FRSC, NSERC/IMCA Inc. Industry Research Chair, Canada Research Chair in Materials for Batteries and Fuel Cells, cross appointment with Chemistry
Drummond, J.R., BA, MA, PhD (Oxford), FRSC - Canada Research Chair in Remote Sensing of Atmospheres
Gedalaj, D.J.W., BSc (Acadia), PhD (McMaster), FRSC - Research
gauchat, R., BSc (Varna), PhD (Cambridge), NSERC/MARIE/ MRC Industry Research Chair, primary appointment with Oceanography
Kretzner, H.H., MSc, Dr (Born). FRSC - A.C. Fales Professor of Theoretical Physics
Rotermund, H.H., PhD (Berlin), George M. Burns Professor of Physics
White, M.A., BSc (Western), PhD (McMaster), University Research Professor, primary appointment with Chemistry
Zhao, F., PhD (University of Science & Technology of China)

Associate Professors
Duck, T., BSc, PhD (York)
Folkins, I., BSc (Dal), MSc, PhD (Toronto), cross appointment with Oceanography
Hovis, K., BSc (Toronto), PhD (Simon Fraser), P. Phys.
Hill, J.C., BSc, PhD (Queen's)
Kyrakidou, J., BSc, MSc (Dal), PhD (Basel)
Labrie, D., BSc (Montreal), MSc, PhD (McMaster)
Levis, G.B., PhD (Toronto)

Assistant Professors
Bonev, I., BSc (Dalhousie), PhD (Dal)
Hall, R.C., BSc, MSc, PhD (Toronto), Canada Research Chair, Ultrastable Science
Hale, M., BSc, PhD (Dal), primary appointment with Radiation Oncology
Kasperek, L., MSc (Saskatchewan), PhD (U. of Pa)
Morcholosy, T., BSc (Toronto), PhD (Simon Fraser)
Robar, J., MSc (McGill), PhD (U of Cal), primary appointment with Radiation Oncology
Walls, M., BSc (Western), PhD (Toronto) (NSERC University Faculty Award), primary appointment with Medicine

Senior Instructors
Fyle, P.M., MSc (Dal)
Zukowsky, W., BSc (Dal)

Adjunct Professors
Austin, R., PhD (McMaster) Astronomy & Physics, SMU
Azencot, M., PhD (F., France), Physics & Astronomy, Laurentian University
Barkanov, S., PhD (U of Mentana), Acadia
Bennett, J.C., PhD (Waterford), Physics, Acadia
Boyce, S., PhD (UNB), National Research Council of Canada
Bowen, C., PhD (Western), Institute for BioEngineering, NSERC
Chylek, P., PhD (U of Cal), LANC
Frye, M.L., PhD (Hamburg), ETH, Zurich, Switzerland
Gayle, R., PhD (Dal), Dalhousie
Hale, M., BSc, PhD (UNB), primary appointment with Radiation Oncology
Kreplak, L., MSc (Supelec), PhD (Univ. Paris XI)

Postdoctoral Fellows/Research Associates
Beyea, S., PhD (UNB), National Research Council of Canada
Bowen, C., PhD (Western), Institute for Biodiagnostics, NRC
Chylek, P., PhD (U of Cal), LANC
Dunlap, R.A., BS (Worcester), AM (Dart), PhD (Clark)
Drummond, J.R., BA, MA, PhD (Oxford), FRSC - Canada Research Chair, Meteorology Program
Fyfe, M., BSc (Dal), primary appointment with Meteorology Program
Garsuch, R., PhD (Caltech), Astronomy and Physics, SMU
Gesev, A., PhD (Dal), Dalhousie

I. Introduction

Physics is the study of the fundamental properties of energy and matter. It attempts to describe and explain the great diversity of nature with the fewest and simplest hypotheses, and to show the underlying similarities of seemingly diverse phenomena. It requires imagination and its success is judged by whether or not nature confirms its predictions when tested by experiment. An understanding of physics must be built on a good foundation. The various programs are arranged to do this in an orderly, efficient way.

The Honours program is a focal point of undergraduate study in physics and the related areas. Such programs provide the opportunity to pursue a broad education in both physics and other areas. Such programs provide a suitable background for employment in industry, and for further studies in such fields as meteorology, engineering, education, law, medicine, dentistry, health sciences, and business.
First Year Classes
There are three first year classes. PHYC 1400X/Y.06 is a general interest class for RA students and is not acceptable as a prerequisite for further classes in physics. PHYC 1510X/Y.06, and 1520X/Y.06 both give a general introduction to physics, but each has its own particular approach and selection of topics.
PHYC 1100X/Y.06 is primarily for students intending to make a study of a physical science or engineering; it has regular labs, occasional tutorials, uses calculus, and is accepted as a prerequisite for advanced physics classes. Nova Scotia Grade XII Physics or its equivalent is a prerequisite.
PHYC 1010X/Y.06 is an introductory class which is oriented towards the health sciences and is primarily intended for students in biology, pre-medicine, pre-dentistry and allied health sciences. The class incorporates labs and tutorials, and is accepted as a prerequisite for advanced physics classes when Mathematics 1000.03 and 1010.03 are taken concurrently. It is a good preparation for the Medical College Admission Test (MCAT). Nova Scotia Grade XII Physics or its equivalent is highly recommended.

Second Year Classes
There are four 2nd year core physics classes (PHYC 2140, 2150, 2510, 2515). These classes are also suitable for students in other disciplines who would like to enhance their knowledge of physics. In particular, PHYC 2510 provides an opportunity to gain more laboratory experience, which is extremely valuable in many jobs.

Third and Fourth Year Classes
Not all classes are offered each year. Students should take careful note of the year in which each of these classes is planned to be offered. This information can be found at the department website (www.physics.dal.ca).

II. Degree Programs
There are two main programs. The 20-credit Honours in Physics and the 20-credit BSc with a Major in Physics. In addition, there are combined Honours and Major Programs, a Co-operative Education Program in Physics, and a 15-credit BSc with a concentration in physics. Our Department also offers a one year Diploma in Meteorology, leading to a career as a professional meteorologist. This diploma program can also be taken as part of a 20-credit BSc. Details of each program are given below.

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 60 of this calendar.

A. BSc with Honours in Physics
All students who intend to take a BSc with Honours in Physics are encouraged to discuss their program with staff members of the department, and should consult with the Undergraduate Advisor by the beginning of the second year.

Departmental Requirements
A Concentrated Honours Program in Physics will normally include the following classes:

**4000 level**
- PHYC 4160.03/4100.03
- PHYC 4151.03
- PHYC 4800.03/4850.03

**3000 level**
- PHYC 3200.03/3210.03
- PHYC 3640.03/3590.03
- PHYC 3000.03/3010.03

**2000 level**
- PHYC 2515.03/2510.03
- PHYC 2140.03/2150.03

**1000 level**
- PHYC 1100X/Y.06 or 1300X/Y.06 or SCIE 1501X/Y.27 or 1510X/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 1/2 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 3600.03, 3710.03, PHYC 3350.03, PHYC 4540.03, PHYC 4590.03. Up to five full credits may be chosen as general electives from the Faculty of Engineering. Participation in the Co-op Program is encouraged.

B. Combined Honours
Students interested in both physics and another science may wish to take a BSc with Honours in Physics and the other subject combined. In recent years, students have followed programs combining physics with:
- Mathematics
- Chemistry
- Computer Science
- History of Science and Technology
- Economics

As so many possibilities exist, we do not list specific programs here. Any combined honours program involving Physics must include the classes specified under "15-credit BSc with Concentration in Physics" below.

A combined Honours Degree may be an appropriate choice for your particular interests. However, if you opt for a combined degree, make sure that you are adequately educated in the areas of your future career. It is possible that if you don't select the correct classes, you might have to do a qualifying year before being able to enter a regular graduate program. Students contemplating such a program should, in any case, consult the departments before the beginning of their second year of study. Examples of such programs can be found on our website: www.physics.dal.ca.

C. 20-credit BSc with Major in Physics
A 20-credit BSc with major in Physics will normally include the following classes:

**1000 level**
- PHYC 1100X/Y.06 or 1300X/Y.06 or SCIE 1501X/Y.27 or 1510X/Y.33

**2000 level**
- PHYC 2140.03/2150.03
- PHYC 2515.03/2510.03
- Two other physics half credits at or above the 2000 level

A combined Honours Degree may be an appropriate choice for your particular interests. However, if you opt for a combined degree, make sure that you are adequately educated in the areas of your future career. It is possible that if you don't select the correct classes, you might have to do a qualifying year before being able to enter a regular graduate program. Students contemplating such a program should, in any case, consult the departments before the beginning of their second year of study. Examples of such programs can be found on our website: www.physics.dal.ca.

D. 15-credit BSc with Concentration in Physics
A 15-credit BSc with Concentration in Physics will normally include the following classes:
Faculty of Science

492  Physics and Atmospheric Science

The following Programs can be taken concurrently:
- Physics and Engineering

degrees in physics with the many programs Dalhousie offers. Below are

III. Interdisciplinary Opportunities

Classes from other departments
- MATH 1000.03/1001.03
- MATH 2001.03/2002.03
- CHEM 1011.03/1012.03

The 15-credit BSc can be combined with a Diploma in Engineering (see also III below)

Completion of the 15-credit BSc with appropriate physics classes can lead to
admission into the Diploma in Meteorology Program (see IV).

E. Co-op Education in Physics

Co-operative Education in Science (Science Co-op) is a program where academic
study is combined with paid career related work experience. Students incorporate three or four work terms in their academic study
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 2001.00) in the fall term of the year they join.

The scheduling of Science Co-op work terms must be taken into account in planning class selection. Consult with the Physics Co-op Program Advisor for your work term sequence.

See the “Co-operative Education in Science” section of this calendar, or www.sciencecoop.dal.ca, for information on Science Co-op such as Science Co-op requirements, eligibility, how to apply, deadlines and other related information.

For further information on the Physics Co-op program, please see www.physics.dal.ca and follow the links to the Science Co-op website.

Email: daniel.labrie@dal.ca

F. Honours Co-op in Physics

Departmental Requirements

Same as for the regular Honours in Physics as above with the addition of the following:
- Three or four supervised work-terms: PHYC 8891.00, 8892.00, 8893.00, 8894.00
- Co-op Seminar: SCIE 2001.00

This is required and is a prerequisite to the first work term

Continuous standing of at least B

It is strongly recommended that students take a full credit in scientific computer programming in their second year.

Please consult the Department’s website (www.physics.dal.ca) for complete program listing.

III. Interdisciplinary Opportunities

In addition to combined honours, opportunities exist to combine other
degrees in physics with the many programs Dalhousie offers. Below are
listed interdisciplinary opportunities which may be of particular interest.
Please contact the Undergraduate Advisor for details.

Physics and Engineering

The following Programs can be taken concurrently:

1. BSc/DipEng: Students can complete the requirements for the BSc (15-credit) and the Diploma in as little as three years.
2. BSc/BEng: Students can complete the BSc (15-credit) and the BEng degrees in as little as five years.
3. A BSc (Honours Physics)/BEng combination is also possible (see www.physics.dal.ca for more information).

If you wish to enter one of these concurrent programs, you should register for the standard first year Engineering program and consult the Undergraduate Advisor in Physics in order to plan your class selection. Additional details, can be found in the Degree Requirements section.

Geophysics

For those interested in Geophysics, it is recommended that they take the classes required for a Combined Honours in Physics and Earth Sciences, or for Honours Physics, and choose as their electives a selection of the following classes: ERTH 2270.03, 3271.03, 4471.03, 4481.03.

Minors 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.

Minors in Canadian Studies

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

Minors in Community Design

The Minor in Community Design is available to students registered in the BA, BSc 20-credit major and honours programs. The requirements are as for the appropriate degree program with completion of the following classes:
- PLAN 1001.03
- Either PLAN 2001.03 or PLAN 2002.03
- Seven additional half-classes (21 credit hours) in PLAN classes. See page 86 for further details.

Minors in Computer Science

The Minor in Computer Science is available to students registered in the BSc 20-credit major and honours programs. The requirements are as for the appropriate program with the completion of certain CSCI classes. For details on which classes to include, consult the Faculty of Computer Science.

BCS with a Minor in Physics

The Minor in Physics requires completion of the physics classes specified in the 15-credit BSc with Concentration in Physics. See section II., Degree Programs on page 49.

Minors in Environmental Studies

A Minor in Environmental Studies may be completed as part of an Honours or Major degree, each of which involves 20 credits. Consult the Environmental Programs section of this calendar for details.

Minors in Film Studies

A Minor in Film Studies is available as part of a BA, BSc Major and BA Honours (20-credit) degree only. Consult the Degree Requirements section of this calendar for details.

IV. Diploma in Meteorology

A. 20-credit BSc with Major in Physics combined with a Diploma in Meteorology

This is an integrated Physics/Meteorology program. The student follows the regular 20-credit BSc in Physics. The minimum requirements are:
- PHYC 1100.03/1101.03
- PHYC 2140.03/2150.03
- PHYC 2515.03/2510.03
- Two other half credits at the 2000 level or above in physics
B. Diploma in Meteorology

After completion of the Diploma program, students are eligible to be considered for admission to a graduate program in Atmospheric Science at Dalhousie.

V. Class Descriptions

NOTE: Not all classes are offered every year. Please consult the current timetable for this year’s offerings.

PHYC 0010.00: University Prep Physics.

This course can be used as a prerequisite for PHYC 1000X/Y.06 and PHYC 1100X/Y.06. The class will develop problem-solving techniques in preparation for topics to be covered in PHYC 1100X/Y.06 and PHYC 1280.03/1290.03. This course is offered by the College of Continuing Education. Students may register and pay for this course at the College of Continuing Education located at 2200 LeMarchant Street, 2nd Floor or by calling 992-494-2757. This class is offered in the Fall and Summer sessions only. See College of Continuing Education for more details.

PHYC 1000X/Y.06: Survey of Physics.

INSTRUCTOR(S): T. Monchesky, S. Wells
FORMAT: Lecture 3 hours, lab 3 hours (number of labs = 12)
EXCLUSION: Credit will be given for only one of PHYC 1000X/Y.06, 1100X/Y.06, 1280.03/1290.03, 1300X/Y.06, or 1310X/Y.06/1320.03

PHYC 1280.03/1290.03: Introduction to Physics.

These two half classes are, as a pair, equivalent to PHYC 1100X/Y.06. They are available ONLY to accommodate special circumstances; permission from the Department is required.

EXCLUSION: Credit will be given for only one of PHYC 1000X/Y.06, 1100X/Y.06, 1280.03/1290.03, 1300X/Y.06, or 1310X/Y.06/1320.03

PHYC 1300X/Y.06: Physics In and Around You.

An introduction to physics for students in Biology, Psychology, Arts and Environmental Sciences, and for students preparing for MCAT, and Medicine, Dentistry and Applied Health Sciences. It is accepted as a prerequisite to advanced classes in physics when combined with MATH 1000.03 and 1010.03. Basic concepts in physics are applied, where possible, to realistic biological models, e.g. forces and torques are related to muscles and joints, electricity to cellular activity, fluids to blood circulation, etc.

1. This class is not acceptable in the Engineering program.

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

3. Labs do not start until the second week of classes.

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

INSTRUCTOR(S): W. Zukauskas
FORMAT: Lecture 3 hours

INSTRUCTOR(S): K.C. Hall, J. Dahn
FORMAT: Lecture 3 hours, lab 3 hours (number of labs = 12)

EXCLUSION: Credit will be given for only one of PHYC 1000X/Y.06, 1100X/Y.06, 1280.03/1290.03, 1300X/Y.06, or 1310X/Y.06/1320.03

PHYC 1450X/Y.06: Astronomy: The Evolving Universe.

Both the universe and our understanding of it are evolving. The aim of this class is the development of a coherent, though temporary and incomplete, view of the astronomical universe; a view where both familiar elements and strange new frontiers have their place. Topics include "naked eye" astronomy; nature and properties of Sun and stars, stellar evolution from gas cloud to black hole cosmology - the origin and fate of the universe; the solar system. Occasional evening observing.

NOTE: This class meets the science distribution requirements for RA students.

The class does not count as a prerequisite for any other science class. Algebra and geometry are used only when helpful.

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

INSTRUCTOR(S): W. Zukauskas
FORMAT: Lecture 3 hours

INSTRUCTOR(S): T. Monchesky, S. Wells
FORMAT: Lecture 3 hours

INSTRUCTOR(S): T. Monchesky, S. Wells
FORMAT: Lecture 3 hours
**PHYC 2050.03: Computer Simulations in Science.**

Computer simulation is one of the most powerful methods in science today. This class introduces techniques in computer simulation, including continuous and discrete-event models. Monte Carlo methods, object-oriented design and scientific visualization. Examples, assignments, projects and tutorials will be drawn from physics, chemistry and mathematics. The course is suitable for students in Science, Computer Science and Engineering.

**PREREQUISITE:** PHYC 1100.03, CHEM 1011.02/1012.03, MATH 1000.03/1003.03

**FORMAT:** Lecture 3 hours

**EXCLUSION:** Students who have previously taken PHYC 3330 can not take PHYC 210.

**PHYC 2451.03: Astronomy I : The Sky and Planets.**

An introduction to astronomy for science students. If you have ever marveled 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. BSc students should take PHYC 2451.03 and PHYC 2452.03 instead.

**EXCLUSION:** Not open to students taking or having taken PHYC 2450X/Y.06 or 2451.03 or 2452.03. BSc students should take PHYC 2451.03 and 2452.03 instead.

**PHYC 2500.03: Oscillations and Waves.**

This class provides an introduction to mechanical and analytical concepts to human movements. It expands on the knowledge acquired in the first half of PHYC 2451.03 to study the motion of the body and develops this to explain the behavior 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 Bang?" How do we know all of this and how will we know if it is true?

**INSTRUCTOR(S):** D.A. Tindall

**FORMAT:** Lecture 3 hours

**EXCLUSION:** PHYC 2450.06 X/Y

**PHYC 2510.03: Electricity and Magnetism.**

This class will develop the vector calculus needed for the description of electric and magnetic fields. Other topics include scalar and vector potentials, forces on charges, magnetic induction and Maxwell’s equations. The class will give students the necessary foundation for an understanding of more advanced topics in electricity and magnetism.

**INSTRUCTOR(S):** L. Kneplak

**FORMAT:** Lecture 3 hours, Tutorial 1.5 hours

**EXCLUSION:** PHYC 2450X/Y.06

**PHYC 2515.03: Modern Physics.**

This introduction to quantum physics discusses some of the difficulties of classical physics in explaining blackbody radiation, photoelectric effect and the Compton effect. The concept of wave-particle duality is introduced for light and particles, de Broglie waves and electron diffraction are discussed. The Schroedinger equation is applied to one-dimensional examples. The concept of tunneling through classically forbidden regions is discussed. Tutorials are offered.

**INSTRUCTOR(S):** A. Rutenberg

**FORMAT:** Lecture 3 hours, Tutorial 1.5 hours

**EXCLUSION:** PHYC 2450 X/Y.06

**PHYC 2520.03: Thermodynamics.**

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 experienced by the different biological tissues. The primary goal of the course is to learn to apply basic mechanical concepts to human movements.

**EXCLUSION:** PHYC 2310.
PHYC 3200.03: Climate Change.
The Earth's climate has changed on time scales from hundreds of millions of years as a result of tectonic activity to tens of thousands of years due to changes in the Earth's orbital parameters to as short as decades from the burning of fossil fuels by humans. Special attention will be given to the unique role that varying atmospheric carbon dioxide concentrations have had in determining climate throughout the history of the Earth and its influence for future global warming which may become the greatest environmental issue of this century. Although this course is inherently multidisciplinary, borrowing concepts from physics, geology, chemistry, biology, meteorology and oceanography it is designed to be an introduction to the basic concepts and laws of thermodynamic change and is open to all students from all backgrounds.

INSTRUCTOR(S): G. Lesins
FORMAT: 3 hours
CROSS-LISTING: GEOG 2800.03, OCEA 2800.03

PHYC 3000.03: Experimental Physics I.
This class introduces students to electronics and measuring techniques. Topics include digital electronics: logic gates, clocks, shift registers, counters, memory; analog electronics: R.C.L. circuits, operational amplifiers; electronic systems: A/D and D/A chips, computer chips, and displays. The class also introduces students to modern data acquisition methods (including LabVIEW), skills which will be applied in the design and execution of experiments that illustrate fundamental concepts in physics. This class is open to Honours students only.
NOTE: This class has no final examination. Student evaluation is through performance on assignments and projects, and evaluation of written lab reports.

FORMAT: Lecture 3 hours, lab 6 hours
PREREQUISITE: PHYC 2150.03 and PHYC 2515.03

PHYC 3010.03: Experimental Physics II.
Designed to give the students a chance to do non-set experiments and thereby encounter and solve the problems of experimental technique. Original approaches by the students are encouraged. As the number of experiments is small (three) students should achieve a real understanding of a few physical phenomena. Lecture topics include a survey of experimental techniques as encountered in the different areas of physics.

INSTRUCTOR(S): D. Labrie
FORMAT: Lecture 1.5 hours, lab 6 hours
PREREQUISITE: PHYC 2150.03, or permission of instructor

PHYC 3160.03: Topics in Physics.
This class covers a variety of topics related to areas of current interest in physics. Presently, topics include high temperature superconductivity, quantum Hall effect, neutrino oscillations, gravitational radiation and fusion reactors.

INSTRUCTOR(S): D.A. Tindall
FORMAT: Lecture 3 hours
PREREQUISITE: MATH 2001.03 and at least one of PHYC 2515.03 or PHYC 2510.03 or permission of the instructor

PHYC 3200.03: Thermodynamics.
An introduction to the basic concepts and laws of thermodynamics. There will be a short survey of required Mathematics (partial derivatives). Topics include thermometry, equations of state, energy and entropy, thermodynamic potentials, heat engines, thermodynamic efficiency and phase transitions.

FORMAT: Lecture 3 hours, tutorial 1.5 hours
PREREQUISITE: PHYC 2140.03, MATH 2001.03/2002.03, or permission of the instructor.

PHYC 3210.03: Statistical Mechanics.
In this class the tools are developed to link the physical laws of the microscopic world to those of the macroscopic world, and the underlying atomic processes of the laws of thermodynamics are explored.

INSTRUCTOR(S): H.J. Kreuzer
PREREQUISITE: PHYC 3200.03 or equivalent; MATH 2001.03/2002.03

PHYC 3250.03: Computational Methods in Physics.
The objective of this class is to teach students the use of computers in physical analysis. The UNIX operating system will be introduced and used throughout the course. A modern programming language will be applied to a selection of problems drawn from physical theory and experiment. This is a hands-on, practical, and interactive class with an emphasis on the development of computational skills that scientists use.

INSTRUCTOR(S): J. Kyrikakis
FORMAT: Lecture 3 hours
PREREQUISITE: PHYC 1100.03 or 1300.06 and a 2000-level Calculus class, or permission of the instructor

PHYC 3303.03: Materials Science.
The emphasis of this class will be on the exposition of the underlying principles involved in understanding physical properties of materials, such as thermal and mechanical stability, and electrical and optical properties. All phases of matter will be examined: gases, liquids, films, liquid crystals, perfect crystals, defective solids, glasses. The principles of important processes such as photography and Xerography will be explained.

INSTRUCTOR(S): M. A. White
FORMAT: Lecture 3 hours
PREREQUISITE: CHEM 2001.03 or PHYC 2200.03 or EARTH 2001.03/2002.03 or ENCE 2800.03 or permission of the instructor
CROSS-LISTING: CHEM 3303.03

PHYC 3340.03: Electronics.
Topics include digital electronics: logic gates, clocks, shift registers, counters, memory; analog electronics: R.C.L. circuits, operational amplifiers; electronic systems: A/D and D/A chips, computer chips, and displays.

NOTE: Credit cannot be given for both PHYC 3000.03 and PHYC 3340.03

FORMAT: Lecture 3 hours
PREREQUISITE: CHEM 2301.03 or PHYC 3200.03 or ERTH 2001.03/2002.03 or ENCE 2800.03 or permission of the instructor

PHYC 3540.03: Optics and Photonics.
Topics in physical and geometrical optics will be covered. Selected applications will be presented in certain areas of photonics, including micro-optic sensors, semiconductor lasers and detectors, optical waveguides and fibres, optical signal processing and telecommunications.

INSTRUCTOR(S): I. Hill
FORMAT: Lecture 3 hours
PREREQUISITE: PHYC 2150.03 and PHYC 2510.03

PHYC 3590.03: Advanced Classical Mechanics.
Topics include central force motion, the principle of virtual work, Lagrange's equations, the principle of least action, Hamilton's equations, canonical transformations, Hamilton-Jacobi equation.

INSTRUCTOR(S): T. Monchesky
FORMAT: Lecture 3 hours
PREREQUISITE: PHYC 2150.03, MATH 2002.03

PHYC 3640.03: Quantum Physics I.
This course is a modern introduction to quantum theory. Dirac notation is introduced and used throughout. The structure of the theory is investigated through the physics of spin-1/2 particle. Topics covered include Stern-Gerlach experiments, matrix mechanics, angular momentum, time evolution, wave mechanics, and symmetry in the twobody problem.

INSTRUCTOR(S): A. Rustenberg
PREREQUISITE: MATH 2002.03, MATH 2030.03, PHYC 2515.03 and PHYC 2140.03
PHYC 3810.03: Microcomputers and the Real World. Subject material: measurement theory, modern sensors, microcomputer architecture, and software simulation of digital electronic circuits. Interfacing techniques including serial, parallel USB and GPIB ports. The graphical programming language is used throughout.

INSTRUCTOR(S): B. E. Paton
FORMAT: Lecture 3 hours, computer lab 3 hours
PREREQUISITE: PHYC 2500.03, PHYC 3400.03
CROSS-LISTING: CSI 3123.03

PHYC 4100.03: Electrodynamics. Topics include electrostatics and magnetostatics, boundary value problems, fields in matter, time-dependent phenomena, Maxwell’s equations, electromagnetic waves, radiation and special relativity.

INSTRUCTOR(S): J.S. Thomas
FORMAT: Lecture 3 hours
PREREQUISITE: PHYC 2500.03, MATH 3100.03
CROSS-LISTING: PHYC 5400.03

PHYC 4101.03: Quantum Physics I. This is an introductory class in quantum physics. Topics discussed include: wave mechanics, the Schrödinger equation, the WKB approximation, time-dependent perturbation theory, scattering, Born approximation.

INSTRUCTOR(S): A. Rutenberg
FORMAT: Lecture 3 hours
PREREQUISITE: PHYC 3640.03 and 3210.03 which may be taken concurrently, or permission of instructor
CROSS-LISTING: PHYC 5410.03

PHYC 4102.03: Quantum Physics II. Topics include: quantum mechanics, Dirac equation, scattering, perturbation theory, density matrices, and applications to quantum systems.

INSTRUCTOR(S): A. Rutenberg
FORMAT: Lecture 3 hours
PREREQUISITE: PHYC 4101.03
CROSS-LISTING: PHYC 5412.03

PHYC 4110.03: Thermodynamics. Topics discussed include: complex variable theory, Fourier and Laplace transform techniques, partial differential equations.

FORMAT: Lecture 3 hours
PREREQUISITE: MATH 3110.03, PHYC 2140.03 or permission of instructor
CROSS-LISTING: PHYC 5110.03, MATH 4116.03

PHYC 4111.03: Statistical Physics. This class is an introduction to statistical physics. 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 covered.

INSTRUCTOR(S): D. Kelley
FORMAT: Lecture 3 hours
PREREQUISITE: Subject to instructor approval.
CROSS-LISTING: PHYC 5510.03, OCEA 4510.03/5510.03

PHYC 4411.03: Atmospheric Dynamics I. The topics covered include: the physics of clouds and storms, numerical weather prediction and other topics covered in this class are the physics of clouds and storms. Other topics include aerodynamic forces, motion, and basic aerodynamics.

INSTRUCTOR(S): T. Duck
FORMAT: Lecture 3 hours
PREREQUISITE: PHYC 2140.03 and MATH 3110.03 or permission of the instructor
CROSS-LISTING: PHYC 5411.03, OCEA 4411.03/5411.03

PHYC 4412.03: Atmospheric Dynamics II. The approach is the same as for PHYC 4411.03, with emphasis on atmospheric dynamics, severe storms, mesoscale meteorology and numerical weather prediction may be included.

INSTRUCTOR(S): T. Duck
FORMAT: Lecture 3 hours
PREREQUISITE: PHYC 4411.03 or permission of the instructor.
CROSS-LISTING: PHYC 5412.03, OCEA 4412.03/5412.03

PHYC 4500.03: Atmospheric Physics I. The major topics covered in this class are the physics of clouds and storms. Other topics covered in this class include 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 numerical weather prediction and other topics covered in this class are the physics of clouds and storms.

INSTRUCTOR(S): T. Duck
FORMAT: Lecture 3 hours
PREREQUISITE: PHYC 2140.03 or permission of the instructor.
CROSS-LISTING: PHYC 5500.03, OCEA 4500.03/5500.03

PHYC 4510.03: Atmospheric Physics II. The major topics covered in this class are the physics of clouds and storms. Other topics include aerodynamic forces, motion, and basic aerodynamics.

INSTRUCTOR(S): T. Duck
FORMAT: Lecture 3 hours
PREREQUISITE: PHYC 4500.03 or permission of instructor.
CROSS-LISTING: PHYC 5510.03, OCEA 4510.03/5510.03

PHYC 4520.03: Introduction to Atmospheric Science. The general overview of the atmosphere provides the student with an understanding of the composition and thermal structure of the atmosphere, air mass and frontal theory and weather generating physical processes and their consequences. Other topics include atmospheric radiation, dynamic meteorology, climatology and the physics of clouds and storms.

INSTRUCTOR(S): T. Duck
FORMAT: Lecture 3 hours
PREREQUISITE: PHYC 2140.03 or permission of instructor.
CROSS-LISTING: PHYC 5520.03, OCEA 4520.03/5520.03

PHYC 4540.03: Synoptic Meteorology I. The class introduces the practical skills of meteorological observation and analysis. Emphasis is on developing skills in drawing and interpreting weather maps, and on studying the three-dimensional structure of weather systems. Satellite and radar remote sensing of the atmosphere is covered.
also introduced. Case studies of atmospheric systems and processes are conducted during the tutorial-laboratory period.

**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:** PHYC 5550.03, OCEA 4550.03/5550.03

**PHYC 4570.03: Light Scattering, Radiative Transfer, and Remote Sensing.**
The equations of radiative transfer through the atmosphere will be developed and used. Special topics include transfer of infrared radiation, Mie scattering, absorption by atmospheric gases and aerosols, transfer through clear and cloudy atmospheres. Also remote sensing techniques and radiative transfer models are covered.

**FORMAT:** Lecture 3 hours
**PREREQUISITE:** PHYC 2140.03, PHYC 2510.03
**CROSS-LISTING:** PHYC 3570.03

**PHYC 4595.03: Atmospheric Chemistry.**

**FORMAT:** Lecture 3 hours
**PREREQUISITE:** PHYC 2140.03 and a first year chemistry course
**CROSS-LISTING:** PHYC 3595.03, CHEM 4595.03, OCEA 4595.03/5595.03

**PHYC 4650.03: General Relativity.**
A review of differential geometry will be given followed by an introduction to the general theory of relativity. Various topics will be discussed, including: linearized theory and gravitational radiation, spherically symmetric metrics and the Schwarzschild solution, gravitational collapse, black holes, and cosmology.

**FORMAT:** Lecture 3 hours
**PREREQUISITE:** MATH 3045.03 or permission of the instructor
**CROSS-LISTING:** PHYC 3650.03, MATH 4650.03/5650.03

**PHYC 4660.03: Cosmology.**
A self-contained introduction to cosmology will be given and no prior knowledge of differential geometry or general relativity will be assumed (although some knowledge of elementary differential equations will be useful). A cosmological model is a model of the universe, as a whole, on the largest scales; the emphasis of the class will be on the modeling aspects of cosmology.

**FORMAT:** Lecture 3 hours
**PREREQUISITE:** Instructor’s permission
**CROSS-LISTING:** PHYC 3660.03, MATH 4410.03/5410.03

**PHYC 4800.03: Honours Research Project I.**
Students in the honors 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 final report are required. The final grade will be based on an evaluation of the reports and an oral presentation. Students in the major stream can apply to the department to take this course.

**COORDINATOR:** H. Rotermund

**FORMAT:** Independent research, typically 6 hours a week. This course can be taken in either the first or second semester.
**PREREQUISITE:** PHYC 3010 and permission of the coordinator and supervisor.

**PHYC 4850.03: Honours Research Project II.**
Students in the 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 final report are required. The final grade will be based on an evaluation of the reports and an oral presentation.

**COORDINATOR:** H. Rotermund

**FORMAT:** Independent research, typically 6 hours/week.
**PREREQUISITE:** PHYC 4800 and permission of the coordinator and supervisor.

**PHYC 8891.00: Co-op Work-Term I.**
**PREREQUISITE:** SCE 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

498 Psychology

Breau, L., BA (MtA), PhD (Dalhousie), Major appointment in the School of

Adamo, S., BSc (Toronto), PhD (McGill)

Abbass, A., BSc (Ottawa), MD (Dalhousie), FRCPC (Toronto), Major appointment in

Anatomy and Neurobiology

Wassermann, R., BA (Tfib), PhD (Chicago), Major appointment in Anatomy and

Neurobiology

Associate Professors

Abbas, A., BSc (Ottawa), MD (Dalhousie), FRCCPC (Toronto), Major appointment in Psychology

Adams, S., BSc (Toronto), PhD (McGill)

Brenn, L., BA (MA), PhD (Dalhousie), Major appointment in the School of Nursing

Blanchard, C., BA (UPEI), MA, PhD (Alberta), Major appointment in Medicine

Chambers, C.T., BSc (Dalhousie), MA, PhD (UIC), Joint appointment in Pediatrics; Canada Research Chair in Pain and Child Health; Clinical PhD Program Associate Director of Training

Coombs, P.V., BSc (Dalhousie), MA, PhD (Toronto), Clinical PhD Program Director of Training

Eastard, R., BA, MA, PhD (Toronto), Undergraduate Program Coordinator

Eales, C.A., BA, PhD (Berkley), Major appointment in Psychiatry

Go, K., BSc (UNB), MSc, PhD (UIC), Major appointment in Psychiatry

Korthe, M., BA (MUN), MSc, PhD (Alberta), Major appointment in the School of Human Communication Disorders

McGraw, J., BA, MA, PhD (Western)

Perer, S.B., BSc (Acadia), MA, PhD (UIC)

Smith, L., BA (Dalhousie), MSc (Brown), PhD (Dalhousie), Major appointment in Pediatrics

Taylor-Helmick, T.L., BA (Calgary), MSc, PhD (Dalhousie)

Assistant Professors

Barrett, S.P., BA (Wilfr), PhD (McGill)

Crowley, N.A., BSc, PhD (Alberta)

Dacon, H., BSc (UPEl), PhD (Oxon)

Daily, K., BA (St Thomas), PhD (McMaster)

Fennel, S.W., BSc (McMaster), MSc, PhD (Dalhousie)

Harman, K., BSc (Toronto), MSc, PhD (Carleton), Major appointment in Physiotherapy

Ingles, J., BA (Queen's), PhD (Dalhousie), Major appointment in the School of Human Communication Disorders

Jacques, S., BA (McGill), MA, PhD (Toronto)

Johnson, S., BA (Dalhousie), MSc, PhD (Victoria)

Newman, A., BA (Winnipeg), MSc, PhD (Oregon), Canada Research Chair in Cognitive Neuroscience

Phillimore, L., BA (UWO), MA, PhD (Queen's)

Sherry, S.B., BSc (York), MA, PhD (UIC), PhD (Saskatchewan)

Westwood, C.A., BSc, MA, PhD (Waterloo), Major appointment in the School of Human and Physical Performance

Senior Instructors

Gadbois, S., BSc, MSc, PhD (Univ de Montreal), PhD (Dalhousie)

Hullman, R.S., BA (Colorado), MA, PhD (Dalhousie)

Leary, J., BSc (Dalhousie), MSc, PhD (Adelaide)

Scheible, H., BSc, PhD (Dalhousie)

Stumpy, J., BSc (Dalhousie), PhD (Cambridge)

Adjunct Professors

Bailey, J., BA (Dalhousie), MA, PhD (Carleton), Psych/IKM Health Centre

Barrows, J., BSc (Brown), MA (Cal), MSc, PhD (Wisconsin), Psych/Dalhousie

Chipman, K., BA (VUPEI), MA, PhD (Western), Psych/Nova Scotia Hospital

Cox, A.J., BA (McGill), MA, PhD (Queen's), Psych/UPEI

Cox, I.P., BA (Holy Cross), MA, PhD (London, U. de Montreal)

D'Arcy, R.C., BSc (Victoria), MSc, PhD (Dalhousie), Institute for Biodiagnostics (Atlantic)/National Research Council Canada

D'Arcy, H., BSc, PhD (Dalhousie), Institute for Biodiagnostics (Atlantic)/National Research Council Canada

Duffy, K., BA, MA (Western), Psych/QUE Health Sciences Centre

Eskes, G.A., BA, PhD (Berkeley), Psych/PED

Kiefte, M., BA (MUN), MSc, PhD (Alberta), Major appointment in the School of Human Communication Disorders

Marchand, Y., MCS (Universite des Sciences de Paris), PhD (Compiengne), Institute for Neurobiology

Perrot-Sinal, T.S., BSc, PhD (Western)

Robertson, H., BA, MA, PhD (Oxford), Psych/IWK Health Centre

Sherry, S.B., BSc (York), MA, PhD (UIC), PhD (Saskatchewan)

Spring, J., BSc (Dalhousie), MA, PhD (Waterloo)

Senior Instructors

Gadbois, S., BSc, MSc, PhD (Univ de Montreal), PhD (Dalhousie)

Hullman, R.S., BA (Colorado), MA, PhD (Dalhousie)

Leary, J., BSc (Dalhousie), MSc, PhD (Adelaide)

Scheible, H., BSc, PhD (Dalhousie)

Stumpy, J., BSc (Dalhousie), PhD (Cambridge)

Adjunct Professors

Bailey, J., BA (Dalhousie), MA, PhD (Carleton), Psych/IKM Health Centre

Barrows, J., BSc (Brown), MA (Cal), MSc, PhD (Wisconsin), Psych/Dalhousie

Chipman, K., BA (UPEI), MA, PhD (Western), Psych/Nova Scotia Hospital

Cox, A.J., BA (McGill), MA, PhD (Queen's), Psych/UPEI

Cox, I.P., BA (Holy Cross), MA, PhD (London, U. de Montreal)

D'Arcy, R.C., BSc (Victoria), MSc, PhD (Dalhousie), Institute for Biodiagnostics (Atlantic)/National Research Council Canada

Duffy, K., BA, MA (Western), Psych/QUE Health Sciences Centre

Eskes, G.A., BA, PhD (Berkeley), Psych/PED

Kiefte, M., BA (MUN), MSc, PhD (Alberta), Major appointment in the School of Human Communication Disorders

Marchand, Y., MCS (Universite des Sciences de Paris), PhD (Compiengne), Institute for Neurobiology

Perrot-Sinal, T.S., BSc, PhD (Western)

Robertson, H., BA, MA, PhD (Oxford), Psych/IWK Health Centre

Sherry, S.B., BSc (York), MA, PhD (UIC), PhD (Saskatchewan)

Spring, J., BSc (Dalhousie), MA, PhD (Waterloo)

Senior Instructors

Gadbois, S., BSc, MSc, PhD (Univ de Montreal), PhD (Dalhousie)

Hullman, R.S., BA (Colorado), MA, PhD (Dalhousie)

Leary, J., BSc (Dalhousie), MSc, PhD (Adelaide)

Scheible, H., BSc, PhD (Dalhousie)

Stumpy, J., BSc (Dalhousie), PhD (Cambridge)
There are strict size restrictions on individual classes. Lecture classes are an alternate plan in case they are unsuccessful.

declaring an intent to Major in Psychology does NOT guarantee a place in Psychology should note that there are limitations on the number of students. However, potential Major and Honours students, and those intending to enter the 15-credit BA or BSc Concentration program, in Psychology should note that there are limitations on the number of students. However, potential Major and Honours students, and those intending to enter the 15-credit BA or BSc Concentration program, in Psychology should note that there are limitations on the number of students that can be accepted into these programs in any given year. Passing introductory psychology classes with the required grade of B- and declaring an intent to Major in Psychology does NOT guarantee a place in any of these programs. Students are advised to register as early as possible for required classes to secure a space within a program, and should have an alternate plan in case they are unsuccessful.

There are strict size restrictions on individual classes. Lecture classes are limited by room size. Additional size restrictions are imposed on laboratory classes because of equipment limitations and the much closer supervision required. Because of size limitations on 3000-level laboratory classes, Major and Honours students, and those enrolled in the 15-credit BA or BSc Concentration program, should take 3000-level prerequisites for at least two 3000-level laboratory classes. Laboratory classes fill rapidly, and not all laboratory classes are offered every year.

B. Enrolment of Other Students

Only Major and Honours students, and those who have declared a 15-credit BA or BSc Concentration program in Psychology may enroll in PSY 2000.03 and 2001.03, and such students are given preference in other second-year classes. All students must have at least a B- in a full credit of introductory psychology classes in order to register in any second-year class in Psychology.

C. Laboratories

Several classes include a laboratory component, of which there are two types. One type is a research laboratory in which students will conduct research, collect data and write reports on the results of the research. All Major, Honours and Concentration students must take the second-year research laboratory class (PSY 2000.03) and at least one third-year research laboratory class (full credit for Honours students). The other type is a proficiency or skills laboratory, which usually involves additional work in computer exercises related to the lecture material and class readings.

II. Degree Programs

The department offers the following degree programs:

- 20-credit BA and BSc with Honours in Psychology
- 20-credit BA and BSc with Major in Psychology
- 15-credit BA and BSc with Concentration in Psychology

While these programs are described below, a more detailed and up-to-date description is available from the Psychology Main Office (LSC 3263) or online at the Department’s website (http://psychology.dal.ca/). In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 65 of this calendar.

A. BA or BSc with Honours in Psychology

Students enrolled in either the BA or BSc Honours program must take 9-11 full credits (or half-credit equivalents) in Psychology classes beyond the 1000 level. The earliest students can gain formal admission to the Honours program is at the end of their second year of study. Applicants carrying a full course load will normally be expected to maintain high academic standards including an A-average in their Psychology classes at the time of application.

Students should follow the course sequence recommended below. Although there is considerable flexibility for the student, it is important to plan carefully (this is especially true for those considering graduate work in Psychology). Additional information or advice about the program can be obtained from an Honours Advisor. Students can be put in touch with an academic advisor by contacting the Psychology Main Office (LSC 3263 or 494-3417).

Registration Notes:

1. Students wishing to undertake an Honours program must meet with an Honours advisor, and complete a Departmental Honours Application form. Application for admission to Honours is normally undertaken at the end of the second or during the third year of study. Admission to the Honours program requires Departmental (and then University) approval.

2. It is recommended that students in the Honours program obtain the approval of a willing thesis research supervisor, and begin laying the groundwork for their thesis research (e.g., background reading, learning laboratory methodology, submission of ethics forms), no later than during the summer preceding the thesis year.

3. Students taking an Honours degree in Psychology cannot use cross-listed Neuroscience classes as electives.
4. Laboratory classes focusing on human psychology typically require students to serve as participants and/or as experimenters in class projects. Students who do not wish to participate in such projects should ensure that they have the prerequisites necessary to register in alternative laboratory classes.

Departmental Requirements

3000 level
- PSYO 1011.05 or 1012.03 or PSYO 1021.05 or 1022.03 or SCI 150X/Y or 250X/X or 250Y/Y or 350X/X or 350Y/Y or 350Z/Z with a grade of B- or better

3000 level
- An average of 1.25 full credits, or at least two half credits, of 3000-level classes (excluding an independent research class)
- Three half credits in 4000-level seminar classes
- Two half credits in 3000-level laboratory classes
- One additional full credit, or two half credits, in 3000-level Psychology classes (excluding an independent research class)
- Two half credits in designated laboratory (LAB) classes
- Two of the half credits must be in designated laboratory (LAB) classes
- Students are encouraged to take either a full- or half-credit Directed Project in Psychology class (PSYO 3001.06 or PSYO 3002.06) or a half-credit Independent Research in Modern Psychology class (PSYO 3000.06 or PSYO 3001.06 or PSYO 3002.06) as a full-credit Directed Project in Psychology class (PSYO 3003.06) from Category C to obtain experience that will assist in preparing for their 4000-level Honours thesis. In planning their program, students should keep in mind that two half-credit classes must be completed in each of Category A and Category B prior to graduation.

Category A. Brain, Language, Learning, and Cognition
- PSYO 2501.03 Statistical Methods I
- PSYO 2502.03 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 encouraged to take either a full- or half-credit Directed Project in Psychology class (PSYO 3001.06 or PSYO 3002.06) or a half-credit Independent Research in Modern Psychology class (PSYO 3000.06)

Category B. Clinical, Developmental, History, Personality, and Overviews of Psychology
- PSYO 2470.03 Introduction to Neuroscience I. Brain Systems
- Three additional half-credit, second-year classes

Category C. Directed Research Classes for Potential Honours Students
- PSYO 3000.06 Independent Research in Modern Psychology
- PSYO 3001.06 Directed Project in Psychology

Honours Students
- PSYO 2501.03 Statistical Methods I
- PSYO 2502.03 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
- Additional laboratory (LAB) classes
- Students are encouraged to take either a full- or half-credit Directed Project in Psychology class (PSYO 3001.06 or PSYO 3002.06) or a half-credit Independent Research in Modern Psychology class (PSYO 3000.06) as a full-credit Directed Project in Psychology class (PSYO 3003.06) from Category C to obtain experience that will assist in preparing for their 4000-level Honours thesis. In planning their program, students should keep in mind that two half-credit classes must be completed in each of Category A and Category B prior to graduation.

Overall Total = 7.5 full credits or 15 half-credit classes.
Elective Second-Year Classes are:

- PSYO 2000.03 Methods in Experimental Psychology

Required Second-Year Classes are:

- Three half credits required from:
  - PSYO 2000.03 Social Psychology
  - PSYO 2001.03 Developmental Psychology
  - PSYO 2120.03 Introduction to Cognition
  - PSYO 2140.03 Learning
  - PSYO 2150.03 Animal Behaviour
  - PSYO 2170.03 Hormones and Behaviour
  - PSYO 2230.03 Abnormal Behaviour
  - PSYO 2570.03 Introduction to Neuroscience II. Cellular Neurobiology

3000 Level

- Four full credits or eight half credits at or above the 3000 level are required to graduate. Students must take a minimum of two half-credit classes in each of Category A and Category B, and complete a designated half-credit laboratory (LAB) class. Classes in Category C are intended for students planning to enter the Honours program.

Category A. Brain, Language, Learning, and Cognition

- PSYO 3095.03 Perceptual Processes
- PSYO 3493.03 Neuropsychology of Learning
- PSYO 3344.03 Learning and Conditioning Lab (LAB)
- PSYO 3351.03 Sensory Neuroscience I. Vision (LAB)
- PSYO 3352.03 Sensory Neuroscience II. Hearing and Speech*
- PSYO 3346.03 Social Cognition
- PSYO 3313.03 Research Methods in Attention (LAB)
- PSYO 3322.03 Research Methods in Visual Cognition (LAB)
- PSYO 3313.03 Research Methods in Memory (LAB)
- PSYO 3343.03 Research Methods in Psycholinguistics (LAB)
- PSYO 3317.03 Research Methods in Cognitive Neuroscience (LAB)
- PSYO 3316.03 Neurobiology* (LAB)
- PSYO 3319.03 Psycholinguistics
- PSYO 3322.03 Principles of Human Neuropsychology
- PSYO 3327.03 Drugs and Behaviour
- PSYO 3362.03 Biological Rhythms*
- PSYO 3373.03 Developmental Neuroscience*
- PSYO 3373.03 Neuroscience Lab I (LAB)
- PSYO 3374.03 Neuroscience Lab II (LAB)
- PSYO 3361.03 Genes, Brain, and Behaviour
- PSYO 3373.03 Behavioural Neuroscience
- PSYO 3375.03 Behavioural Neuroscience Laboratory* (LAB)
- PSYO 3379.03 Neurolinguistics
- PSYO 3319.03 Molecular Neuroscience*
  
  *Requires (PSYO/NEIS 2470.03 as prerequisite.

Category B. Clinical, Developmental, History, Personality, and Overviews of Psychology

- PSYO 3301.03 Advanced General Psychology
- PSYO 3303.03 Psychometrics (LAB)
- PSYO 3362.03 Experimental Social Psychology (LAB)
- PSYO 3301.03 Methods in Developmental Psychology (LAB)
- PSYO 3350.03 Development of Language and Literacy Abilities
- PSYO 3322.03 Methods in Experimental Clinical Psychology (LAB)
- PSYO 3329.03 Childhood Psychopathology
- PSYO 3321.03 Clinical Psychology
- PSYO 3322.03 Forensic Psychology
- PSYO 3325.03 Health Psychology
- PSYO 3361.03 Personality
- PSYO 3361.03 Cognitive Development
- PSYO 3361.03 History of Psychology

Category C. Directed Research Classes for Potential Honours Students

- PSYO 3306.06 Independent Research in Modern Psychology

Overall Total = 7 full or 14 half-credit classes.

C. Honours with a Certificate in Forensic Psychology

A Certificate indicating a specialization in Forensic Psychology is available to suitably qualified students. Applications for the Certificate will be accepted only from students admitted directly into the Honours BA or BSc program at the end of their second year of study at Dalhousie. Admission will be limited to 3-4 students per year. A selection committee will interview applicants and make selections based on academic performance and possession of interpersonal skills suitable for work with forensic staff and populations.

To satisfy the Certificate in Forensic Psychology requirements, the regular BA or BSc Honours program must include:

- PSYO 3244.03 (A- or better)
- PSYO 408X.03 (B- or better)
- One 400-level course chosen from categories A and B
- Completion of two 160-hour practica in approved forensic settings prior to graduation.

For further information about this program, obtain a Certificate in Forensic Psychology description from the Psychology Main Office (LSC 3263).

D. 20-Credit BA or BSc with Major in Psychology

BA students must take at least seven and no more than nine half credits (or half-credit equivalents) in Psychology classes beyond the 1000 level. All Major students must take at least seven and no more than ten full credits (or half-credit equivalents) in classes numbered 3000 or above.

Required Second-Year Classes:

- PSYO 2223.03 Applied Research Design
- PSYO 2224.03 Forensic Psychology
- PSYO 2227.03 Introduction to Neuroscience I. Brain Systems
- PSYO 2231.03 Directed Research Classes
- PSYO 3282.03 Introduction to Neuroscience II. Cellular Neurobiology

Overall Total = 7 full-credit or 14 half-credit classes.
E. 20-Credit BA or BSc with Double Major in Psychology
The five full credits, or half-credit equivalents, of Psychology classes specified in the Concentration program will constitute the Psychology component of any 20-credit Double Major program.

F. 15-Credit BA or BSc with Concentration in Psychology
The Psychology Department does not encourage students to take a 15-credit degree, although that option is available to students who wish only to concentrate their studies in Psychology. Students are strongly urged to take a 30-credit Major or Honours degree.

Students in both the BA and BSc programs must take at least five full credits and no more than eight half credits (or half-credit equivalents) in Psychology classes beyond the 1000 level. At least two full credits (or half-credit equivalents) must be taken in classes numbered 3000 or above. Students should plan carefully and, if required, obtain advice from an academic advisor. Advisors can be consulted by contacting the Psychology Main Office (LSC 3263 or 494-3417). Students should be aware that laboratory classes focusing on human psychology typically require students to serve as participants and/or as experimenters in class projects. Students not wishing to participate in such projects should ensure that they have the prerequisites necessary to register in alternative laboratory classes.

Departmental Requirements
1000 level
- PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03 or SCIE 1501X/Y.27, 1503X/Y.21, 1504X/Y.27 or 1510X/Y.33 with a grade of B- or better

2000 level
A normal second-year program will include three required half-credit classes and three elective half-credit classes in Psychology. Care should be taken in selecting second-year elective classes to ensure they will provide the necessary prerequisites for classes intended to be taken in the third and fourth years of study.

Required Second-Year Classes are:
- PSYO 2270.03 Brain and Behaviour (recommended for students planning to take advanced Psychology classes)
- OR
- PSYO 2270.03 Introduction to Neuroscience I. Brain Systems (recommended for students planning to take advanced Neuroscience classes)

Elective Second-Year Classes are:
- Three-half credits required from:
  - PSYO 2001.03 Methods in Experimental Psychology
  - PSYO 2251.03 Statistical Methods I
  - PSYO 2270.03 Brain and Behaviour (recommended for students planning to take advanced Psychology classes)
- OR
- PSYO 2270.03 Introduction to Neuroscience I. Brain Systems (recommended for students planning to take advanced Neuroscience classes)

3000 level
- Two full credits, or four half credits, at or above the 3000 level are required to graduate. Students must take a minimum of one half-credit class from each of Category A and Category B classes, and must complete a designated half-credit laboratory (LAB) class. Classes in Category C are intended for students planning to enter the Honours program.

Category A. Brain, Language, Learning, and Cognition
- PSYO 3035.03 Perceptual Processes
- PSYO 3043.03 Neurobiology of Learning

PSYO 3044.03 Learning and Conditioning Lab (LAB)
PSYO 3051.03 Sensory Neuroscience I. Vision (LAB)
PSYO 3062.03 Sensory Neuroscience II. Hearing and Speech*
PSYO 3084.03 Social Cognition
PSYO 3131.03 Research Methods in Attention (LAB)
PSYO 3132.03 Research Methods in Visual Cognition (LAB)
PSYO 3133.03 Research Methods in Memory (LAB)
PSYO 3134.03 Research Methods in Psycholinguistics (LAB)
PSYO 3135.03 Research Methods in Cognitive Neuroscience (LAB)

PSYO 3136.03 Principles of Human Neuropsychology
PSYO 3137.03 Drugs and Behaviour
PSYO 3138.03 Biological Rhythm*
PSYO 3139.03 Developmental Neuroscience*
PSYO 3140.03 Neuroethology* (LAB)
PSYO 3141.03 Behavioural Neuroscience
PSYO 3142.03 Behavioural Neuroscience Laboratory* (LAB)
PSYO 3143.03 Neurolinguistics
PSYO 3150.03 Molecular Neuroscience*
* Requires PSYO/NESC 2470.03 as prerequisite.

Category B. Clinical, Developmental, History, Personality, and Overviews of Psychology
PSYO 3010.03 Advanced General Psychology
PSYO 3011.03 Psychometrics (LAB)
PSYO 3026.03 Experimental Social Psychology (LAB)
PSYO 3041.03 Methods in Developmental Psychology (LAB)
PSYO 3052.03 Early Development
PSYO 3053.03 Development of Language and Literacy Abilities
PSYO 3122.03 Methods in Experimental Clinical Psychology (LAB)
PSYO 3129.03 Childhood Psychopathology
PSYO 3224.03 Forensic Psychology
PSYO 3225.03 Health Psychology
PSYO 3261.03 Personality
PSYO 3301.03 Neuropsychology
PSYO 3586.06 History of Psychology

Category C. Directed Research Classes for Potential Honours Students
PSYO 3401.03 Independent Research in Modern Psychology
PSYO 3501.03 Directed Project in Psychology
(Total = 2 full or 4 half credits)
Overall Total = 5 full-credit or 10 half-credit classes.

G. Other Programs
Other programs are available in cooperation with various departments. These programs are designed to meet the needs of students whose specific interests may be in areas other than those covered by the Major and Honours programs offered by the department. For example, a Minor in Business, Computer Science or Environmental Studies may be completed as part of the 20-credit Honours or Major degree. Consult the Degree Requirements section of this calendar about other available Minor programs.

Students in Computer Science may undertake a Minor in Psychology by completing the five full-credit requirements specified for completion of the 15-credit Concentration program in Psychology. It is recommended that students in other programs wishing to Minor in Psychology elect to undertake a Double Major in Psychology and their primary field of study. For further information students should contact the Chair of the Undergraduate Programs Committee.

H. Repeating Classes
Students may repeat a class in which they have earned a passing grade with permission from the department, but the class instructor should be consulted prior to registering. Refer to Regulation 15.4 (Academic Regulations section of this calendar) for further information.
Ill. 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 2006/07, the half-credit Introduction to Psychology classes were divided into two half-credit classes: PSYO 1001X/Y.06 is PSYO 1011.03 and 1021.03, and PSYO 1011X/Y.06 became PSYO 1011.03 and 1021.03. If a class now requires PSYO 1011.03 and 1021.03 or PSYO 1021.03 and 1022.03 as prerequisites, this requirement may also be met by either PSYO 1010.06 or PSYO 1012.06.

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 behavior, as well as sensory and perceptual processes, learning, development and states of consciousness. Typically, the class is taught by several different instructors with expertise in the topics covered. Biweekly laboratory tutorials add depth to the material covered in lectures.

COORDINATOR: H. Schellinck

NOTE: Students wishing to take 2000-level classes in Psychology must have a minimum grade of B- in both half-credit introductory psychology classes. Students should take the following combination of classes: PSYO 1011.03 and PSYO 1021.03 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 1011X/Y.06, PSYO 1012.03, SCIE 1500X/Y.30, SCIE 1501X/Y.27, SCIE 1503X/Y.21, SCIE 1504X/Y.27, SCIE 1510X/Y.33

PSYO 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 behavior, personality, and psychopathology. Typically, the class is taught by several different instructors with expertise in the topics covered. Biweekly laboratory tutorials add depth to the material covered in lectures.

COORDINATOR: H. Schellinck

NOTE: Students wishing to take 2000-level classes in Psychology must have a minimum grade of B- in both half-credit introductory psychology classes. Students should take the following combination of classes: PSYO 1011.03 and PSYO 1021.03 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 1011X/Y.06, PSYO 1012.03, SCIE 1500X/Y.30, SCIE 1501X/Y.27, SCIE 1503X/Y.21, SCIE 1504X/Y.27, SCIE 1510X/Y.33

PSYO 1021.03: Introduction to Psychology and Neuroscience III: 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 behavior, as well as sensory and perceptual processes, learning, development and states of consciousness. Typically, the class is taught by a single instructor with broad experience in teaching at the introductory level. Unlike PSYO 1012.03, biweekly laboratory tutorials are not available to supplement material covered during lectures.

NOTE: Students wishing to take 2000-level classes in Psychology must have a minimum grade of B- in both half-credit introductory psychology classes. Students should take the following combination of classes: PSYO 1011.03 and PSYO 1021.03 or PSYO 1021.03 and PSYO 1022.03.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

PSYO 1022.03: Introduction to Psychology and Neuroscience II: From Social Interaction to Psychopathology.

This class extends the coverage of psychology offered in PSYO 1012.03 or 1022.03. The class provides an introduction to memory and forgetting, cognition, intelligence, motivation, social behavior, personality, and psychopathology. Typically, the class is taught by a single instructor with broad experience in teaching at the introductory level. Unlike PSYO 1022.03, biweekly laboratory tutorials are not available to supplement material covered during lectures.

NOTE: Students wishing to take 2000-level classes in Psychology must have a minimum grade of B- in both half-credit introductory psychology classes. Students should take the following combination of classes: PSYO 1011.03 and PSYO 1021.03 or PSYO 1021.03 and PSYO 1022.03.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

EXCLUSION: PSYO 1000X/Y.06, PSYO 1001X/Y.06, PSYO 1010X/Y.06, PSYO 1011X/Y.06, PSYO 1021.03, SCIE 1500X/Y.30, SCIE 1501X/Y.27, SCIE 1503X/Y.21, SCIE 1504X/Y.27, SCIE 1510X/Y.33

PSYO 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 derived 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 enrolment limitations, only Dalhousie students with a Major or Concentration in Psychology may enrol in this class, unless space is available after the first class.

COORDINATOR(S): S. Gadbois, R. Hoffman and J. Leary

FORMAT: Writing Intensive, lecture 3 hours, lab 2 hours

EXCLUSION: NSCC 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 given to the students to work on out of class and the examinations are comprised of some of those questions.

COORDINATOR(S): S. Sherin

FORMAT: Lecture 3 hours

EXCLUSION: PSYO 1001.03/1012.03 or PSYO 1021.03/1022.03 or SCIE 1501X/Y.27, 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33 (with a grade of B- or better)

PSYO 2090.03: Developmental Psychology.

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 behavior, personality, and psychopathology. Typically, the class is taught by a single instructor with broad experience in teaching at the introductory level. Unlike PSYO 1022.03, biweekly laboratory tutorials are not available to supplement material covered during lectures.

NOTE: Students wishing to take 2000-level classes in Psychology must have a minimum grade of B- in both half-credit introductory psychology classes. Students should take the following combination of classes: PSYO 1011.03 and PSYO 1021.03 or PSYO 1021.03 and PSYO 1022.03.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

EXCLUSION: PSYO 1000X/Y.06, PSYO 1001X/Y.06, PSYO 1010X/Y.06, PSYO 1011X/Y.06, PSYO 1012.03, SCIE 1500X/Y.30, SCIE 1501X/Y.27, SCIE 1503X/Y.21, SCIE 1504X/Y.27, SCIE 1510X/Y.33

PSYO 2100.03: Developmental Psychology.

People change with age. This class examines the changes that occur in humans from conception through adolescence. Biological, social, cognitive, and linguistic aspects of development are considered. Theory, research, and practical implications are integrated throughout the class.
PSYO 2130.03: Introduction to Cognitive Psychology. Lectures focus on the processes involved in transforming sensory information into the meaningful, coherent world of everyday experience we know. Initially, emphasis is on the visual system, and how information within that system is structured and organized, followed by a consideration of the characteristic of the internal representations used in thinking and remembering.

INSTRUCTOR(S): T. E. Bar-Helmick
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03 or SCIE 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33 (with a grade of B- or better)
CROSS-LISTING: NESC 2310.03

PSYO 2140.03: Learning. This class traces the experimental study of learning from the turn-of-the-century research of Pavlov and Thorndike to the present. Development of the field of animal learning is described in terms of the ways in which particular conceptions of the learning process have guided experimentation, and have in turn been revised on the basis of the outcomes of that experimentation. Some important concepts discussed are: association, attention, biological constraints on learning, classical conditioning, discrimination, expectancies, law of effect, learning-performance distinction, operant conditioning, S-S- and S-R bonds, and stimulus control. The value of various approaches is discussed with respect to several goals: (1) providing general principles of learning; (2) understanding the behaviour of particular species; (3) direct application to human problems. Emphasis is on understanding why researchers in animal learning do what they are currently doing (given the goals and the historical context), rather than on learning a number of facts about animal learning.

INSTRUCTOR(S): V. L. Landozo
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03 or SCIE 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33 (with a grade of B- or better)
CROSS-LISTING: NESC 2410.03

PSYO 2160.03: Animal Behaviour. Using 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 behaviour, and animal communication. We will study the behaviour of a wide range of animals.

INSTRUCTOR(S): S. Adams or S. Galbous
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03 or SCIE 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33 (with a grade of B- or better), or BIOC 1010.03/1011.03 or BIOC 1020.03/1021.03
CROSS-LISTING: NESC 2610.03

PSYO 2170.03: Hormones and Behaviour. An introduction to chemical signals of the neural, endocrine, and immune systems and the ways in which these neuro-chemicals interact to influence the brain and behavior. Emphasis is on the mechanisms by which neurotransmitters, neuropeptides, and the hormones of the hypothalamus, pituitary gland, gonads and adrenal gland control neural and behavioral development, sexual, aggressive and maternal behaviour. Other topics covered are hormone receptors in the brain, the menstrual cycle and human reproduction, puberty, sex differences in the brain, neurotransmitters, pheromones, stress.

INSTRUCTOR(S): R. E. Brown
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03 or SCIE 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33 (with a grade of B- or better), or BIOC 1010.03/1011.03 or BIOC 1020.03/1021.03
CROSS-LISTING: NESC 2710.03

PSYO 2220.03: Abnormal Behaviour. This class involves the study of a broad range of manifestations of abnormal behaviour in adults (e.g., anxiety disorders, substance abuse/dependence, schizophrenia, affective disorders, personality disorders). For each disorder, various theoretical accounts of etiology and approaches to intervention will be considered. This class focuses not only on what is known about the causes and treatments of abnormal behaviour, but also on the scientific techniques clinical psychologists have developed to better understand and better intervene with various forms of behavioural dysfunction.

INSTRUCTOR(S): S. Stewart or S. Barrett
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03 or SCIE 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33 (with grade of B- or better)

PSYO 2470.03: Introduction to Neuroscience I. Brain Systems. This lecture class is intended to provide an introduction to the gross structures and functions of the brain. The class treats the brain as a set of neural systems, each with relatively well-defined anatomical substrates and functional roles. The class examines each neural system one at a time, exploring its anatomical architecture, connections and function. These systems may include the peripheral nerves, the mechanisms of sensation and motor control, the cranial nerves, the brainstem, cerebral cortex and cerebellum. For each of the neural systems, the class examines some of the clinical consequences of injury or pathology. Introduction is also provided to recent advances in brain imaging and brain chemistry. This class does not cover cellular or molecular mechanisms of brain function in any detail; students wishing explicit instruction in those fields should see the Calculus entries for PSYO/NESC 2570.03 and/or PSYO/NESC 3970.03, respectively.

INSTRUCTOR(S): D. Phillips
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03 or SCIE 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33 (a grade of B- or better), or BIOC 1010.03/1011.03 or BIOC 1020.03/1021.03
CROSS-LISTING: NESC 2470.03

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-on-one basis preparing a research project which the student then conducts. The lecture periods are devoted to an introduction to the design and statistical analysis of experiments. In the lab meetings, the student will give oral reports on the proposed research. At the end of the class formal oral reports will be given in an all-day conference for the entire class. A formal written report on the research is submitted at the end of the term. This class is a preparatory class for students planning to do an Honours degree in Psychology, and admission will be restricted to students whose academic record indicates an ability to perform at the honours level. No one will be admitted until they have completed PSYO 2000.03 with a grade of B or better, or a high level of performance in other Psychology classes along with an overall average of B+ (GPA 3.8) will normally be expected.

FORMAT: Lecture 2 hours, lab 2 hours
PREREQUISITE: PSYO 2000.03, with grade of B- or better, and permission of the instructor

PSYO 2501.03: Statistical Methods I. This class provides an introduction to research design and statistics within Neuroscience and Psychology. Particular emphasis is placed on valid interpretation and, therefore, on the link between the assumptions of various statistics procedures and the associated experimental or quasi-experimental designs. Specific topics include univariate and bivariate descriptive statistics, and univariate inferential statistics. Only students undertaking a Concentration, Major or Honours degree in Psychology or Neuroscience are eligible for enrolment.
COORDINATOR: B. Earhard
SIGNATURE REQUIRED

PSY 2570.03: Introduction to Neuroscience II.
Cellular Neurobiology.
Building on the knowledge of holistic aspects of brain function gained in
PSY 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 post-synaptic action of synaptic
transmitter; aspects of the neurochemistry of synaptic transmitters and of
drugs actions; and glial cells. Cellular phenomena relevant to neurological
dysfunction will be discussed.
INSTRUCTORS: N. Crewder
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 2000.03 or NES 3000.03, previous
or concurrent enrolment in two other PSYO/ NESC 3000-level classes,
and Coordinator’s consent.
CROSS-LISTING: NES 3001.03
EXCLUSION: PSYO/ NESC 3000X/Y.06

PSY 2770.03: Brain and Behaviour.
This lecture class examines the brain’s role in controlling experience and
behaviour in both animals and humans. The class will focus on the
functional anatomy of brain systems, in particular on neural pathways
involved in motivation, mood, memory, and sensation/perception. There
will be an emphasis on recent research findings and understanding
methodology for studying brain and behaviour. This class is designed for
Psychology students undertaking a Concentration, Major or Honours
program. Students planning to take advanced Neuroscience classes
should register for PSYO/ NESC 2470.03
INSTRUCTORS: J. Stamp
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 2001.03 or NES 2007.03 or SCIE
1501X/Y.27, 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33 (with a grade of
B- or better)
CROSS-LISTING: NES 2770.03

PSY 3000X/Y.06: Independent Research in Modern
Psychology.
Primarily for Honours students wishing further experience and
understanding of psychological research. Students not in the Honours
program normally will be expected to have a grade of B or better in PSY
2000.03, a high level of performance in other psychology classes, and an
overall B+ (GPA 3.30) average. A student wishing to take this class must
undergo a three stage approval process. This includes meeting with a faculty
member who has agreed to supervise the project and agreeing to serve as supervisor. Class approval will not be
given until this is done.
COORDINATOR: B. Earhard
NOTE: This class cannot be used to fulfill the department’s research
laboratory requirement.
NOTE: This class provides only a half-year research experience. Students
wanting a full-year research experience in a lab should register for
PSYO 3000X/Y.06
FORMAT: Lab 4 hours
PREREQUISITE: PSYO 2000.03 or NES 2007.03, PSYO 2501.03, previous
or concurrent enrolment in two other PSYO/ NESC 3000-level classes,
and Coordinator’s consent.
CROSS-LISTING: NES 3001.03
EXCLUSION: PSYO/ NESC 3000X/Y.06

PSY 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.
INSTRUCTORS: N. Crewder
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 2000.03 or NES 2007.03, and PSYO/ NESC
2470.03 or PSYO 2770.03
CROSS-LISTING: NES 3005.03
EXCLUSION: PSYO/ NESC 2150.03

PSY 3010X/Y.06: Advanced General Psychology.
For the advanced student, a review of general psychology with the aim of
consolidating the student’s knowledge. The method is unconventional.
With the assistance of the instructor, the student prepares material
assigned to PSYO 1011.03 and 1012.03 students at a level which enables
him or her to instruct introductory students in tutorial lab classes. The
class is designed primarily for Honours students, or other advanced
Psychology or Neuroscience students who may be suitably qualified.
Prospective students are advised to consult the instructor in the spring of
the preceding year.
SIGNATURE REQUIRED
NOTE: Students taking this class must register in both X and Y in
consecutive terms; credit will be given only if both are completed
consecutively.
INSTRUCTORS: H. Schellinck
FORMAT: Lecture/seminar 2 hours, tutorial lab 1 hour, skills lab
PREREQUISITE: PSYO 2000.03 or NES 2007.03, advanced classes in
Psychology or Neuroscience, and instructor’s consent.
CROSS-LISTING: NES 3005X/Y.06

PSY 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.
INSTRUCTORS: B. Frankland
FORMAT: Lecture 2 hours, research lab 3 hours
PREREQUISITE: PSYO 2000.03 or NES 2007.03, and PSYO 2501.03

PSY 3043.03: Neurobiology of Learning.
This class provides examination of the various forms of learning and
neurobiological 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.
INSTRUCTORS: L. Phillsmore
FORMAT: Lecture 3 hours
PSY 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 writes his or her own report on the experimental procedures; students will also complete a final, independent paper.

INSTRUCTOR(S): L. Phillips
FORMAT: Research lab 4 hours
PREREQUISITE: PSYO 2000.03 or NESC 2140.03, and one of PSYO/NESC 2470.03 or PSYO 2700.03
CROSS-LISTING: NESC 3044.03
EXCLUSION: PSYO 3042.03

PSYO 3051.03: Sensory Neuroscience I. Vision.

Because our visual perceptions are rich, varied and with few exceptions, arise quickly, flawlessly and without apparent cognitive effort, it might be thought that the underlying processes are simple. That this is not the case is illustrated by the difficulty with which the performance of our biological visual system can be matched by artificial systems. Beginning with a description of the information available in the retinal image, this class will examine the neural basis for the perception of light, colour, movement, depth and form in a variety of species chosen to illustrate common as well as specialized mechanisms of neural processing. In addition, the class will describe the development of perception and discuss the extent to which performance at any age is constrained by the anatomical and physiological development at various levels within the visual pathway.

INSTRUCTOR(S): K. Dally
FORMAT: Lecture 3 hours, research lab 1 hour
PREREQUISITE: PSYO 2000.03 or NESC 2140.03, and one of PSYO/NESC 2140.03 or PSYO 2700.03
CROSS-LISTING: NESC 3051.03

PSYO 3052.03: Sensory Neuroscience II. Hearing and Speech.

Hearing and speech are two behavioral 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, and human communication disorders and/or audiology. The class emphasizes normal hearing and speech mechanisms, but will address pathology where evidence from pathological subjects is pertinent to understanding normal function. Class content: introductory acoustics; structure and function of the outer and middle ears; structure and function of the cochlea; hair cell physiology and sensory transduction; coding of simple and complex sounds in the auditory nerve; sound localization mechanisms as an example of the correspondence between the physical properties of the stimulus, neural sensitivity and behavior; performance theories of speech production; theories of speech perception; acoustic and linguistic contributions to speech perception.

INSTRUCTOR(S): D.P. Phillips
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 2000.03 or NESC 2070.03, and PSYO/NESC 2470.03
CROSS-LISTING: NESC 3052.03

PSYO 3082.03: Experimental Social Psychology.

The primary goal of this class is to develop students' skill level in empirical analysis in social psychology. We examine how the tools of science can be used to help us understand more about social thinking and social behavior. The class is primarily a skills class emphasizing active student learning rather than didactic teaching. Students will be required to complete two research projects during the term. The projects will involve testing subjects, coding data, computer data analysis, and report writing. Familiarity with computer-based statistical analysis and test preparation is strongly recommended.

INSTRUCTOR(S): J. Stump
FORMAT: Lecture 1 hour, research lab 2 hours
PREREQUISITE: PSYO 2000.03 or NESC 2070.03, PSYO 2901.03, and PSYO 2800.03

PSYO 3084.03: Social Cognition.

How do people understand themselves and others as social beings? This class will consider a variety of approaches to try and provide an answer to this question. We will look at evolutionary factors, and the way in which humans differ from other species in their understanding of social phenomena. We will look at different stages in the development of social cognition. We will consider empirical and theoretical studies delineating different mechanisms of social perception and social cognition. Finally, we will give attention to how historical and cultural factors have influenced the character of social cognition.

INSTRUCTOR(S): Staff
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 2000.03 or NESC 2070.03, and one of PSYO 2800.03 or PSYO 2900.03 or PSYO 2220.03

PSYO 3091.03: Methods in Developmental Psychology.

This class is a survey of the research methods that are used in developmental psychology. It largely assumes knowledge of basic methodology and design issues common to all areas of psychology and concentrates on those methods that are of special relevance to the study of development in humans from birth through childhood. In addition to the lectures, students will carry out a number of research exercises to gain experience in conducting research with children.

INSTRUCTOR(S): S. Jacques
FORMAT: Lecture 2 hours, research lab 1 hour
PREREQUISITE: PSYO 2000.03 or NESC 2070.03, PSYO 2901.03, and PSYO 2090.03

PSYO 3092.03: Early Development.

This class examines development in infancy and the preschool period. The main theme of the class is to show how perceptual, cognitive, emotional, social, and linguistic changes occurring during the first five years of life are integrated in the psychological life of the child to allow the development of social understanding.

INSTRUCTOR(S): H. Deacon
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 2000.03 or NESC 2070.03, PSYO 2901.03, 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 2070.03, and PSYO 2090.03

Please note. Major and Honours students in the third year of the Linguistics program do not require these prerequisites. They will, however, require a Prerequisite Override from the instructor before being able to register for the class.

PSYO 3122.03: Methods in Experimental Clinical Psychology.

This class focuses on the methods used in the experimental study of abnormal human behavior. Emphasis will be placed on the evaluation of 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 enrollment 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, and PSYO 2201.03

**PSYO 3128.03:** Childhood Psychopathology.

The 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, research lab 2 hours

**PREREQUISITE:** PSYO 2000.03 or NESC 2007.03, and PSYO 2201.03 is recommended

**PSYO 3131.03:** Research Methods in Attention.

Most closely associated with selection (our ability to focus on some things to the exclusion of others), attention is an umbrella term that also covers the concepts of alertness, arousal, preparation and control. Neglected by mainstream Psychology for the first half of the 20th century, this gateway to awareness has since returned to centre stage. In this laboratory class, we will explore the methods, findings and theories that have driven recent empirical research in a greater depth. Labs will provide hands-on experience with numerous psychological methods including reaction time, priming, self-paced reading, computational modeling, corpus-based research, and event-related brain potentials. Topics include processing at the phonological, morphological, syntactic, and semantic levels; reading, signed language; and computational modeling of language processing. Students will serve as experimenters and participants in class experiments.

**INSTRUCTOR(S):** A. Newman

**FORMAT:** Lecture 3 hours, research lab 2 hours

**PREREQUISITE:** PSYO 2000.03 or NESC 2007.03, PSYO 2201.03, and PSYO/NESC 3101.03

Please note: Major and Honours students in the third year of the Linguistics program do not require these prerequisites. They will, however, require a Preregister Override from the instructor before being able to register for the class.

**CROSS-LISTING:** NESC 3134.03

**EXCLUSION:** PSYO/NESC 3131.03

**PSYO 3137.03:** Research Methods in Cognitive Neuroscience.

Cognitive neuroscience aims at understanding the neural basis of perception, cognition, and action through the integration of behavioral and neuroimaging techniques. This class will: focus on the various techniques used in this endeavor, including the technologies available; the methodologies employed, and the limitations of these techniques. Examples from various areas of inquiry (e.g., language, vision, attention, memory) will be used to illustrate both applications and limitations. Techniques to be covered include event-related potentials (ERPs), functional magnetic resonance imaging (fMRI), diffusion MRI tractography (DTI), magnetoencephalography (MEG), positron emission tomography (PET), near-infrared optical imaging (NIRs), transcranial magnetic stimulation (TMS), and intracranial electrical recording and stimulation. The laboratory component will include experience in the recording and analysis of ERP data and in the analysis of fMRI data, as well as demonstrations of MRI and data acquisition. Students will serve as experimenters and participants in class experiments.

**INSTRUCTOR(S):** A. Newman

**FORMAT:** Lecture 3 hours, research lab 2 hours

**PREREQUISITE:** PSYO 2201.03 or NESC 2007.03, PSYO 2200.03, and PSYO/NESC 2130.03

**CROSS-LISTING:** NESC 3173.03

**PSYO 3165.03:** Neuroethology.

Neuroethology explores how assemblies of neurons work together to produce behaviour. This new scientific discipline lies at the intersection of behavioural ecology and neuroscience. In this class, we will examine the neural control of selected behaviors taken from a wide range of animals, both invertebrate and vertebrate. From this comparative perspective we will determine whether there are common themes in the physiological control of behaviour. All of the experiments in the laboratory component of the class will involve insects. Students will need to handle the insects during the labs.

**INSTRUCTOR(S):** S. Adams

**FORMAT:** Lecture 2 hours, research lab 2 hours

**PREREQUISITE:** PSYO/NESC 2201.03 or BIOL 3021.03, and PSYO/NESC 2510.03 or BIOL 3016.06 or MARI 3071.06, and PSYO 2200.03 or NESC 2007.03 or one of following Biology classes: 2003.01, 2004.01, 2020.03, 2023.03, 2026.03, 2061.03

**CROSS-LISTING:** NESC 3165.03
PSYO 3190.03: Psycholinguistics.
An introduction to the processes in the use of language by human beings. The main topics are: 1) the nature of language, 2) syntactic organizations, 3) propositions, 4) thematic structure, 5) speech comprehension, 6) speech production, 7) speech acts, 8) discourse 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
PHASE
Note: Major and Honours students in the third year of the Linguistics program do not receive these prerequisites. They will, however, require a Prerequisite Override from the instructor before being able to register for the class.
CROSS-LISTING: NESC 3190.03
EXCLUSION: PSYO/NESC 2130.03
PSYO 3220.03: Clinical Psychology.
This survey class reviews current and professional issues relevant to the practice of clinical psychology in hospitals, private practice, schools, the court system, and the community. The student can expect to become knowledgeable about psychological services, and to develop an understanding of the training, ethics and expertise that clinical psychology brings to the delivery of mental health and healthcare. Students will learn also to appreciate some of the limitations and challenges of this profession. Completion of the class conveys no professional skills or qualifications.
INSTRUCTOR(S): Staff
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and PSYO 2220.03
EXCLUSION: PSYO 2320.03
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. Fortune
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 2000.03 or NESC 2007.03
EXCLUSION: PSYO 2324.03
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 behaviors and prevention, stress and coping, the patient in treatment settings, and management of chronic and terminal illness.
INSTRUCTOR(S): Staff
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and PSYO 2220.03
PSYO 3227.03: Principles of Human Neuropsychology.
This survey class examines how higher cognitive, emotional, and social functions are organized in the human brain. Topics-covered include: What happens to these abilities when parts of the brain are damaged or diseased? How do clinicians diagnose and rehabilitate clients with brain disorders? Which behavioral interventions help individuals adapt to aphasia, apraxia, dyslexia, neglect, spatial disorientation, visual agnosia, amnesia, and inattention? Students integrate empirical findings from several theories and research methodologies such as structural and functional brain imaging and anatomy, early and late brain lesions in animals and humans, clinical diagnosis, neuropsychological testing, and clinical outcomes. The class should prove valuable to students with interests in the professional life of clinical neuropsychologists.
INSTRUCTOR(S): J. McCann
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and either PSYO/NESC 2470.03 or PSYO 2770.03, PSYO/NESC 2130.03 is helpful
CROSS-LISTING: NESC 3227.03
PSYO 3237.03: Drugs and Behaviour.
An introduction to behavioral psychopharmacology. The lectures involve basic anatomy, physiology, and chemistry of the nervous system. Behavioural effects and underlying mechanisms of various psychoactive drugs will be discussed. Specific topics will cover alcohol, tobacco, amphetamines, cocaine, hallucinogens, tranquilizers, and antipsychotic drugs.
INSTRUCTOR(S): J. Stamp
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and one of PSYO/NESC 2130.03, 2170.03, 2470.03, 2570.03, or PSYO 2770.03
CROSS-LISTING: NESC 3237.03
PSYO 3260.03: Biological Rhythms.
The temporal structure of human physiology is governed by both homeostatic mechanisms and by a system of biological clocks. These internal clocks generate rhythms with various periods in virtually every physiological and behavioral system. Daily (circadian) clocks are the most prominent; they generate rhythms in sleep, reproduction, intellectual performance and many other functions. This class examines the nature of these biological clocks and their physiological substrates, with an emphasis on the neural mechanisms involved in rhythm generation and synchronization in a variety of species. It also explores the hypothesized role of circadian mechanisms in sleep disorders, jet lag and depression.
INSTRUCTOR(S): B. Rusal
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 2000.03 or NESC 2007.03 or BIOI 1010.03/1011.03 or PSYO 1020.03/1021.03, and either PSYO/NESC 2130.03 or PSYO/NESC 2470.03
CROSS-LISTING: NESC 3260.03
PSYO 3270.03: Developmental Neuroscience.
This class introduces students who are already familiar with the structural organization and functional properties of the mature nervous system to aspects of neural development, especially at the cellular level. The first part of the class will link the early events of neural development to general embryonic development. Cell determination, pattern regulation, cell production, cell lineage analysis, and neuronal differentiation, movement and migration will be discussed. Special attention will then be given to later developmental events such as neuronal growth cones, cell death, growth factors, neuron-neuron interactions and synapse formation using vertebrate and invertebrate examples.
INSTRUCTOR(S): K. Duffy
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and PSYO/NESC 2470.03 and PSYO/NESC 2570.03
CROSS-LISTING: NESC 3270.03
PSYO 3280.03: Personality.
In this class a person is treated as a unified whole. Personality deals with questions such as: Is a science of persons possible? What forms can it take? Are there types of personalities, or is each individual’s personality unique? In an individual’s life history an expression of his or her personality, or is personality description merely a summary statement of behaviour whose cause lies elsewhere?
INSTRUCTOR(S): S. Sherry
FORMAT: Lecture 3 hours
PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and one of PSYO 2080.03 or PSYO 2090.03 or PSYO 2220.03
PSYO 3370.03: Neuroscience Laboratory I.
The two classes PSYO/NESC 3370.03 and 3371.03 (see next entry) are a pair, between which the exact distribution of experimental approaches may vary from year to year according to availability of equipment and material, and numbers enrolled. Usually, electrical recording methods from several types of preparation are emphasized in 3370.03, while detailed neuroanatomically-based approaches are favoured in 3371.03. Regularly scheduled labs with students working in groups of 2 or 3 under supervision are supplemented by occasional lectures, in both classes. Students become familiar with electrical recording and stimulation methods and related techniques, currently using both sensory and motor pathways 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, immunochemistry, dye-tracing of connections, and electronmicroscopy of the visual system or central nervous system. 

**SIGNATURE REQUIRED**

**INSTRUCTOR(S):** T. Perrot-Sinal

**FORMAT:** Lab 3 hours

**PREREQUISITE:** PSYO 2000.03 or NESC 2007.03, PSYO/NESC 2470.03 and 2570.03, or 3270.03, and instructor’s consent

**CROSS-LISTING:** NESC 3751.03

**PSYO 3371.03:** Neuroscience Laboratory II.

For a description of this type of neuroscience lab class, see the entry under 3270.03 above. Lab II usually, but not always, runs in the second term and develops different research approaches.

**SIGNATURE REQUIRED**

**INSTRUCTOR(S):** J. Mieringhagen

**FORMAT:** Lab 3 hours

**PREREQUISITE:** PSYO 2000.03 or NESC 2007.03, PSYO/NESC 2470.03 and 2570.03, or PSYO/NESC 3270.03, and instructor’s consent

**CROSS-LISTING:** NESC 3751.03

**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.

**SIGNATURE REQUIRED**

**INSTRUCTOR(S):** C. Moore

**FORMAT:** Lecture 3 hours

**PREREQUISITE:** PSYO 2000.03 or NESC 2007.03, and PSYO 2900.03

**PSYO 3502.03:** Statistical Methods II.

This class is the continuation of PSYO 2501.03, with the examination of more complex, less commonly used, inferential statistics. Topics include factor analysis, ANOVA, ANCOVA, and multiple regression. This class is intended primarily for Honours students in Neuroscience or Psychology. Class work includes computer-based assignments.

**SIGNATURE REQUIRED**

**INSTRUCTOR(S):** B.W. Frankland

**FORMAT:** Lecture 4 hours, skills lab 2 hours

**PREREQUISITE:** PSYO 2000.03 or NESC 2007.03, PSYO 2501.03, and instructor’s consent

**PSYO 3590.03:** History of Psychology.

In writing 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 evil actions, the nature of the brain and of vision.

**SIGNATURE REQUIRED**

**INSTRUCTOR(S):** T. Jackes

**FORMAT:** 4 Writing Intensive, Seminar 3 hours

**PREREQUISITE:** PSYO 2000.03 or NESC 2007.03

**PSYO 3670.03:** Genes, Brain and Behaviour.

This class will examine the application of genetic techniques to the study of brain and behaviour in animals and humans. The class will consist of four sections: basic genetics, neurogenetics, neurogenetic analysis of animal behaviour, and neurogenetic analysis of human behaviour. During the class, topics in bioinformatics and neuroinformatics and the use of genetic data bases will be considered. Substantial attention will be given to transplantable 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.

**SIGNATURE REQUIRED**

**INSTRUCTOR(S):** T. Perrot-Sinal

**FORMAT:** Lecture 3 hours

**PREREQUISITE:** PSYO/NESC 2470.03 or PSYO 2770.03, and 3270.03, or PSYO/NESC 3270.03, and 1502X/Y, 21 or SCIE 1502X/Y.21, or SCIE 1504X/Y.27, BIOL 2010.03 and 3010.03 are useful

**CROSS-LISTING:** NESC 3790.03

**EXCLUSION:** PSYO/NESC 3750.03

**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, sexual, and parental behaviour, temperature regulation, sleep and waking, motor and sensory system function, learning and other forms of behavioural plasticity, memory, and the physiological mechanisms underlying behavioral disorders. Students should be familiar with experimental research methods, and have some background in biological or neural aspects of psychology.

**SIGNATURE REQUIRED**

**INSTRUCTOR(S):** S. Gadbois

**FORMAT:** Lecture 3 hours

**PREREQUISITE:** PSYO 2000.03 or NESC 2007.03, PSYO/NESC 2470.03 or PSYO 2770.03

**CROSS-LISTING:** NESC 3790.03

**EXCLUSION:** PSYO/NESC 3750.03

**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 behaviour. Students will be expected to acquire skills in animal handling, animal care, recovery surgery, behavioural observations, and histological analysis of the brain. Acquisition of these methods during the class should facilitate students’ research efforts in their honours theses.

**SIGNATURE REQUIRED**

**INSTRUCTOR(S):** T. Perrot-Sinal

**FORMAT:** Research lab 3-6 hours

**PREREQUISITE:** PSYO 3751.03 and instructor’s consent

**CROSS-LISTING:** PSYO 3755.03

**EXCLUSION:** PSYO/NESC 3750.03

**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) neurophysiological and electrophysiological experiments, 6) event related brain potential experiments, 7) PET, f-NMR scan experiments, and 8) neural models of language processing.

**SIGNATURE REQUIRED**

**INSTRUCTOR(S):** Staff

**FORMAT:** Lecture 3 hours

**PREREQUISITE:** PSYO/NESC 2470.03 or PSYO 2770.03

**CROSS-LISTING:** NESC 3790.03

**PSYO 3970.03:** Molecular Neurosciences.

This class continues concepts introduced in PSYO/NESC 2570.03, from the cellular/molecular basis of neuronal function to the role of gene expression in development, maintenance, and pathology of the nervous system. Models of normal and pathological neuronal function are presented and dissected to the level of messengers, receptors, intracellular signaling cascades, transcription factors, and genes. The mechanisms underlying normal neuronal function are presented using both developmental and adult model systems. The role of genetic versus epigenetic factors in development of the functioning nervous system is covered. As well, the importance of gene products like neurotransmitters 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 neurosciences.

**SIGNATURE REQUIRED**

**INSTRUCTOR(S):** N. Crosnier

**FORMAT:** Lecture 3 hours

**PREREQUISITE:** PSYO/NESC 2570.03

**CROSS-LISTING:** NESC 3970.03

**EXCLUSION:** PSYO/NESC 3670.03
4000-Level Seminars
The following seminars are intended for fourth-year Honours students. Third-year Honours students are eligible provided they obtain permission from the instructor, and the needs of all the fourth-year Honours students have been met. The topics covered in these classes vary from year to year. Class format is usually 2 hours, instructors vary by topic. Consult the department for the specific class descriptions.

**PSYO 4000.03: Senior Seminar.** This class is an individually tailored reading or study class. It is designed to allow a student to focus on a particular issue, or set of related issues, that are not part of the regular program. Students may register for this class if they can find a staff member who is prepared to supervise the course of study. Before attempting to register for this class, a student must provide the chairperson of the Undergraduate Program Committee with: (a) a one page description of the proposed course of study, (b) a letter from a staff member agreeing to supervise the program outlined. A copy of the completed project, and a mark, must be submitted to the Undergraduate Program Committee chairperson by December 15 or April 15.

SIGNATURE REQUIRED
COORDINATOR: B. Earhard
CROSS-LISTING: NESC 4000.03

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Format</th>
<th>Prerequisites</th>
<th>Cross-Listings</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSYO 4001.03</td>
<td>Contemporary Issues in Psychology.</td>
<td>Seminar 2 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSYO 4040.03</td>
<td>Learning Applications in Clinical and Social Psychology.</td>
<td>Seminar 2 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSYO 4050.03</td>
<td>Topics in Perception.</td>
<td>Seminar 2 hours</td>
<td>PSYO/NESC 3051.03 or instructor's consent</td>
<td>CROSS-LISTING: NESC 4050.03</td>
</tr>
<tr>
<td>PSYO 4070.03</td>
<td>Neuroscience Seminar.</td>
<td>Seminar 2 hours</td>
<td>PSYO/NESC 2470.03 and 2570.03, or PSYO/NESC 3270.03, or instructor's consent</td>
<td>CROSS-LISTING: NESC 4070.03/5070.03, ANAT 5070.03</td>
</tr>
<tr>
<td>PSYO 4080.03</td>
<td>Topics in Social Psychology and Personality.</td>
<td>Seminar 2 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSYO 4090.03</td>
<td>Development of Social Behaviour.</td>
<td>Seminar 2 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSYO 4120.03</td>
<td>Topics in Clinical Psychology.</td>
<td>Seminar 2 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSYO 4130.03</td>
<td>Topics in Human Information Processing.</td>
<td>Seminar 2 hours</td>
<td></td>
<td>CROSS-LISTING: NESC 4130.03</td>
</tr>
<tr>
<td>PSYO 4140.03</td>
<td>Animal Learning Topics.</td>
<td>Seminar 2 hours</td>
<td></td>
<td>CROSS-LISTING: NESC 4140.03</td>
</tr>
<tr>
<td>PSYO 4160.03</td>
<td>Topics in Behavioural Biology.</td>
<td>Seminar 2 hours</td>
<td></td>
<td>CROSS-LISTING: NESC 4160.03</td>
</tr>
<tr>
<td>PSYO 4170.03</td>
<td>Topics in Behavioural Neuroendocrinology.</td>
<td>Seminar 2 hours</td>
<td>PSYO/NESC 2470.03, PSYO/NESC 2140.03</td>
<td>CROSS-LISTING: NESC 4170.03</td>
</tr>
</tbody>
</table>

**PSYO 4224.03: Topics in Forensic Psychology.** FORMAT: Seminar 2 hours
RESTRICTION: Restricted to Psychology Honours students
CROSS-LISTING: NESC 4224.03

**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 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
CROSS-LISTING: NESC 4740.03

510 Psychology
Science, Interdisciplinary

Dean

SCIE 1050.03: Foundations for Science Learning. This course is intended for any entering or second-year student in the Faculty of Science and has the dual purpose of introducing students to the culture of the university and enhancing students' academic performance in science disciplines. Classroom experiences are designed to develop a practical understanding of the learning process at the university level and include topics such as performance expectations at the university level, basic conventions of scientific methods, discipline-specific learning strategies, identifying and applying transferable knowledge between disciplines, academic critical reading and writing, preparing for office conferences, research preparation, knowledge management, forming peer-based learning communities, methods of self-evaluation, and effective use of University resources.

EXCLUSION: ASC 1050.03

RESTRICTION: Restricted to students having 30 credit hours or less

SCIE 1100.03: Interdisciplinary Issues in Career Development. This class examines theoretical and practical issues in career development. Participating in the portfolio process, students will apply theoretical understandings to experientially based activities. Through assessing personal environmental factors that impact decision-making, students will create a purposeful context for viewing their careers. Class content will include principles, theories and practices relating to the meaning and nature of work, self and identity, career choice and decision-making, issues and strategies in self-assessment, occupational research and the future of work. Special issues will also be considered, such as gender, culture, job loss and the management of a career portfolio. This is a half credit class that is taken as part of a regular degree program.

CROSS-LISTING: ASC 1100.03

SCIE 1111.03: Elements of Writing. This half class consists of three lecture hours per week for one term and fully meets the Writing Requirement in the Faculty of Science. The lectures cover a broad 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: w Writing requirement for Faculty of Science BSc students only

SCIE 1501/X/Y.27: DISP for Biomedical Science. This program provides particularly good first-year preparation for the full range of degree programs in the biomedical sciences at Dalhousie. Concepts and techniques of the first-year introductory level are integrated across six subjects: Biology, Chemistry, Mathematics, Physics, Psychology, and Statistics. A few field trips are included, but this option lacks a formal Earth Sciences component. SCIE 1501 includes a full year of Calculus and Physics, and it satisfies the full Social Science requirement and the full Writing Class requirement. This 4.5 credit DISP program, combined with the half-credit PHIL 1050, is 5.0 full credits, a full class load. NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

FORMAT: w Writing requirement; Lecture 14 hours /lab and other activities 8 hours / tutorials 3 hours (optional)

SCIE 1502X/Y.21: DISP for Environmental Science. A recommended route into the Environmental Science degree, this program integrates concepts and techniques at the first-year introductory level across five subjects: Biology, Chemistry, Earth Sciences, Mathematics, and Statistics. Field trips are an important component of this DISP option. This option provides particularly good first-year preparation for degrees in Biology, Marine Biology, and Earth Sciences, as well as the Biology, Earth Sciences, Ecology, and Marine Biology Areas of Emphasis of Environmental Science: Students interested in other Areas of Emphasis (Chemistry and the Environment, Statistics and the Environment, and Atmospheric Science), or degrees in Chemistry, Environmental Engineering, Mathematics, or Oceanography may need to take additional first-year classes in Physics and Mathematics in subsequent years. SCIE 1502 satisfies the first-year Math requirement (through one term of Calculus plus one term of Statistics) and the first-year Writing Class requirement. This 3.5 credit DISP program, combined with the half-credit PHIL 1050, is 4.0 full credits. This option provides flexibility for DISP students to take an elective or a lighter load if they work part-time. NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

FORMAT: w Writing requirement; Lecture approx. 10 hours /lab and other activities approx. 7 hours / tutorials 1 hour

CROSS-LISTING: BIO 1010.03 and BIO 1011.03, CHEM 1011.03 and CHEM 1012.03 or ERTH 1080.03 and ERTH 1090.03, MATH 1000.03, and STAT 1060.03

RESTRICTION: Restricted to students having 30 credit hours or less

SCIE 1503.21: DISP for Life Science. This program prepares for students for degrees in Biology, Psychology, or Microbiology and Immunology by integrating concepts and techniques at the first-year introductory level across five subjects: Biology, Chemistry, Mathematics, Psychology, and Statistics. A few field trips are included, but this option lacks a formal Earth Sciences component. Students interested in degree programs in Biochemistry, Chemistry, Mathematics, Neuroscience, or Oceanography will need to take additional first-year classes in Mathematics and Physics in subsequent years. SCIE 1503 satisfies the first-year Math requirement (through one term of Calculus plus one term of Statistics), the first-year Writing Class requirement, and the Social Science requirement. This 3.5 credit DISP program, combined with the half-credit PHIL 1050, is 4.0 full credits. SCIE 1503 allows students to take a full class load elective in addition to PHIL 1050 during their first year. 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 only be given if both are completed consecutively.

FORMAT: w Writing requirement; Lecture 10 hours/lab and other activities 10 hours / tutorials 1 hour (optional)

CROSS-LISTING: BIO 1010.03 or BIO 1011.03, CHEM 1011.03 or 1012.03, MATH 1000.03, PSYO 1011.03 or 1012.03, PSYO 1021.03 or 1022.03, and STAT 1060.03

CROSS-LISTING: BIOL 1010.03

SCIE 1504.27: DISP for Life Sciences. This program provides comprehensive preparation for the Life Sciences at Dalhousie. Concepts and techniques at the first-year introductory level are integrated across six subjects: Biology, Chemistry, Earth Sciences, Mathematics, Psychology, and Statistics. Field trips and other 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, as it is not recommended for students intending to continue in the Physical Sciences (e.g., physics, chemistry, engineering). Students will have all of the first-year science and math prerequisites for a major or honours degree in Biology, Marine Biology, Microbiology and Immunology, and Psychology. This 4.5 credit DISP program, combined with the half-credit PHIL 1050, is 5.0 full credits, a full class load.

PSYO 1011.03, PSYO 1012.03 or PSYO 1021.03, MATH 1000.03, PSYO 1011.03 or PSYO 1012.03, and STAT 1060.03

CROSS-LISTING: BIOL 1010.03

SCIE 1502XY.21: DISP for Environmental Science. This program integrates concepts and techniques at the first-year introductory level across five subjects: Biology, Chemistry, Earth Science, Mathematics, and Statistics. Field trips are an important component of this DISP option. This option provides particularly good first-year preparation for degrees in Biology, Marine Biology, and Earth Sciences, as well as the Biology, Earth Sciences, Ecology, and Marine Biology Areas of Emphasis of Environmental Science: Students interested in other Areas of Emphasis (Chemistry and the Environment, Statistics and the Environment, and Atmospheric Science), or degrees in Chemistry, Environmental Engineering, Mathematics, or Oceanography may need to take additional first-year classes in Physics and Mathematics in subsequent years. SCIE 1502 satisfies the first-year Math requirement (through one term of Calculus plus one term of Statistics) and the first-year Writing Class requirement. This 3.5 credit DISP program, combined with the half-credit PHIL 1050, is 4.0 full credits. This option provides flexibility for DISP students to take an elective or a lighter load if they work part-time. NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

FORMAT: w Writing requirement; Lecture approx. 10 hours /lab and other activities approx. 7 hours / tutorials 1 hour

CROSS-LISTING: BIO 1010.03 or BIO 1011.03, CHEM 1011.03 and CHEM 1012.03 or ERTH 1080.03 and ERTH 1090.03, MATH 1000.03, and STAT 1060.03

CROSS-LISTING: BIOL 1010.03

SCIE 1503.21: DISP for Life Science. This program prepares for students for degrees in Biology, Psychology, or Microbiology and Immunology by integrating concepts and techniques at the first-year introductory level across five subjects: Biology, Chemistry, Mathematics, Psychology, and Statistics. A few field trips are included, but this option lacks a formal Earth Sciences component. Students interested in degree programs in Biochemistry, Chemistry, Mathematics, Neuroscience, or Oceanography will need to take additional first-year classes in Mathematics and Physics in subsequent years. SCIE 1503 satisfies the first-year Math requirement (through one term of Calculus plus one term of Statistics), the first-year Writing Class requirement, and the Social Science requirement. This 3.5 credit DISP program, combined with the half-credit PHIL 1050, is 4.0 full credits. SCIE 1503 allows students to take a full class load elective in addition to PHIL 1050 during their first year. 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 only be given if both are completed consecutively.

FORMAT: w Writing requirement; Lecture 10 hours/lab and other activities 10 hours / tutorials 1 hour (optional)

CROSS-LISTING: BIO 1010.03 or 1011.03, CHEM 1011.03 or 1012.03, MATH 1000.03, PSYO 1011.03 or 1012.03 or PSYO 1021.03 or 1022.03 and STAT 1060.03

CROSS-LISTING: BIOL 1010.03

SCIE 1504.27: DISP for Life Sciences. This program provides comprehensive preparation for the Life Sciences at Dalhousie. Concepts and techniques at the first-year introductory level are integrated across six subjects: Biology, Chemistry, Earth Sciences, Mathematics, Psychology, and Statistics. Field trips and other 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, as it is not recommended for students intending to continue in the Physical Sciences (e.g., physics, chemistry, engineering). Students will have all of the first-year science and math prerequisites for a major or honours degree in Biology, Marine Biology, Microbiology and Immunology, and Psychology. This 4.5 credit DISP program, combined with the half-credit PHIL 1050, is 5.0 full credits, a full class load.
Faculty of Science

CROSS-LISTING: BIOL 3503X/Y.06, HIST 3074X/Y.06, HSTC 1200/1201X/Y.06

INSTRUCTOR(S): D. Lehoux, S. Snobelen, G. McOuat

NOTE: Students taking this class must register in both X and Y in arts or science credit.

This class will introduce Science Co-op students to aspects of career development and 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.sciencecoop.dal.ca for further information.

INSTRUCTOR(S): A. McKinnon, A. Dunsworth

FORMAT: Lecture 3 hours

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 course will introduce GIS in detail and introduce material to be covered in the labs. Labs are held once per week and will provide practical experience in data manipulation and problem solving.

INSTRUCTOR(S): C.C. Walls

PREREQUISITE: Two years of university study

EXCLUSION: ERTH 3500.03, ENVS 3500.03, 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 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, HST 3073.03, HSTC 3331.03, MAEE 4664.03
Statistics

Location: Chase Building
Halifax, NS B3H 4B2

Telephone: (902) 494-2572
Fax: (902) 494-5130

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

Chair of the Department
Dícker, K., PhD (Queen's)

Director of Division
Hamilton, D., MA, PhD (Queen's)

Faculty Advisors
Gu, H., MSc (Peking), PhD (Hong Kong), (Undergraduate and Co-op) Susko, E., PhD (Waterloo) (Graduate)

Professor Emeritus
Field, C.A., MSc, PhD (Northwestern)

Professors
Gabor, G., MSc, PhD (Eotvos) Hamilton, D.C., MA, PhD (Queens) Smith, B., MSc (Calgary), PhD (Berkeley) Thompson, K., MSc (Manchester), PhD (Liverpool) - (jointly with Oceanography)

Associate Professors
Gu, H., MSc (Peking), PhD (Hong Kong) Susko, E., PhD (Waterloo) Zhao, Younggan, MSc (Western Kentucky), PhD (British Columbia) - (cross appointment with Management)

Assistant Professors
Beloš, R., PhD (Notre Dame) - (cross appointment with Computer Science) Bailovski, J., MA (Canada & M) - (jointly with Biology) Dower, M., BSc, MBA (Dalhousie) Flemming (Mills), J., MSc (TUNS), PhD (Dal) Herbringer, C., MSc (Paris), PhD (Dal) - (jointly with Biology) Hilburn, R., BSc, MSc, PhD (Washington)

Adjunct Professors

Postdoctoral Fellow
Wang, H., PhD (Ottawa)

Please refer to the entry for the Department of Mathematics & Statistics in this calendar for a full listing of the members of the Department and information on other programs offered by the Department.

I. Degree Programs

Statistics is the discipline which is concerned with the collection, organization, display and interpretation of data. Statisticians are in high demand in government, industry and in research institutions.

There are several honours programs, and a 20-credit majors program in Statistics available to students. In addition, there is a Co-op program. Any student interested in such a class of study should consult the Undergraduate Advisor for Statistics, Department of Mathematics & Statistics.

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

A. Honours in Statistics

The Honours program in Statistics will provide students with a comprehensive knowledge of both theoretical and applied statistics and will enable students to move easily into challenging employment or graduate work in statistics.

Departmental Requirements

1000 level
- MATH 1000.03/1010.03
- STAT 1060.03*
- CSI1 1100.03/1101.03**

2000 level
- MATH 2001.03
- MATH 2002.03
- MATH 2010.03/2040.03 or 2155.03
- STAT 2040.03
- STAT 2080.03***
- STAT 2900.03***
- Two to six other half credits in Statistics at or above the 2000 level but not including classes listed below.

3000 level
- STAT 3340.03
- STAT 3350.03
- STAT 3360.03
- STAT 3370.03
- STAT 3380.03 or 3350.03
- STAT 3460.03
- At least two more credits in Statistics at or above the 3000 level

*The requirement to take STAT 1060.03 may be waived for students entering the program in their second year.
**Math 2400 may be taken in place of CSI1 1100

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*
- CSI1 1100.03/1101.03**

2000 level
- MATH 2001.03
- MATH 2002.03
- MATH 2010.03/2040.03 or 2155.03
- STAT 2040.03
- STAT 2080.03
- STAT 2900.03

3000 level
- STAT 3340.03
- STAT 3350.03
- STAT 3360.03
- STAT 3370.03
- STAT 3380.03 or 3350.03
- STAT 3460.03
- At least two more credits in Statistics at or above the 3000 level

*I recommend taking STAT 1060.03 or STAT 1010.03.
**Math 2400 may be taken in place of CSI1 1100

Statistics 513
Additional courses have been approved for use in fulfilling the educational requirements of the Associate Statistician (A.Stat.) designation of the Statistical Society of Canada (SSC). See the Department or the SSC website (www.ssc.ca) for details.

Credit may not be obtained twice for the same class even if the numbers have been changed.

SCIE 2800.00: Science Co-op Seminar Series.
This class is a prerequisite to the first work term and is a mandatory component of the Science-Cooperative Education program; all Science Co-operative Education students are required to register for and attend the Science Co-op Seminar Series (SCIE 2800.00) in the fall of the year they join. 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

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 2080.03 and STAT 2050.03. Credit will not be given for STAT 1060.03 if credit has previously been obtained for STAT 2060.03.

FORMAT: Lecture 3 hours, tutorial 1 hour, MLC

PREREQUISITE: Nova Scotia Mathematics advanced 11 and advanced 12 (or pre-calculus) or equivalent

CROSS-LISTING: MATH 1060.03
EXCLUSION: COMM 2501.03, MGMT 2513.03, DISP 2050.03

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 or DISP 2050.03.
STAT 2060.03: Introduction to Probability and Statistics.
Rigorous introduction to probability and statistical theory. Subject matter is developed systematically beginning with the fundamentals of probability and following with statistical estimation and testing. The interrelationship between probability theory, mathematical statistics and data analysis will be emphasized. Topics covered include elementary probability, random variables, distributions, estimation and hypothesis testing. Estimation and testing are introduced using maximum likelihood and the generalized likelihood ratio. Natural sequels for this class are STAT 3360.03 and STAT 3360.03.

FORMAT: Lecture 3 hours, MLC
PREREQUISITE: STAT 1060.03 or STAT 2060.03
CROSS-LISTING: MATH 2060.03
EXCLUSION: ENG 2922.03

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 develop the techniques required for multiple regression. From here we consider analysis of variance, factorial designs, analysis of covariance using the general linear models for linear models. The last part of the class will include techniques for two and three way tables along with logistic regression. The use of a computer package for carrying out the computations will be an integral part of the class. A natural sequel for this class is STAT 3340.03.

FORMAT: Lecture 3 hours, MLC
PREREQUISITE: STAT 1060.03 or STAT 2060.03 or DSF
CROSS-LISTING: MATH 2080.03, ICON 2260.03
EXCLUSION: COM 2922.03, MGMT 2922.03

STAT 2300.03: Introduction to Mathematical Modelling I.
See class description for MATH 2030.03 in the Mathematics section of this calendar.

STAT 2600.03: Theory of Interest.
See class description for MATH 2600.03 in the Mathematics section of this calendar.

STAT 3340.03: Regression and Analysis of Variance.
A thorough treatment of the theory and practice of regression analysis. Topics include: fitting general linear models using matrices, optimality of least squares estimators (Cauchy–Schwarz 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 2080.03, MATH 2010.03 and either MATH 2010.03 or STAT 2080.03
CROSS-LISTING: MATH 3340.03

STAT 3350.03: 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.

FORMAT: Lecture 3 hours
PREREQUISITE: MATH 3000.03, STAT 2080.03 or equivalent

STAT 3350.03: Design of Experiments.
The aim of the class is to develop the fundamental statistical concepts required for designing efficient experiments to answer real questions. The first main subject is unit variation and control. The basic concepts of randomization, blocking and randomization are examined. The second main subject is treatment questions and structure. The ideas of factorial designs, split-plot and incomplete plot designs are presented. We conclude with a look at response surface methodology.

FORMAT: Lecture 3 hours
PREREQUISITE: STAT 2080.03, MATH 2010.03 and either MATH 1010.03 or STAT 2080.03
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 2101.03
CROSS-LISTING: MATH 3360.03

STAT 3380.03: Sample Survey Methods.
The development of design and analysis techniques for sample surveys. Topics include simple, stratified and systematic random sampling, ratio and regression estimation, sub-sampling with units of equal and unequal size, double-multistage and multiphase sampling, non-sample errors and non-respondents.

FORMAT: Lecture 3 hours
PREREQUISITE: STAT 2060.03
CROSS-LISTING: MATH 3380.03

STAT 3400.03: 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 3400.03

STAT 3460.03: Advanced Statistical Theory I.
This class, together with STAT 3460.03 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 3460.03

STAT 4070.03: Multivariate Distributions.
This class deals with the distribution theory of the observations on more than one variable. Topics covered include: the multivariate normal distribution, the Wishart distribution, Hotelling’s T, distributions associated with regression, canonical correlations and discriminant analysis.

FORMAT: Lecture 3 hours
PREREQUISITE: STAT 3360.03
CROSS-LISTING: MATH 3460.03

STAT 4080.03: 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, Bondi–Cantelli lemmas, laws of large numbers, characteristic functions and central limit theorems, conditional probability and expectation.

FORMAT: Lecture 3 hours
PREREQUISITE: STAT 3460.03 and a third year analysis class, instructor’s consent
CROSS-LISTING: MATH 4080.03, 5080.03, STAT 5080.03
STAT 4100.03: Survival Analysis.
This class is an introduction to survival analysis methods and will cover both the statistical theory behind the methods, and the application of various techniques. Topics to be discussed include survivorship and hazard functions and their relationship to lifetime distributions and densities; modes of censoring; the Kaplan-Meier estimate of the survivor function; parametric survival time distributions; proportional hazard models and their semi-parametric estimation; accelerated life models, log rank tests, including the Mantel-Haenzzel test; and goodness of fit measures.
FORMAT: Lecture 3 hours
PREREQUISITE: STAT 3460.03 or equivalent
CROSS-LISTING: STAT 5100.03

STAT 4210.03: Time Series Analysis in Oceanography and Meteorology.

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 3460.03 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 multi-variate 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 or 3340.03
CROSS-LISTING: STAT 5360.03

STAT 4370.03: Stochastic Processes.
The theory and application of stochastic processes. Topics to be discussed include the Poisson process, renewal theory, discrete and continuous time Markov processes, and Brownian motion. Applications will be taken from the biological and physical sciences, and queueing theory.
FORMAT: Lecture 3 hours
PREREQUISITE: STAT 3360.03 or instructor's consent
CROSS-LISTING: STAT 5370.03

STAT 4390.03: Time Series Analysis I.
Time series analysis in both the time and frequency domain is introduced. The class is applied and students are required to develop their own computer programs in the analysis of time series drawn from real problems. Topics to be discussed include the nature of time series, stationarity, auto and cross covariance functions, the Box-Jenkins approach to model identification and fitting, power and cross spectra and the analysis of linear time-variant relationships between pairs of series.
FORMAT: Lecture 3 hours
PREREQUISITE: STAT 3460.03, 3460.03, or instructor's consent
CROSS-LISTING: OCEA 4210.03/5210.03, STAT 5390.03

STAT 4620.03: Data Analysis.
A variety of statistical models which are useful for the analysis of real data are discussed. Topics may include generalized linear models, such as logistic regression and Poisson regression, models for multidimensional contingency tables, ordered categories and survival data.
FORMAT: Lecture 3 hours
PREREQUISITE: STAT 3340.03, 3460.03, or instructor's consent
CROSS-LISTING: STAT 5620.03

STAT 4950.03: Honours Research Project.
This class is required for students in the honours program. It will consist of a research project carried out under the supervision of a faculty member. The results of the research will be submitted to the statistics honours advisor as a written report. Students wishing to enroll in this class must have a suitable background in statistics, and must meet with, and obtain the approval of, the statistics honours coordinator before undertaking their project.

STAT 8892.00: Co-op Work-Term II.

STAT 8893.00: Co-op Work-Term III.
Atlantic Health Promotion Research Centre (ARC)  
Director: Nicole Ridgway  
Tel: (902) 494-7131  
Fax: (902) 494-3594  
Website: http://arc.medicine.dal.ca/  

Established in 1997, the ARC conducts basic biomedical research in the fields of lipid metabolism and cell signalling, areas of fundamental importance to a variety of disorders including cancer, neurological, heart and infectious diseases. It also provides education and expertise in these fields to undergraduate and graduate students, other researchers, and the general public. The ARC houses state-of-the-art facilities for biochemical and molecular biological research, including a regional proteomics service facility (DaGEN, http://genomics.medicine.dal.ca/), and is affiliated with the IWK Cheminformatics & Drug Discovery Laboratory. The Centre’s staff hold appointments in the Departments of Pediatrics and Biochemistry & Molecular Biology in the Faculty of Medicine. Research at the ARC is supported by agencies such as the CIHR, NSERC, CIHR, CH, Heart and Stroke Foundation, National Cancer Institute, Atlantic Innovation Fund, and the IWK Health Centre.

Brain Repair Centre  
Chair: Dr. Ivar Mendez, (Professor and Head, Division of Neurosurgery, Department of Surgery and Cross-appointment in Department of Anatomy & Neurobiology, Faculty of Medicine)  
Website: https://www.brainrepair.ca/  

The Brain Repair Centre (BRC) is a joint research institute of Dalhousie University and the Capital District Health Authority. The BRC is a multi-disciplinary unit focusing on research that can lead to the treatment and repair of the brain to overcome the effects of neurological and psychiatric disorders such as Parkinson’s disease, Alzheimer’s disease, Huntington’s disease, Amyotrophic Lateral Sclerosis (ALS), stroke and spinal cord injury. The BRC grew out of the clinical Neural Transplantation Program, collaboration between basic neuroscientists and clinicians interested in treating Parkinson’s disease. The success of the Neural Transplantation Program led clinical and basic neuroscientists to decide to form the Brain Repair Centre. The BRC came together at a meeting held in the Halifax Infirmary in 1999 and decided to focus on stem cell neural transplantation and neuroimaging as areas of innovation at Dalhousie University, Capital Health and the IWK Health Centre.

Examples of developments that have contributed to BRC’s research strengths and capabilities include:

- Establishment of a $12 million magnetic resonance imaging facility with the National Research Council’s Institute for Biodiagnostics (NRC-ID)
- 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 $3.5 million research award.
- In the neurotransplantation field, the BRC is unique in Canada and one of only four centres worldwide involved in clinical application of neural transplantation.
- The BRC is an innovative collaboration that integrates its research expertise with pioneers in the fields of imaging, neurology, stem cell neurobiology, vision, molecular neurobiology, pharmacology, psychiatry, clinical trials and cognitive neuroscience.
- The BRC brings together the expanding fields of neuroimaging and stem cell technologies with application to neural transplantation and the treatment of neurological and psychiatric disorders.
- The BRC 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.

Atlantic Research Centre (ARC)  
Manager: Sandra Crowell, MPA  
Tel: (902) 494-2280  
Fax: (902) 494-0394  
Website: www.arc.dal.ca  

The Atlantic Research Centre (ARC) is a joint research facility. When the LSRI is completed, the Brain Repair Centre will become the anchor tenant of this new research and commercialization facility.

Centre for Integrated Proteomics (CIP)  
Chair: Dr. Joseph C. Tsang, Professor and Head of the Department of Chemistry and Biochemistry  
Website: http://proteomics.med.dal.ca/  

The Centre for Integrated Proteomics (CIP) is a research and training facility. CIP’s mission is to provide researchers in the Maritime region and beyond with access to the latest, leading-edge proteomic technology for the discovery and characterization of proteins and post-translational modifications of interest to researchers in basic health sciences, life sciences, and physical sciences. CIP is affiliated with the Proteomics Research Network of Canada (PRN-Canada), and is also part of the Atlantic Proteomics Network (APN) funded by the Social Sciences and Humanities Research Council of Canada (SSHRC) and the Atlantic Innovation Fund. CIP is part of the Atlantic Proteomics Network, a network funded by the Social Sciences and Humanities Research Council of Canada (SSHRSC) and the Atlantic Innovation Fund (AIF).

The Centre actively supports research in areas of proteomics, genomics, and related technologies, and provides access to cutting-edge proteomic and genomics facilities and expertise. The Centre also supports research in areas of bioinformatics, bioinformatics, and related technologies, and provides access to cutting-edge bioinformatics facilities and expertise. The Centre also supports research in areas of computational biology, computational biology, and related technologies, and provides access to cutting-edge computational biology facilities and expertise.

Centre for Integrated Proteomics (CIP)  
Chair: Dr. Joseph C. Tsang, Professor and Head of the Department of Chemistry and Biochemistry  
Website: http://proteomics.med.dal.ca/  

The Centre for Integrated Proteomics (CIP) is a research and training facility. CIP’s mission is to provide researchers in the Maritime region and beyond with access to the latest, leading-edge proteomic technology for the discovery and characterization of proteins and post-translational modifications of interest to researchers in basic health sciences, life sciences, and physical sciences. CIP is affiliated with the Proteomics Research Network of Canada (PRN-Canada), and is also part of the Atlantic Proteomics Network (APN) funded by the Social Sciences and Humanities Research Council of Canada (SSHRC) and the Atlantic Innovation Fund. CIP is part of the Atlantic Proteomics Network, a network funded by the Social Sciences and Humanities Research Council of Canada (SSHRC) and the Atlantic Innovation Fund (AIF).

The Centre actively supports research in areas of proteomics, genomics, and related technologies, and provides access to cutting-edge proteomic and genomics facilities and expertise. The Centre also supports research in areas of bioinformatics, bioinformatics, and related technologies, and provides access to cutting-edge bioinformatics facilities and expertise. The Centre also supports research in areas of computational biology, computational biology, and related technologies, and provides access to cutting-edge computational biology facilities and expertise.

Atlantic Research Centre (ARC)  
Manager: Sandra Crowell, MPA  
Tel: (902) 494-2280  
Fax: (902) 494-0394  
Website: www.arc.dal.ca  

The Atlantic Research Centre (ARC) is a joint research facility. When the LSRI is completed, the Brain Repair Centre will become the anchor tenant of this new research and commercialization facility.

Centre for Integrated Proteomics (CIP)  
Chair: Dr. Joseph C. Tsang, Professor and Head of the Department of Chemistry and Biochemistry  
Website: http://proteomics.med.dal.ca/  

The Centre for Integrated Proteomics (CIP) is a research and training facility. CIP’s mission is to provide researchers in the Maritime region and beyond with access to the latest, leading-edge proteomic technology for the discovery and characterization of proteins and post-translational modifications of interest to researchers in basic health sciences, life sciences, and physical sciences. CIP is affiliated with the Proteomics Research Network of Canada (PRN-Canada), and is also part of the Atlantic Proteomics Network (APN) funded by the Social Sciences and Humanities Research Council of Canada (SSHRC) and the Atlantic Innovation Fund. CIP is part of the Atlantic Proteomics Network, a network funded by the Social Sciences and Humanities Research Council of Canada (SSHRC) and the Atlantic Innovation Fund (AIF).

The Centre actively supports research in areas of proteomics, genomics, and related technologies, and provides access to cutting-edge proteomic and genomics facilities and expertise. The Centre also supports research in areas of bioinformatics, bioinformatics, and related technologies, and provides access to cutting-edge bioinformatics facilities and expertise. The Centre also supports research in areas of computational biology, computational biology, and related technologies, and provides access to cutting-edge computational biology facilities and expertise.

Atlantic Research Centre (ARC)  
Manager: Sandra Crowell, MPA  
Tel: (902) 494-2280  
Fax: (902) 494-0394  
Website: www.arc.dal.ca  

The Atlantic Research Centre (ARC) is a joint research facility. When the LSRI is completed, the Brain Repair Centre will become the anchor tenant of this new research and commercialization facility.

Centre for Integrated Proteomics (CIP)  
Chair: Dr. Joseph C. Tsang, Professor and Head of the Department of Chemistry and Biochemistry  
Website: http://proteomics.med.dal.ca/  

The Centre for Integrated Proteomics (CIP) is a research and training facility. CIP’s mission is to provide researchers in the Maritime region and beyond with access to the latest, leading-edge proteomic technology for the discovery and characterization of proteins and post-translational modifications of interest to researchers in basic health sciences, life sciences, and physical sciences. CIP is affiliated with the Proteomics Research Network of Canada (PRN-Canada), and is also part of the Atlantic Proteomics Network (APN) funded by the Social Sciences and Humanities Research Council of Canada (SSHRC) and the Atlantic Innovation Fund. CIP is part of the Atlantic Proteomics Network, a network funded by the Social Sciences and Humanities Research Council of Canada (SSHRC) and the Atlantic Innovation Fund (AIF).

The Centre actively supports research in areas of proteomics, genomics, and related technologies, and provides access to cutting-edge proteomic and genomics facilities and expertise. The Centre also supports research in areas of bioinformatics, bioinformatics, and related technologies, and provides access to cutting-edge bioinformatics facilities and expertise. The Centre also supports research in areas of computational biology, computational biology, and related technologies, and provides access to cutting-edge computational biology facilities and expertise.
The BRC is pursuing a number of approaches to brain repair including neural transplantation, neuroimagining and neuroprotection. The BRC places emphasis on moving basic science research from the bench to the clinical bedside and from the bedside back to the bench. A key objective of the BRC is to produce innovative technologies that will be commercialized. To that end, BRC works in close collaboration with the University Industry Liaison & Innovation Office and other related entities.

Canadian Institute of Fisheries Technology (CIFT)

Director: T.A. Gill, PhD
Telephone: (902) 494-4000
Fax: (902) 495-0229
Website: www.dal.ca/cift engineering.dal.ca

The Canadian Institute of Fisheries Technology was established in 1979 at the former Nova Scotia Technical College (later TUNS). The federal Department of Fisheries and Oceans provided much of its early specialized laboratory and seaweed pilot scale processing equipment, and Industry Canada provided start-up funding and designated CIFT a centre of excellence. As a government-approved laboratory for advanced technology, it also provides R&D services on a cost-recovery basis to industry and to various governmental agencies. The Institute promotes technology transfer and the development of advanced technologies aimed at more effective commercial utilization of fish supplies in Canada and throughout the world.

In addition, the CIFT offers unique opportunities for undergraduate, graduate and doctoral training and research through the Food Science program. Major areas of emphasis are: food biochemistry and microbiology; fats, oils and nutraceuticals; physical properties of foods; fish/fish product engineering; computerized control in the food processing industry; food safety and preservation; food rheology; food fermentation and beverage science.

Facilities

The Canadian Institute of Fisheries Technology is located in the MacDonald building of Sexton Campus at 1360 Barrington Street in downtown Halifax. The Institute's facilities include:

- fats and oils laboratory
- seaweed laboratory
- food development laboratory
- sensory evaluation laboratory
- food process engineering pilot plant
- low temperature storage facility
- food chemistry laboratory
- food microbiology laboratory

These areas contain specialized instruments and food processing equipment to enable experimental processing, laboratory analysis, and product storage evaluation. In addition to a computer-controlled cold-storage facility, the pilot plant is equipped for experimental processing including freezing, thermal processing, drying and smoking, centrifugal separation, pasteurization and modified atmosphere storage.

The pilot plant is especially well equipped for thermal processing with a modern automated retort capable of steam, steam-air, or water immersion processing research. The specially designed cold-storage facility is computer controlled and particularly useful for the study of changes in fish due to a result of frozen storage history. The pilot plant is also equipped with a custom-built computer-controlled hotump dryer that is used in food dehydration experiments.

Specialized laboratory equipment includes:
- automated high performance and fast protein liquid chromatography systems
- gas chromatography
- mass spectrometry system
- preparative ultracentrifuge
- multipurpose refrigerated centrifuge
- microtube centrifuge
- analytical and preparative electrophoresis
- siliconized silica gel-impregnated paper electrophoresis
- Linkham shearing stage/microscope
- Nikon microscope
- ball viscometer
- pressure attachment
- controlled rate rheometer
- Viscomat
- rolling Linkham shearing stage/microscope, Nikon microscope (various attachments), controlled stress rheometer with a high temperature/pressure attachment, controlled rate rheometer, Viscomat, and a rolling ball viscometer.

Educational Opportunities

Undergraduate (BSc) and graduate (MSc and PhD) programs are available through the Food Science and Technology program. Also post-doctoral research opportunities are offered. Graduate level coursework and research opportunities are related to food science, seaweed processing, food technology, marine oils, engineering design, packaging technology, fish post-mortem biochemistry, food microbiology, food rheology, food fermentation and beverage science. Students with degrees in food science, engineering, chemistry/biochemistry, microbiology or biology are invited to apply.

Centre for African Studies

Phone: (902) 494-3014/1/3177
Fax: (902) 494-2105
Director: Theresa Ullick

This Centre, established in 1975, advances instruction, publication, research and development education programs in African Studies. Associated faculty hold appointments in departments and institutes concentrated in the social sciences and humanities. The Centre organizes academic and informal seminars and public policy conferences on Africa and encourages interdisciplinary interaction at all levels on African subjects and issues. It co-operates with the International Development Studies department and with the Lester Pearson International Office.

Centre for Environmental and Marine Geology

Director: Dan Middlemiss, PhD

Established in 1971 the Centre is concerned with teaching, research, publication, policy advice and other professional activities in the various aspects of foreign policy; security studies and international politics. It is funded through the Security and Defence Forum of the Department of National Defence and other foundations, government agencies, international organizations, publications' sales, and contracts. The Centre's work is concentrated in the area of Canadian and comparative marine and ocean policy and oceans, but it also deals with international political economy, regional and global development and peace-building and democratization. Its geographical specializations include foreign policy in Canada, Europe, the South (especially Africa, Asia and the Caribbean), and the U.S. The Centre encourages activities in these areas by Senior Research & Doctoral Fellows and advances publications' sales, and contracts. The Centre is especially well equipped for thermal processing with a modern automated retort capable of steam, steam-air, or water immersion processing research. The specially designed cold-storage facility is computer controlled and particularly useful for the study of changes in fish due to a result of frozen storage history. The pilot plant is also equipped with a custom-built computer-controlled hotump dryer that is used in food dehydration experiments.
The Centre is an integral part of the Department of Political Science. Centre faculty offer classes through the Department in foreign and defence policy, international relations and development, and maritime affairs at both undergraduate and graduate levels. They also supervise masters and doctoral theses in these fields.

For further information, consult the Centre’s website: www.dal.ca/~centre.

Centre for International Trade and Transportation

Location: 6100 University Avenue
Halifax, NS
B3H 3J5

Director: Gregory Hebb
Phone: (902) 494-3482
Fax: (902) 494-3483
Email: gregory.hebb@dal.ca

Administrative Secretary: Maggie Lapp
Phone: (902) 494-4153
Fax: (902) 494-4143
Email: mg.lapp@dal.ca

Student Exchange Coordinator: Timothy Richard
Phone: (902) 494-2224
Fax: (902) 494-4143
Email: tim.richard@dal.ca

Website: http://iwc.management.dal.ca

The Centre was established in 1975, and is primarily funded by Export Development Canada with a mission to foster international business teaching and research and enhance Canada’s global competitiveness through innovative programs and outreach services. It carries out these functions within the administrative framework of the School of Business Administration. CITT supports a wide range of learning experience functions within the administrative framework of the School of Business Administration. CITT supports a wide range of learning experience functions within the administrative framework of the School of Business Administration.

Full scale tests, at sea
Small Craft model tank tests
Computer simulation of ship and offshore structure motions and flow fields
Ship maneuverability in restricted waters
Vessel seakeeping and safety studies, including swamping and capsize
Ship maneuverability in restricted waters
Vessel seakeeping and safety studies, including swamping and capsize

The Centre and Institutes 519

Centre for Marine Vessel Development and Research (CMVDR)

Acting Director: Fazal Taheri, PhD, PEng

The Centre was established in 1989 to provide specialized technical services to the Marine Industry. Emphasis is on pure and applied research in marine dynamics, with particular focus on the performance prediction analysis of marine vessels and offshore structures.

Areas of expertise include:
- Fundamental research in marine hydrodynamics
- Ship/hull motion and wave loads, including response of offshore structures in waves
- Vessel seakeeping and safety studies, including swamping and capsize behaviour in extreme sea
- 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 Program as much as possible in its research contracts with industry.

Research Facilities:

Marine Craft Model Towing Tank

The marine craft model towing tank is located in the Civil Engineering Hydraulic Laboratory on Sexton Campus. The tank’s dimensions are 1m x 3m x 0.3m. 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 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 ft).

Computing Facilities

CMVDR and the post-graduate Naval Architecture Program has sophisticated and networked Computer Systems to support its advanced research work.

The computer systems are used for running numerical computations, required for the ongoing development of numerical techniques to solve complex hydrodynamic problems. Advanced 2D and 3D visualization software is also developed on the systems so that real-time dynamic simulations can be carried out and displayed.

In addition to advanced hydrodynamic and hydroelastic software developed in-house, CMVDR has commercial hull design and analysis software packages, including Fairship, GHR, Shipflow 2000, Autship and ABS-Safehull. These are used to complement research efforts, and to instruct naval architecture students.

RBC Centre for Risk Management, Faculty of Management

Director: Ronald Pyle, PhD, PEng
Phone: (902) 494-1769
Fax: (902) 494-1483
Email: tim.richard@dal.ca

The mission of the RBC Centre for Risk Management is to be a catalyst for the interdisciplinary study of risk and 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 sector. Dalhousie researchers will bring to the Centre expertise in disciplines such as:

- **Decision Analysis**: development of formal models of decision making
- **Economics**: estimation of probabilities and risk matrices for extreme events
- **Econophysics**: exploration of utility, trade-offs and cost/benefit analysis
- **Finance and Insurance**: use of derivative instruments and insurance for managing risk
- **Public Administration**: consideration of the dynamics and impact of institutional, legislative and regulatory decisions
- **Health Sciences**: public health risk, workplace safety
- **Information Management**: assessment of local and global environmental trends
- **Institutional Analysis**: framework for the organization of massive levels of information and access/security issues of information systems
- **Legal Studies**: guidelines governing the rights and liabilities of contractual obligations designed to manage risk within national and international jurisdictions

The RBC Centre for Risk Management will generate a regional, national, and international profile and create a source of competitive advantage for Dalhousie in an area of fundamental importance to public and private sector institutions. The accumulation of knowledge and skills in risk management will enrich individual faculty and strengthen the degree programs not only in the Faculty of Management’s four Schools of Business Administration, Public Administration, Resource and


Centres and Institutes 519
Environmental Studies and Information Management, but also in virtually every other school and discipline on the Dalhousie campus including science, law, engineering, medicine, social sciences. The Centre could lead to the creation of a knowledgeable and effective workforce facing today’s issues, and ultimately make the difference in building a strong and healthy society.

Guided by a prominent Executive Advisory Council, the Director of the Centre will engage in research and scholarly activities, generate funding through grants and contracts and develop conferences and programs in response to the educational demands of the risk management industry.

**Centre for Water Resources Studies**

**Director:** W.C. Hart, PhD

The Centre for Water Resources Studies was established in December, 1981, by a resolution of the Board of Governors (TUNS). The objectives of the Centre are to carry out applied research which contributes to the effective and sustainable protection of water resources in Atlantic Canada, nationally and internationally, and to facilitate the transfer of new knowledge to potential users. Research programs directed by the Centre address the design of cost-effective on-site wastewater systems, soil erosion processes, drinking water treatment, the use of roofwater catchers for domestic water supply, estuarization, watershed management, and the computer modeling of hydrodynamic and hydrochemical processes. The Centre also has a number of research advisory panels, which involve professionals from industry, government and academia in applied research related to water use and water management.

**Facilities**

The Centre for Water Resources Studies is located on the fifth floor of "D" Building on Sexton Campus. Laboratory and office space is available for specific graduate research topics, as well as ongoing research carried out by Centre personnel. Analytical equipment includes instrumentation for determining low levels of major ions and nutrients, as well as trace quantities of metal ions in water. The Centre has apparatus for laboratory investigation and pilot scale testing of innovative water treatment methods using Disolved Air Floation (DAF) 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 program in this area since 1987. In conjunction with the Nova Scotia Agricultural College, the Centre has a field laboratory investigating sloping sand filter 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 program leading to a dual degree in water resources engineering and planning, in conjunction with the School of Planning into the Faculty of Architecture and Planning.

**Eco-Efficiency Centre, Faculty of Management**

**Director:** Ray Cote

**Technical Manager:** Gerry McGinn

**Program Coordinator:** Penny Slight

**Website:** www.dal.ca/eco-efficiency

The Eco-Efficiency Centre (EEC) was established in 1998 as a partnership with Nova Scotia Power, Inc., and in 2005 was approved as a university centre in the Faculty of Management. It is currently linked to business, engineering, and resource and environmental studies programs. The EEC has achieved a national and international profile for its work in promoting research and action in relation to eco-efficiency and industrial ecology, especially in its application to industrial parks.

The objectives of the Centre are to:

1. develop and sustain eco-efficiency and industrial ecology research programs at Dalhousie University;
2. provide education, research and employment opportunities for students;
3. develop and provide information and resources related to eco-efficiency and industrial ecology to business and government;
4. develop models of environmentally sustainable industrial development thereby improving environmental and financial performance of small and medium enterprises (SMEs); and
5. foster sustainable business practices as models and develop local case studies for teaching purposes.

Eco-efficiency is identified as a dimension of competitive advantage for businesses. The research of the Centre provides SMEs with the tools necessary to increase eco-efficiency by investigating and applying techniques such as pollution prevention, life cycle analysis and eco-industrial networking. The Centre’s research also influences the development of new government policies at all levels using an action research mode. The Centre provides opportunities for students to learn, faculty to collaborate in new action research initiatives and businesses to improve their environmental performance.

Areas of collaboration in research include:

- Environmental Studies - Life cycle analysis, energy and material metabolism, industrial symbiosis, ecological footprint analysis.
- Business - input/output analysis, supply chain management, reverse logistics, environmental accounting, eco-efficiency studies, supply chain management, and education of personnel.
- Engineering - process optimization, energy and material balances, pollution prevention, industrial symbiosis, environmentally friendly building materials, product and process design.
- Planning - green building design and construction, industrial park planning, zoning, land use standards, infrastructure design.
- Information Management - geographic information systems, life cycle and industrial metabolism database management.
- Public Policy and Law - economic and industrial development policies, regulations, economic instruments.

With support from HSBC Bank Canada, the Centre and the Faculty of Management have established a high profile lecture series on business and the environment, which will support Master of Resource and Environmental Management and Master of Business Administration students in completing internships involving both traditional and action research.

Eco-efficiency has been identified as a priority at all levels of government, particularly the federal government and agencies such as the Atlantic Canada Opportunities Agency and Industry Canada. The Centre has working relationships with the Atlantic Canada Opportunities Agency, Natural Resources Canada’s Office of Energy Efficiency, Environment Canada, the Nova Scotia Department of Environment and Labour, and the Resource Recovery Fund Board Nova Scotia Inc. (RRFBNST). TheContaining involvement of students and the increased focus on graduate research and research partnerships will assist in developing the research capacity and promote long term progress in eco-efficiency in Atlantic Canada and Canada generally. Co-op students are hired regularly and a new program will support Master of Resource and Environmental Management and Master of Business Administration students in completing internships involving both traditional and action research. The Centre has working relationships with the Atlantic Canada Opportunities Agency, Natural Resources Canada’s Office of Energy Efficiency, Environment Canada, the Nova Scotia Department of Environment and Labour, and the Resource Recovery Fund Board Nova Scotia Inc.
European Union Centre of Excellence
Director: F. Lauzon, PhD
Principal Investigator: R. Boardman, PhD
Established in 2006, the European Union Centre of Excellence in Canada gives Dalhousie University recognition from the European Union to carry out projects and activities that promote greater awareness of the EU in Canada. Dalhousie has joined three other centres in Canada with this title, located at Carleton University, the University of Toronto, and Université de Montréal/McGill University. While based in the Faculty of Arts and Social Sciences, with special emphasis on the Department of Political Science, this centre coordinates exchanges of faculty and students, conferences, workshops, symposia, and other projects and activities from other faculties as well, including Law, Management, and Science. Some of the activities include the study of international oil and gas, security issues, the EU and Africa, health issues, immigration, merger policy, biodiversity policy, and EU constitutional issues. Funds from the centre will also support activities in the Centre for Foreign Policy Studies and the Metropolis Project, and will support new EU teaching initiatives, as well as graduate students through fellowships and research assistantships. Support will also be provided to the Killam Library to strengthen its collection of EU materials.

Health Law Institute
Director: William Lahey, BA, B.A., LLB, LLM
Dalhousie University
6061 University Avenue
Halifax, NS B3H 4E9
Phone: (902) 494-6681
Fax: (902) 494-6679
Email: hli@dal.ca
Website: www.dal.ca/hli
An Interdisciplinary Institute of the Faculties of Law, Medicine, Health Professions, and Dentistry, the Institute is committed to the advancement of health law and policy and the improvement of health care practice and health systems in Canada through scholarly analysis, professional education, and public service. Its objectives are:

1. To foster strong and innovative health law and policy scholarship by:
   • contributing to research in health law and policy
   • providing external consultation services on matters having a significant impact on health law or policy

2. To advance health law and policy education by:
   • designing and implementing education programs for law, medicine, health professions and dentistry students
   • providing continuing education opportunities for health professionals and legal practitioners

3. To serve the public in areas of expertise by:
   • contributing to the societal understanding of health law and policy issues
   • providing expertise to organizations in the public sector
   • engaging in the policy-making process at local, regional, and national levels.

Institute for Research in Materials (IRM)
Director: Mary Anne White, BSc, PhD
Administrative Offices: 6136 Coburg Rd.
Dalhousie, NS B3H 8J5
Phone: (902) 494-6733
Fax: (902) 494-8016
URL: www.irm.dal.ca
Established in 2002, IRM is made up of about 100 faculty members in six faculties (Science, Engineering, Dentistry, Medicine, Architecture and Planning, and Management) and seventeen departments. The goals of the Institute include advancing the collective interdisciplinary research efforts in materials science and engineering at Dalhousie University, facilitating interdisciplinary teaching in materials science within the existing discipline structure, and enhancing interactions between materials researchers at Dalhousie University with relevant government laboratories and industry, especially within the region. The Institute leads collaboration within the university on interdisciplinary applications to funding agencies for major equipment and research infrastructure, and collaborates with external organizations to pursue research opportunities.

All Dalhousie University faculty members carrying out research in the area of materials are eligible to be Members of IRM. Graduate students associated with these research groups are invited to become Associate Members of IRM. See www.irm.dal.ca/graduates.php for details.

In addition to equipment operated by individual members of the Institute, IRM has established (2003) the Facilities for Materials Characterization, an $11 million suite of instruments managed by the Institute. The equipment includes:

• High-field solid-state NMR spectrometer (managed jointly with the Atlantic Magnetic Resonance Centre)
• Scanning electron microscope
• Focused ion beam
• X-ray photoelectron spectrometer (XPS)
• Secondary ion mass spectrometer (SIMS)
• Sputtering system
• Ultra-high-speed optical systems
• Physical properties measurement system (PPMS)
• Scanning thermal microscope (SThM)
• Brunel computer system
• Ultrasonic immersion testing equipment
• Hot press
• Geno/Max
• High-speed motion recorder/analyser

These facilities are open to external users. Please contact IRM@dal.ca for details.

Law and Technology Institute
Director: Chidi Oguamanam, LLB, LLM, PhD
Associate Director: Michael Deturbide, BSc, BA, LLB, LLM
Location: Dalhousie Law School
6061 University Avenue
Halifax, NS B3H 4E9
Phone: (902)494-1469
Fax: (902)494-3156
Email: lynda.corliss@dal.ca
Website: http://www.dal.ca/law/lati
The Law and Technology Institute was established at Dalhousie Law School in 2001 to provide teaching, research, and continuing education on technology law issues to students, faculty members, and the public. The Institute participates, with the faculties of Computer Science and Management, in Dalhousie’s Master of Electronic Commerce Program, and has commenced collaborative projects with the private sector and government on information technology issues. Also, in conjunction with Dalhousie’s Industry Liaison and Innovation Office, the Institute offers a student placement program in intellectual property and commercialization. Its faculty members provide graduate supervision to students interested in the developing field of technology law issues, and are active in law and technology organizations, such as IT Can, and the International Society for Law and Technology. The Institute hosts an Eminent Speakers Series, which brings leading IT lawyers and academics to Dalhousie to share their expertise. The Institute is home to the Canadian Journal of Law and Technology, edited by Professors Doty and Santa. The CJLT, which is published three times per year, is the pre-eminent technology law review in Canada.

Classes Offered:
• Law and Technology
• Internet and Media Law
• Privacy Law
• Intellectual Property Law
• Information Technology Transactions
• Entertainment Law
• Intellectual Property and Commercialization Placement

Students also have the opportunity to pursue specialized interests in fields such as health law and alternate dispute resolution, as they relate to law and technology.
Marine & Environmental Law Institute

Director: David L. VanderZwaag, MDiv, JD, LLM, PhD
Associate Director: Meindert Doele, BSc, LLB, LLB, JSD
Location: Dalhousie Law School
6061 University Avenue
Halifax, NS, B3J 2X4
Phone: (902) 494-1988
Fax: (902) 494-1316
Email: MELAW@dal.ca
Website: www.dal.ca/law/MELAW

The Institute, which is housed in the Law School, carries out research and consultation, and also directs the MEL-Faculty of Management Center on Ocean Law & Governance. In addition to their scholarly research and publication activities, MEFL faculty, associates and staff carry out research projects and provide advisory services to agencies of the United Nations, international non-governmental organizations, and regional organizations as well as assisting government departments and non-governmental organizations in Canada and overseas.

The Marine & Environmental Law Institute is also the editorial office of the Ocean Yearbook, a major international inter-disciplinary annual, devoted to ocean affairs. Dalhousie law students have the chance to gain experience working as research assistants on the Institute’s research projects and workshops, and assisting with editing the Ocean Yearbook.

The MEL Institute supports student collaboration in addressing environmental issues through the Environmental Law Students’ Society and the East Coast Environmental Law Association, a non-governmental organization dedicated to environmental law education and advocacy. The MEL Institute encourages interdisciplinary collaborations within the Dalhousie community including the School for Resources and Environmental Studies (SRES), the Marine Affairs Program (MAP), the International Development Studies (IDS) Program, the Centre for Foreign Policy Studies, and the recently established Ocean Tracking Network (OTN) led by the Department of Oceanography. The MEL Institute also promotes national collaborations, for example, through the Ocean Management Research Network (OMRN). International linkages include, among others, the Collaboratory on Oceans, Coasts and Islands and the IUCN Academy of Environmental Law.

Minerals Engineering Centre

Director: George G. Kyparisis, Ph.D., P.Eng
Location: 1360 Barrington Street
Halifax, NS, B3J 2X4
Phone: (902)494-6101
Fax: (902)494-3955
Website: mineralsengineering.dal.ca

The Minerals Engineering Centre was established by 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, ores and clay fraction
- Size analysis, including screening, sieving, and sub-sieve analyses
- Dense liquid analyses
- Preparation of thin sections
- Physical and chemical analytical methods using atomic absorption, spectrophotometric and wet chemical techniques
- Analysis of samples including geological, metalliferous ores, industrial minerals, coals, metals, alloys and water
- Mineral processing test work covering the whole range of investigative techniques from bench scale to pilot plant, including crushing, grinding, classification, gravity separation, dense medium separation, magnetic separation, electrostatic separation, flotation, flocculation, thickening, filtration, and drying
- Evaluation of biomass fuels.

The Minerals Engineering Centre provides opportunities for undergraduate and graduate students to learn various analytical and mineral testing techniques applicable in their course of studies. It also offers services to faculty members to assist in their teaching and research activities.

Further information may be obtained from the Director of the Centre.

Neuroscience Institute

Director: Steven Barnes, PhD.
Contact: neuroscience.institute@dal.ca
Website: www.neuroscience.dal.ca

The Neuroscience Institute was founded in 1990 to promote and coordinate research in neuroscience, the modern interdisciplinary study of the brain and nervous system. The development of the Institute paralleled the establishment of many such institutes throughout the world and marks the dramatic progress in understanding the workings of the brain.

The Institute serves as an umbrella organization to foster research and training in neuroscience at Dalhousie. A major objective is to increase understanding of the functions of the nervous system in health and disease and, in 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 areas of current research activity include: the autonomic nervous system; development and plasticity of the nervous system; and, sensory physiology. The Institute also provides a vehicle to seek new sources of funding, and will encourage new initiatives in all areas of neuroscience research at Dalhousie. In addition, the Institute promotes and coordinates training programs in neuroscience currently offered through its constituent departments at both the undergraduate and graduate levels. It sponsors a seminar series annually, and coordinates a variety of community outreach events.

Norman Newman Centre for Entrepreneurship

Director: David Roach, MBA, PEng
Coordinator: Janet Lord, Centre for Integrated Research and Learning
Phone: (902)494-7104
Website: entrepreneurship.dal.ca

The Norman Newman Centre for Entrepreneurship is a research unit within the Faculty of Management. The centre is led by a Director who will engage in research and generate funding through grants and contracts. Faculty across the University have the opportunity to be affiliated with the Centre and can be appointed as research associates. The 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 for national and international linkages with other academic institutions that are involved in the field of entrepreneurship.

The Nova Scotia CAD/CAM Centre

Location: 1360 Barrington Street
Halifax, NS B3J 2X4
Fax: (902)494-3955
Contact: Debbie Brozen, Administrative Assistant (902)494-3242

The Centre is housed in the School of Computing at Dalhousie University. The Centre is supported by the Province of Nova Scotia through the Nova Scotia Centre of Excellence in Engineering and Computer Sciences (NSCECS). The Centre is engaged in a variety of activities, including research, consulting and education. The Centre’s mission is to provide a comprehensive resource for the Canadian defence industry, government and industry in the areas of CAD/CAM technology.

The Centre offers a range of services to industry, including:
- Technical assistance in the selection and implementation of CAD/CAM systems
- Training programs for users of CAD/CAM systems
- Consulting services in the areas of CAD/CAM technology
- Research and development activities in CAD/CAM technology

The Centre is open to all interested companies and individuals in the CAD/CAM field. For more information, please contact the Centre at 1360 Barrington Street, Halifax, NS B3J 2X4, or by telephone at (902)494-3242.

522 Centres and Institutes
Established: April 29, 1983, as a cost-recovery, industry-oriented Centre within Dalhousie. It is primarily affiliated with the Departments of Mechanical and Civil Engineering, but also works with all other departments.

Mandate: As set out in an agreement with the Province of Nova Scotia, Dalhousie established an “industry-oriented CAD/CAM Centre to assist particular industries, manufacturers and consulting engineers to develop, design and utilize CAD/CAM applications”. Recently, the Centre has undergone a variety of changes and is now comprised of two new groups, the Intelligent Structures and Innovative Materials (ISIM) Group and the Advanced Manufacturing Group. It is also pleased to announce that it is home to the Canada Research Chair in Structural Health Monitoring which was awarded to Dr. Jean-François Trottier, P.Eng. in June 2001. Director: Dr. Jean-François Trottier, P.Eng. (902) 494-3901.

Admin Assistant: Debbie Brown (902) 494-3242

Advanced Manufacturing Group
Coordinator: Dr. Andrew Warrenton (494-3901)
Manager: Mr. Robert Warner, P.Eng (494-4066)

Manufacturing, research and technical support services to:
- Dalhousie Faculty of Engineering
- private industry
- government agencies: DND, DREA, BIO

Areas of Expertise:
- CAD/CAM training and technical support in MasterCAM, SolidCAM, Solid Edge and Pro/Engineer and Unigraphics
- prototype design and machining with CNC machines
- rapid plastic part prototypes by injection molding
- reserve engineering and inspection with a Mitutoyo CMM Coordinate Measuring Machine (CMM)

Mr. Warner teaches ENG 3321: Manufacturing Processes, and as PACE Coordinator for the University teaches Solid Edge and Unigraphics in Design and Graphics I (ENGI 1100), Design and Graphics II (MECH 2130), Manufacturing (MECH 4015) and Design Project I (MECH 4010).

Intelligent Structures and Innovative Materials (ISIM) Group

Adjunct Associate Professor: Dean Fergusson, P.Eng, PhD (944-2847)
Research Professional: Christopher Barnes, P.Eng (494-3904)

- R&D of novel reinforcing fibers and other materials for use in concrete
- fiber reinforced concrete, shotcrete and high performance concrete and their applications
- composite and advanced materials
- advanced sensors for intelligent structured health monitoring of buildings and structures
- remote monitoring and intelligent data processing
- innovative steel-free concrete decks for bridges, wharves and parking garages
- modeling of buckling and post-buckling failures
- operates IBIS - Halifax

Non-destructive Infrastructure Inspection Applications using Impact-Echo, Spectral Analysis of Surface Waves and Ground Penetrating Radar

- resonant frequency testing of materials
- stiffness profiles of layered media and material specimens
- bridge deck deterioration
- continuous pavement layer thickness
- waterproofing membrane integrity
- detection of voids under jointed portland cement concrete pavements
- detection of water under pavements

Equipment & Software Available for Industry and Dalhousie Use
- MasterCAM, Solid Edge, Pro/Engineer, Unigraphics
- CNC milling centre Mori Seiki MV Junior S-3 axes
- CNC turning centre lathe Mori Seiki SL-25
- Impact-Echo Inspection System
- Spectral Analysis of Surface Waves Inspection System
- Resilient modules testing of materials
- Coordinate Measuring Machine (CMM), Mitutoya measuring range of 13 feet x 20 feet x 12 feet

Impact testing machine Tinus Olsen Izod - Model 66
- Digital surface roughness gage
- Injection Molding Machine (25 Ton Arburg, 30 gram shot capacity)
- Ground Penetrating Radar Infrastructure Inspection System (400MHz to 1500 MHz)
- ASTM C3106:06 closed-loop testing
- Australian Round Determinate Panel test
- South African Water test
- Creep and fatigue of materials

Technology Transfer Activities
- contracts from and joint ventures with companies, industry and government
- training programs for industry and government
- technical and application advisory service
- research and development
- technical services
- prototype development
- use of facilities

Actively Seeking
- collaborative projects (Research and Development)
- access to specialized equipment and facilities
- specialized testing contracts

Support by:
- Canada - Nova Scotia cooperation Agreement on Technology Development
- Natural Sciences and Engineering Research Council of Canada (NSERC)
- Canada Research Chairs Program (CRC)
- Canadian Foundation for Innovation (CFI)
- Atlantic Fiber Technologies Limited

Trace Analysis Research Centre
Director: A. Chart, BSc, MSc, PhD

With the assistance of a grant from the National Research Council, the Centre was established in 1971 to train analytical chemists and, through research, to contribute to the advancement of analytical chemistry. A major facility of the Centre is a low-power nuclear reactor (SLOWPOKE) which is available to researchers within Dalhousie and elsewhere.

Vehicle Safety Research Team
Director and Principal Investigator: C.R. Baird, PhD, 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 program of seeking out and examining alleged safety-related defects. The major portion of the program is geared to relating injuries from vehicular crashes to the injury-causing mechanisms or sources in vehicles. As such, results of collision studies are continually being related to Transport Canada Vehicle Standards.

The team is composed of two professional engineers from the Faculty as well as two full-time investigators, one of whom is a professional engineer. In addition, an advisory committee exists, providing liaison and interaction with medical personnel, policing agencies and provincial transportation authorities. The VSRT has special research interests in causal factor evaluation methods, in computer-aided collision reconstruction, in data base management and modular analysis procedures, particularly in relation to injury severity and injury-causal factors.

The team is currently participating in a number of national programs including injuries associated with airbag deployments and side impact collisions.
Resources and Services

1. Alumni Association/Alumni Relations

The Alumni Association is comprised of over 100,000 graduates of Dalhousie University. A global network of volunteers keeps alumni informed and involved with the university. By providing many programs and services, the Association fosters a strong relationship between Dalhousie and its alumni.

Dalhousie alumni play a vital role in the health and future of the university. Many alumni return to Dalhousie regularly to hire graduating students. They also serve as advocates, ambassadors, and student mentors. The financial support provided by our alumni helps ensure that Dalhousie will continue to provide exceptional post-secondary education to future generations.

The Alumni Association’s Board of Directors works with the Dalhousie Alumni Relations Office, located in the Macdonald Building (949-805/1-800-565-9969). Together, the Association and Alumni Relations strive to identify opportunities for alumni involvement, and to foster an environment that invites alumni to participate fully in Dalhousie’s well-being.

Visit the website at www.dal.ca/alumni.

2. Anti-Plagiarism Service

Plagiarism is considered a serious academic offense. At the recommendation of Senate (June 2002), Dalhousie subscribed to TurnItIn.com. Academic Computing Services and the Dalhousie University Libraries jointly support this service. Faculty who wish to use this service can get started at http://integratedlearningonline.academiccomputing.ca/Learner%20Resources/Turnitin.com/

Resources for developing awareness among students, and to help them avoid plagiarism are available at http://learningandteaching.dal.ca/nas/ai.html

3. Athletics and Recreational Services

Athletics and Recreational Services offers a wide range of programs for every Dalhousie student. An extensive program of club and intramural activities offer fun, fitness and competition while 14 varsity sports provide opportunities for athletic development and interpersonal skills. 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” racquet courts, an indoor putting track, a rock climbing centre, a golf driving cage; and family-fitness features such as the Fun Zone play area, family changing rooms; Dalhousie Memorial Arena; Studley Gym, and F.B. Wickwire Memorial Field (one of Canada’s largest artificial playing surfaces). The Cordis Fitness Centre, as well as babysitting services, are available for additional fees. The F.H. Sexton Memorial Gymnasium on the Sexton Campus includes a gym, weight room, squash court and other facilities. For details on fitness and recreation at Dalhousie contact Dalplex on 494-3572, F.H. Sexton Memorial Gymnasium at 494-3580, the Intramural Office at 494-2002 or visit www.athletics.dal.ca.

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 of African or Black descent. The Centre is intended to foster a sense of community with other students on campus and to increase intercultural awareness.

The advisor may organize program activities and arrange local community tours which assist students in developing contact within the African Nova Scotian Community. The advisor can provide confidential services, individual or group orientation, if needed, to enhance the relevant resource materials, along with a referral service which may benefit your academic, personal and social development on and off campus.

There is a small student resource room for meeting, peer support, reading and studying. Information is also available on scholarships, bursaries, employment and upcoming community events.

The Centre is meant to be beneficial to ALL students, faculty and staff as a means of increasing awareness and sensitivity to students of African or Black descent and their issues and presence within the University community.

For further information contact: phone (902) 494-6648; fax (902) 494-8013; email: BSA@dallh.ca; webpage www.dal.ca/bsa.

5. Career Services Centre

The Career Services Centre assists you in:

- exploring a full range of career and work possibilities that match your career goals;
- preparing job-search competencies and tools to present yourself effectively as a candidate for employment;
- obtaining information on employment opportunities and prospective employers;
- connecting with career opportunities through campus interviews, job and volunteer listings, referrals, direct application, networking, job-search events, publications, and/or information technology; and
- developing and maintaining relationships with organizations that provide career development and employment opportunities for you.

Please refer to Career Services Centre website at www.dal.ca/ca for more information on programs and services.

6. Centre for Learning and Teaching

The Centre for Learning and Teaching (CLT) works in partnership with academic units, faculty members, and graduate students to enhance the practice and scholarship of learning and teaching at Dalhousie University. CLT takes an evidence-based approach to advocating for effective learning and teaching practices, curriculum planning, services to support the use of technology in education, and institutional policies and infrastructure to enhance the Dalhousie learning environment.

Programmes: To fulfill this primary goal, CLT organizes a range of programming for faculty and teaching assistants. Workshop series, presentations, and demonstrations are scheduled to address the full spectrum of educational issues, including curriculum design, evaluation of student learning, teaching and learning strategies, and the effective integration of instructional technology. All workshops are open to the full Dalhousie community.

Confidential Consultations: Confidential consultations on teaching and learning issues are also available to colleagues. The Peer Consultation Program pairs experienced colleagues who have been recognized for their teaching excellence with colleagues seeking to improve students’ learning. In addition, CLT staff members provide consultation services to graduate students, faculty, and administrators on a wide range of topics.

Annual Events: On an annual basis, CLT coordinates New Academic Staff Orientation, TA Days, Recording Teaching Accomplishment Institute, and the Dalhousie Conference on University Teaching and Learning that brings together presenters from across the University and the country to explore issues related to specific themes. CLT also organizes several university-wide teaching awards, including the Dalhousie Educational Leadership Award, the Alumni Award of Excellence for Teaching, and the President’s Graduate Teaching Assistant Award.

Certificate in University Teaching and Learning: The Certificate program is offered to graduate students by the CLT in collaboration with the Faculty of Graduate Studies. The purpose of the program is to assist academic departments in preparing students for their teaching responsibilities and to enhance their professional development opportunities for other careers.

For more information, please visit the CLT website at www.dal.ca/CLT.
Distance Education: The DalCard (also referred to as the Dalhousie University ID Card or 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; and as a residence meal plan 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.

Counselling Services

The Dalhousie Counselling Services website: www.counsellingservices.dal.ca. Information about specific Distance Education courses or programs is also available from the Registrar's Office.

Dalhousie Arts Centre

Designed as a multipurpose facility, the Dalhousie Arts Centre is home to four University departments: Dalhousie Arts Centre (Rebecca Cohn Auditorium), Dalhousie Art Gallery, and the two academic departments of Music and Theatre. The Arts Centre is an integral part of the cultural experience in our community and stands as the only arts complex of its kind in Nova Scotia.

An exciting exhibition programs.

Resources and Services
One of the most important resources of the Student Union is the Student Union Building located at 6136 University Avenue between Seymour and LeMarchant Streets. The SUB, which is owned by the University and administered, managed and controlled by the Student Union and is paid for through Student Union fees, was opened in 1968 as a centre for student activity on campus. The Student Union Building provides a wide range of services for students including the Student Advocacy Services, Travel Cab, The Grosvenor, 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 DSL 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 494-1108 or email dsu.ca. Check out the website at www.dsu.ca, or my.dsu.ca.

12. Housing/Residence Services

The University is pleased to guarantee housing in University-owned properties for all new students. It is, however, important that students planning to attend Dalhousie think in advance about their accommodation needs. Students should be aware of several important points of reference in regard to residence accommodation. Upon admission to a program of study, all students will receive university housing information. They will also be asked to pay an Admission Deposit. It is important to apply to residence (online) and to pay the Admission Deposit promptly as these dates are needed to determine when the Residence Application is considered. Residence applications will not be considered from individuals who have not gained admission to a program of study. Students with disabilities are encouraged to contact the Residence Office at (902) 494-1104, or email housing@dal.ca, for information and assistance.

The traditional style residences at Dalhousie are chiefly for undergraduate students, very few spaces are allocated to graduate students and students pursuing advanced degrees are not prepared to live with the experience of first- and second-year students. All students living in traditional style residences are required to participate in one of the meal plans options available.

The information below gives a description of 1. traditional on-campus residences, 2. non-traditional on-campus housing which includes apartment style housing, 3. the services offered by the off-campus housing listing service, and 4. general information. For information on housing fees, see the Fees section of the Calendar.

It is the responsibility of the individual student in all cases to make a separate online application to the university housing of her/his choice, or utilize the listing services provided by the Off-Campus Housing Office. It is the responsibility of the individual student in all cases to make a separate online application to the university housing of her/his choice, or utilize the listing services provided by the Off-Campus Housing Office.

Although accommodation in residence is guaranteed, students must apply online and are encouraged to submit their residence application immediately upon receiving their letter of academic admission.

1. Traditional On-Campus Residence

A. Study (Main) Campus

i. Heve Hall

Centrally located on campus, Heve Hall, provides accommodation for 700 undergraduate students. The sprawling, grey stone complex is divided into 6 houses: Bronson, Cameron, Foremoor, Fledgmond, and Smith. Houses are co-ed. Each house has its own distinctive identity and student government. The ratio of seniors to first-year students is approximately 50/70.

The houses offer both double and single rooms with singles assigned to senior undergraduates and first-year students and doubles for first-year students. Facilities include a dining room, lounges, television rooms in each house, a common, games room, squash courts, study areas, laundry rooms, computer room and 24-hour front desk. Within residence rooms, ResNet (high-speed Internet), local telephone service and cable TV service are provided.

ii. Shire Hall

Shire Hall provides accommodation to 407 students. Located in a quiet corner of the campus, it is minutes from classes, the library, Dalplex and other facilities. Shire Hall is divided into 4 areas - the Annex, Newcastle House (female only), Old Eddy & New Eddy are co-ed, with alternating male and female floors. Old Eddy and New Eddy have both single and double rooms while Newcastle has single rooms only.

Shire Hall offers a dining room, an elegant library and visitors’ lounge, study areas, computer rooms, games room, television lounges, kitchenettes, common, laundry rooms, and 24-hour front desk. ResNet (high speed Internet), local telephone service and cable TV service are provided within each room. Students also have access to two pianos.

iii. Eliza Ritchie Hall

Opened in 1987, Eliza Ritchie Hall is a co-ed residence. It provides traditional residence accommodation for 92 students in predominantly single rooms. This three-story building is located close to the Dalplex and to Shire Hall, where students normally have their meals. Facilities include study rooms, a multipurpose room, reception area, laundry facilities, leisure lounges with kitchenettes and, within each room, ResNet (high speed Internet), local telephone-service and cable TV service are provided.

iv. Risley Hall

Dalhousie’s newest co-ed residence, Risley Hall, opened in September, 2004. It is located on LeMarchant Street, behind the Student Union Building, and offers 490 single rooms, primarily to undergraduate students. Services include a dining room, laundry rooms, television lounges, computer room and a 24-hour front desk and within each room ResNet (high speed Internet), local telephone-service and cable TV service are provided.

v. Logie House, DeMille House, Colpitt House

These properties, which once formed faculty offices, have been converted into 3 mini-residences with a shared courtyard. There are a total of 49 single rooms in a co-living environment, with comfortable common space available in each. Each building has 12 units in each house. Each residence, a meal plan is required and meals are usually eaten at Heve Hall. Services include a shared laundry area, ResNet (high-speed Internet), local telephone service and cable TV service.

B. Sexton Campus

i. Gerard Hall

Gerard Hall is a 12-story traditional co-ed residence that houses 200 students in single and double rooms. It is located at the corner of Morris and Barrington Streets. Gerard Hall offers laundry facilities, a computer lab and a big screen TV, DVD player and satellite access in the main lounge. Within residence rooms, ResNet (high speed Internet), local telephone service and cable TV service are provided. Gerard Hall residents commonly use the O’Brien Hall dining hall, only seconds away, or may use the dining halls in Heve Hall, Risley Hall or Shire Hall.

2. Non-Traditional On-Campus Housing, including apartments

A. Study (Main) Campus

i. Residence Houses

Dalhousie also has two residence houses, which are co-ed. Formerly single family homes, each house has kitchen, living room and washroom facilities which are shared among the residents in the house. The character of these homes has been maintained as much as possible. Although they
are generally occupied by students in graduate programs or professional schools, a few spaces are reserved for undergraduates.

These houses have only single rooms, each with a bed, wardrobe, study desk, lamp and chair. Linens, cooking utensils and small appliances are not provided. A trained senior student acts as a House Assistant and liaises with the Residence Life Manager to provide administrative and resident related services. ResNet (high speed Internet), local telephone service and cable TV service are provided. Meal plans are not mandatory, but may be purchased separately to use at any dining hall on campus.

ii. Glengary Apartments

Located on the Studley Campus on Edward Street, Glengary Apartments is a four-storey brick building offering coed accommodation for 40 students. Preference is given to senior undergraduates, especially to those who apply in groups of three.

Glengary has 12 furnished apartments, each with space for three students in three single rooms. Each apartment includes a kitchen, living room and bathroom. There are also four furnished bachelor apartments which are always in high demand. Laundry facilities are located in the basement, where there is also a limited amount of storage space. ResNet (high speed Internet), local telephone and cable TV service are provided in all apartments. Coordinators are available for security and administrative services and also act as a resource for students who may need advice or assistance.

B. Sexton Campus

i. Graduate House

This facility houses 14 graduate students, ages 25 and older, in single rooms. It is located a short walk from Gerad Hall on Morris St. ResNet (high speed Internet), local telephone service and cable TV service are provided.

Meal plans are not mandatory, but may be purchased separately to use at any dining hall on campus.

ii. Fenwick Place

Dalhousie’s 33-storey Fenwick Place offers students the privacy and the independence of apartment living. Located in south end Halifax, it is only a 15-minute walk or a short bus ride from Studley campus, or a 5-minute walk to Sexton campus. Fenwick houses both single students and families in a harmonious living environment.

Many of the 252 apartments in Fenwick Place are furnished to accommodate students in groups of two, three or four. Priority is given to senior undergraduates, especially to those who apply in groups or to those who are currently living in a Halftime 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 mono-style bed. Heat, hot water and electricity are included in the residence fee. ResNet (high speed Internet), local telephone and cable TV service are included in all apartments. Linens, dishes, utensils, bedding and small appliances are not provided.

Fenwick also has a number of unfinished bachelor, one and two-bedroom apartments which are rented to single students or families. Each of these apartments has a full kitchen and bathroom. Heat, hot water, and satellite television are included in the rent. Laundry facilities are available on every floor of Fenwick Place. The front desk is open 24 hours a day with staff available to provide security, information and advice to students. ResNet (high speed Internet), local telephone and cable TV service are included in all apartments.

3. Living Off-Campus

Dalhousie’s Off-Campus Housing office assists students who do not want to live on campus or who have been unable to find a place in residence or in University apartments and houses. Located in Risley Hall, this office is designed to help students find off-campus accommodation.

The Off-Campus Housing office provides centralized information on available housing in the Halifax metro area, including apartments, shared accommodations, rooms, condos and houses. Up-to-date computerized printouts of these listings are available for viewing as well as telephones for calling landlords and material such as maps and transit schedules.

Off-Campus Housing has a website: http://www.dal.ca/och. You can search for accommodations as well as list your own place at no charge if you are a Dalhousie student.

Although the housing staff cannot arrange, inspect or guarantee housing, they will do everything they can to help students find accommodation that is pleasant, inexpensive and close to campus.

Because of the relatively low vacancy rate in Halifax, it is advised that students start looking for off-campus housing well ahead of the academic year.

For further information on living at Dalhousie, or for a hard copy of the residence application form, do not hesitate to contact:

Hewel W. Eliza Ritchie Hall, Shireef Hall, Gerard Hall, Risley Hall and Mini Residences

Director of Housing, Conference and Ancillary Services

Location: Off-Campus Housing

Risley Hall, Room 1023
1443 Seymour St.
Halifax, N.S. B3H 3P6
Telephone: (902) 494-2429
Email: och@dal.ca
Website: www.dal.ca/och

Off-Campus Housing

Location: Off-Campus Housing

Risley Hall, Room 1023
1443 Seymour St.
Halifax, N.S. B3H 3M6
Telephone: (902) 494-2429
Email: och@dal.ca
Website: www.dal.ca/och

Resources and Services 527
13. International Student & Exchange Services

The International Student & Exchange Services (ISES) office is committed to welcoming, supporting and servicing new and returning international students to Dalhousie. The ISES office is located in Room G 25 the Killam Library. You can email the ISES Office at ises@dal.ca, or by calling (902) 494-1566.

14. Lester Pearson International (LPI)

Lester Pearson International (LPI) was founded in 1985 to promote Dalhousie’s involvement in international development activities. In 1987, LPI merged with the Centre for Development Projects and was given responsibility for the management of all externally-financed international development programs and projects at Dalhousie. Since then, its mandate has been further expanded to support a broader range of activities which help to internationalize the university.

In general, LPI supports the Dalhousie community’s involvement in international activities. Towards this end, LPI helps to develop, support and oversee the university’s international projects; coordinates a development education program; and offers international development training courses. Additionally, LPI 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 Administration building on the third floor.

15. Libraries

The Dalhousie University Library System is organized to accommodate the needs of the undergraduate teaching programs, graduate and faculty research projects, and professional schools. The system is made up of the following components: the Killam Memorial Library - Humanities, Social Sciences and Science, the Sir James Dunn Law Library, the Kellgren Health Sciences Library, and Sexton Design and Technology Library - Architecture, Engineering, and Planning. As of April 1, 2007, the holdings of the Dalhousie Libraries include over 1,900,000 volumes of books, bound periodicals, documents and bound reports, 432,320 microfilms and microfiche, 95,235 maps and other media, 10,906 music scores and 11,798 music recordings. The libraries subscribe to 61,482 serial titles, including 57,132 electronic titles.

Dalhousie University participates in Novanet, a network which shares a single automated online catalog of the holdings of the member libraries (Mount Saint Vincent University, Nova Scotia Agricultural College of Art & Design, Saint Mary’s University, University College of Cape Breton, University of King’s College, the Atlantic School of Theology, St. Francis Xavier University, Nova Scotia Agricultural College and Nova Scotia Community College). Users borrow from Novanet libraries upon presentation of their University ID card.

16. Mature Student Services

Mature Student Services assists individuals 25 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 902-494-2573 or visit our website.

17. Office of Human Rights, Equity & Harassment Prevention

The overall mandate of the Office of Human Rights, Equity & Harassment Prevention is to foster and support an inclusive and working environment where all members of the University community share responsibility for establishing and maintaining a climate of respect.

The Office is responsible for administering a number of University policies including: the Accommodation Policy; the Employment Equity Through Affirmative Action Policy; complaints based on the Statement of Prohibited Discrimination; the Personal Harassment Policy; and the Sexual Harassment Policy. The Human Rights & Equity Advisor and the Harassment Prevention Advisor also liaise with the Office of the Vice-President, Student Services, regarding the Code of Student Conduct.

Other initiatives in the Office of Human Rights, Equity & Harassment Prevention include education and training on topics such as diversity, accommodation, harassment awareness and prevention, conflict resolution and more. Workshops are offered regularly for students, faculty and staff.

The website for the Office of Human Rights, Equity & Harassment Prevention offers downloadable versions of each of the policies, information on the education and training opportunities offered, and additional resources including an annual Mosaic Calendar featuring a variety of religious and cultural holidays, and a Diversity Glossary.

Contact: Bonnie Best-Fleming, Human Rights & Equity Advisor.

Gaye Wight, Harassment Prevention Advisor.

Where: Room 2, Basement Level, Henry Hicks Academic Administration Building, Studley Campus.

Phone: 494-6672 / 494-1337
Fax: 494-1179
Email: bdfh@dal.ca
Website: www.hrdep dal.ca

18. Office of the Ombudsperson

The Dalhousie Office of the Ombudsperson offers assistance and advice to anyone experiencing problems with the Dalhousie community, including difficulties associated with finances, academic, 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 308, 1221 Edward Street. Regular office hours are posted on the door at the beginning of each semester. The Ombudsperson can be reached by phoning (902)494-6303 or by Email: ombudsperson@dal.ca. Website: ombudsperson.dal.ca.

19. Registrar’s Office

The office is responsible for high school liaison, admissions, awards and financial aid, registration, maintenance of student records, scheduling and coordinating formal examinations, and convocation. Of greater significance to students, however, is the role played by members of the staff who provide information, advice, and assistance. They offer advice on admissions, academic regulations and appeals, and the selection of
programs. In addition, they are prepared to help students who are not quite sure what sort of assistance they are looking for, referring them to appropriate departments for advice about specific major and honours programs or to the office of Student Services or to specific service areas such as the Counselling Services Centre. The Registrar’s Office also mails term of thousands of faculty, staff, and graduate student volunteers annually in response to requests for information and student records, from application to graduation and beyond.

Among the staff are people with expertise in financial aid and budgeting who are available for consultation. The fact that the Registrar’s Office is in contact with every student and every department means that it is ideally placed to provide or to guide students and prospective students to the source of the advice or assistance they need.

Students can access the services of the Registrar’s Office at two locations. The main office is located in Room 133 of the Henry Hicks Academic Administration Building on the Studley Campus. Students attending classes at Sexton Campus can also access Registrar’s Office services at the Student Service Centre which is located in Building E on the Sexton Campus.

Inquiries may be directed to:

The Registrar
Dalhousie University
Halifax, NS
Canada B3H 4H6

Telephone: (902) 494-2450
Fax: (902) 494-3630
Email: admissions@dal.ca

20. Student Accessibility Services

Dalhousie University is committed to providing an accessible environment in which members of the community can pursue their educational goals. Ongoing efforts consist with a reasonable and practical allocation of resources are being made to improve accessibility and provide special services.

The Advisor provides support and advocacy for students with disabilities. In cooperation with faculty, staff, and other student services at the University, the Advisor endeavours to provide appropriate support services as needed by the student. Early consultation is advised to ascertain that we can fulfill your needs. We can be contacted by phone: voice (902) 494-2205, or by email accessibility@dal.ca. Please refer to our website for further information: www.studentaccessibility.dal.ca

Please note that due to chemical sensitivities of persons who work and frequent this office, our environment must be scent free.

21. Student Advocacy Service

The Student Advocacy Service was established by the Dalhousie Student Union and is composed of qualified students from the University. The main purpose of the Service is to ensure that the student receives the proper information when dealing with the various administrative boards and faculties at Dalhousie. An Advocate may also be assigned to assist students with academic appeals or in a disciplinary hearing for an academic offence. Our goal is to make the often unpleasant experience of challenging or being challenged by University Administration less intimidating.

The Advocates may be contacted through:

Location: Student Advocacy Service Room 201
Dalhousie Student Union Building

Telephone: (902) 494-2205
Email: advdss@dal.ca
Website: www.dsu.ca/services/advocacy

22. Student Clubs and Organizations

Students seeking information on clubs and societies should call the Dalhousie Student Union offices at 494-1106 or check the DSU Website at www.dsu.ca. Extracurricular activities and organizations at Dalhousie are as varied as the students who take part in them. Organizations range from small informal groups to large well organized ones; they can be residence-based, within faculties, or university-wide. Some are decades old with long traditions, others arise and disappear as students’ interests change. A list of clubs, societies and organizations is available every fall to new students who are encouraged to select and participate.

23. Student Services

Located in Room G28 on the Main Floor of the Killam Library, the Office of the Vice-President, Student Services, provides a point of referral for any student concern. The Vice-President, Student Services, is the chief student services officer, coordinating the activities of student services across campus.

Student Academic Success Services (which encompasses Academic Advising, the Black Student Advising Centre, the First-Year Advising Centre, Learning Connections; the Multifaith Centre; Student Accessibility Services; Studying for Success Program; Tutoring Service; the Writing Centre); Athletics and Recreational Services; Bookstores; Career Services Centre and Volunteering; Conference and Ancillary Services; Counselling Services; Health Services; Housing; International Student and Exchange Services; Office of the Ombudsperson; Registrar’s Office; Sexton Student Service Centre; Trademarks; University Food Services.

Students who experience difficulties with their academic programs or who are uncertain about educational goals, major selection, honours or advanced major information, degree regulations, changing faculties, inadequate study skills, or conflicts with faculty and regulations, can seek the assistance of the Academic Advisors in the Vice-President’s Office.

24. Studying for Success

As part of Student Academic Success Services, Studying for Success offers programs to help you reach your academic potential during your time at Dalhousie. Our primary goal is to assist you in becoming a more efficient and effective learner. Help is available by group and individually. Workshops are offered to small groups of students to develop or enhance personal learning strategies and, when applicable, are customized to focus on particular disciplines or fields of study ensuring that the workshop content is relevant to your needs. Topics regularly covered include time management, getting the most from lectures, getting the most from textbooks, delivering oral presentations, writing research papers, preparing for and writing exams. Students who could benefit from individual assistance may also book an appointment with one of our personal coaches.

For more details contact Studying for Success:
Room G28, Main Level, Killam Library
Telephone: 494-3077
Website: http://sfs.studentservices.dal.ca/

25. Tutoring Service

The Dalhousie Tutoring Service matches students who require tutoring in a particular subject, with upper-year and graduate student tutors. For information on finding or becoming a tutor, consult the Tutoring Service website at www.dal.ca/tutoring

26. University Bookstore

The University Bookstore, owned and operated by Dalhousie, is a service and resource centre for the university community and the general public. The Bookstore has all required and recommended texts, reference books and supplies, as well as workbooks, self-help manuals and other reference material. As well, you can find titles by Dalhousie authors.

The Stationery department carries all necessary and supplementary stationery and supplies. The Campus shop carries gift items, bags, clothing and created wear, cards, jewelry, class rings, backpacks, novelties and accessories. A Special Order department is located at the customer service area and will order and ship books worldwide.

The Bookstore is situated on the lower level of the Student Union Building on University Avenue, and is open year round, Monday to Saturday (Hours vary throughout the year).

The Health Sciences Bookstore has the largest and most complete medical book section in Atlantic Canada, with over 2,000 titles in stock. Thousands of textbooks, handbooks, study guides and practice examination papers are available to students. Students can also order any title on request.
of other titles are specially ordered annually, and the department ships out books to consumers and hospitals throughout the world. The Health Sciences Bookstore is located in the Dentistry Building, 5981 University Avenue, and is open year round. Monday to Saturday. Hours vary throughout the year.

The Sexton Campus Bookstore is located in the Student Service Centre at 1360 Barrington Street (Building B) and is open from 9:00 a.m. - 4:00 p.m. Monday to Friday. It supplies tests and reference books required for Architecture and Engineering students as well as casual clothing, stationery and other supplies.

The Bookstore recently added an e-commerce component to their services. The Community can order any item the Bookstore carries and have it delivered to their door. Visit us at www.dal.ca/bookstore today!

27. University Computing and Information Services

University Computing and Information Services (UCIS) provides computing and communication services for students, faculty and staff for instructional, research and administrative purposes. The department is responsible for all centrally managed computing, networking and telecommunications facilities.

UCIS manages a variety of systems including email, MyDal, Blackboard Learning System (BLS), net storage, web servers and many others. UCIS also supports numerous computer labs which are situated throughout the campuses. All students may have access to campus computing facilities on an individual basis or in conjunction with the classes that they take. Network ports or wireless connections for personal computers are available in several campus locations and in residence rooms.

Computer Help Desks are located in the Killam Computer Centre and in the B Building, Sexton Campus. UCIS also manages the campus computer store (PCPC), provides non-credit computer courses, offers a hardware maintenance service for computers, a web authoring service, an Electronic Text Centre and is a partner in the Killam Library Learning commons.

UCIS manages a campus-wide communications network which interconnects all areas of the university. This network is connected to the CANARIE research and education network and to the Internet.

28. University Health Services

The university operates a medical clinic, in Howe Hall, at Coburg Road and LeMarchant Street staffed by family doctors, nurses and a psychiatrist. Further specialists' services are available and will be arranged through the Health Service when indicated. All information gained about a student by the Health Service is confidential and may not be released to anyone without signed permission by the student.

Appointments are made during the clinic's open hours, from 9 a.m. to 10 p.m., Monday to Friday and 10:00 a.m. to 6:00 p.m. Saturday and Sunday, by calling 494-2171. In the event of an urgent medical problem, students may seek medical advice during clinic hours. After hours, students may wish to seek assessment at the local emergency room. The QEII emergency room on Summer Street is the closest emergency room.

All students must have medical and hospital coverage. All Nova Scotia students are covered by the Nova Scotia Medical Services Insurance. All other Canadian students must maintain coverage from their home 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 advise the Health Services; preferably with a statement from the doctor. Further information is available on our website at www.healthservices.dal.ca.

30. Writing Centre

The Writing Centre’s programs recognize that students in all disciplines are required to write clearly to inform, persuade, or instruct an audience in term papers, laboratory reports, essay examinations, critical reviews and more. Students benefit from discussing their work with supportive instructors and peer tutors.

The Centre currently offers a number of services. The main office in the Learning Commons allows students to obtain advice on writing issues. Tutors also work part of the week at the Sexton Library, the Killam Library, and the Rowe Building. Finally, seminars are held throughout the academic year on topics such as essay writing, science writing, mechanics of writing, English as a second language issues, admission applications, etc.

Contact the Writing Centre by visiting the main office in the Learning Commons, calling 494-1963 or emailing at writingcentre@dal.ca. Students can also obtain information on services, hours of operation, and links to writing resources at www.writingcentre.dal.ca.

29. Volunteering

Please refer to Career Services Centre.

30. Writing Centre

The Writing Centre’s programs recognize that students in all disciplines are required to write clearly to inform, persuade, or instruct an audience in term papers, laboratory reports, essay examinations, critical reviews and more. Students benefit from discussing their work with supportive instructors and peer tutors.

The Centre currently offers a number of services. The main office in the Learning Commons allows students to obtain advice on writing issues. Tutors also work part of the week at the Sexton Library, the Killam Library, and the Rowe Building. Finally, seminars are held throughout the academic year on topics such as essay writing, science writing, mechanics of writing, English as a second language issues, admission applications, etc.

Contact the Writing Centre by visiting the main office in the Learning Commons, calling 494-1963 or emailing at writingcentre@dal.ca. Students can also obtain information on services, hours of operation, and links to writing resources at www.writingcentre.dal.ca.

29. Volunteering

Please refer to Career Services Centre.
## Fees

### Student Accounts Office

**Mailing Address:** Henry Hicks Academic Administration Building (Room 295)  
Halifax, NS B3H 4B6  
**Website and online payment:** [http://www.dal.ca/studentaccounts](http://www.dal.ca/studentaccounts)

**Service Location:**  
- Studley Campus - Basement Henry Hicks Academic Administration Bldg.  
- Sexton Campus - Student Service Centre  
**Telephone:** (902) 494-3995  
**Fax:** (902) 494-2839  
**Email:** Student.Accounts@Dal.Ca  
**Office Hours:** Studley Campus - Monday to Friday 9:00 a.m. - 4:00 p.m.  
Sexton Campus - Monday to Friday 9:00 a.m. - 4:00 p.m.

<table>
<thead>
<tr>
<th>2008/2009 Important Dates:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>September</td>
<td>31st <strong>$50 reinstatement fees assessed on all outstanding accounts over $275</strong></td>
</tr>
<tr>
<td>November</td>
<td>3 Last day for partial refund fall term.</td>
</tr>
<tr>
<td>January</td>
<td>16 Fees due for winter term and second instalment of regular session. Last day to pay without late registration fee of $50. Last day for complete refund.</td>
</tr>
<tr>
<td>February</td>
<td>19 $50 reinstatement fee assessed on all outstanding accounts over $275.</td>
</tr>
<tr>
<td>March</td>
<td>1 Last day for partial refund for winter term.</td>
</tr>
<tr>
<td><strong>NOTE:</strong> Please consult the online summer school timetable for the summer school registration schedule.</td>
<td></td>
</tr>
</tbody>
</table>

### Website and Online Payments

[http://www.dal.ca/studentaccounts](http://www.dal.ca/studentaccounts)

---

I. Introduction

The following section of the calendar outlines the University Regulations on academic fees for both full-time and part-time students enrolled in programs of study during the fall, winter and summer terms. A section on University residence and housing fees is also included. Students wishing to register for the summer term should consult the summer school timetable online at [www.dal.ca](http://www.dal.ca) for information on registration dates and fees.

All fees are subject to change by approval of the Board of Governors of Dalhousie University. An Academic Fee Schedule will be available in June 2008.

**NOTE:** Student tuition and other fees published herein are applicable only to regular students admitted to a program through the normal application process. Other students who are admitted to Dalhousie under a special program or policy will be charged student tuition and other fees in accordance with such special program or policy. For further information regarding these fees, please contact Student Accounts or the dean's office of the applicable faculty.

Students should make special note of the academic dates contained in the front section of the calendar as well as fee dates. Students should also be aware that additional fees and/or interest will be charged when deadlines for payment of fees as contained herein are not met.

All the regulations in this section may not apply to Graduate Students. Please refer to the Faculty of Graduate Studies section of the Graduate Calendar.

II. University Regulations

The following general regulations are applicable to all payments made to the University in respect of fees. Please refer to our website for additional information on payment options.

- **Fees** must be paid by certified cheque, money order, interac, Visa, Mastercard, or American Express.
- If payment is by cheque and returned by the bank as non-negotiable, there will be an additional fee of $20.00 and the account will be considered unpaid. Furthermore, if the bank returns a cheque that was to cover payment of tuition, the student’s registration may be canceled and, if permitted to re-register, a late fee will apply.
- **Accounts in arrears** must be paid by cash, certified cheque, money order, interac, Visa, Mastercard, or American Express prior to registration in a future term.

### A. Deposits

1. **Admission Deposit - note these rates are for 2007-2008. For information only**

   A non-refundable deposit of $200 is payable on admissions by all new undergraduate and some graduate students. Students in specified limited enrolment programs (see below) must pay the deposit within three weeks of receiving an offer of admission. Undergraduate students accepted by March 15 are required to pay the deposit by May 15. Undergraduate students accepted after March 15 must pay the deposit within three weeks of receiving an offer of admission. International Dentistry, Qualifying Dentistry and Internet working students are required to pay a non-refundable $2500 admission deposit.

   **Limited Enrolment Programs include:**
   - Master of Business Administration
   - Master of Environmental Studies
   - Master of Library and Information Studies
   - Master of Public Administration
   
   All programs in the following faculties:
   - Faculty of Dentistry
   - Faculty of Health Professions
   - Faculty of Law
   - Faculty of Medicine

   The admission deposit will be credited towards fees at time of registration.

2. **Registration Deposit**

   All returning students (except those in the Faculties of Law, Medicine, Dentistry or Graduate Studies) are required to pay a registration deposit before they are eligible to register and select courses. The deposit will be credited towards fees at time of registration. Note: A registration deposit is not required if an admission deposit is paid for the term.

### B. Registration

A student is considered registered only after financial arrangements have been made with Student Accounts (i.e., a deposit has been paid as noted above).

Payment of the deposit and selection of course(s) is deemed to be an agreement by the student for the payment of the balance of fees.
The 2008/2009 academic fee schedule is not yet available. Once fees are approved for 2008/2009, a complete schedule showing the required payments of the academic fees and deposits will be made available. The official schedule will be available online at www.dal.ca/studentaccounts.

NOTE: Students registered in more than one program are required to pay separate academic fees for each program.

### C. Late Registration

Students are expected to register on or before the specified registration dates. Students wishing to register after these dates must receive the approval of the Registrar. A late registration fee of $50.00 will apply if registration and payment of fees has not been completed by specified dates. This fee is payable at the time of payment and will be in addition to regular fees.

### D. Academic Fees

The payment of academic fees will be received at the Student Accounts Office located on the basement level of the Hedy Hicks Academic Administration building or the Student Service Centre on Sexton Campus.

For the convenience of students, non-cash payments are accepted by mail. Fees paid by mail must be received by Student Accounts on or before the deadlines specified in order to avoid late payment and/or delinquency charges.

Credit card payments can be made through our online payment site www.dal.ca/studentaccounts. Payments are authorized immediately and posted to the student’s account by noon the next business day.

The following regulations apply to the payment of academic fees. For further information on regulations regarding withdrawal of registration, please refer to “Class Changes, Refunds and Withdrawals” on page 533:

- a. All students must pay the applicable deposit in accordance with Section A.
- b. Those holding external scholarships or awards paid by or through Dalhousie University must provide documentation of the scholarship or award before term fees are due.
- c. Those whose fees are paid by Dalhousie University staff tuition fee waiver must present the appropriate waiver form and pay applicable incidental fees.
- d. Those whose fees are paid by Canada Student Loan must negotiate the loan by September 19 or January 16 for the respective term. The form is available online at www.dal.ca/studentaccounts.
- e. Those paying the balance of their account by Canada Student Loan must provide documentation of the scholarship or award before term fees are due.
- f. Those who are Canadian citizens or permanent residents, 65 years of age or over and enrolled in an undergraduate degree program will have their tuition fees waived but must pay the applicable incidental fees by September 19 or January 16.
- g. Those who are Canadian citizens or permanent residents, 65 years of age or over and enrolled in an undergraduate degree program will be applied to academic and residence fees.
- h. When a Canada Student Loan, provincial loan or co-payable bursary is presented at the Student Accounts Office, any unpaid charges, will be deducted.
- i. Fees cannot be deducted from salaries paid to students employed at Dalhousie University.
- j. Any payments will first be applied to overdue accounts.
F. Access to Student Financial Information

Student Accounts is often asked to disclose financial information on a student’s account by parents and others so that 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 $360.00 maximum per term, subject to increase in 2008/2009. There is a proportional charge for part-time international students. International Dentistry, Qualifying Dentistry and Internet working students are exempt. Graduate Students please see Section 4.8 of the Graduate Studies Calendar to determine the number of years a student is required to pay the differential fee. If a student receives landed immigrant status, the differential fee will not be assessed for the current term and beyond. In order to process a retroactive reimbursement of differential fees in a current term, proof of residency must be submitted to the Registrar’s office prior to the last day of classes of that term.

2. Health Insurance

International students will be charged for an International Student Health Insurance Plan when they register. If a student already has health coverage, they can apply to opt out of the International Student Plan at the International Student & Exchange Services Office (ISES) before the last day to register for classes. Costs for the health plan change yearly. More details on the international student health plan costs and opt out process can be found at the ISES website (www.international.studentservices@dal.ca).

Health Insurance – International Students (2007/2008 fees, for information only):
• Single - $609.00 per year
• Couple - $1109.00 per year
• Family - $1494.00 per year

H. Audit Classes

All students auditing a class pay one-half of the regular tuition fee plus full auxiliary fees, if applicable. In such cases, the student is required to complete the usual registration process. A student who is registered to audit a class who during the session wishes to change their registration to credit must receive approval from the Registrar. This must be done on or before the last day for withdrawal without academic penalty. The same deadline applies for a change from credit to audit. Graduate students please see Section 6.4.4 for audit information.

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 or please ensure courses are dropped. Refunds due to course withdrawals will be effective when a course is dropped online at www.dal.ca/online or written notification is received at the Office of the Registrar. Please contact Student Accounts to have your refund processed.

In the Faculties of Architecture and Planning and Health Professions students who wish to withdraw from the University must obtain written approval from the appropriate school or college and submit the appropriate forms to the Registrar. Students should continue to attend class until their withdrawal has been approved.

Refunds will be processed as follows:

a. Based on the withdrawal date, fees are refunded based on the percentages outlined in the online refund schedule www.dal.ca/studentaccounts.

b. No refunds will be made for 30 days when payment has been made by personal cheque or 60 days for a cheque drawn on a bank outside of Canada.

c. A student who is dismissed from the University for any reason will not be entitled to a refund of fees.

d. Refunds will be made to the National Student Loan Centre if a student has received a Canada or provincial student loan.

e. Refunds will be prorated on fees paid by Dalhousie scholarships and/or for waiver.

f. A valid Dalhousie University ID must be presented in order for the student to receive a refund.

g. No fee adjustment will be made for a student changing their degree or program as follows:

Regular (Sept. - April) and Fall Terms After September 20
Winter Term After January 17
Summer Term After May 20

J. Refund Schedule

Please visit www.dal.ca/studentaccounts in June of 2008 to view the new refund schedule.

Important Information Regarding Refunds

• A portion of fees as outlined in the refund schedule will be assessed if withdrawal from a course occurs after September 19 (Fall Term) and January 16 (Winter Term). Withdrawals before these dates will be completely refunded, but no substitutions will be allowed from a financial perspective after these dates.

• Non-attendance does not constitute withdrawal and fees will be payable.

• The refund schedule does not apply to the University of King’s College Journalism Program.

K. Delinquent Accounts

Accounts are considered delinquent when the balance of fees has not been paid by September 19 for the fall term (January 16 for the winter term).

Interest at a rate set by the University will be charged on delinquent accounts for the number of days overdue.

Effective July 1st, 2007 the rate of interest is 9.00% per annum.

A student whose account is delinquent for more than 30 days will be denied University privileges including access to transcripts. A student will be reinstated upon payment of the fees outstanding, the arrears interest and a $50.00 reinstatement fee. Students will not be permitted to register in future terms until all outstanding amounts are paid in full. Subsequently, if the bank does not honour the payment, the student may be deregistered.

Graduating students whose accounts are delinquent on April 15 will not receive their degree/diploma parchment. For full 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 actions.

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 loan/grant requirements. A late fee of $50.00 will apply if the loan is negotiated after September 19, 2008.

(January 16, 2009 for students registered for winter term, and May 15, 2009 for students registering for the summer term).
M. Provincial Bursaries and University Scholarships
These scholarships are distributed by the Student Accounts Office. Any unpaid fees and/or temporary loans along with charges, if applicable, are deducted and payment will be issued within one week of endorsement for any balance remaining. A valid Dalhousie University ID and Social Insurance Number must be presented in order to receive cheques. Please contact the appropriate provincial office to determine eligibility as well as class requirements for provincial bursaries. For more information on student loans, bursaries or scholarships inquiries should be directed to the Registrar’s Office - on the first floor of the Henry Hicks Academic Administration building, Room 123.

N. Income Tax Credit from Academic Fees
The amount of academic fees constituting an income tax credit is determined by Canada Revenue Agency. A special income tax certicate (T2202A) will be available annually through Web for Student at www.dal.ca/online no later than February 28.

O. Identification Cards (DalCard)
All full and part-time students should obtain identification cards upon registration and payment of appropriate fees. If a card is lost, a fee of $15.00 is charged. Regular session ID cards are valid until August 31.

P. Student Fees
1. Student Union Fee
Every student registered at Dalhousie is a member of the Student Union and required to pay a Student Union fee as part of their registration procedure. These fees have been approved by students in referenda and, along with other revenue of the Union, are allocated each year by the Student Council budget.

For information only, 2007-2008 full-time student union fees are $58.00 per term. DSU Health Insurance is $253.00 per year. Students with separate health insurance may apply to the DSU for reimbursement. For more information please contact the Student Union Office in Room 222 of the Student Union Building (902) 449-2146 or visit their website at www.dsu.ca

2. Student Service Fee
Student Service offers and supports various Dalhousie Services including health services and athletics. For information only, 2007-2008 Student Service fee is $96.00 per term for full-time students.

The following services will be provided without additional charges unless specified:
• Change from Audit to Credit
• Confirmation of Enrolment
• Confirmation of Fee Payment
• Dalpaks Membership
• Leave of Absence Fee
• Letter of Permission
• Replacement Tax Receipt
• Transcripts (maximum of 5 requested at one time)

3. Laboratory Deposits
A deposit for the use of laboratory facilities in certain departments is required. The deposit is determined and collected by 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 schedules are available online at www.dal.ca/studentaccounts and include other charges such as auxiliary, society, and facilities renewal fee.

Deposits 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>Miscellaneous Fees 2007-2008</th>
<th>Fee Amount</th>
<th>Payable at</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toll Registration</td>
<td>500</td>
<td>Student Accounts</td>
</tr>
<tr>
<td>Recruitment Fee</td>
<td>500</td>
<td>Student Accounts</td>
</tr>
<tr>
<td>Returned Charge</td>
<td>500</td>
<td>Student Accounts</td>
</tr>
<tr>
<td>Application Fee</td>
<td>500</td>
<td>Registrar</td>
</tr>
<tr>
<td>Low Graduation Application</td>
<td>500</td>
<td>Registrar</td>
</tr>
<tr>
<td>Replacement ID</td>
<td>15</td>
<td>Cash and Other</td>
</tr>
<tr>
<td>Replacement Fee</td>
<td>15</td>
<td>Cash and Other</td>
</tr>
<tr>
<td>Dalplex Membership</td>
<td>20</td>
<td>Student Accounts</td>
</tr>
<tr>
<td>Confirmation of Fee Payment</td>
<td>25</td>
<td>Registrar</td>
</tr>
<tr>
<td>Confirmation of Enrolment</td>
<td>25</td>
<td>Registrar</td>
</tr>
<tr>
<td>Change from Audit to Credit</td>
<td>50</td>
<td>Registrar</td>
</tr>
<tr>
<td>Replacement Bus Pass</td>
<td>15</td>
<td>DalCard Office or Student</td>
</tr>
<tr>
<td>Replacement ID</td>
<td>15</td>
<td>DalCard Office</td>
</tr>
<tr>
<td>Change from Audit to Credit</td>
<td>50</td>
<td>Registrar</td>
</tr>
<tr>
<td>Residence Application Fee</td>
<td>500</td>
<td>Residence</td>
</tr>
</tbody>
</table>

Note: Fees are subject to change after publication of this calendar. **Where appropriate, contact Registrar’s office for details.

5. University Bus Pass Fee
All eligible full-time students will receive a Metro-Transit bus pass. For information only, the fee for the pass in 2007/2008 is $136.00. Please refer to the Student Services website, www.dal.ca/studentaccounts for further information.

O. Statements and Monthly Notices
Students with current activity will be issued electronic statements. Students will be notified through their official Dalhousie email address when a new statement is available. Subsequent monthly payment reminders will be sent to the student’s official Dalhousie email address. Refer to www.dal.ca/studentaccounts for more information.

III. Residence Fees
The following are 2006/2007 rates.

Residence Room and Board Rates vary depending on the location and style of accommodation. For all traditional style residences, a meal plan is mandatory.

Traditional Residences include Howe Hall, Bailey Hall, Shirreff Hall, Eliza Ritchie Hall, General Hall and Mini Residences. For all other Residences, a meal plan is optional.

Our Non-Traditional Residences include Fenwick Place, Glengary Apartments, Residence Houses and the Grad House.

All prices are listed per student per term.

Traditional Residences
Rates include a 19 Meal Plan and the Residence Council Fee. All residence fees include local phone service with voice mail features, cable TV service, and ResNet (local Internet access).

Prices listed do not include the non-refundable $50.00 application fee.
returning, who have accepted a room assignment will be required to pay a
fee 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 31 days
will be denied university privileges including access to transcripts. The
student will be reinstated upon payment of the fees outstanding, the
amounts interest, and a $50 reimbursement fee.

All residence fees can be paid at the Student Accounts Office, the Student
Service Centre (Sexton Campus), the Accommodation Office at Fenwick
Place, or online at www.dal.ca/studentaccounts.

Students should make an appointment as soon as possible with the
Administrative Coordinator of Residence Life, Manager Sexton Campus,
or the Assistant Manager of Student Accounts if they are having financial
difficulties.

B. Regulations and Additional Charges

The room and board session commences the day before classes begin in
September in the College of Arts and Science and ends on the last day of
the examination period in the Faculty of Arts and Science. Please
note that, except at Fenwick Place, students must vacate the residence
twenty-four hours after their last exam and that residences are closed over
the December break.

In Fenwick Place the rental period is based on a 34-week period beginning
on Labour Day. For more specific details on dates of sessions, 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 in 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, Shillell Hall, Eliza Ritchie Hall, Risley
Hall, Gerard Hall, Mini-residences, Glengary Apartments and the
Residence Houses cover the time period from the Wednesday in September
before classes begin in the College of Arts and Science to the
last day of the examination period in the Faculty of Arts and Science
in April (December break excluded).

The residence term for Fenwick Place is as follows: First semester - Labour
Day to December 31st, and second semester - January 1 to April 30th.

Those students wishing to stay beyond the residence term may do so for a
daily or weekly rate. Please contact the appropriate residence for details.

After the student has paid their deposit, the balance is to be paid in two
parts per the schedule in Table II: Residence Rates. The first portion is

D. ResNet

All residences are wired for Internet, local phone service and cable TV
service. The cost is included in residence fees. Check out the Website at
www.dal.ca/resnet (Rental computers are conveniently available).
Awards

Scholarships, Awards, Financial Aid and Bursaries

The Office of the Registrar is responsible for:

- Undergraduate Scholarships
- Undergraduate Bursaries
- Temporary Loans
- Canada Student Loans
- Provincial Loans
- US Dept. of Education Loans
- Awards and Financial Aid Advice & Information

IMPORTANT NOTE: The University is reviewing the policy governing undergraduate awards. Consequently, portions of the following statement of policy may be modified or substantially altered and may be implemented during the course of the academic year of this Calendar.

A. Some Helpful Terms

1. Admissions Average
   This is the average of the subjects which were used for entry to the Dalhousie academic program and is governed by admission requirements for the degree/diploma selected.

2. Adjusted Average
   This number is the sum of the Admissions Average plus points which are assigned to the level of course difficulty, the number of university-preparatory subjects beyond the minimum five and the position in the graduating class, expressed either as the top 1-2 per cent or the top 3-5 per cent.

3. Faculty Groupings
   There are seven: architecture and planning; arts and social sciences; health professions; management; science; engineering; and computer science.

B. Types of Awards

1. Scholarships: A monetary award, at entrance or in-course and/or at graduation level based on academic excellence (in specific subject or group of subjects) and on the recognition of additional relevant attributes.

2. Bursary: An award granted on the basis of financial need.

3. Medal: An award based on recognition of an outstanding academic record at Dalhousie for a specific degree program in a particular subject.

4. Prize: A monetary award of any value, or a non-monetary award, based on general academic excellence, or proficiency in a specific area of study or competition.

5. External Award: An award given to the student of the university by an external agency. (The University may share in the selection, administration and/or payment of such an award).

C. Statement of Scholarship Terms

This document is given to each awardee at the time of the announcement of a scholarship from the Registrar's Office (Awards). The Statement of Terms contains some of the more pertinent policy items for easy reference. Additional scholarship regulations are listed below.

I. General Policy

(Applicable to those scholarships administered by the Registrar’s Office. Selection criteria may be different for those administered by individual faculties/schools/departments.)

A. Full Class Load

1. Entering students to whom an entrance scholarship is awarded must undertake a full class load for the regular session immediately following the award in a designated degree or diploma program at Dalhousie University. A full class load for most designated programs consists of not less 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 Directly or should otherwise permit. (The University of King’s College has its own scholarship program.) Insofar as scholarships, bursaries and governmental student loans are concerned, Dalhousie and King’s are separate. In order to receive Dalhousie money you must be registered at Dalhousie University.

C. Portability of Undergraduate Scholarships

Most entrance and in-course scholarships are portable among all undergraduate programs for the eligible degree/diploma programs. Please contact the Awards Office prior to changing programs.

D. When Scholarships Are Tenable

Undergraduate scholarships to regular full-time students are tenable in the academic year immediately following their award (regular fall and winter terms).

E. Scholarship Payments and Rebates

To receive scholarship funds, a student must be registered at least as a full-time student (min. 9 credit hours) at Dalhousie during the term(s) in which they are receiving the funds.

1. Payments: Dalhousie University scholarships of $3000 or greater are credited towards students’ accounts in two installments first and second term. Awards less than $3000 are credited in full first term. Awards are applied first to tuition and prescribed fees, and secondly for residence fees if and only if you stay enrolled at the University.

2. Rebates: The portion of scholarship money in excess of the above charges will be refunded to the student. Refunds are made by the Student Accounts Office, late October.

F. Scholarship Duration

Dalhousie offers both renewable and non-renewable Entrance Scholarships. Non-renewable scholarships are held for one year. Renewable entrance awards are renewable for the duration of the program (maximum of four years). Holders of renewable scholarships are notified of either the renewal or the non-renewal of their scholarships. Please note that holders of renewable scholarships are NOT entitled also to hold Dalhousie one-year in-course scholarships. (Please also refer to section G.)

G. Eligible Classes

The Registrar’s Office (Awards) considers those Dalhousie classes which are taken for credit in a designated degree/diploma program during the academic year (or term in the Co-op program). Correspondence classes are considered for scholarship purposes.

Please note that classes taken at other institutions are counted, to a maximum of 1 course per term for scholarship assessment if such classes are taken on Letter of Permission towards an eligible degree/diploma at Dalhousie.
H. Scholarship GPA

1. Calculation
   The Scholarship GPA will be calculated for students who have completed a minimum of 30 hours of work over the preceding academic year (September 1 - April [August for co-op students]). The Scholarship GPA will include all eligible classes attempted during this time period. Please note that the Scholarship GPA and the Sessional GPA normally differ.

   The Scholarship GPA, expressed to two decimal places, does not show on a student’s transcript.

2. Renewable Scholarships
   The renewability point is a SGPA of 3.50. If not attained, students can have these scholarships renewed in future years by attaining a 3.70 SGPA.

I. Qualifying for In-Course Scholarships
   All Dalhousie students in eligible programs in the participating faculties who have completed a full class load (a minimum of 30 credit hours for most programs) over two terms within the previous regular session (Sept. - April) and achieved a minimum SGPA of 3.70 will be considered eligible for in-course scholarships. Co-op students who are on a work term during the calendar year, must also complete 30 credit hours over two terms (fall, winter or summer) to be eligible. Students completing two work terms within one academic year (Sept. - Aug.) must complete a minimum of 15 credit hours during their one academic term and achieve a minimum term GPA of 3.70 to be considered eligible. In 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. Cutoffs and amounts vary from year to year.

J. International Exchanges
   Students who have permission to study for one or two terms outside of Canada in an approved exchange program, and are considered to be full-time (normally 30 credit hours), can be considered eligible for in-course or renewable scholarship assessment. Please direct specific questions to the Office of the Registrar as only pass/fail grades are recorded.

K. Academic Year and Assessment Timing
   The academic year consists of three sessions: Fall, Winter, Summer. Student records will be assessed in the fall.

L. Degree Program Considered for Assessment
   Changing degree/diploma programs can have implications for scholarship consideration. Scholarship holders considering degree changes should consult the Registrar’s Office - Awards.

M. Reduced Class Load and Retention of Scholarship
   Scholarship holders considering taking a reduced class load should consult the Registrar’s Office - Awards. Holders of renewable scholarships may have a reduced class load (i.e., 30 credit hours) within September to April (August for co-op students).

N. Record of Scholarships
   Awards are recorded on the academic records of the students. The University retains the right to 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 to a 4-year degree, you would forfeit eligibility for continuation of your scholarship. Graduation constitutes completion of program. In addition, if you graduate and then decide to upgrade your degree, you cannot be assessed for an in-course scholarship until a further 30 credit hours over two terms within the regular session is completed and a minimum SGPA of 3.70 is achieved.

P. Transfer Students
   With the exception of the First Nations & Indigenous Black Students Entrance Scholarship, transfer students are ineligible for scholarships in the year of transfer. After one full year, students would be considered on the same basis as other students for in-course awards. Please refer to section I. Qualifying for In-Course Scholarships.

Q. Taxation and Scholarships
   Under the Income Tax Act the University is required to report scholarships. On occasion the government may audit your awards. You should retain copies of award letters so that you can forward copies for audit or confirmation purposes.

   The University is required by law to prepare a T4A form for the recipient of a University scholarship (applies to bursary, prizes or other monetary awards). The generation of such documents for University scholars shall be for the tax year in which the scholarship was authorized. This is a condition of accepting the scholarship.

R. Student Aid and Scholarships
   Provincial Student Aid authorities require that students report their scholarships.

S. Withdrawing
   If you must discontinue studies, please do so in writing via the Office of the Registrar. Depending upon the time of withdrawal, students may be entitled to a prorated portion of the scholarship to be credited towards academic fees, if you are enrolled in an academic program other than a ‘limited enrollment’ one. If you are enrolled in a program having ‘limited enrollment’ (i.e., Bachelor of Nursing, Bachelor of Science [Health Promotion] or Bachelor of Science [Kinesiology]), no portion of the entrance scholarship may be claimed.

   Please note that no portion of the scholarship may be applied against residence fees if you are withdrawing from the University.

T. Government Notification
   The University is required to report its award winners to the respective Provincial Student Aid Authority.

U. Scholarship Appeals
   The deadline to appeal a scholarship decision for an entrance/in-course/renewable scholarship for the 2008/09 academic year is October 31, 2008.

   Students may appeal under the following grounds:
   • extraordinary or compassionate circumstances;
   • unfair scholarship decision under the circumstances; and/or,
   • inconsistent scholarship decision compared to other offers/decisions.

   Students must submit their appeal, in written form, to the Assistant Registrar, Awards, in the Registrar’s Office, by the deadline noted above. The letter should clearly outline the grounds for appeal and the remedy being sought. Students should include documentation, if applicable, to support the basis of their appeal. The decision of the Appeals Committee is final.

II. Entrance Scholarships
   (Applicable to those scholarships administered by the Registrar’s Office. Selection criteria may be different for those administered by individual faculties/schools/departments.)

1. To be considered for an Entrance Scholarship, applicants must submit a completed Dalhousie application for admission, and have their high school send an official transcript to the Office of the Registrar by March 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
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 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) admission average based on admission requirements; (ii) the level of course difficulty of classes (AP, IB, etc.); (iii) total number of university-preparatory classes beyond the minimum five and; (iv) the applicant’s position in the graduating class (top 1%-2% or top 3%-5%).

3. The applicants are assessed on a mutually competitive basis for the available funds allocated to the regular entrance scholarship program.

4. Admitted students will be considered for an entrance scholarship in only one of these academic groups: architecture, arts (includes music and costume studies), health professions, nursing, and recreation (includes commerce and management), science (includes DSIF), engineering, and computer science.

5. Transfer Students are not eligible for entrance scholarships. Entrees coming from Year II of a CEGEP are considered to be Transfer Students.

The foregoing is not a definitive statement of criteria or policy and is subject to change without notice.

B. Quick View Entrance Scholarships (subject to change)

Entrance Renewable Scholarships
$33,000 (Chancellor’s Scholarships - $6,000 per year)
• renewable to a maximum of four years (minimum average of SGPA of 3.70 for renewal) (see C. Scholarship Renewal Criteria)
• awarded on the basis of a very high Adjusted Average
• these awards are not tied to faculty grouping
$25,000 ($5,000 per year)
• renewable to a maximum of four years (minimum average of SGPA of 3.70 for renewal) (see C. Scholarship Renewal Criteria)
• awarded on the basis of a very high Adjusted Average
• these awards are not tied to faculty grouping
$16,000 ($4,000 per year)
• renewable to a maximum of four years (minimum average of SGPA of 3.70 for renewal) (see C. Scholarship Renewal Criteria)
• awarded on the basis of a very high Adjusted Average
• these awards are distributed on a population basis among faculty groupings (because the populations of the groups differ, the same Adjusted Average can yield different scholarship values in each group)

Entrance Scholarships
$3,000
• 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
$5,000
• tenable for one year
• awarded on the basis of an Admissions Average of 95.0% or greater but not qualifying for a renewable entrance scholarship
• these awards are not tied to population
$10,000
• tenable for one year
• awarded on the basis of an Admissions Average of 96.0% to 99.9%
• these awards are not tied to population
$20,000 ($5,000 per year)
• renewable to a maximum of four years (minimum average is SGPA of 3.70 for renewal) (see C. Scholarship Renewal Criteria)
• awarded on the basis of a very high Adjusted Average
• these awards are 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)

C. Scholarship Renewal Criteria
A minimum Scholarship Grade Point Average (SGPA) of 3.70 is required to maintain a Dalhousie University renewable scholarship. This must be achieved by completing a full class load (a minimum of 30 credit hours for most programs) over two terms within the previous regular session (Sept. - Aug.). Exceptions include Nursing (Yrs 2-4) and third year Mechanical Engineering. Co-op students who are on a work term within the calendar year, must also complete 30 credit hours over two terms (fall, winter or summer) to be eligible for renewal. Students completing two work terms within one academic year (Sept. - Aug.) must complete a minimum of 15 credit hours during their one academic term and achieve a minimum term GPA of 3.70 to renew. In these cases where students have taken more than 30 credit hours, assessment is based on all courses taken within the two terms.

Students who fail to re-qualify for their renewable scholarship will be notified in writing. If a student achieves the required 3.70 SGPA in the next academic year, or in any academic year within four years of the original offer, the scholarship will be reinstated.

D. Entrance Scholarship Funds
It is University practice to distribute scholarships among as many students as possible.
The Bissett Scholarship
A scholarship valued at $24,000 ($6,000 per year) was established by Mr. David Bissett with the intention of encouraging scholastic achievement by providing an incentive to capable high school students who wish to obtain a university education and who might otherwise be prevented from pursuing post-secondary studies at Dalhousie. The scholarship is administered by the Alumni Office.

#### Awards by March 15th

- **Dalhousie Alumni Leadership Scholarships**: Scholarships are open to Canadian students accepted into the First Year Study Abroad Program at the International Study Centre (ISC), at Hermonosaurus Castle, England. Scholarships are offered to students entering the University for the first time directly from high school who have attended another post-secondary institution. Scholarships will be awarded on the basis of a student’s academic achievement and leadership potential. Please submit a completed application to the Assistant Registrar, Awards by March 15. Applications available online at http://moneymatters.dal.ca.

- **Helen C. McDowell Foundation Memorial Scholarship**: Two scholarships of $5,000 each are available to students entering Dalhousie who have been a resident of Bermuda for at least the previous three years. Preference will be given to students who are majoring in the School of Health and Human Performance (BSc in Health Promotion, Kinesiology or Recreation). Please send letters to the Assistant Registrar Awards, c/o Denton Hurdle Scholarship, by March 15th.

- **Helen C. McDowell Foundation Memorial Scholarship**: A scholarship valued at $24,000 ($6,000 per year) was established by Mr. David Bissett with the intention of encouraging scholastic achievement by providing an incentive to capable high school students who wish to obtain a university education and who might otherwise be prevented from pursuing post-secondary studies at Dalhousie. The scholarship is administered by the Alumni Office.

#### Awards by March 15th

- **Dalhousie Alumni Leadership Scholarships**: Scholarships are open to Canadian students accepted into the First Year Study Abroad Program at the International Study Centre (ISC), at Hermonosaurus Castle, England. Scholarships are offered to students entering the University for the first time directly from high school who have attended another post-secondary institution. Scholarships will be awarded on the basis of a student’s academic achievement and leadership potential. Please submit a completed application to the Assistant Registrar, Awards by March 15. Applications available online at http://moneymatters.dal.ca.

- **Helen C. McDowell Foundation Memorial Scholarship**: Two scholarships of $5,000 each are available to students entering Dalhousie who have been a resident of Bermuda for at least the previous three years. Preference will be given to students who are majoring in the School of Health and Human Performance (BSc in Health Promotion, Kinesiology or Recreation). Please send letters to the Assistant Registrar Awards, c/o Denton Hurdle Scholarship, by March 15th.

- **Helen C. McDowell Foundation Memorial Scholarship**: A scholarship valued at $24,000 ($6,000 per year) was established by Mr. David Bissett with the intention of encouraging scholastic achievement by providing an incentive to capable high school students who wish to obtain a university education and who might otherwise be prevented from pursuing post-secondary studies at Dalhousie. The scholarship is administered by the Alumni Office.

#### Awards by March 15th

- **Dalhousie Alumni Leadership Scholarships**: Scholarships are open to Canadian students accepted into the First Year Study Abroad Program at the International Study Centre (ISC), at Hermonosaurus Castle, England. Scholarships are offered to students entering the University for the first time directly from high school who have attended another post-secondary institution. Scholarships will be awarded on the basis of a student’s academic achievement and leadership potential. Please submit a completed application to the Assistant Registrar, Awards by March 15. Applications available online at http://moneymatters.dal.ca.

- **Helen C. McDowell Foundation Memorial Scholarship**: Two scholarships of $5,000 each are available to students entering Dalhousie who have been a resident of Bermuda for at least the previous three years. Preference will be given to students who are majoring in the School of Health and Human Performance (BSc in Health Promotion, Kinesiology or Recreation). Please send letters to the Assistant Registrar Awards, c/o Denton Hurdle Scholarship, by March 15th.

- **Helen C. McDowell Foundation Memorial Scholarship**: A scholarship valued at $24,000 ($6,000 per year) was established by Mr. David Bissett with the intention of encouraging scholastic achievement by providing an incentive to capable high school students who wish to obtain a university education and who might otherwise be prevented from pursuing post-secondary studies at Dalhousie. The scholarship is administered by the Alumni Office.

#### Awards by March 15th

- **Dalhousie Alumni Leadership Scholarships**: Scholarships are open to Canadian students accepted into the First Year Study Abroad Program at the International Study Centre (ISC), at Hermonosaurus Castle, England. Scholarships are offered to students entering the University for the first time directly from high school who have attended another post-secondary institution. Scholarships will be awarded on the basis of a student’s academic achievement and leadership potential. Please submit a completed application to the Assistant Registrar, Awards by March 15. Applications available online at http://moneymatters.dal.ca.

- **Helen C. McDowell Foundation Memorial Scholarship**: Two scholarships of $5,000 each are available to students entering Dalhousie who have been a resident of Bermuda for at least the previous three years. Preference will be given to students who are majoring in the School of Health and Human Performance (BSc in Health Promotion, Kinesiology or Recreation). Please send letters to the Assistant Registrar Awards, c/o Denton Hurdle Scholarship, by March 15th.

- **Helen C. McDowell Foundation Memorial Scholarship**: A scholarship valued at $24,000 ($6,000 per year) was established by Mr. David Bissett with the intention of encouraging scholastic achievement by providing an incentive to capable high school students who wish to obtain a university education and who might otherwise be prevented from pursuing post-secondary studies at Dalhousie. The scholarship is administered by the Alumni Office.

#### Awards by March 15th

- **Dalhousie Alumni Leadership Scholarships**: Scholarships are open to Canadian students accepted into the First Year Study Abroad Program at the International Study Centre (ISC), at Hermonosaurus Castle, England. Scholarships are offered to students entering the University for the first time directly from high school who have attended another post-secondary institution. Scholarships will be awarded on the basis of a student’s academic achievement and leadership potential. Please submit a completed application to the Assistant Registrar, Awards by March 15. Applications available online at http://moneymatters.dal.ca.

- **Helen C. McDowell Foundation Memorial Scholarship**: Two scholarships of $5,000 each are available to students entering Dalhousie who have been a resident of Bermuda for at least the previous three years. Preference will be given to students who are majoring in the School of Health and Human Performance (BSc in Health Promotion, Kinesiology or Recreation). Please send letters to the Assistant Registrar Awards, c/o Denton Hurdle Scholarship, by March 15th.

- **Helen C. McDowell Foundation Memorial Scholarship**: A scholarship valued at $24,000 ($6,000 per year) was established by Mr. David Bissett with the intention of encouraging scholastic achievement by providing an incentive to capable high school students who wish to obtain a university education and who might otherwise be prevented from pursuing post-secondary studies at Dalhousie. The scholarship is administered by the Alumni Office.
The Maple Leaf Funds Scholarship
This Scholarship was established by Maple Leaf Foods for students entering the program of study leading to the degree of Bachelor of Applied Science (Food Science) within the Faculty of Engineering. It is intended for candidates entering either first or second year of the program. The scholarships will be awarded in the amount of $2,500 per annum. Applications should be made through the office of the Associate Dean of Engineering, undergraduate studies, Sexton Campus. Deadline for applications is June 1.

The J.D. Shatford Memorial Trust Scholarship
The J.D. Shatford Memorial Scholarship is a scholarship of $16,000 ($4,000 per year) to entering high school students; including one to students entering Nursing. Scholarships are awarded to students with demonstrated financial need, a recognized initiative to funding their own education and possess strong leadership abilities. The deadline to apply is March 1. Application forms are to be sent to the Assistant Registrar, Awards. Applications available online at http://www.moneymatters.dal.ca.

The C.D. Howe Scholarships in Engineering
The C.D. Howe Scholarship is a scholarship of up to $2000, will be awarded to top-ranked students from Nova Scotia high schools who have achieved high academic standing and who are enrolled full-time in the Bachelor of Engineering program. Application not required.

The Bell Entrance Scholarship in Science
This scholarship was established by a bequest from the estate of Barbara Bell who attended Dalhousie in 1923 as a music student. This scholarship is awarded annually to honour her father, the late Mr. Francis Hugh Bell, who was one of Dalhousie's earliest graduates.

2. Entrance Scholarships (no application required)

The Francis Hugh Bell Entrance Scholarship in Science
This scholarship was established by a bequest from the estate of Barbara Bell who attended Dalhousie in 1923 as a music student. This scholarship is awarded annually to honour her father, the late Mr. Francis Hugh Bell, who was one of Dalhousie's earliest graduates.

Frank R. Davis Memorial Scholarships
These scholarships are made possible by a fund established by Mrs. Davis in memory of her late husband, the Hon. Frank R. Davis, Minister of Public Health in the government of Nova Scotia and a graduate of this University. The scholarship will be awarded by the University to deserving graduates of Bridgewater High School, on the nomination of the Supervisor of Schools and the Senior High School Staff. In selecting candidates, the governing considerations will be scholastic standing, unselfishness of purpose, and interest in the common good. The fund may also be used for bursaries. Application not required.

Frederick S. Fountain Scholarship
An endowed fund has been established by Frederick S. Fountain for residents of Atlantic Canada who have demonstrated all around distinction. Preference is given to students in the Faculty of Arts and Social Sciences. These scholarships are valued at $32,000 ($8,000 per year).

The Bell Entrance Scholarship
This scholarship is awarded annually 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 Rieland C. Frazee Undergraduate Scholarships in Business Administration
Two scholarships of $5,000 each are to be awarded annually to students entering the Bachelor of Commerce program. Sponsored by The Royal Bank of Canada, these scholarships honour Mr. Frazee's long and distinguished career with the bank. Application not required.

The Milton G. Green Memorial Scholarship
This renewable scholarship is offered on a three-year rotational basis to students from the western area of Nova Scotia, Deer Lake, and Chesterbrook, Newfoundland. Preference will be given to students from Atlantic Canada enrolling in the Faculty of Arts and Social Sciences. These scholarships are valued at $32,000 ($8,000 per year).

Sheldon and Marjorie Fountain Scholarships
Two non-renewable entrance scholarships are awarded each year to students from Atlantic Canada enrolling in the Faculty of Arts and Social Sciences. These scholarships are valued at $16,000 ($4,000 per year).

The Frederick S. Fountain Scholarship
This scholarship was established by a fund established by Mrs. Davis in memory of her late husband, the Hon. Frank R. Davis, Minister of Public Health in the government of Nova Scotia and a graduate of this University. The scholarship will be awarded by the University to deserving graduates of Bridgewater High School, on the nomination of the Supervisor of Schools and the Senior High School Staff. In selecting candidates, the governing considerations will be scholastic standing, unselfishness of purpose, and interest in the common good. The fund may also be used for bursaries. Application not required.
The A. Murray MacKay Scholarship
The North British Society has established an annual scholarship of $500 which is open to a student entering Dalhousie from Queen Elizabeth High School. The Selection Committee will consider candidates on the criteria of academic ability, financial need and leadership. The criteria are weighted equally. The late Dr. MacKay was chairman of the School Board at the time when QEH was constructed. Application not required.

W.M. Nelson Scholarship
Under the Will of the late Mr. W. M. Nelson of Tatamagouche, funds have been made available to provide a scholarship to Dalhousie University open to students attending North Colchester High School. Application not required.

Nova Scotia Power Inc. Scholarship
Since 1995, Nova Scotia Power Inc. has sponsored an annual scholarship in the amount of $1,500 for full-time study in an undergraduate degree program. The Scholarship will be renewable for up to three or four years depending upon the duration of the undergraduate program provided that the student maintains the required academic standing. Recipients are to be Canadian citizens (or landed immigrants) and residents of Nova Scotia for at least three years. Application not required.

The Hugh J. Potter Scholarship
An endowment has been established to provide a scholarship to an entering Commerce student who has demonstrated a high level of academic achievement. First preference will be given to residents from Digby County who qualify based on their academic record. The scholarship honours the memory of Joseph Hugh Potter, a native of Digby County, who showed himself to be an exceptional initiator and developer of financial and commercial activity throughout this province in the fields of insurance, securities, shipbuilding, transportation and manufacturing. Application not required.

Cicero T. Ritchie and Hazel Robertson Scholarship
This scholarship was created at the bequest of Hazel Robertson in memory of her husband, a Dalhousie graduate. This $1,500 entrance renewable scholarship is open to an incoming student from Dartmouth High School enrolled in the Bachelor of Science program. The scholarship is renewable to a maximum of four years provided a GPA of 3.3 is maintained while carrying a full course load. Application not required.

The School of Nursing BScN Scholarship
This entrance scholarship is awarded to the student in the Dalhousie University Basic BScN program with the highest high school academic average. Application not required.

The School of Nursing BScN Entrance Scholarship for Non-Traditional Students
This entrance scholarship is awarded to the student with the highest academic standing who has come to the basic BScN program neither directly from high school nor from a full year of university. Assessment is made by the School of Nursing. Application not required.

Alexander Sinclair Scholarship
Under the Will of the late Edward Henry Sinclair of Sydney County, a $500 entrance scholarship is made available to students from the County of Cape Breton or Prince Edward Island who have attained the highest academic standing in their class. Application not required.

The L.C. Stewart Trust Fund
From the Estate of George M. Stewart came a trust fund, the annual income from which is to be used for L.C. Stewart Scholarships to qualifying students from St. Mary’s District in the County of Guysborough, Nova Scotia. Candidates are recommended by St. Mary’s Rural High School in consultation with the Registrar’s Office - Awards. Application not required.

L.A. & Edith Upham Scholarship
A renewable scholarship valued at $2,000 ($500 per year) has been established to recognize the long association of the Upham family with Dalhousie University. This scholarship is offered to a Nova Scotia high school graduate enrolling in the Faculty of Arts and Social Sciences and is tenable, consistent with the Dalhousie scholarship portfolio, to a maximum of four years provided a SGPA of 3.70 is maintained with a full course load. Application not required.

Marguerite E. Vernon Scholarship
A trust has been established under the Will of the late Marguerite Vernon whereby, from time to time, a scholarship will be assigned to Dalhousie University for an entering student. Application not required.

Don Wright Scholarship of Excellence
This annual scholarship funded by the Lillian and Don Wright Foundation, supports outstanding students who are entering the Department of Music. While preference shall be given to awarding the scholarship to one student per year, if no student merits the awarding of the scholarship, the awarding committee has the authority to award two scholarships to students who have applied and been accepted to study with the Department of Music. Where there is more than one eligible candidate, first preference shall be given to the candidate deemed to have the most merit as judged by a majority of the Music Department Scholarships Committee.

5. Endowments or Annual Givings used by the University to fund Students’ Scholarships
The following scholarships are administered by the Registrar’s Office.

Robert Bruce Scholarships
The University is a beneficiary of a bequest from the late Robert Bruce of Quebec whereby a portion of the annual income is to be used for both entrance and in-course scholarships, and for bursaries. Application not required.

James and Abbie Campbell Memorial Scholarships
A bequest from the late Elsie Alma MacIntyre of Halifans made provision for the establishment of the James and Abbie Campbell Memorial Fund. The purpose of this fund is to promote the University’s music program through scholarships in music. Academically sound students who have demonstrated competency in music will be selected by the Department for one of several James and Abbie Campbell / Department of Music Scholarships. Other music students will be selected on the basis of their overall academic standing by the Registrar’s Office. The fund provides in-course scholarships also. Application not required.

Dalhousie Club of New York Scholarships
A fund for this purpose, established by the Dalhousie Club of New York and placed in the hands of the Board of Governors of the University, endows several scholarships open to students entering the Faculties of Arts & Social Sciences or Science from high school. Application not required.

Ross Faulkner Scholarships
The University received from the Estate of Julia L. Faulkner a bequest to provide scholarships in memory of her husband, Dr. Ebenezer Ross Faulkner. Application not required.

The Percy Bertman Jollota Scholarships
From the Estate of Jean Minerva Jollota came a bequest, the annual income of which is to be used to provide scholarships in memory of her late husband, Percy Bertman Jollota. The awards are to be made in recognition of students who have been involved in the arts on campus. 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 Scholarships
A fund for this purpose, established by the Killam Foundation, provides entrance scholarships to students of the United States who are enrolled in undergraduate programs at Dalhousie University. No application required.
Awards

Frederick A. MacMillen Scholarships
The late Frederick A. MacMillen bequeathed to Dalhousie University a sum of money, the net income therefrom to be used for scholarships. This fund has been designated for entrance scholarships. Application not required.

The Hector McNees Memorial Scholarships
In December 1937, an anonymous donor gave the University $5,000 for undergraduate scholarships as a memorial to the late Mr. McNees. Application not required.

Silvanus A. Morton Memorial Scholarship
The Silvanus A. Morton Scholarship Fund was established in 1972 to endow one or more awards. The awards are in memory of Silvanus A. Morton, Principal of the old Halifax Academy, predecessor of the Queen Elizabeth High School. The scholarship is to be awarded on the recommendation of the principal to one or more graduates of Queen Elizabeth High School upon entrance to Dalhousie University in the College of Arts & Science. Application not required.

Harold Oxley Scholarship
A bequest under the late Mr. Oxley’s Will makes possible the funding of a scholarship, which has been allotted to the entrance scholarship plan. Application not required.

Arthur S. Payzant Scholarship
Under the Will of the late Rev. Robert Payzant a bequest was established for scholarship purposes. The University has allotted this fund to the entrance scholarship plan. Application not required.

The Harold A. Renaud Scholarship
An endowment has been established to provide an annual scholarship for students entering the Bachelor of Commerce program. Application not required.

The Lois J. Robertson Scholarships
The University received a generous bequest from the Estate of the late Lois Robertson. This fund has been allocated to undergraduate scholarships. Application not required.

Dr. David M. Sosmen Scholarship
Under the Will of the late Dr. David M. Sosmen the University received a sum of money. The Board of Governors decided that the gift be used to provide one or more entrance scholarships in the College of Arts & Science. Application not required.

Joseph Duncan Stewart Scholarships
A bequest under the Will of the late Joseph Duncan Stewart has made possible the funding of undergraduate scholarships. Application not required.

The J. Douglas Vair Scholarship
This scholarship is available to students entering the University for the first time from Yarmouth County, Queens’ County, and rural Halifax County. Failing a candidate from these areas, a student from other areas of Nova Scotia may be selected at the discretion of the Scholarship Committee. The award shall be based on scholarship and need; making it possible for a promising student to obtain a university education. The scholarship may be continued beyond the first year to students from the three preferred areas if standing is maintained, but only if there is no first-year student eligible for the award. Application not required.

The Women’s Division of the Dalhousie Alumni Association Scholarships
This fund provides two entrance scholarships; one is named the Margaret Floore Newcombe Scholarship, which commemorates the 100th anniversary of the graduation of the first woman graduate of Dalhousie University in 1885. The second scholarship is named the Ruth Skaling Morton Scholarship, in memory of a dedicated alumna of the Dalhousie Women’s Division. Application not required.

E. The Canadian Merit Scholarship Foundation
The program was started in 1989 to identify, recognize and reward well-rounded students who combine distinguished talents with character, leadership potential and a commitment to the community. In 1991 Dalhousie University became a participating member of those institutions where the CMSF National Awards are tenable.

The scholarship consists of $8,000 (paid by the Foundation) and tuition (paid by the University), renewable to a limit of four years of undergraduate study. The scholarships are renewable on the achievement of a Grade Point Average of 3.30 (B+), plus continued evidence of the qualities of character, leadership and service upon which the award is based.

Participating high schools may each nominate one student and forward the requisite documents to the CMSF Area Committee to be received by the November deadlines.

Details of the process and criteria are available from your high school. Nominees must meet the admission requirements for Dalhousie University and the program which the student wishes to undertake.

III. In-Course Scholarships
All Dalhousie students in eligible programs in the participating faculties who have completed a full class load (a minimum of 30 credit hours for most programs) over two terms within the previous regular session (Sept. – April) and have achieved a minimum GPA of 3.70 will be considered eligible for in-course scholarships. CGPA’s of 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. CGPA’s cut-offs and scholarship amounts vary from year to year. Possession of minimum requirements does not guarantee an award. The Registrar’s Office (Awards) decides the award and the amounts of money. The amount of money authorized for a scholar may be met wholly or partially by a Dalhousie University Scholarship and/or one of the named scholarships described below in sections A through I. (Applicable to those scholarships administered by the Registrar’s Office. Selection criteria may be different for those administered by individual faculties/schools/departments.)

Please note that the automatic consideration is either for the renewal of an entrance renewable scholarship or for a one-year scholarship, but not both.

A. General - All Faculties

Golden Key International Honour Society
Dalhousie University has a participating chapter in the Golden Key International Society. The Golden Key Society is an academic honours society that recognizes the academic achievements of students. The society provides scholarships and leadership opportunities and career assistance to its student members. Students are invited to become members based upon criteria established by the society. For information please refer to the society’s website: www.GoldenKey.GSU.EDU.

1. Endowments or Annual Givings used by the University to Fund Students’ Scholarships
The following scholarships are administered by the Registrar’s Office. Unless otherwise noted, no application required.

The Astrazeneca Scholarship
This annual scholarship is awarded each year to a student enrolled in the fourth and final year of a BSc program with Honours in biology, biochemistry, or chemistry. Awards will be made on a rotational basis between the subject areas. The recipient will have achieved a high academic standing. Awarded by the Office of the Registrar. Application not required.

Marjorie Ball Scholarship
Marjorie Ball was born in Newfoundland in 1912 and attended Dalhousie University in 1934. This scholarship was established by a bequest from the Estate of Marjorie Ball to the Dalhousie University Alumni Association.
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. Hector McInnes.

The Jotham Blanchard Scholarship

The University received a generous bequest from the Estate of the late Jotham Blanchard. This fund has been allocated to undergraduate scholarships.

The Killam American Scholarship Fund

This endowment, established in memory of Isaac Walton Killam, provides undergraduate degree programs. Awarded based upon academic excellence. Automatic consideration.

The W. Andrew MacKay Alumni Scholarship Fund

To provide annual scholarships in memory of the late Dr. W. Andrew MacKay, a former president of the University. The scholarship is available to a student who has attained a high standard of academic achievement and who has completed a minimum of one year in undergraduate program.

The Mr. & Mrs. H.D. Howitt Scholarship Fund

A scholarship of $1000 is offered by T.Y. Lung in memory of Dharma Master Chuk Mor. This scholarship is available to a student who has attained a high standard of academic achievement and who has completed a minimum of one year in undergraduate program.

The Bryan F. Barr Scholarship

In her Will the late Mme F. Barridge bequeathed the residue of her estate to Dalhousie University. In 1945 the sum of $16,000 was endowed to provide undergraduate, usually in-course, scholarships.

The Mr. & Mrs. H.D. Howitt Scholarship

A one-year scholarship open to students registered in Year 4 or 5 of an undergraduate program. Selection is carried out by the Scholarship & Awards Committee of the Faculty of Engineering. Application required. Deadline: September 30.

The John L. and Glenna E. Teesse Scholarships

A bequest under the Will of the late Joseph Duncan Stewart has made possible the funding of undergraduate scholarships.

The George B. Robertson Phi Delta Theta Fraternity Scholarship

In memory of a Phi Delta Theta brother who had high academic standing and who has contributed to student life at the university. Apply to the Director of the School of Planning by March 20.

The Environova Scholarship

This $1000 scholarship is for a student entering fourth year of the Bachelor of Community Design honours program who has higher than average academic standing and has been actively involved in community service. Apply to the Director of the School of Planning by March 20.

The Harry Kite Fund

Interest from the fund, established in memory of the late Harry Kite, is used to support one or more students in Year 4 of the BEdS program to undertake supervised design and construction activities in the Halifax
Awards

The Medjuck Architectural Design Scholarship
The Medjuck Architectural Design Scholarship is awarded, in the first place, to a student in the Majors program (that is a student in the School of Architecture who is engaged solely in architectural design and not in any other discipline). The scholarship is awarded annually. Application not required.

The Newfoundland Association of Architects William J. Ryan Memorial Scholarship
This scholarship is awarded annually to a student in Architecture entering Year 3 of the BEDS program who was born and raised in Newfoundland or had lived in the province for a minimum of three years prior to enrolling at a university in the province, and who demonstrates: (a) the best design ability as it relates to the Atlantic region, and in particular to Newfoundland; (b) practicality of design and ability to show that he or she can make the solution workable; (c) aptitude for a particular or several aspects, other than design of architecture and the built environment; (d) an indication of the development of professional ability; (e) highest overall marks in classes of study other than design; (f) financial need, if candidate is equal to others in at least three of the other criteria. Application not required.

Newfoundland and Labrador Alumni Undergraduate Scholarship
This award of $1,000 was established by the St. John’s Newfoundland Alumni Branch to a student registered in Year 4 in Architecture, Planning, Computer Science, or Engineering. The scholarship is awarded primarily on the basis of the applicant’s academic record (first class mandatory) with preference given to students who were residents of Newfoundland and Labrador for at least an academic term. The selection committee may weigh other considerations in reaching a decision. Deadline: September 30.

President’s Associates (Entrance) Scholarship
The President’s Associates Entrance Scholarship has been made possible by members of the Associate’s Program (1994-96). The recipients represent business, industry, friends, faculty and university administrators. This award of $1,000 is made annually to a student in undergraduate Architecture, Planning, Computer Science or Engineering on the basis of their academic record. Candidates must have fulfilled or expect to fulfill the entrance requirements for the BEDS program in Architecture for entrance into third year of Engineering or Computer Science. Deadline: April 30.

The Shaw Group Environmental Design Scholarship
In the 1990s, The Shaw Group Limited established an award for the student in the School of Architecture who is considered to have derived the greatest benefit from Design classes during Year 3 of the Bachelor of Environmental Design Studies program. To be eligible for this $2,500 award, a student must have been born in, and have a permanent residence in, Atlantic Canada. The recipient is selected at the year-end review in April and receives the scholarship at the start of the next academic term in May. No application is required.

The Charles and Cecilia Zwerling Scholarship
This fund was created by members of the Zwerling family in memory of Mr. and Mrs. Charles Zwerling for a scholarship beyond first year. Application not required.

C. Faculty of Arts and Social Sciences

The Commodore Bruce S. Oland Scholarship
This 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 Constance MacFarlane Scholarship
The following scholarships are administered by the Registrar’s Office.

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
This fund was made possible by the oatmeal-making business of the late Allan Bevan. The scholarship is to be awarded to the student entering the 3rd or 4th year of the Majors program who fulfils or expects to fulfils the criteria for the award. Application not required.

The Constance MacFarlane Scholarship
This scholarship was established by the late Mrs. Constance MacFarlane to provide for a scholarship in Arts. Application not required.

The Commodore Bruce S. Oland Scholarship
An endowment fund has been established to provide a scholarship to a deserving student in the second or subsequent year of the Honours program in either biology or marine biology. Candidates must have completed at least one course in each of the disciplines. Application not required.

The Allan Pollok Scholarship
This scholarship was established by the North British Society in Halifax in memory of the Rev. Dr. Alan Pollok. The awardee will be the student, in second year in the College of Arts and Science at Dalhousie University, who stands highest in a class load of at least five full classes (or equivalent). Application not required.

The Stora Enso Port Hawkesbury Undergraduate Scholarship in Arts or Science
On the occasion of their 25th Anniversary Stora Enso have established an endowment fund to provide one undergraduate scholarship open to students in Arts & Science. To be eligible, candidates must reside in Nova Scotia, have demonstrated academic excellence and have exhibited a desire to learn. Students will be considered after one year at Dalhousie. Application not required.
The Archibald MacMechan Chapter/ODE Scholarships in English

This scholarship of about $1,800 was presented to Dalhousie University as an endowment by the Archibald MacMechan Chapter, Imperial Order Daughters of the Empire. It is awarded to a Dalhousian student of special ability in English, and preference is given to graduates who intended to study for a Master’s degree in English. Students registered at King’s are not eligible.

2. French

The French Department Scholarship

This scholarship is awarded to students entering the third or fourth year of a major or an Honours program, and who have spent a year studying in France. This award is based on merit or superior performance in French classes. At the discretion of the Department, the scholarship may also be awarded to outstanding students who have not studied abroad. This award is conferred at a Departmental ceremony in the Spring.

The Ruth Murray Scholarship for French Studies

An endowment fund has been established to honour the memory of Mrs. Ruth Murray by providing scholarships to students in the Department of French. These scholarships are open to undergraduate students who are academically sound and who are participating in a departmental program abroad.

At the discretion of the Department, the fund may also be used to provide financial assistance for on-campus students majoring in French who have demonstrated above average academic ability. This award is conferred at a Departmental ceremony in the Spring.

3. History

The George E. Wilson Memorial Scholarship

On the occasion of the 50th anniversary of the graduation of the Class of 1930, a representative announced the establishment of a scholarship fund. The scholarships, in honour of Professor Wilson, are open to students in history.

4. Music

The Bernoff/Garamie Memorial String Scholarship

A scholarship will be given to a student who is entering the third- or fourth-year of a music degree program in who in the opinion of the Department has demonstrated outstanding talent as a string player. The fund was established to honour the memory of two significant string music teachers, George Bernoff and Arthur Garamie.

The James and Abbie Campbell Memorial Scholarships and the James and Abbie Campbell/Department of Music Scholarships

The Undergraduate Scholarship Committee and the Department of Music make selections of winners for undergraduates. See entry under Entrance Awards.

Honourable L.D. Currie Memorial Scholarship in Music

The North British Society established this scholarship in memory of the Honourable L.D. Currie, a Justice of the Supreme Court of Canada. An annual scholarship of $1,000 will be awarded to a full-time student entering third year of the Bachelor of Music (Piano Performance) program or equivalent. If there are no eligible third-year students in a given year, consideration may be given to a fourth-year student. The scholarship may also be split into two awards. The recipient will have a cumulative grade point average of 3.7 or higher.

5. Spanish

Sonia Jones Scholarship

This scholarship is awarded annually to a student entering the final year of the Bachelor of Music major in Spanish. This award is conferred at a Departmental ceremony in the Spring.

6. Theatre

Costume Studies Scholarship

Awarded annually to a full-time student entering the final year of the Costume Studies Program.

Christina Zuck Scholarships

Three scholarships awarded annually to fourth-year students in each of the three streams of Theatre: Theatre Studies, Technical Scenography and Acting.

D. Faculty of Computer Science

Unless otherwise noted, selection for these awards is carried out by the Faculty of Engineering Scholarships & Awards Committee, augmented by representatives from Architecture and Computer Science. Application forms are available from the offices of the appropriate dean.

25th Anniversary Alumni Family Scholarship

The Engineering Alumni Association established this award in 1995 in recognition of the 25th 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, grandfather, niece or nephew, brother/sister) of an engineering graduate and have achieved satisfactory academic standing. Application required. Deadline: September 30.

Awards 545
Awards

546 Awards

Awards

Awards

The Bruce and Dorothy Rosetti Engineering Entrance Scholarships

The Bruce and Dorothy Rosetti bequest provides five $1,000 scholarships to candidates who have fulfilled or expect to fulfill the minimum entrance requirements for year three in an undergraduate program in the Faculties of Engineering & Computer Science. Application required. Deadline: April 30.

Bruce and Dorothy Rosetti Engineering Undergraduate Scholarships

The Bruce and Dorothy Rosetti bequest provides five $1,000 awards to undergraduate students in the penultimate year of an undergraduate program in Architecture and Planning, Computer Science, or Engineering. Selection is made on the basis of the applicant's academic record (first class mandatory) with preference given to students who were residents of Newfoundland and Labrador immediately prior to attending Dalhousie. Application required. Deadline: September 30.

The Walter Gardner Stanfield Entrance Scholarships

The Walter Gardner Stanfield bequest provides two awards valued at $1,750 is open to students registered in the penultimate or final undergraduate year of Computer Science, Architecture, Planning, or Engineering. Selection is carried out by the Scholarship & Awards Committee of the Faculty of Engineering. Application required. Deadline: September 30.

The Walter Gardner Stanfield (Entrance) Scholarship

The scholarship is awarded on the basis of the applicant's academic record at Dalhousie. Application required. Deadline: September 30.

The Bruce and Dorothy Rosetti Engineering Entrance Scholarships

The Bruce and Dorothy Rosetti bequest provides five $1,000 awards to undergraduate students in the penultimate year of an undergraduate program in Architecture and Planning, Computer Science, or Engineering. Selection is made on the basis of the applicant's academic record (first class mandatory) with preference given to students who were residents of Newfoundland and Labrador immediately prior to attending Dalhousie. Application required. Deadline: September 30.

The Walter Gardner Stanfield Entrance Scholarships

The Walter Gardner Stanfield bequest provides two awards valued at $1,750 is open to students registered in the penultimate or final undergraduate year of Computer Science, Architecture, Planning, or Engineering. Selection is carried out by the Scholarship & Awards Committee of the Faculty of Engineering. Application required. Deadline: September 30.

The Walter Gardner Stanfield (Entrance) Scholarship

The scholarship is awarded on the basis of the applicant's academic record at Dalhousie. Application required. Deadline: September 30.

The Bruce and Dorothy Rosetti Engineering Undergraduate Scholarships

The Bruce and Dorothy Rosetti bequest provides five $1,000 scholarships to candidates who have fulfilled or expect to fulfill the minimum entrance requirements for year three in an undergraduate program in the Faculties of Engineering & Computer Science. Application required. Deadline: April 30.

Bruce and Dorothy Rosetti Engineering Undergraduate Scholarships

The Bruce and Dorothy Rosetti bequest provides five $1,000 awards to undergraduate students in the penultimate year of an undergraduate program in Architecture and Planning, Computer Science, or Engineering. Selection is made on the basis of the applicant's academic record (first class mandatory) with preference given to students who were residents of Newfoundland and Labrador immediately prior to attending Dalhousie. Application required. Deadline: September 30.

The Walter Gardner Stanfield Entrance Scholarships

The Walter Gardner Stanfield bequest provides two awards valued at $1,750 is open to students registered in the penultimate or final undergraduate year of Computer Science, Architecture, Planning, or Engineering. Selection is carried out by the Scholarship & Awards Committee of the Faculty of Engineering. Application required. Deadline: September 30.

The Walter Gardner Stanfield (Entrance) Scholarship

The scholarship is awarded on the basis of the applicant's academic record at Dalhousie. Application required. Deadline: September 30.

The Bruce and Dorothy Rosetti Engineering Undergraduate Scholarships

The Bruce and Dorothy Rosetti bequest provides five $1,000 scholarships to candidates who have fulfilled or expect to fulfill the minimum entrance requirements for year three in an undergraduate program in the Faculties of Engineering & Computer Science. Application required. Deadline: April 30.

Bruce and Dorothy Rosetti Engineering Undergraduate Scholarships

The Bruce and Dorothy Rosetti bequest provides five $1,000 awards to undergraduate students in the penultimate year of an undergraduate program in Architecture and Planning, Computer Science, or Engineering. Selection is made on the basis of the applicant's academic record (first class mandatory) with preference given to students who were residents of Newfoundland and Labrador immediately prior to attending Dalhousie. Application required. Deadline: September 30.

The Walter Gardner Stanfield Entrance Scholarships

The Walter Gardner Stanfield bequest provides two awards valued at $1,750 is open to students registered in the penultimate or final undergraduate year of Computer Science, Architecture, Planning, or Engineering. Selection is carried out by the Scholarship & Awards Committee of the Faculty of Engineering. Application required. Deadline: September 30.

The Walter Gardner Stanfield (Entrance) Scholarship

The scholarship is awarded on the basis of the applicant's academic record at Dalhousie. Application required. Deadline: September 30.

The Bruce and Dorothy Rosetti Engineering Undergraduate Scholarships

The Bruce and Dorothy Rosetti bequest provides five $1,000 scholarships to candidates who have fulfilled or expect to fulfill the minimum entrance requirements for year three in an undergraduate program in the Faculties of Engineering & Computer Science. Application required. Deadline: April 30.
The Dr. Alan E. Cameron Scholarship
An anonymous donor established this award of $1,000 for students registered in the Senior Year of the Faculty of Engineering. The award is based primarily on the academic record of the applicant during the Junior Year, but will also take into account the personality, leadership ability and financial need of the applicant. Application required. Deadline: September 30.

CRLC Limited, Consulting Engineers’ Scholarship
CRLC Limited, Consulting Engineers established this award valued at $2,000. Eligible students are registered in fourth or fifth year of Civil, Industrial, Mechanical or Electrical Engineering programs in the Faculty of Engineering. The Scholarship is awarded primarily on the basis of the student’s academic record. Other factors such as personality, initiative, community involvement, other awards held by the applicant, etc. may also weigh in the decision. Application required. Deadline: September 30.

The Dr. H.W.L. Doane, F.E.I.C. Scholarship
Nova Scotia Power Inc. established this scholarship valued at $400 in 1981 in recognition of dedicated service rendered by Dr. Doane as a member of the Nova Scotia Power’s Board of Directors from 1953 to 1981. A distinguished engineer, Dr. Doane graduated from Dalhousie in 1913, was invested as an Honorary Doctor in 1957, was presented with the Dexter Memorial Award in 1964, and was a honorary president of the University’s Alumni Association. Eligible students are Nova Scotia students registered in the senior year of Civil Engineering. Basis is academic achievement, leadership abilities and qualities of personality and character. Application required. Deadline: September 30.

The Electrical and Computer Engineering Faculty Scholarship
Faculty Members of the Department of Computer and Electrical Engineering established this award of $1,000. Candidates must have fulfilled or expect to fulfill the minimum entrance requirements into third year of an undergraduate program in the Faculty of Engineering in Electrical and Computer Engineering. Selection is carried out by Scholarship & Awards Committee of the Faculty of Engineering on the recommendation of the Electrical and Computer Engineering Department. Application required. Deadline: April 30.

Exxon Mobil Canada Ltd. Undergraduate Scholarships
Exxon Mobil Canada Ltd. established scholarships of $2,000 each. Eligible students are to be registered in the Senior Year of the Faculty of Engineering. Preference will be given to Canadian citizens or landed immigrants. The award is based on the academic record of the applicant at Dalhousie University. Application required. Deadline: September 30.

Faculty of Engineering Scholarships
Five awards valued at $500 each are open to students entering third year of an engineering program. The awards are made on the basis of the student’s academic record at Dalhousie University. Application required. Deadline: April 30.

Fairey Canada Scholarship
Fairey Canada Ltd. established this award of $500. Eligible students are registered in year four of Mechanical Engineering. The award is based on the academic record of the applicant and the financial need. Preference will be given to a native of the Atlantic Provinces; applicants are required to have an interest in some aspect of aviation. Application required. Deadline: September 30.

David F. Fanning Scholarship
This award of $1,000 was established in memory of David F. Fanning by his family and fellow members of the Civil Engineering class of 1980. Eligible students are Canadian students registered in the penultimate year of the Civil Engineering program. The scholarship is awarded on the basis of the student’s academic record at Dalhousie. Preference will be given to a student who has displayed an interest in mathematical modelling and finite element analysis of structures. Application required. Deadline: September 30.

M. Roy Foran Scholarship
Dr. M. Roy Foran, Dean Emeritus of the Nova Scotia Technical College and Professor Emeritus of Chemical Engineering, began his career at Dalhousie as Assistant Professor of Chemistry in 1944. Three years later, he joined the Nova Scotia Technical College as one of the founding members of the Chemical Engineering Department. He served as Department Head for 20 years and then as Dean of Graduate Studies, a post he held until 1974. Dr. Foran was a long time Registrar of the Nova Scotia Technical College, a position he held until his retirement in 1977. Under the Will of the late M. Roy Foran, the University received an endowment which provides an annual scholarship for a student enrolled in their final year of the Chemical Engineering program with exceptional academic standing. Application required. Deadline: September 30.

Marc Garneau, P.Eng. Scholarship
The Association of Professional Engineers of Nova Scotia (APENS) established two awards of $2,000 each to commemorate the journey of the first Canadian astronaut, Marc Garneau, into space on October 5, 1984. Dr. Garneau is an honorary member of APENS and has promised to support the Association by carrying its insignia on this historic flight. Eligible students are Nova Scotia students registered in the fourth and fifth years of an undergraduate engineering program in the Faculty of Engineering. The scholarship is awarded on the basis of the applicant’s academic record at Dalhousie University. While academic excellence will be the primary criterion for the award, the Selection Committee may also weigh other considerations in reaching a decision. Application required. Deadline: September 30.

The James L. Hall Scholarship in Earth Sciences
This scholarship is awarded on the joint recommendation of the Faculty of Engineering and the Department of Earth Sciences, to a student who has completed his/her first year, who is planning a career in the field of Mining Geology. The scholarship alternates between Engineering and Earth Sciences. Application not required.

Industrial Engineering Entrance Scholarships
Up to five scholarships, established by the Department of Industrial Engineering, in the amount of up to $2000, will be awarded to top-ranked students applying to Industrial Engineering. All students who are accepted for entry to the Industrial Engineering program at the end of year one or year two, are eligible. Payment is applied to the student’s first academic term in the upper division (year three, term five). Awards are based primarily on the academic records submitted for entry into the Industrial Engineering program and no application is required.

An additional scholarship of $1,000 is awarded to a student entering Dalhousie who has selected the Industrial Engineering program and who has achieved a high academic standing within his/her prior university-studies. Participation in extracurricular activities will also be given consideration. Candidates must have fulfilled or expect to fulfill the minimum entrance requirements into third year for the undergraduate program in the Faculty of Engineering. Application required. Deadline: April 30.

The John J. Jodrey Scholarship
John J. Jodrey established this award valued at $2,000. Eligible students are Atlantic Canadian students registered in the penultimate year of an Engineering program. The scholarship is awarded on the basis of the applicant’s academic record at Dalhousie University. Application required. Deadline: September 30.

The Percy Bertram Jollota Scholarships
From the Estate of Jean. Minerva Jollota came a bequest, the annual income of which is to be used to provide scholarships in memory of her late husband, Percy Bertram Jollota. The awards must be engaged in studies in engineering or physics. Application not required.

John R. Kaye Memorial Scholarship
In 1981 a scholarship was established in memory of Mr. John R. Kaye, a notable engineer who served as Chairman of the Board at the Technical University of Nova Scotia, and received an honorary doctorate degree in 1984. This scholarship is to provide financial assistance to an engineering student who is a native-born Nova Scotian, and well-rounded individual. The successful candidate will be among those who have fulfilled the requirements for promotion from Year 1 to Year 2 in the Dalhousie Faculty of Engineering. 5/ he/she will be academically sound and will have demonstrated motivation, diligence, and promise in succeeding and being a credit to the engineering profession. Application not required.

Awards 547
Awards

J. Douglas Kline Memorial Scholarship
The Halifax Water Commission established this award of $2,500. Eligible students are Nova Scotia students registered in the final year of the undergraduate Civil Engineering program in the Faculty of Engineering. The applicant must be involved in water-related studies in Civil Engineering. The scholarship is awarded on the basis of the applicant's record at Dalhousie University. While academic excellence will be the primary criterion for the award, the selection committee may also weigh other considerations in reaching a decision. Application required. Deadline: September 30.

John Frederick Kendall Engineering Scholarship
An endowment of $6,000 has been established to honour the memory of J.F. Kendall, a graduate electrical engineer from Dalhousie and Nova Scotia Technical College. The scholarship is awarded to a male Dalhousie engineering student who was born in Nova Scotia and attended schools in Nova Scotia. The successful candidate will be among those who have fulfilled the requirements for promotion from Year II to Year III in the Dalhousie Faculty of Engineering. The recipient must have achieved excellent academic standing and demonstrated significant improvement from the first to second year of the engineering degree program. Application not required.

The Donald MacFadden Memorial Scholarship
The Mining Society of Nova Scotia has established this award of $500. Eligible students are registered in the Junior Year of the Faculty of Engineering. The award is made on the basis of merit and need, with preference given to students enrolled in the programs of Mining and Materials Engineering. Application required. Deadline: September 30.

Dr. G. David MacKay Scholarship
Dr. G. David MacKay received both his Bachelor of Engineering and his Master's degree in Engineering from the Nova Scotia Technical College in 1955 and 1959, respectively. He then went on to complete his PhD in Chemical Engineering from McGill University in 1962. He returned to the Nova Scotia Technical College in 1969 where he taught for 30 years. During this time he served as Department Head for 11 years (1969-79), founded the Centre for Energy Studies, was its Director from 1978-87 and served on numerous committees. He was named Professor Emeritus of the Technical University of Nova Scotia in 1994. This endowment provides one or more scholarships to third-year students who are entering a Upper Division (BEng) Chemical Engineering. Application required. Deadline: April 30.

The Dr. S.K. Malhotra Scholarship
The $1,500 scholarship was established by his family and friends in memory of Dr. S.K. Malhotra, former Dean of Graduate Studies and Professor of Civil Engineering at Dalhousie from 1965 to 1990. Eligible students are registered in the penultimate academic study term of the Civil Engineering Program of the Faculty of Engineering. The scholarship is awarded on the basis of the applicant's academic record at Dalhousie University. Preference will be given to a student who had displayed an interest in structural engineering. Application required. Deadline: September 30.

The Maple Leaf Foods Scholarship
This Scholarship was established by Maple Leaf Foods for students entering the program of studies leading to the degree of Bachelor of Applied Science (Food Science) within the Faculty of Engineering. It is intended for candidates entering in either first or second year of the program. The scholarships will be awarded in the amount of $2,500 per annum. Applications should be made through the office of the Associate Dean of Engineering, Undergraduate Studies, Sexton Campus. Application required. Deadline: April 30.

NACE International "The Corrosion Society" Atlantic Canada Scholarship
This award, valued at $500, has been established by NACE International and is awarded to the student with the highest academic achievement in the course "Corrosion an Degradation of Materials" or an undergraduate student who receives top marks in a corrosion-related research project or lab experiment project. The winner is expected to meet the local NACE International Section members and encouraged to become a student member with the initial membership dues covered by the membership. Deadline: September 30.

The Maritime and Northeast Pipeline Legacy Scholarship
Two scholarships, in the amount of $2,500 each, are awarded annually to students entering the third year (Upper Division) of the BEng program at Dalhousie. Preference will be given to students from the Atlantic Provinces, the first studying with a concentration in Environmental Engineering, the second studying either Chemical Engineering, or 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 fulfills or is expected to fulfill the minimum entrance requirements for admission to the BEng program in Architecture, or Year Three of the Bachelor of Chemical Science or Engineering. The Scholarship is awarded on the basis of the applicant's academic record at the Associated University or Dalhousie University. The Committee may also weigh financial and other consideration in reaching a decision. Application required. Deadline: April 30.

Gordon C. McCausland Scholarship
Mrs. Elizabeth C. McCausland established this award of $1,000. Eligible candidates must have fulfilled or expect to fulfill the minimum entrance requirements into third year of the undergraduate Civil Engineering program in the Faculty of Engineering. The award is made on the basis of the applicant's academic record at the Associated University or Dalhousie. Selection is carried out by the Scholarships & Awards Committee of the Faculty of Engineering in the recommendation of the Chair of the Civil Engineering program. Application required. Deadline: April 30.

The Materials Engineering Faculty Scholarship
The Materials Faculty Members of the former Department of Mining and Metallurgical Engineering established this award of $3,000. Eligible candidates must have fulfilled or expect to fulfill the minimum entrance requirements into third year of an undergraduate program in the Faculty of Engineering in the field of Materials Engineering. Application required. Deadline: April 30.

Minas Basin Pulp and Power Company Limited Scholarships
The Minas Basin Pulp and Power Company Limited established three awards of $1,000 each. Eligible candidates must have fulfilled or expect to fulfill the minimum entrance requirements into year three of an engineering undergraduate program in the Faculty of Engineering. The award is made on the basis of the applicant's academic record. The Committee may also weigh financial and other consideration in reaching a decision. Application required. Deadline: September 30.

The George Geoffrey Meyerhof Scholarship
Dr. George Geoffrey Meyerhof established this award of $1,000. Eligible students are registered in the Senior Year of Civil Engineering in the Faculty of Engineering. The award is based primarily on the academic record of the applicant during the Junior year, but will also take into account personality and leadership ability. A letter of nomination or application should convey the reasons the nominee or applicant is deemed worthy of the award. Selection will be carried out by the Scholarships & Awards Committee of the Faculty of Engineering in consultation with the Chair of the Civil Engineering program. Application required. Deadline: September 30.

Mineral Resource Engineering Entrance Scholarship
This scholarship was established by the Mining Engineering graduates. Every year several scholarships of up to $1,500 each are available to Mineral Resource Engineering students entering their third year of study at Dalhousie University. The recipients will primarily be selected on the basis of academic standing. Students in good academic standing with proven financial need will also be considered. Deadline: April 30.

Gow Namak Scholarship
Dr. and Mrs. D.S. Chinn established this scholarship to encourage black Nova Scotia students to qualify for admission and complete the engineering degree at Dalhousie. This award of $2,000, is to be held for up to three years or more, subject to maintenance of an acceptable academic performance.
The scholarship in honour of Dr. Douglas G. Pincock. The award will be given to a student entering the third year Electrical & Computer Engineering specializing in Electrical Engineering. In addition to academic achievement, the student must have demonstrated extra curricular involvement in athletics, fine arts, student activities or volunteer work. Application required. Deadline: April 30.

**Positron Engineering Scholarship**
Positron Industries, Inc. established this award of $2,500. Eligible students are registered in the penultimate year of an Electrical and Computer Engineering program in the Faculty of Engineering. The Scholarship is awarded primarily on the basis of the applicant's academic record. Application required. Deadline: September 30.

**Bruce and Dorothy Rosetti Engineering Undergraduate Scholarships**
The Bruce and Dorothy Rosetti scholarship open to a third or fourth year Engineering student who has maintained an interest in the basic or the arts. Application required. Deadline: September 30.

**Newfoundland and Labrador Alumni Undergraduate Scholarship**
This award, $2,000, was established by the St. John's Newfoundland Alumni Branch. The Selection Committee may weigh other criteria along with the above stated. The scholarship is awarded primarily on the basis of the applicant's academic record. Application required. Deadline: September 30.

**Bruce and Dorothy Rosetti Engineering Undergraduate Scholarships**
The Bruce and Dorothy Rosetti scholarship open to a third or fourth year Engineering student who has maintained an interest in the basic or the arts. Application required. Deadline: September 30.

**Positron Engineering Scholarship**
Positron Industries, Inc. established this award of $2,500. Eligible students are registered in the penultimate year of an Electrical and Computer Engineering program in the Faculty of Engineering. The Scholarship is awarded primarily on the basis of the applicant's academic record. Application required. Deadline: September 30.

**Positron Engineering Scholarship**
Positron Industries, Inc. has also established another scholarship of $2,500 for one year. Eligible students are registered in the Bachelor of Electrical Engineering, or Electrical and Computer Engineering. The scholarship is awarded on the basis of the applicant's academic standing of at least 'A' in relevant classes among communications, electronics or computer engineering. Application required. Deadline: September 30.

**President's Associates Scholarship**
The President's Associates Scholarship has been made possible by the generosity of the President's Associates (1994-96). The members represent business, industry, friends, faculty and university administrators. This award of $1,000 is made annually to a student in undergraduate Architecture, Planning, Computer Science or Engineering on the basis of the academic record. Candidates must have fulfilled or expect to fulfill the entrance requirements for an undergraduate degree program in Architecture or for entrance into third year of Engineering or Computer Science. Application required. Deadline: April 30.

**Dr. Edward (Ted) Rhodes Scholarship in Engineering**
Dr. Edward Rhodes, former President of the Technical University of Nova Scotia and former Principal of DalTech has established an annual scholarship open to a student entering the third year Electrical & Computer Engineering. The scholarship is awarded on the basis of the applicant's academic record. Application required. Deadline: September 30.

**Bruce and Dorothy Rosetti Engineering Undergraduate Scholarships**
The Bruce and Dorothy Rosetti scholarship open to a third or fourth year Engineering student who has maintained an interest in the basic or the arts. Application required. Deadline: September 30.

**Newfoundland and Labrador Alumni Undergraduate Scholarship**
This award, $2,000, was established by the St. John's Newfoundland Alumni Branch. The Selection Committee may weigh other criteria along with the above stated. The scholarship is awarded primarily on the basis of the applicant's academic record. Application required. Deadline: September 30.

**Bruce and Dorothy Rosetti Engineering Undergraduate Scholarships**
The Bruce and Dorothy Rosetti scholarship open to a third or fourth year Engineering student who has maintained an interest in the basic or the arts. Application required. Deadline: September 30.

**Newfoundland and Labrador Alumni Undergraduate Scholarship**
This award, $2,000, was established by the St. John's Newfoundland Alumni Branch. The Selection Committee may weigh other criteria along with the above stated. The scholarship is awarded primarily on the basis of the applicant's academic record. Application required. Deadline: September 30.

**Bruce and Dorothy Rosetti Engineering Undergraduate Scholarships**
The Bruce and Dorothy Rosetti scholarship open to a third or fourth year Engineering student who has maintained an interest in the basic or the arts. Application required. Deadline: September 30.

**Newfoundland and Labrador Alumni Undergraduate Scholarship**
This award, $2,000, was established by the St. John's Newfoundland Alumni Branch. The Selection Committee may weigh other criteria along with the above stated. The scholarship is awarded primarily on the basis of the applicant's academic record. Application required. Deadline: September 30.

**Bruce and Dorothy Rosetti Engineering Undergraduate Scholarships**
The Bruce and Dorothy Rosetti scholarship open to a third or fourth year Engineering student who has maintained an interest in the basic or the arts. Application required. Deadline: September 30.

**Newfoundland and Labrador Alumni Undergraduate Scholarship**
This award, $2,000, was established by the St. John's Newfoundland Alumni Branch. The Selection Committee may weigh other criteria along with the above stated. The scholarship is awarded primarily on the basis of the applicant's academic record. Application required. Deadline: September 30.

**Bruce and Dorothy Rosetti Engineering Undergraduate Scholarships**
The Bruce and Dorothy Rosetti scholarship open to a third or fourth year Engineering student who has maintained an interest in the basic or the arts. Application required. Deadline: September 30.

**Newfoundland and Labrador Alumni Undergraduate Scholarship**
This award, $2,000, was established by the St. John's Newfoundland Alumni Branch. The Selection Committee may weigh other criteria along with the above stated. The scholarship is awarded primarily on the basis of the applicant's academic record. Application required. Deadline: September 30.

**Bruce and Dorothy Rosetti Engineering Undergraduate Scholarships**
The Bruce and Dorothy Rosetti scholarship open to a third or fourth year Engineering student who has maintained an interest in the basic or the arts. Application required. Deadline: September 30.
Awards

550 Awards

F. Faculty of Health Professions

Unless otherwise noted, applicants for these awards should consult the department directly for details regarding application processes and deadlines.

1. School of Health and Human Performance

Walter Gardner Stanfield Scholarships
This scholarship is awarded annually to a student(s) entering the Bachelor of Science (Nursing). First preference will be given to mature students and to Aboriginal peoples (specifically members of the Mi’kmaw community). Contact the School of Nursing for further details.

2. College of Pharmacy

Sanofi Aventis Scholarship in Pharmacy
This scholarship is awarded annually to a student entering the second year of an undergraduate engineering program in the Faculty of Engineering. Application not required. Deadline: September 30.

3. School of Nursing

Evelyn Negus Scholarship in Nursing
This scholarship is awarded annually to a student entering the Bachelor of Science (Nursing). First preference will be given to mature students and to Aboriginal peoples (specifically members of the Mi’kmaw community). Contact the School of Nursing for further details.

Endowment of funds by the late M. Caroline Prince for the benefit of the School of Social Work provides for the award of one scholarship 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.

Contact the School of Social Work for further details.

M. Caroline Prince Scholarship
An endowed scholarship by the late M. Caroline Prince for the benefit of the School of Social Work provides for the award of one scholarship 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.

Contact the School of Social Work for further details.

Clement Legare Scholarship
Endowment of funds by the late M. Caroline Prince for the benefit of the School of Social Work provides for the award of one scholarship 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.

Contact the School of Social Work for further details.

F. Faculty of Health Professions

Unless otherwise noted, applicants for these awards should consult the department directly for details regarding application processes and deadlines.

1. School of Health and Human Performance

Walter Gardner Stanfield Scholarships
This scholarship is awarded annually to a student(s) entering the Bachelor of Science (Nursing). First preference will be given to mature students and to Aboriginal peoples (specifically members of the Mi’kmaw community). Contact the School of Nursing for further details.

2. College of Pharmacy

Sanofi Aventis Scholarship in Pharmacy
This scholarship is awarded annually to a student entering the second year of an undergraduate engineering program in the Faculty of Engineering. Application not required. Deadline: September 30.

3. School of Nursing

Evelyn Negus Scholarship in Nursing
This scholarship is awarded annually to a student entering the Bachelor of Science (Nursing). First preference will be given to mature students and to Aboriginal peoples (specifically members of the Mi’kmaw community). Contact the School of Nursing for further details.

Endowment of funds by the late M. Caroline Prince for the benefit of the School of Social Work provides for the award of one scholarship 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.

Contact the School of Social Work for further details.

M. Caroline Prince Scholarship
An endowed scholarship by the late M. Caroline Prince for the benefit of the School of Social Work provides for the award of one scholarship 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.

Contact the School of Social Work for further details.

Clement Legare Scholarship
Endowment of funds by the late M. Caroline Prince for the benefit of the School of Social Work provides for the award of one scholarship 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.

Contact the School of Social Work for further details.
G. Faculty of Management

Unless otherwise stated, these scholarships are administered by the academic unit. Please consult the departments directly for details.

Acadian Lines Limited Scholarship
Acadian Lines Limited has established a fund to provide a scholarship to a student, beyond first year, who has demonstrated superior academic performance in the preceding year(s) of the commerce program and, who has demonstrated outstanding leadership in the University’s program of intercollegiate athletics.

The Wilfred Berman Scholarship
A scholarship is offered to the student in Commerce who, at the end of year two, has attained the highest average mark in COMM 2101, 2102, 2105. The fund for this scholarship was provided by friends and colleagues of the late Professor Berman. Application is not required.

Centre for International Business Studies Fourth Year Undergraduate Scholarship
One Scholarship of $2,000 is offered to a fourth year Commerce student majoring in International Business. Application required.

The Eaton Foundation Scholarship in Business Studies
A scholarship will be awarded annually to a student entering fourth year in the Commerce program who has the highest average mark in Introduction to Marketing, Buyer Behaviour, and Marketing Research, and who has demonstrated high academic standing throughout his or her previous years of study. The award was established by the Eaton Foundation, a philanthropic organization dedicated to supporting the arts, education, health, and social services across Canada with the generous support of the T. Eaton Co. Limited and Mr. John David Eaton. Application not required.

Ernst and Young Scholarship
A scholarship of $500 will be awarded to a third year student in Commerce who has obtained a high standing on the basis of his/her average marks for a full year’s class, of which one class must be in accounting. Application not required.

Export Development Canada Scholarship in International Studies
A $3,000 scholarship awarded by the Centre for International Business Studies to a student entering the third year of the Commerce program majoring in International Business. A work term at EDC in Ottawa is also part of the scholarship. Application is required by department.

Stewart Lockie Gibson Scholarship in Commerce
Several scholarships of varying amounts will be awarded annually to third- and fourth-year students of scholarship standing and good character who are proceeding to a degree in Commerce. Application not required. Awarded automatically by the Registrar's Office.

The Carl Mushkat Memorial Scholarships
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 L.A. DeWolfe Memorial Scholarship
A scholarship has been established by the T. Eaton Co. Limited in support of the T. Eaton Co. Limited Scholarship for Nova Scotia students majoring in International Business. Application not required.

The Sagavanirktok Group Award for Entrepreneurship
This is an annual award designed to encourage entrepreneurship among Bachelor of Commerce students who have completed at least 2 full years. Its intent is to fund a business start-up, and selection will be based on assessed viability of the proposed business and demonstrated commitment and ability of the student. Application required by academic department.

Ronald G. Smith Scholarship
This scholarship was established in recognition of the distinguished service rendered by Ronald G. Smith. An amount of $400 will be awarded to a Nova Scotia student entering the fourth year of the Bachelor of Commerce program based upon academic achievement, leadership ability and qualities of personality and character. Application not required.

H. Faculty of Science

These scholarships are administered by the Office of the Registrar.

AstraZeneca Scholarship
This annual scholarship is awarded each year to a student enrolled in the fourth and final year of a BSc program with Honours in biology, biochemistry, or chemistry. Awards will be made on a rotational basis between the subject areas. The recipient will have achieved a high academic standing. Awarded by the Office of the Registrar. Application not required.

The L.A. DeVille Memorial Scholarship
A fund has been established under the Will of the late Dr. L.A. DeVille to provide undergraduate scholarships in Mathematics or Science. Application not required.

The Percy Berton Jollota Scholarships
A fund has been established by the late Mrs. Jollota in memory of her late husband, Percy Berton Jollota. The awards will be made on a rotational basis between the subject areas. The recipient will have achieved a high academic standing. Awarded by the Office of the Registrar. Application not required.

The Carl Mushkat Memorial Scholarships
A fund has been established in memory of Mr. Carl Mushkat, a noted businessman and philanthropist, to provide scholarships to students in Mathematics or Science. Application not required.

Betty Spencer Scholarship
Betty Spencer was born in Saint John, New Brunswick in 1916. She graduated from Saint John Vocational School and worked for a time at Watson’s Pharmacy where she met her husband. They retired in Bangor, Maine and later in St. Andrews, New Brunswick. Although Betty had no specific connection to Dalhousie, she generously bequeathed this
endowment through her Will. Preference is given to students from the Atlantic provinces and recipients cannot hold other Dalhousie scholarships or bursaries. Application not required.

The Ross Stewart Smith Scholarships
A significant bequest established these memorial scholarships for students who excel in the sciences or mathematics. Application not required.

The following scholarships are administered by the academic unit. Please consult the departments directly for details.

1. Biology

Hugh P. Bell Scholarship in Biology
In 1968 the Class of 1928 established the H.P. Bell Fund to provide one or more annual scholarships. Each year the Biology Department will select the most promising honours biology student third year. That student shall hold the Hugh P. Bell Scholarship in the fourth year of the honours program.

The Sarah M. Lawson Scholarships in Botany
At the discretion of the Honours Undergraduate Awards Committee of the Department of Biology, the University may offer scholarships to students who have shown special ability in botany. This award is open to students at Dalhousie University or the University of King’s College, and is given to support summer or fall (for Co-op students) research projects in botany at either the undergraduate or graduate level.

Lorne O.L. Titus Scholarship
Four scholarships are available to full-time students majoring in Biology, Math and Physics with the highest cumulative GPA’s. Students must be in their second, third or fourth year of studies.

2. Chemistry

Belle Crewse Scholarship
This Scholarship was established in 1944 in accordance with a gift from the estate of Miss Belle Crewse, a student at Dalhousie University in 1895/96. This Scholarship is awarded to a Major or Honours degree Chemistry student on the basis of academic standing and demonstrated proficiency in chemistry and has been accepted into a graduate program to study inorganic chemistry.

The E. Walter Todd Scholarship
A bequest from the Estate of Mabel E. Todd in 1958 established a fund to provide a scholarship (and inscribed vial) in memory of her brother, E. Walter Todd, who was for many years a member of the Department.

Norbert Walter Memorial Scholarship
Established in memory of Norbert Wolter, this Scholarship is awarded to a student enrolled in Chemistry within the Faculty of Science.

3. Earth Sciences

J. Ewart Blanchard Memorial Scholarship
This Scholarship was established in memory of Dr. J. Ewart Blanchard 1921 - 2003. Dr. Blanchard was an early physics pioneer in Nova Scotia. He was the first geophysicist appointed to Dalhousie’s Physics Department and received an Honorary Degree from Dalhousie in 2000.

One or more scholarships will be awarded each fall to students enrolled in the degree programs of either the Department of Physics and Atmospheric Science or the Department of Earth Sciences who have achieved academic excellence and best exemplifies the qualities of initiative, experimental skill, leadership and enthusiasm for Geophysics.

Canadian Institute of Mining and Metallurgy Earth Science Scholarship for New Brunswick Students
Awarded to a student entering second or subsequent year in an earth science discipline. Applicants must have been at New Brunswick or resided in New Brunswick for seven years, or have his/her immediate family reside in that province.

Canadian Society of Exploration Geophysicists Scholarship
This scholarship is available to a student applicant who is pursuing a course of studies directed toward a career in exploration geophysics in industry, teaching or research.

Chamber of Mineral Resources of Nova Scotia Scholarship
Senior students from Acadia University, Dalhousie University, St. Francis Xavier University or Saint Mary’s University in a geology or mining-related bachelor degree program are considered for this scholarship. Selection is based upon the student’s contribution to the development of the province's mineral resources sector as well as scholastic achievement.

The James L. Hall Scholarship in Earth Sciences
This scholarship is awarded on the joint recommendation of the Faculty of Engineering and the Department of Earth Sciences, to a student who has completed his/her first year, who is planning on a career in the field of Mining Geology. The scholarship alternates between Earth Sciences and Engineering.

4. Economics

Professor W. Russell Macwell Memorial Scholarship
Friends and colleagues of Professor Macwell have established a fund to provide scholarships to outstanding students entering the second, third or fourth year of the General Degree or Honours Degree program in Economics. Preference will be given to candidates entering the fourth year of the Honours program.

5. Environmental Programs

Art and Dorothy Cooke Memorial Research Scholarship
Their daughter Janet Jericho and Susan Miskich established this Scholarship in memory of Art and Dorothy Cooke. Art and Dorothy both attended Dalhousie University in the 1930s, taking degrees in English. They then lived near Dalhousie most of their lives, their children attended Dalhousie and Dorothy became University Librarian. This Scholarship will be awarded to a full-time student entering their fourth year in an Honours or Combined Honours in Environmental Science whose Honours thesis research proposal is judged to be of strong merit.

6. Marine Biology

Venoco Scholarship in Marine Biology
This Scholarship of $2,500 is awarded to a student entering their final year of Marine Biology. The recipient will have demonstrated significant academic achievement and also extra curricular involvement including athletics, fine arts, student body involvement and/or volunteer work in the community.

7. Mathematics and Statistics

The Ralph and Frances Lewis Jeffrey Scholarship
From the Estate of Frances E. Jeffery came a bequest in 1979 to endow a scholarship which is to be awarded to a student who has completed the final year of an honours degree in Mathematics, and who has maintained at least a second class standing during the first three years of the class.

Lorne O.L. Titus Scholarship
Four scholarships are available to full-time students majoring in Biology, Math and Physics with the highest cumulative GPA’s. Students must be in their second, third or fourth year of studies.

8. Physics and Atmospheric Science

J. Ewart Blanchard Memorial Scholarship
This Scholarship was established in memory of Dr. J. Ewart Blanchard 1921 - 2003. Dr. Blanchard was an early physics pioneer in Nova Scotia. He was the first geophysicist appointed in Dalhousie’s Physics Department and received an Honorary Degree from Dalhousie in 2000.

One or more scholarships will be awarded each fall to students enrolled in the degree programs of either the Department of Physics and Atmospheric Science or the Department of Earth Sciences who have achieved academic excellence and best exemplifies the qualities of initiative, experimental skill, leadership and enthusiasm for Geophysics.
Athletics.

Applications for the following awards are available at the Department of Athletics. Entering candidates must have an average of 80% or higher. Dalhousie with a minimum GPA of 2.0 in three full year classes or the equivalent. Entering students must have been a full time student for at least two semesters in an academic year at Dalhousie University who has exhibited the most outstanding qualities of citizenship, service and attributes in the areas of citizenship, sportsmanship and community service.

Awards

The Black and Gold Awards

One or more Scholarships will be awarded to entering or continuing student athletes on Dalhousie men’s volleyball team.

The Annie L. Beer Prize

Under the will of the late Mrs. Thomas (Annie L.) Beer of Charlottetown a bequest was established at Dalhousie University. The net income from the fund provides for a prize which is to be awarded to the youngest student from Prince Edward Island who enters this University in each year. The Office of the Registrar selects and notifies the winner.

Black and Gold Awards

Each year the Dalhousie Black and Gold Club funds a number of awards that recognize outstanding student athletes and the contribution they make to university life. Returning students must have been a full time student for at least two semesters in an academic year at Dalhousie with a minimum GPA of 2.0 in three full year classes or the equivalent. Entering candidates must have an average of 80% or higher. Participation on a varsity team is a requirement. Applicants should apply through the head coach of their respective varsity teams. Eligibility is verified by the Registrar’s Office.

IV. Prizes, Medals, and Awards

Unless otherwise noted, the following awards are administered by the academic unit or the Department of Athletics.

A. General - All Faculties

The Alumni Association Medal

The Sexton Campus Alumni Association provides a medal which is awarded at Convocation each year to the graduating student in the University’s volleyball team.

The Honourable W.H. Dennis Memorial Prizes for Literary Compositions in English

Two Prizes known as the Joseph Howe Prizes are offered each year. First prize ($200), second prize ($100), for a poem or collection of poems of any length greater than one hundred lines. Two prizes known as the James DeMille Prizes are offered each year, one of $100 for an essay, the other of $50 for a prose short story. Contact the Department of English for details.

1. Candidates for these prizes must be registered full-time undergraduate or graduate students at Dalhousie University.
2. Three copies of each composition must be sent in by the competitor.
3. Candidates submitting more than one prose entry must use the same pseudonym for each; different pseudonyms may be used for the Joseph Howe Prize or for the James DeMille Prize, as the case may be.
4. The envelope shall contain in typewriting the pseudonym, the titles of the entries and the candidate’s full name and address.
5. Entries must reach the Department of English on the deadline.

2. MacRae Scholarships

The Dr. Donald M. MacRae Basketball Scholarships were established by the late Dr. Donald M. MacRae to recognize the important roles played by the captains of the Dalhousie men and women’s basketball teams. These awards recognize three generations of the MacRae family who played for the Tigers including Dr. MacRae.

The Annie L. Beer Prize

Under the will of the late Mrs. Thomas (Annie L.) Beer of Charlottetown a bequest was established at Dalhousie University. The net income from the fund provides for a prize which is to be awarded to the youngest student from Prince Edward Island who enters this University in each year. The Office of the Registrar selects and notifies the winner.

Black and Gold Awards

Each year the Dalhousie Black and Gold Club funds a number of awards that recognize outstanding student athletes and the contribution they make to university life. Returning students must have been a full time student for at least two semesters in an academic year at Dalhousie with a minimum GPA of 2.0 in three full year classes or the equivalent. Entering candidates must have an average of 80% or higher. Participation on a varsity team is a requirement. Applicants should apply through the head coach of their respective varsity teams. Eligibility is verified by the Registrar’s Office.

Jeff Bredin Memorial Scholarship in Men’s Volleyball

This Scholarship was established in memory of Jeff Bredin who graduated from Dalhousie in May, 1985 with a Bachelor of Physical Education. While at Dalhousie, Jeff was a member of the varsity volleyball team for two years and was the recipient of numerous awards for his contributions to the University’s volleyball team.

The Annie L. Beer Prize

Under the will of the late Mrs. Thomas (Annie L.) Beer of Charlottetown a bequest was established at Dalhousie University. The net income from the fund provides for a prize which is to be awarded to the youngest student from Prince Edward Island who enters this University in each year. The Office of the Registrar selects and notifies the winner.

Black and Gold Awards

Each year the Dalhousie Black and Gold Club funds a number of awards that recognize outstanding student athletes and the contribution they make to university life. Returning students must have been a full time student for at least two semesters in an academic year at Dalhousie with a minimum GPA of 2.0 in three full year classes or the equivalent. Entering candidates must have an average of 80% or higher. Participation on a varsity team is a requirement. Applicants should apply through the head coach of their respective varsity teams. Eligibility is verified by the Registrar’s Office.

IV. Prizes, Medals, and Awards

Unless otherwise noted, the following awards are administered by the academic unit or the Department of Athletics.

A. General - All Faculties

The Alumni Association Medal

The Sexton Campus Alumni Association provides a medal which is awarded at Convocation each year to the graduating student in the University’s volleyball team.

The Honourable W.H. Dennis Memorial Prizes for Literary Compositions in English

Two Prizes known as the Joseph Howe Prizes are offered each year. First prize ($200), second prize ($100), for a poem or collection of poems of any length greater than one hundred lines. Two prizes known as the James DeMille Prizes are offered each year, one of $100 for an essay, the other of $50 for a prose short story. Contact the Department of English for details.

1. Candidates for these prizes must be registered full-time undergraduate or graduate students at Dalhousie University.
2. Three copies of each composition must be sent in by the competitor.
3. Candidates submitting more than one prose entry must use the same pseudonym for each; different pseudonyms may be used for the Joseph Howe Prize or for the James DeMille Prize, as the case may be.
4. The envelope shall contain in typewriting the pseudonym, the titles of the entries and the candidate’s full name and address.
5. Entries must reach the Department of English on the deadline.

2. MacRae Scholarships

The Dr. Donald M. MacRae Basketball Scholarships were established by the late Dr. Donald M. MacRae to recognize the important roles played by the captains of the Dalhousie men and women’s basketball teams. These awards recognize three generations of the MacRae family who played for the Tigers including Dr. MacRae.

The Annie L. Beer Prize

Under the will of the late Mrs. Thomas (Annie L.) Beer of Charlottetown a bequest was established at Dalhousie University. The net income from the fund provides for a prize which is to be awarded to the youngest student from Prince Edward Island who enters this University in each year. The Office of the Registrar selects and notifies the winner.

Black and Gold Awards

Each year the Dalhousie Black and Gold Club funds a number of awards that recognize outstanding student athletes and the contribution they make to university life. Returning students must have been a full time student for at least two semesters in an academic year at Dalhousie with a minimum GPA of 2.0 in three full year classes or the equivalent. Entering candidates must have an average of 80% or higher. Participation on a varsity team is a requirement. Applicants should apply through the head coach of their respective varsity teams. Eligibility is verified by the Registrar’s Office.

Jeff Bredin Memorial Scholarship in Men’s Volleyball

This Scholarship was established in memory of Jeff Bredin who graduated from Dalhousie in May, 1985 with a Bachelor of Physical Education. While at Dalhousie, Jeff was a member of the varsity volleyball team for two years and was the recipient of numerous awards for his contributions to the University’s volleyball team.

One or more Scholarships will be awarded to entering or continuing student athletes on Dalhousie men’s volleyball team who demonstrate excellence in volleyball, sportsmanship and community service.

The Honourable W.H. Dennis Memorial Prizes for Literary Compositions in English

Two Prizes known as the Joseph Howe Prizes are offered each year. First prize ($200), second prize ($100), for a poem or collection of poems of any length greater than one hundred lines. Two prizes known as the James DeMille Prizes are offered each year, one of $100 for an essay, the other of $50 for a prose short story. Contact the Department of English for details.

1. Candidates for these prizes must be registered full-time undergraduate or graduate students at Dalhousie University.
2. Three copies of each composition must be sent in by the competitor.
3. Candidates submitting more than one prose entry must use the same pseudonym for each; different pseudonyms may be used for the Joseph Howe Prize or for the James DeMille Prize, as the case may be.
4. The envelope shall contain in typewriting the pseudonym, the titles of the entries and the candidate’s full name and address.
5. Entries must reach the Department of English on the deadline.

Awards

553

Awards
Awards

11. Contestants are urged to retain a copy of their typescript(s) since the Robert and Katherine MacDonald Award in Healing and the Arts

The Robert and Katherine MacDonald Award

15th April each year to The Chair, The Kim Rilda LeBlanc Memorial Award in Medicine or Health Care. Nomination letters, accompanied by three copies of each winning composition are deposited in the University archives. Contestants retain ownership of copyright.

15. Contestants are urged to retain a copy of their typescript(s) since the copies cannot be returned.

Sharon Downes Memorial Prize

This Prize was established in memory of Sharon Downes, of Dartmouth, NS, who was a member of the varsity swim team. This Prize of $500 will be awarded at the first AUS meet of the season held at Dalhousie, to a Dartmouth Crusader women's team member for her first year of study at Dalhousie University. Preference will be given to students who are enrolled in a course from the Bachelor of Commerce program or the Spanish Department, Faculty of Arts and Social Sciences.

The Clare Murray Foshee Poetry Prize

One or more prizes will be awarded for the best poems, of any length, submitted by Dalhousie undergraduates. Prize money approximates $400, which is the net income from a fund established by friends in memory of the poetess Mrs. Clare Murray Foshee, BA (1924). Up to five poems may be submitted by each writer. Previous winners are ineligible. No award will be made unless a poem submitted is deemed to be of sufficient merit.

Entries should reach the Chair of the Department of English by March 1.

The SLT Bruce Galloway Memorial Prize

Friends, family and shipmates of Sub-Lieutenant Bruce David Galloway, a 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 who has attained the highest academic standing (not less than a passing standing) in the program in which he or she is enrolled. A prize is to be awarded in each year in which there is a student attending Dalhousie on the University Training Plan who achieves a passing standing. The Office of the Registrar selects the winner.

The Irving and Jeanne Glavin Award

The Oskar Schnieder Humanities Foundation established this award in 2003 to support research into the meaning and principles underlying "good human conduct." The research submitted will seek to define the meaning of "good human conduct" with which all persons could agree, to explore its sources, and develop pragmatic educational strategies and ways of teaching children, to show by action, respect and acceptance of others, with a focus on circumstances and/or background. The Irving and Jeanne Glavin Award will enable collaborative research by students, in the final year of undergraduate study or graduate study, in any major discipline or interdisciplinary program, together with a professor or mentor. The recipient will be preferably one who has a broad general education and 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. The Irving and Jeanne Glavin Award will be offered the first option to publish winning compositions. A copy of each winning composition is deposited in the University archives. Contestants retain ownership of copyright.

10. The Dalhousie Review will be offered the first option to publish winning compositions. A copy of each winning composition is deposited in the University archives. Contestants retain ownership of copyright.

11. Contestants are urged to retain a copy of their typescript(s) since the copies cannot be returned.

North Nova Scotia Highlanders Memorial Award

An award of up to $300 is available to an entering varsity student athlete who clearly shows leadership qualities and has a strong background in competitive athletics and other extra curricular activities. Applicants must have achieved at least an 80 percent average in Grade 12. Candidates must apply with supporting documentation to the Associate Director of Athletics, Dalplex, Dalhousie University, Halifax, NS, B3H 3J5. Deadline June 30.

Gordon S. Rankin Memorial Scholarship

Gordon Rankin, born in Halifax in 1933, graduated from Dalhousie in 1957 with a Bachelor of Commerce degree. He played both varsity football and basketball, holding the position of Captain for a period of time on both teams. As a continuing tribute to Gord, this Scholarship was formed to assist athletes in financing their studies while attending Dalhousie University.

B. Convocation Awards

The following three awards are administered by the Registrar's Office and are awarded at Convocation.

Governor General's Silver Medal

Offered by Her Excellency the Governor-General of Canada, this medal is awarded to the undergraduate student who has achieved the highest academic standing among graduates of baccalaureate programs.

University Silver Medal

This medal is awarded to the student who is judged to be the leading First Class Honours student among graduates of baccalaureate programs. The recipient cannot have received the Governor General's Silver Medal.

Avery Prize

This prize, bequeathed by J.F. Avery, MD, will be awarded on graduation to the student standing highest among graduates of the general degree program. The recipient cannot have received the Governor General's Silver Medal or University Silver Medal.

For the aforementioned medals and prizes, a student who is completing a second degree used when calculating their cumulative average. In addition, any disciplinary action by the Senate Discipline Committee shall be deemed sufficient cause for any student to be ineligible.

C. Faculty of Architecture and Planning

1. Architecture

Bachelor of Environmental Design Studies Year 3 Portfolio Prize

A prize is awarded to the student who has produced the best design portfolio at the end of Year 3 in the BEDS program.

Bachelor of Environmental Design Studies Year 4 Portfolio Prize

A prize is awarded to the student who has produced the best design portfolio at the end of Year 4 in the BEDS program.

2. Planning

Community Design Achievement Award (second year)

This prize is awarded to the student with the highest cumulative average in the second year of the Community Design program.

Community Design Achievement Award (third year)

This prize is awarded to the student with the highest cumulative average in the third year of the Community Design program.

554 Awards
Community Design Service Prize
The prize is awarded to a graduating Community Design student who has made a significant contribution to community design beyond the School.

Community Design Thesis Prize
This prize is given in recognition of excellent work in completing the thesis project for the Bachelor of Community Design.

Floyd Dykeman Prize in Rural Planning
Awarded to a planning student committed to rural planning. Preference will be given to a candidate in their final year of study who engages in innovative research on rural planning, who conducts a special project, who develops in inspiring thesis or who shows outstanding service to others.

University Medal in Community Design
This medal is awarded annually to the graduate who has attained the highest academic standing in Community Design.

D. Faculty of Arts & Social Sciences
1. Classics

University Medal in Classics
The Department of Classics offers to the top First Class Honours graduate in the classics program a medal in recognition of superior achievement in Classics.

2. Contemporary Studies

University Medal in Contemporary Studies
The Department of Contemporary Studies offers to the top First Class Honours graduate a medal in recognition of superior achievement.

3. Early Modern Studies

University Medal in Early Modern Studies
The Department of Early Modern Studies offers to the top First Class Honours graduate a medal in recognition of superior achievement.

4. English

The 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 Canadian Tire Corporation Limited, to mark the company's 40th anniversary and the 40th anniversary of the New Canadian Library, of which the founding general editor was Dalhousie Professor Emeritus, Dr. Malcolm M. Ross. It is awarded each year to the best essay on Canadian literature submitted from an undergraduate class at Dalhousie during the current academic year. Essays may have been written for classes in any department, but they should focus explicitly on a Canadian literary topic and not on history or culture more generally, and they must be written in English. Essays should be nominated by instructors; clean copies should be submitted by the specified date.

Barbara Bennett Chittick Prize
This prize of about $500 is awarded annually to an outstanding first-year student enrolled in English 1000 (Introduction to Literature) at Dalhousie University. Section instructors will normally make nominations, which shall consist of a letter from the instructor on why the student should receive the award, the student’s final grade, and a sample essay. The prize winner will be determined by a selection committee consisting of one member of the Undergraduate Committee and the co-ordinator of Tutor-markers in the English Department.

Graham Crighton Prize in English
Established by his son, Wilfred Crighton, this prize is to honour the memory of Graham Crighton, 1904 graduate of Dalhousie. Graham Crighton and his wife raised six children in their home on LeMarchant Street. All six children attended Dalhousie and graduated between 1915 and 1927. This prize is awarded annually to a student majoring in English or in Honours English and entering their fourth year of study.

Paul McIsaac Memorial Prize
A memorial gift provides an annual prize of about $350 for an undergraduate student, who shows an enquiring and original mind, in the second or third year of study in the Honours or Majors program in English.

Margaret Nicoll Pond Memorial Prize in English
This prize ($500 plus a complete set of the New Canadian Library) is one of six established by Mr. F.H. Pond of Halifax in memory of his wife, the late Margaret Nicoll Pond, a gifted teacher of English and a devoted alumna and governor of the 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 to propose to do graduate work in English at a university approved by the faculty.

The University Medal in English
Each year the Department of English offers a medal to the top First Class Honours graduate in recognition of superior achievement in the program.

Yarina Prizes in Gothic Literature
These prizes were established to honour the memory and spirit of the late Devandra Varma who taught at Dalhousie University in the Department of English. Applicants should be undergraduate English majors or Honours English students. Prizes shall be awarded to the winners of a gothic short story contest.

5. French

Prix de l’Alliance française
An annual book prize awarded to a third or fourth year student who has achieved outstanding results in the study of French language and literature. Suitable candidates are proposed by the Department before March 15. The award is bestowed at an official ceremony at the Alliance française in the Spring. The Alliance française and the Embassy of Switzerland, who has made a significant contribution to community design beyond the School.

Prix de l’Ambassadeur de France
This prize is awarded 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
This prize is awarded 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’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 and the Embassy of Switzerland, who has made a significant contribution to community design beyond the School.

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 and the Embassy of Switzerland, who has made a significant contribution to community design beyond the School.

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 and the Embassy of Switzerland, who has made a significant contribution to community design beyond the School.

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 and the Embassy of Switzerland, who has made a significant contribution to community design beyond the School.

6. German

Prize of the Ambassador of Austria in Canada
A prize of about $300 is awarded annually to an outstanding first-year student of German. The prize is given in recognition of excellence in the study of a language. The Austrian, German and Swiss embassies in Canada regularly offer German language books to the Department to be awarded to Dalhousie University. Section instructors will normally make nominations, which shall consist of a letter from the instructor on why the student should receive the award, the student’s final grade, and a sample essay. The prize winner will be determined by a selection committee consisting of one member of the Undergraduate Committee and the co-ordinator of Tutor-markers in the English Department.

Prize of the Ambassador of Switzerland in Canada
A prize is given in recognition of excellence in the study of German. The prize is given in recognition of excellence in the study of a language. The Austrian, German and Swiss embassies in Canada regularly offer German language books to the Department to be awarded to Dalhousie University. Section instructors will normally make nominations, which shall consist of a letter from the instructor on why the student should receive the award, the student’s final grade, and a sample essay. The prize winner will be determined by a selection committee consisting of one member of the Undergraduate Committee and the co-ordinator of Tutor-markers in the English Department.

Prize of the Ambassador of Switzerland in Canada
A prize is given in recognition of excellence in the study of German. The prize is given in recognition of excellence in the study of a language. The Austrian, German and Swiss embassies in Canada regularly offer German language books to the Department to be awarded to Dalhousie University. Section instructors will normally make nominations, which shall consist of a letter from the instructor on why the student should receive the award, the student’s final grade, and a sample essay. The prize winner will be determined by a selection committee consisting of one member of the Undergraduate Committee and the co-ordinator of Tutor-markers in the English Department.

Prize of the Ambassador of Switzerland in Canada
A prize is given in recognition of excellence in the study of German. The prize is given in recognition of excellence in the study of a language. The Austrian, German and Swiss embassies in Canada regularly offer German language books to the Department to be awarded to Dalhousie University. Section instructors will normally make nominations, which shall consist of a letter from the instructor on why the student should receive the award, the student’s final grade, and a sample essay. The prize winner will be determined by a selection committee consisting of one member of the Undergraduate Committee and the co-ordinator of Tutor-markers in the English Department.

Prize of the Ambassador of Switzerland in Canada
A prize is given in recognition of excellence in the study of German. The prize is given in recognition of excellence in the study of a language. The Austrian, German and Swiss embassies in Canada regularly offer German language books to the Department to be awarded to Dalhousie University. Section instructors will normally make nominations, which shall consist of a letter from the instructor on why the student should receive the award, the student’s final grade, and a sample essay. The prize winner will be determined by a selection committee consisting of one member of the Undergraduate Committee and the co-ordinator of Tutor-markers in the English Department.

Prize of the Ambassador of Switzerland in Canada
A prize is given in recognition of excellence in the study of German. The prize is given in recognition of excellence in the study of a language. The Austrian, German and Swiss embassies in Canada regularly offer German language books to the Department to be awarded to Dalhousie University. Section instructors will normally make nominations, which shall consist of a letter from the instructor on why the student should receive the award, the student’s final grade, and a sample essay. The prize winner will be determined by a selection committee consisting of one member of the Undergraduate Committee and the co-ordinator of Tutor-markers in the English Department.

Prize of the Ambassador of Switzerland in Canada
A prize is given in recognition of excellence in the study of German. The prize is given in recognition of excellence in the study of a language. The Austrian, German and Swiss embassies in Canada regularly offer German language books to the Department to be awarded to Dalhousie University. Section instructors will normally make nominations, which shall consist of a letter from the instructor on why the student should receive the award, the student’s final grade, and a sample essay. The prize winner will be determined by a selection committee consisting of one member of the Undergraduate Committee and the co-ordinator of Tutor-markers in the English Department.
students whose achievement in German is outstanding. Awards are made at various levels of proficiency.

University Medal in German
The Department of German offers a medal to the top First Class Honours graduate in recognition of superior achievement.

7. History
The Edith and Rose Goodman Prize in History
Under the Will of the late Mrs. Jeannette Goodman a bequest was made to Dalhousie University to fund a prize(s) for the highest standing in Canadian History. The prize is awarded on the recommendation of the Department of History.

The Clan Ramsay of Nova Scotia Prize
To provide an annual prize to the student in the Department of History who has written the best paper dealing with (any aspect of) the influence of Scottish culture within Canada. This award was established by the Clan Ramsay in Nova Scotia in recognition of the contribution of George Ramsay, 19th Earl of Dalhousie, founder of Dalhousie University.

The Commonwealth History Prize
To facilitate and encourage the study of Commonwealth or British history, this prize is awarded annually for the best undergraduate essay on a topic relating to the history of Britain and/or the Commonwealth countries. The prize is funded by a gift from Dr. David Jones and Dr. Karen Ostergaard.

University Medal in History
To the top First Class Honours graduate the Department of History offers a medal in recognition of superior achievement.

The Dr. George E. Wilson Prize in History
In 1967 an endowment was established to provide an annual prize to be awarded for the best essay by a First-Year student in a first-year class.

8. History of Science and Technology
University Medal in History of Science and Technology
The Department of History of Science and Technology offers to the top First Class Honours graduate a medal in recognition of superior achievement.

9. International Development Studies
University Medal in International Development Studies
A University Medal has been established for the student with the highest standing among those who graduate with First Class Honours.

10. Linguistics
University Medal in Linguistics
Dalhousie InterUniversity Linguistics Program offers to the top First Class Honours graduate a medal in recognition of superior achievement.

11. Music
Professor Ray, D. Byham Memorial Prize in Piano Studies
A prize established with donations made by family, colleagues and friends of Professor Ray D. Byham, who taught at Dalhousie from 1969-1993, to provide one (or more annual prizes) 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 residence in the Dalhousie Bachelor of Music (Piano Performance) program or equivalent.

James and Abbie Campbell Prize, Campbell Incentive Award
The Department of Music may from time to time award prizes to outstanding students from the James and Abbie Campbell Memorial Fund. The Campbell Incentive Award may on occasion be awarded under special circumstances.

Dalhousie Alumni Association (Women's Division) Medal in Music
The Women's Division provides an annual medal to the graduating student who achieves the highest cumulative GPA in music subjects over the four-year Bachelor of Music degree program.

Dalhousie Women's Alumnae Prize
This prize is presented to the graduating student who has achieved a high cumulative average in Music subjects during the four-year Bachelor of Music degree program.

The Beatrix Davies Music Prize
A fund has been established by members of the Dalhousie community to mark Women's Centennial Year (1945) at the University. The purpose of the fund is to provide an annual in-course prize to a female student in the Bachelor of Music program on the combined basis of high academic standing and performance ability as determined by the Department of Music. The prize is named after the first graduate in music in 1909.

The Ernest and Dorothy Heighton Memorial Prize
A prize established through bequests received from the estates of the late Dr. Ernest Heighton and his wife Dorothy, in the spirit of their love and interest and support for the Department of Music's Applied Skills training program and for the public performances of its students. Preference will be given to an outstanding student in the Third or Fourth Year of the Bachelor of Music in Performance: Contemporary Musics, concentration in Jazz and Improvisation. The value of the Prize shall not be less than $400.

The Lorne C. Huber Memorial Prize in Music
This prize is awarded annually from a fund in memory of the late major Lorne C. Huber established by his widow and family, to an undergraduate student of outstanding potential in brass performance. The minimum value of this prize is $300.

The Erik Perth Memorial Award
An award established to honour the memory of Erik Perth, a former Director of Cultural Activities at Dalhousie University. An annual prize will be awarded to a female vocal student who has completed the Third Year of a Bachelor of Music, or Bachelor of Arts Combined Honours Music & Theatre, and who, in the opinion of the Department, has demonstrated both outstanding achievement in vocal performance, and an aptitude for a career in opera and/or musical theatre. The prize will be awarded in conjunction with the opening night performance of the annual Opera Workshop.

The Royal Saint George's Society of Halifax Prize in Music
The Royal Saint George's Society of Halifax has established a prize in recognition of the University's successful role in the musical training and cultural enrichment of the community. This Prize will be awarded annually to a student enrolled in an undergraduate degree program in Music who, in the estimation of the Department, shows particular potential in an orchestral instrument.

The Sing Sunrise” Prize in Choral Music
The Nova Scotia Chapter of the Society for the Presentation and Encouragement of Barber Shop Quartet Singing in America has established a fund to award an annual prize to a student enrolled in an undergraduate degree program in Music who, in the estimation of the Department, demonstrates outstanding aptitude and achievement leading to a professional career in an aspect of choral music (conducting, composing, arranging, singing, etc.). Normally awarded to a fourth-year student, with the discretion of the Department it may be used as a Graduation Prize.

The William Tritt Recital Prize
The Department of Music may, upon the recommendation of the Piano Faculty, award this prize to a piano student who has demonstrated a high level of performance on his/her Third Year or Graduation Recital. This prize will be awarded only when it is deemed warranted. This award is named after the late Canadian Pianist and Dalhousie Faculty member, William Tritt.

The William Tritt/Scotia Festival Memorial Prize
The Department of Music awards this prize upon the recommendation of the Piano Faculty to a senior level Piano student who has achieved a high standard of performance. This prize is to be applied to tuition costs for
participation in the Young Artists Program of the Scotia Festival of Music. This award is named after the late Canadian Pianist and Dalhousie Faculty member, William Tratt.

University Medal in Music
The Department of Music offers a medal to the highest ranking student of the year who graduates with the equivalent of a First Class Honours degree in the Bachelor of Music program.

12. Philosophy

The F. Hilton Page Memorial Prize in Philosophy
This annual prize is normally awarded to the honours graduate whose Honours Essay is judged to be outstanding.

Dr. H.L. Stewart Memorial Scholarship
This prize is awarded to the student with the best record entering the Final Year of an Honours Philosophy degree program.

University Medal in Philosophy
The Department of Philosophy offers a medal to the top First Class Honours graduate in recognition of superior achievement in the program.

13. Political Science

The James H. Aitchison Award
In 1979 colleagues of Dr. J.H. Aitchison established a fund from which an annual prize would be awarded in recognition of the best undergraduate honours essay. The fund was established to honour Professor Aitchison who was instrumental in founding the Department.

Commonwealth Political Philosophy Prize
Established by John W. Beveridge (BA, Honours 1971) for students who demonstrate interest and achievement in the field of political philosophy. The prize name derives from Commonwealth, understood as society and government that endeavours to serve and represent community, without tending towards a totalitarian system. This prize is awarded annually to the student who has achieved the highest grade in a course on political philosophy / the Foundations of Political Thought.

The Eric Dennis Gold Medal
Founded by Senator William Dennis and Mrs. Dennis, this medal will be awarded 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 the top First Class Honours graduate a medal in recognition of superior achievement in the program.

15. Sociology and Social Anthropology

Professor Yuri Glazov Memorial Award
Awarded annually to a student who shows an outstanding capacity to combine civic duty and charitable service with a love for the humanities.

The Rev. S.H. Prince Prize in Sociology
A bequest under the will of the late Dr. S.H. Prince established a fund to provide an annual prize to be awarded to students at either Dalhousie or King’s.

University Medal in Social Anthropology
The Department of Sociology and Social Anthropology offers a medal to the top First Class Honours graduate in the Social Anthropology program in recognition of superior achievement.

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 Helen S. de Carteret and their sister, Phyllis de Carteret Nielsen. The prize is to be awarded on the recommendation of the Executive Committee of the Department to an outstanding student in the Department of Spanish.

Dr. James E. Holloway, Jr. Memorial Prize
The Holloway Memorial Prize is awarded to a graduating student with an Honours degree who has demonstrated a consistently high level of achievement in the field of Latin American Literature, and who has successfully completed an Honours thesis in the department in that field. The prize was established by colleagues, students, friends and family to honour the memory of Dr. James E. Holloway, Jr., a Dalhousie Spanish professor for over 30 years.

Sylvia Coffee Memorial Award
The Sylvia Coffee Memorial Award is given to a female Spanish student studying in one of our programs abroad in Latin America.

Department of Spanish Citizenship Award
The Citizenship Award recognizes the contributions of an individual to build a community atmosphere within the Department of Spanish.

University Medal in Spanish
The Department of Spanish offers a medal to the top First Class Honours graduate in recognition of superior achievement in the Spanish program.

17. Theatre

Andrew and David Stitt Memorial Prize
To honour the memory of Theatre students Andrew and David Stitt, two prizes will be awarded annually to two students entering the third year of the Acting Program who have shown promise in, and passion for, acting.

Department of Theatre Awards Fund
This fund supports three awards to recognize the achievements of outstanding students in the Department of Theatre: the Basil Cook Award for students in the Costume Studies program; the Department of Theatre Award for students enrolled in the BA program; and the Martin Sucre Award for which all students enrolled in the Theatre Program may be eligible.

The awards will normally be made at the commencement of students’ third year of study in the Theatre program with the exception of the Basil Cook Award which will be made to students in their second year.

Jopling Award for Out of Country Theatre Studies
Earning from this fund are used to support an annual award to assist students enrolled in the Department of Theatre to further their knowledge of theatre by study in another country during the summer. Eligible students must be enrolled full-time in a program of study in the Department of Theatre and have completed at least one year (both fall and winter semesters) of their program of study. In addition, eligible students will have been accepted to study theatre at an institution in a country other than Canada.

University Medal in Theatre
The Department of Theatre offers to the top First Class Honours graduate a medal in recognition of superior achievement.

Women’s Division – Dalhousie Alumni Association Medal in Costume Studies
This medal is presented annually to the graduating student with the highest cumulative GPA in the Costume Studies Program.

Christine Zwick Bank Award
Recognizes an outstanding graduating honours student in Theatre Studies.

Awards
18. Transition Year Program
Morris Saffron Prize
A bequest under the will of the late Morris Saffron established an endowment to provide an annual prize to a student in the Transition Year Program who is judged to have made the greatest academic achievement during the year.

Jonathan Skeete Memorial Prize
Funds, faculty and former students of the Transition Year Program have established an endowment from which to fund an annual prize. The award honours the memory of Jonathan Skeete who, following completion of the TYP, was graduated with a BComm degree and then served several years with the RCMP. An annual prize is available to a Black student who is enrolled in the Transition Year Program. Contact the Director of the Program for details.

E. Faculty of Computer Science
Awards

Ada Byron Award
The Ada Byron Award recognizes the leadership and contributions of an individual to increase and promote the involvement of women in Computer Science.

Citizenship Award
The Citizenship Award recognizes the contributions of an individual to build a community atmosphere within the Faculty of Computer Science.

Dean's List Award
Students enrolled in an undergraduate major 20-credit program offered by the Faculty of Computer Science with at least 1.5 credits of courses offered at Dalhousie in the academic term being assessed, are automatically considered for the Dean's List designation and monetary award of $250. Students are eligible to receive the award for each term in which they achieve a minimum 3.50 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. Students cannot receive both a Dean's List Award and a Sexton Scholar Award in any one term.

Entrepreneurship Award
The Entrepreneurship Award is sponsored by the Faculty of Computer Science, Executives of the Natural Sciences and Engineering Council of Canada to promote and support entrepreneurial activities among computer science students at Dalhousie University.

This Award, of $5,000, is for one year with the possibility of renewal for one additional year based on the candidate satisfying the renewal criteria. The awards are open to full-time students enrolled in a 20-credit computer science program and have a cumulative GPA of at least 3.0 at the time the award is presented. Computer Science students enrolled in CSCI 2310 and who meet the eligibility requirements are automatically considered for these awards as part of the course requirements. The number of awards available varies each year.

Gold, Silver and Bronze Awards
The Gold ($2,500), Silver ($2,000) and Bronze ($1,500) awards recognize the academic achievements of the top three students who are entering 2nd, 3rd, and 4th years of study.

To be eligible, students must be enrolled in an undergraduate major 20-credit program offered by the Faculty of Computer Science with at least 2.0 credits per term in the student's two academic terms prior to the award assessment; have completed at least five credits per year of study towards their computer science degree (incl. transfer credits); have completed all applicable CSCI core courses required that year and must have at least one academic term of 2.0 credits or more to complete for their computer science degree. All eligible students are automatically considered for these awards which are based solely on cumulative GPA. Students are assessed following the winter term.

Leadership Award
The Leadership Award recognizes the leadership of an individual in building a community atmosphere within the Faculty of Computer Science.

Mobil Oil Award
This award of $125 is given to the student with the highest GPA across CSCI 3120 and one of CSCI 3101 or CSCI 3113. Students are automatically assessed for the award at the end of the winter term or at their first eligibility.

Sexton Scholar Award
Students enrolled in an undergraduate major 20-credit program offered by the Faculty of Computer Science with at least 2.0 credits of courses offered at Dalhousie in the academic term being assessed, are automatically considered for the Sexton Scholar designation and monetary award of $400. Students are eligible to receive the award for each term in which they achieve a minimum 3.50 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. Students cannot receive both a Dean's List Award and a Sexton Scholar Award in any one term.

University Medal in Computer Science
A medal is awarded to the top First Class Honours graduate in both BCSc and BEng in recognition of superior achievement in computer science.

F. Faculty of Engineering
Awards

Ada Jeanleian Award in the Aesthetics of Structures
Dr. John Adjeleian established this award of $1,000 to be made to a graduating student in either the School of Architecture's Master of Architecture program, or Civil Engineering. The award will be granted to the graduating student who demonstrates in a project both aesthetic principles in buildings and bridges, and unified roots of Architecture and Structural engineering. The award will alternate between Architecture and Civil Engineering. Selection is by the Scholarships & Awards Committee of the Faculty of Engineering; the recommendation of one Professor of Structural Engineering, one Professor of Architecture, one Consulting Structural Engineer, and one Consulting Architect. Deadline: Architecture - Jan 31. Civil Engineering - March 31.

APENS (Association of Professional Engineers of Nova Scotia) Award
The Association of Professional Engineers of Nova Scotia provides an annual award to a graduating student in Civil Engineering who best demonstrates promise of using outstanding abilities to serve society in an ethical manner as a Professional Engineer. The award will be made at Convocation each year. The award is comprised of an engraved certificate and a monetary award of $1,000. Selection will be made by the APENS (Association of Professional Engineers of Nova Scotia) Selection Committee.

Atlantic Farm Mechanization Show Award
The Atlantic Farm Mechanization Show Award is given annually to the student graduating in Environmental Engineering with the highest overall average in the program of studies at Dalhousie.

Atlantic Industrial Engineering Society Prize
The Atlantic Industrial Engineering Society provides a prize which is awarded at Convocation each year to the graduating student graduating in Industrial Engineering with the highest overall average in the program of studies at Dalhousie.

Atlantic Land Improvement Contractors Association Award
The Atlantic Land Improvement Contractors Association Award is given annually to the student graduating in the Environmental Engineering program who has exhibited the greatest aptitude in the environmental

558 Awards
The Louie I. Baker Awards in Technical Communication
Established by Dr. Max J. Baker in memory of his wife Louie are two prizes for the Technical Writing Category valued at $300 and $200 each, and two prizes for the Oral Presentation category valued at $300 and $200 each. Dr. Baker was Professor Emeritus at Dalhousie and a former Head of the Department of Electrical Engineering.

The Morningstar Prize
Established by the Morningstar Corporation this prize is awarded annually to the student graduating in Chemical Engineering with the highest overall average in a program of studies at Dalhousie. The award is $75.

The Patrician Award
Established by the Patrician Organization for an annual award to be presented to the student graduating in Chemical Engineering who displays a uniquely high professional attitude towards their academic program that has produced quality academic results. Students are nominated for this award by their department, from those who have applied for in-course scholarships.

The Canadian Society for Chemical Engineering Medal
Established by the Canadian Society for Chemical Engineering this medal is awarded annually to the student graduating in Chemical Engineering who has attained the highest academic standing in Chemical Engineering. The medal is presented at Convocation each year to the student graduating in Chemical Engineering with the highest overall average.

The William Stains Memorial Prize
Established by the William Stains in 1972 this prize is awarded annually to the graduate who has shown outstanding ability in metallurgy, physical properties of metals or the use of metals in the arts of industry.

The Canadian Society for Chemical Engineering Medal
Established by the Canadian Society for Chemical Engineering this medal is awarded annually to the student graduating in Chemical Engineering who has attained the highest academic standing in Chemical Engineering. The medal is presented at Convocation each year to the student graduating in Chemical Engineering with the highest overall average.

The Dr. H.R. Theakston Memorial Award
Established by the Mining Society of Nova Scotia this award is given to a graduating Engineering student who displays a uniquely high professional attitude towards their academic program that has produced quality academic results. Students are nominated for this award by their department, from those who have applied for in-course scholarships.

The Kenneth F. Marginson Award
Established by Mrs. Kenneth F. Marginson this prize is awarded annually to the student graduating in Civil Engineering with the highest overall average in a program of studies at Dalhousie. The award is $75.

The Kenneth F. Marginson Award
Established by the Canadian Society for Chemical Engineering this medal is awarded annually to the student graduating in Chemical Engineering who displays a uniquely high professional attitude towards their academic program that has produced quality academic results. Students are nominated for this award by their department, from those who have applied for in-course scholarships.

The William Stains Memorial Prize
Established by the William Stains in 1972 this prize is awarded annually to the graduate who has shown outstanding ability in metallurgy, physical properties of metals or the use of metals in the arts of industry.

The Canadian Society for Chemical Engineering Medal
Established by the Canadian Society for Chemical Engineering this medal is awarded annually to the student graduating in Chemical Engineering who has attained the highest academic standing in Chemical Engineering. The medal is presented at Convocation each year to the student graduating in Chemical Engineering with the highest overall average.

The William Stains Memorial Prize
Established by the William Stains in 1972 this prize is awarded annually to the graduate who has shown outstanding ability in metallurgy, physical properties of metals or the use of metals in the arts of industry.

The Canadian Society for Chemical Engineering Medal
Established by the Canadian Society for Chemical Engineering this medal is awarded annually to the student graduating in Chemical Engineering who has attained the highest academic standing in Chemical Engineering. The medal is presented at Convocation each year to the student graduating in Chemical Engineering with the highest overall average.

The William Stains Memorial Prize
Established by the William Stains in 1972 this prize is awarded annually to the graduate who has shown outstanding ability in metallurgy, physical properties of metals or the use of metals in the arts of industry.

The Canadian Society for Chemical Engineering Medal
Established by the Canadian Society for Chemical Engineering this medal is awarded annually to the student graduating in Chemical Engineering who has attained the highest academic standing in Chemical Engineering. The medal is presented at Convocation each year to the student graduating in Chemical Engineering with the highest overall average.

The William Stains Memorial Prize
Established by the William Stains in 1972 this prize is awarded annually to the graduate who has shown outstanding ability in metallurgy, physical properties of metals or the use of metals in the arts of industry.

The Canadian Society for Chemical Engineering Medal
Established by the Canadian Society for Chemical Engineering this medal is awarded annually to the student graduating in Chemical Engineering who has attained the highest academic standing in Chemical Engineering. The medal is presented at Convocation each year to the student graduating in Chemical Engineering with the highest overall average.

The William Stains Memorial Prize
Established by the William Stains in 1972 this prize is awarded annually to the graduate who has shown outstanding ability in metallurgy, physical properties of metals or the use of metals in the arts of industry.

The Canadian Society for Chemical Engineering Medal
Established by the Canadian Society for Chemical Engineering this medal is awarded annually to the student graduating in Chemical Engineering who has attained the highest academic standing in Chemical Engineering. The medal is presented at Convocation each year to the student graduating in Chemical Engineering with the highest overall average.

The William Stains Memorial Prize
Established by the William Stains in 1972 this prize is awarded annually to the graduate who has shown outstanding ability in metallurgy, physical properties of metals or the use of metals in the arts of industry.

The Canadian Society for Chemical Engineering Medal
Established by the Canadian Society for Chemical Engineering this medal is awarded annually to the student graduating in Chemical Engineering who has attained the highest academic standing in Chemical Engineering. The medal is presented at Convocation each year to the student graduating in Chemical Engineering with the highest overall average.

The William Stains Memorial Prize
Established by the William Stains in 1972 this prize is awarded annually to the graduate who has shown outstanding ability in metallurgy, physical properties of metals or the use of metals in the arts of industry.

The Canadian Society for Chemical Engineering Medal
Established by the Canadian Society for Chemical Engineering this medal is awarded annually to the student graduating in Chemical Engineering who has attained the highest academic standing in Chemical Engineering. The medal is presented at Convocation each year to the student graduating in Chemical Engineering with the highest overall average.

The William Stains Memorial Prize
Established by the William Stains in 1972 this prize is awarded annually to the graduate who has shown outstanding ability in metallurgy, physical properties of metals or the use of metals in the arts of industry.

The Canadian Society for Chemical Engineering Medal
Established by the Canadian Society for Chemical Engineering this medal is awarded annually to the student graduating in Chemical Engineering who has attained the highest academic standing in Chemical Engineering. The medal is presented at Convocation each year to the student graduating in Chemical Engineering with the highest overall average.
Awards

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 Dr. M.J. Ellis Award
This award is given to the student who best combines fellowship, sportsmanship and scholarship. The Dr. M.J. Ellis Award is the highest honour which the Engineering Society can bestow upon its graduates. The award consists of an engraved gift and a certificate suitable for framing. Instituted in the 1940-41 academic year, the award honours the memory of an outstanding engineering student who was president of the Dalhousie Engineering Society.

G. Faculty of Health Professions

1. University Medals
In the College of Pharmacy, the School of Health and Human Performance, School of Health Sciences and School of Nursing, a University medal is awarded annually at the Spring convocation to a graduating student who demonstrates outstanding academic performance. The medal is only awarded if the following criteria have been met:

a. The candidate has successfully completed the equivalent of three full-time years in his/her respective baccalaureate program (90 credit hours) at Dalhousie.

b. Has met the FHP cumulative GPA requirement or better on courses taken at Dalhousie towards the degree.

c. Of those eligible, has the highest GPA.

All credits taken towards the degree at Dalhousie will be used in the calculations. Transfer credits taken prior to entry into the program are not counted towards either the 90 credit hour criterion, or towards the cumulative GPA requirement. Courses taken on Letters of Permission while registered in the program are included in the 90 credit hour eligibility criterion and calculated as part of the cumulative GPA requirement.

Students graduating in the Fall convocation are eligible for University Medals consideration in the following Spring convocation. As the School of Social Work does not offer a three-year (90 credit hour) BSW degree, it is not eligible for the University Medal.

2. School of Health and Human Performance

Canadian Society for Exercise Physiology
The Society provides an annual medal to the School to be awarded to an outstanding student in the Bachelor of Science in Kinesiology degree program. The recipient will be the graduating student who demonstrates outstanding academic performance. The medal is only awarded if the following criteria have been met:

a. The candidate has successfully completed the equivalent of three full-time years in his/her respective baccalaureate program (90 credit hours) at Dalhousie.

b. Has met the FHP cumulative GPA requirement or better on courses taken at Dalhousie towards the degree.

c. Of those eligible, has the highest GPA.

Canadian Society for Health, Physical Education and Recreation Student Award
This award is presented to the graduating student who has demonstrated a significant involvement and 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 560 for details.

The Women’s Division of the Dalhousie Alumni Association H&HP Medals
Three awards are available to students in the School of Health and Human Performance. For the students who achieve the highest standing in each of the Bachelor of Science in Kinesiology, the Bachelor of Science in Health Promotion and the Bachelor of Science in Kinesiology degree; the Women’s Division sponsors a medal.

3. School of Health Sciences

3.a For Graduating Students
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.

DRAXMLAG 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.

Tom Mackenzie Memorial Award
This award, in memory of Tom Mackenzie, a 1977 graduate of the School of Radiological Technology, is awarded to a graduating Radiological Technology student and is based on high standards of clinical practice and the respect of patients’ rights and needs as individuals.

560 Awards
Dr. Robert H. Martin Prize
In memory of Dr. Robert H. Martin, this award valued at $500.00, is awarded to a member of the graduating class in Nuclear Medicine with the highest combined evaluation in clinical and academic performance over the four years of the degree.

Radiologists' Awards
These awards valued at $250.00 each, are sponsored by the QEII Health Sciences Radiologist Group and is awarded to a full-time student graduating in each of the Nuclear Medicine, Diagnostic Medical Sonography, and Radiological Technology programs with highest cumulative GPA.

Respiratory Therapy Faculty Academic Award
This award valued at $100.00 is sponsored by the BiSR Respiratory Therapy faculty and is awarded to a full-time graduating student of Respiratory Therapy with the highest cumulative GPA.

University Medal in Health Sciences
Please refer to G, Faculty of Health Professions, 1. University Medals on page 560 for details.

3. For Other Students
Dorothy Archibald Award
This award is sponsored by Dorothy Archibald, a lifetime member with CAMRT, who is dedicated to her retirement to advancement of the Medical Radiation Technology professions. Awarded to two full-time students (one in each of Nuclear Medicine Technology and Radiological Technology) who have successfully completed Clinical Practicum II.

Margaret Barrett-Banks Memorial Award
This cash award is sponsored by the Margaret Barrett-Banks memorial fund in memory of Margaret Barrett-Banks, a dedicated health professional and educator. This is awarded to a student entering the fourth year of the BHSc degree program and is based on GPA, demonstrated of financial need, demonstration of contribution to the community, university and/or health system through leadership and voluntary activities.

Ian Collins Memorial Pediatric Award
This award valued at $250.00, is sponsored by the Respiratory Therapy Society of Nova Scotia and the Scotia Chapter of the Canadian Cystic Fibrosis Foundation. The award is presented to a student completing year three in Respiratory Therapy and is chosen based on demonstration of academic performance, interest in neonatal and pediatric care, outstanding academic, laboratory and clinical achievement and contribution to the care of cystic fibrosis patients and their families.

Elsevier Canada Book Awards
These awards are given to two students, one completing the first year and the other completing the second year of Respiratory Therapy. These awards are based on cumulative GPA and commitment to clinical excellence during the relevant year of study.

Cynthia Johnson Evans Award
This award valued at $250.00, is sponsored by the Nova Scotia Society of Diagnostic Medical Sonographers, in memory of Cynthia Johnson Evans, former educator and sonographer. It is awarded to the student who has demonstrated leadership during his/her years of study in Diagnostic Medical Sonography.

Heather Mattice Memorial Award
The friends and family of Heather Mattice, a former student of Nuclear Medicine, established this award in her memory. This cash award is given to a student entering year four in Nuclear Medicine and is based on financial need, academic standing, community and campus involvement and recommendation of the Nuclear Medicine faculty.

Nova Scotia College of Medical Laboratory Technologists (NSCLT) Awards
These three awards, sponsored by NSCLT, are given to three students, one from each of the classes entering second, third, and fourth years of the BHSc in Diagnostic Cytology, and who have consistently demonstrated clinical and academic excellence and maintained a minimum GPA of 3.3.

Students who have completed third year must also demonstrate diagnostic excellence and clinical proficiency as well as excellence in professional practice and respect for the patient.

Trudell Medical Marketing Limited Award
This award valued at $300.00, is awarded to a student completing the third year in Respiratory Therapy and is based on GPA, commitment to clinical excellence during the three years of study and evidence of extracurricular involvement.

4. School of Nursing
Alumni Leadership Award
The recipient of this monetary award is a student graduating from the Basic Degree Program or the Post RN Degree Program who has demonstrated leadership during his/her years of study.

Certificate for Highest Academic Achievement in the Basic Degree Program
This prize is awarded to a student graduating from the basic Degree program who has demonstrated the highest academic achievement.

Certificate for Highest Academic Achievement in the Post RN Stream
This prize is awarded to a student graduating from the Post-RN degree program with the highest academic average.

The Milda Dashevsky Memorial Award
The recipient of this monetary award is a student graduating from the basic degree program who has demonstrated interest and proficiency in Oncology Nursing. This award is provided by Mrs. Dashevsky’s husband in her memory. It was previously awarded to a student graduating from the Victoria General Hospital School of Nursing.

Mary Lou Ellerton Prize in Clinical Nursing
Professor Mary Lou Ellerton was the Associate Director, Undergraduate Program Planning and Development at the School of Nursing. Professor Ellerton was a woman of courage, integrity, wisdom and wit. She was posthumously awarded the IWK Health Centre’s highest honour, the Award of Distinction. This prize recognizes a student who has demonstrated excellence in clinical nursing, with a focus on the care of persons and families facing acute illness in either the hospital or at home. To be eligible, students must have cumulative GPA of 3.7 or higher upon completion of 96 credit hours towards a BSN, and have consistently received an excellent evaluation in the clinical nursing components of the undergraduate program.

Eligible students should submit a scholarly paper (of no longer than 3000 words) which integrates research, theory and practice to describe the care of persons and families facing acute illness. Papers must be submitted to the School of Nursing. Deadline: April 1.

Elsevier Canada Award
The recipient of this award will be a graduating student (Basic or Post RN) who has shown progressive academic achievement.

The H.D. Fraser-Ducey Award
This award is given to a graduating student who has demonstrated outstanding ability and talent in international nursing and nurse midwifery.

Price for Highest Academic Standing in the Undergraduate Degree Program
This award is given to a student graduating from the basic or Post RN degree program with the highest academic average.

The IWK/Medical, Dental and Scientific Staff Award for Excellence in Children’s Nursing
The recipient of this award will be a student graduating from the basic program who has demonstrated excellence in the area of children’s nursing.

Awards 561
The IWK/Medical, Dental and Scientific Staff Award for Excellence in Women’s and Newborn Nursing
The recipient of this award will be a student graduating from the basic program who has demonstrated excellence in the area of women’s and newborn nursing.

IWK/Health Centre Prize for Excellence in the Care of Children and their Families
This award is granted to a student who has demonstrated critical thinking, advocacy and autonomy in nursing children and their families in hospitals, homes and communities.

Elizabeth MacKinnon Lammie Nutrition Award
The recipient of this monetary award has demonstrated the ability to apply community nutrition knowledge to the nursing profession.

QEII Health Sciences Centre Award for Professional Practice in Nursing
Selected by their peers, this award recognizes the graduating BSN Basic and Post-BSN student who demonstrates the qualities of Professional Practice. The recipients epitomize the Standards of Nursing Practice of Accountability and Responsibility, Continuing Competence, and Application of Knowledge and Advocacy, and the CNA Code of Ethics for Registered Nurses.

Registered Nurses Professional Development Centre Award
The recipient of this award has demonstrated exceptional nursing practice in the care of the individual and family in an intermediate acute care setting and is identified as having potential in adult acute care nursing practice.

Sigma Theta Tau (Rho Rho Chapter) for Medical/Surgical Nursing
This award is granted to a student who has demonstrated excellence in academic and clinical practice when caring for adults.

Dr. Samar B. Singh Prize in Anatomy
This book prize is awarded to the highest standing student in ANAT 1001/001 and Pharmacy entrants. 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-BSN program who has demonstrated academic achievement and potential leadership in oncology 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 C. Faculty of Health Professions, 1. University Medals on page 561 for details.

Victoria General Hospital School of Nursing Alumni Award for Oncology Nursing
The recipient of this monetary award is a student graduating from the basic program who has demonstrated exemplary nursing practice, professionalism and compassion while caring for patients in the area of oncology nursing.

Women’s Division of the Dalhousie Alumni Association Medal
This medal is presented to the graduating student with the highest cumulative grade point average in the BSc Nursing program.

5. College of Pharmacy

CPHA Apothe Future Leader Award
One award of $1,000 is available annually to qualifying students who are graduating from the program. The recipients will be selected from those who have made significant contributions to the student body, who have demonstrated the strong potential to make contributions to the profession, and who have maintained throughout their university studies a satisfactory academic standing.

Becton Dickinson Award of Excellence in Endocrine Studies
This $500 award will be presented to the student who has the highest mark in Pharmacy 3060 (Endocrine PBL block) at the College of Pharmacy.

BioMedica Diagnostics Award
An award of $100 and a certificate will be presented to a student at the College of Pharmacy who excels in research related to Pharmacy.

The Dean George A. Burbridge Memorial Award
This award of $2,500 is given by the Nova Scotia College of Pharmacists to a student completing third year, from Nova Scotia, for outstanding qualities of character and pharmaceutical ability at the College of Pharmacy.

The R. Frank Chandler Award
An endowment fund was established by Ortho Pharmaceutical (Canada) Ltd. in 1989 to support this Award. It will be presented to a student entering the final year of study at the College of Pharmacy. The candidate must have high qualities of character and spirit, must have well-developed interpersonal skills, must show an aptitude and proficiency for the profession, must show promise of making future contributions to the profession of pharmacy.

The F.R. Clayden Prize
This prize of a book is presented in memory of Mr. F.R. Clayden (Class of 1912) to a deserving student completing the first-year classes of the pharmacy class.

The Dean J. Emsmilde Cooke Award
This award of $500 is awarded annually to a student who has successfully completed one or more years of the class leading to a degree in pharmacy and who is enrolled in pharmacy at the University for the coming year. Candidates must have attained a good academic standing and show promise of making future contributions to the profession of pharmacy. The student must be a graduate of a high school in Nova Scotia and should not be the recipient of other concurrent awards. The Selection Committee may also consider the financial need. This award is sponsored by the Pharmacy Association of Nova Scotia.

College of Pharmacy Dr. J. G. Duff Award
One award of $1,000 will be awarded annually to a Nova Scotia Student who demonstrates a commitment to professionalism integrity and compassion. Apply to the College of Pharmacy.

Jean 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 Dalley Pharmacy Award for Excellence
In 1990, Shoppers Drug Mart established an endowment to recognize the many contributions of Dale Dalley to the profession of Pharmacy. The award is presented annually to a second-year pharmacy student who has demonstrated a good academic standing and whose contributions to undergraduate life at the university level.

Robert C. Dickerson 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. Dickerson.

The Sister Frances dePaul Award
This $500 award is presented by the College of Pharmacy who excels in research related to Pharmacy.

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 contributions and devotion to pharmaceutical education in the Maritimes. This 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 Frost Canada Inc. to the student who excels in the third-year class.

**The William Killen Award**
Shoppers Drug Mart Associates and the pharmaceutical industry have established an endowment to pay tribute to Bill Killen 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. J. Kinley established an endowment in memory of her husband, the Honourable John J. Kinley, a pharmacist, and former Canadian senator. In order to be considered for the award, candidates must have satisfactory academic standing and show promise of contributing to the profession. The financial need of the applicant may also be considered by the Selection Committee. The income from an established fund will be used to provide a monetary award as well as a book.

**Dr. Jessie I. MacKeith Miss Mona W. Fleming Award in Hospital Pharmacy**
This award is administered annually to a student from New Brunswick and to a student from Nova Scotia who have completed outstanding work in the hospital portion of the practical experience program and in the fourth-year multi-skills laboratory class. It is desirable that the recipients demonstrate an interest in hospital pharmacy practice.

**The Helen Conron Marshall Award in Pharmacy**
This endowment was established in memory of Helen Conron 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 class leading to a degree in pharmacy and who is enrolled in pharmacy at the University for the ensuing year. Candidates must have attained a satisfactory academic standing and must show promise of making future contributions to the profession of pharmacy. Financial need may be considered.

**McKesson Medal**
This medal is awarded annually to the student on graduation who has obtained the second highest aggregate mark during his/her four years at the College of Pharmacy.

**Merck Frosst Evidence-Based Clinical Practice Award**
This $1,000 award is presented to a graduating student who has demonstrated outstanding interest, aptitude and leadership in the development and application of evidence-based and critical appraisal skills.

**Merck Sharp and Dohme Pharmacy Award**
This award, of $5,000 and the books, The Merck Index and The Merck Manual, is presented to the student entering third year who excels in pharmaceutical sciences (medicinal chemistry, pharmacokinetics).

**Donald Moore Memorial Award in Pharmacy**
The Donald Moore Memorial Award was established with donations made by family, friends and a generous on-going grant from Shopper’s Drug Mart Associates in memory of the late Donald Moore, a well known leader in hospital and community pharmacy in New Brunswick. This $1,000 award is presented to students entering third year, who have demonstrated well-rounded skills by making a significant and continuing contribution to the student body at the College of Pharmacy and/or Dalhousie University.

**Natural-Medicines Comprehensive Database Recognition Award**
The recipient of this award will be a graduating student who demonstrates an interest in natural products. The recipient will receive the new edition of the Natural Medicines Comprehensive Database book, a one-year subscription to Natural Medicines Comprehensive Database website, a series of booklets entitled Natural Medicines in the Clinical Management of Disease, and an Award Certificate.

**New Brunswick Pharmaceutical Society Centennial Medal**
In conjunction with its 100th anniversary of incorporation, the Society has established this commemorative medal to be presented annually to the New Brunswick student who has attained the highest aggregate mark during his/her four years at the College of Pharmacy.

**The Nova Scotia Association of Certified Dispensers Prize**
This prize, of a book, will be awarded annually to the top student in the first year multi-skills laboratory. The prize was established in 1984 with the gift of funds to provide the initial award and to set up an endowment to provide subsequent awards.

**The Nova Scotia College of Pharmacists Centennial Awards**
In conjunction with its 100th anniversary of incorporation, the Society has established two awards. Candidates will have a satisfactory academic standing and show aptitude for the profession. The financial need of the student may be considered in selecting recipients for the awards, each of which is $1,000.

**Nova Scotia College of Pharmacists Memorial Award**
The Society has established an award in memory of past members and friends of the Society. The award is available to a qualifying student who possesses good academic standing and aptitude for the profession. The financial need of the student may be considered in selecting the recipient for the award of $1,000.

**Novosanpharm Pharmacy Awards**
This $500 award is given to the student who excels in the second year Pharmacokinetics class.

**Pfizer Cardiology Award**
This $1,000 award is presented by Pfizer Canada to the student who obtained the highest mark in PHAR 340.

**Pfizer Consumer Goods 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 210.

**Pfizer Respiratory Award**
This $1,000 award is presented by Pfizer Canada to the student who obtained the highest mark in PHAR 215.

**CPhA Centennial Award (External)**
This award, presented jointly by the Canadian Pharmacists Association (CPhA), and enables a third-year student to join pharmacists and fellow students at the Annual General Meeting of the Canadian Pharmacists Association. The award program exposes student winners to several facets of the profession including the pharmaceutical industry, innovative pharmacy practice sites, hospitals and government agencies wherever possible. Selection is based on academic achievement and outstanding contributions to undergraduate activities.

**Pharmasave Community Service Awards**
An award ($1250) presented to a student from each of third and second year that shows leadership in the development and implementation of a "non-dispensing" patient care program/service offered by a community pharmacy.

**Pharmasave Pharmacy Innovation in Patient Care Awards**
An award ($1250) presented to a student from both third and fourth year that shows leadership in the development and implementation of a "non-dispensing" patient care program/service offered by a community pharmacy. (FPE not included.)

**Eric & Ryan Post-Pharmacy Leadership Award**
This award is presented to a student who is completing their third year and who has demonstrated financial need and has also made significant contributions to pharmacy life at the College.
The B. Trevor Pugsley Memorial Pharmacy Award
This award was established by a bequest from the Estate of B. Trevor Pugsley for an undergraduate student who has completed one or more years of the Pharmacy Program. The recipient must have a satisfactory academic standing. The award is presented in the fall term. Applications are due by October 30.

The Ratiopharm Award
This award is presented annually to a student whose program concentration is Finance, whose performance in COMM 3206 and who achieves satisfactory performance in research in the Money Management area.

The Sepracor Graduate Award
This award is presented to a graduate student, research fellow or post doctoral fellow who has done research with a Dalhousie University faculty member.

The Christopher McKee Award of Merit
This award was established by a bequest from the Estate of B. Trevoy McKee for an undergraduate student who has 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. Students must have demonstrated strong academic ability and involvement in student activities. Application required in the fall term. Applications are due by October 30.

The University Medal in Pharmacy
Please refer to G. Faculty of Health Professions, 1. University Medals on page 560 for details.

Worthy Award of Excellence in Pharmacy Research
An Award of $200 and a certificate will be presented to a student at the College of Pharmacy who excels in research related to pharmacy. Financial need may be considered.

6. School of Social Work

Dalhousie University Women Alumni Medal
This medal is presented annually to the BSW graduating student with the highest cumulative grade point average in the baccalaureate program in the School of Social Work.

Raoul Leger Memorial Humanitarian Award
For a BSW or MSW graduating student. Recipient must be seen to exemplify a commitment to issues of development, peace and social justice. This can be in academic endeavours, volunteer commitments, field placements or previous work history in combination with a continued involvement in critical issues. Students are nominated by the Faculty.

The SSW Alumni Award
For a BSW and MSW student who demonstrates the highest values of humanity, social justice, community and service in the study of social work. The award is provided from faculty members’ nominations to the School of Social Work BSW Program Committee.

University Medal in Social Work
Please refer to G. Faculty of Health Professions, 1. University Medals on page 560 for details.

H. Faculty of Management

1. Commerce

The Wilfred Berman Memorial Prize
The Wilfred Berman Memorial Prize is payable from the income of a fund provided by former students of the late Professor Wilfred Berman to the student obtaining the highest mark in the class in first-year Accounting.

Commerce Alumni Association Awards
The Commerce Alumni Association sponsors seven annual non-monetary awards to recognize academic achievement. There is one award for each of Accounting, Finance, Entrepreneurship, Marketing Management, Marketing Logistics, International Business and Business Management.

The Stuart Luckie Gibson Memorial Prize
The School of Business Administration offers a prize to the graduating student in the general Bachelor of Commerce program who has achieved the highest standing.

The D.C. Mackay Award in Money Management
An endowment has been established by Dr. Douglas C. Mackay, a successful investment banker, valued alumnus and active member of the School of Business Administration Advisory Committee. A major prize is available to a student whose program concentration is Finance, whose career preparation is Money Management, who achieves excellent performance in COMM 3206 and who achieves satisfactory performance in research in the Money Management area.

Outstanding Undergraduate Achievement in International Business Award (non-monetary)
Awarded to a graduating Commerce International Business major to recognize demonstrated interest, university involvement, and academic achievement.

University Medal in Commerce
The School of Business Administration offers a medal to the top graduate in the Bachelor of Commerce program. The award will be one who has fulfilled the high scholastic standard for this award.

2. Management

University Medal in Management
The Faculty of Management offers a medal to the top graduate in the Bachelor of Management program. The award will be one who has fulfilled the high scholastic standard for this award.
1. Faculty of Science

Hertzman Prize
In 1995 an endowment was established to fund an annual prize in memory of Dr. Victor Hertzman. The Faculty of Science awards the Hertzman Prize to the first year Bachelor of Science student who has achieved the highest GPA on the Dean’s List.

1. Biochemistry & Molecular Biology

Peter Dolphin Memorial Prize in Biochemistry
In memory of Professor Peter Dolphin, this prize is awarded annually to the 4th year science student who is judged to have the best overall performance in the Honours Research Project (Biochemistry 4404/4405). Kilmer-MacMillan Memorial Book Prize
This prize is awarded annually to the student who attains the highest aggregate mark for the three half-classes, BIOC 3200, 3300 and 3400.
Douglas Russell Memorial Book Prize
In memory of Dr. Douglas Russell, the Department of Biochemistry & Molecular Biology has established a prize to be awarded to the student with the highest standing in Biochemistry 2300, a class which owns its existence in large part to his efforts.

The Society of Chemical Industry, Canadian Section, Merit Award
This award (an engraved plaque) may be made to the Honours graduate in Biochemistry with the highest standing in the final year. A minimum average of 75% is required.

University Medal in Biochemistry and Molecular Biology
The Department of Biochemistry and Molecular Biology offers a medal to the top Honours graduate in the Biochemistry program. The award will be the one who has attained the high scholastic standard of the Department.

2. Biology

The Adams 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.)

Blain B. With Prize
Two prizes are available annually to students for the highest standing in Biology 1010.05 and Biology 1011.01, 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 3050).

David Durward Memorial Prize
This prize is to be awarded to the best student in the 2000-level inorganic chemistry class.

Osvald Knop Prize in Chemistry
An endowment provides for an annual prize to the top student (or students, in the event of a tie) for the best achievement in both classes and laboratory work in the 2000-level inorganic chemistry class.

The Dr. Ming Fang Li Memorial Prize in Marine Biology
An endowment has been established to fund an annual prize to a Third-Year student in the Co-operative Education program in Marine Biology. The recipient will be the one who is deemed to be the best, assessed on academic-standing and work term performance.

Ogden Memorial Prize
The Dr. J.C. Ogden memorial Prize is given to the top student in Limnology (Biology 4630) and honours the late Dr. J.C. (Pete) Ogden, an accomplished limnologist. A long-serving member of the Biology Department, Dr. Ogden contributed significantly to the field of aquatic science. He particularly enjoyed teaching the Limnology class.

University Medal in Biology
The Department of Biology offers a medal to the top First Class Honours graduate in the Biology program in recognition of superior achievement.

1. Biochemistry & Molecular Biology

University Medal in Marine Biology
The Department established this medal in 1983-84 to be awarded, where appropriate, to the student who stands highest among the First Class Honours graduates in the Marine Biology program.

3. Chemistry

The John Hamilton Barrett Prize
This is the gift of his widow, Mrs. Merrie Barrett. It is offered annually at the end of the fourth year of the class to a student who has shown exceptional ability in Chemistry or other science.

The Canadian Society for Chemistry Silver Medal
The CSC Silver Medal is provided to each university with a chemistry department and is awarded to the student with the highest standing in chemistry and allied subjects in the penultimate year. The successful student receives a medal and a inscribed certificate.

The John Carstairs-Arnell Prize
An endowment has been established to provide an annual prize to the student who has submitted and defended the best Honours Research Project in Chemistry. Dr. Arnell received his BSc (High Honours) from Dalhousie in 1959 and held many senior positions with the Canadian Armed Forces and the Department of National Defence.

Wallace J. Chafe Prize in Chemistry
An endowment has been established to provide an annual prize to a chemistry student, with an outstanding record in organic chemistry, during his or her final year in the Honours Chemistry program.

The Hugh Graeme Fraser Memorial Prize in Advanced Chemistry
This award was founded by members of the Class of 1931. The interest is awarded annually to a student at the end of his/her third year, who has, in the opinion of the Department, shown such aptitude for Chemistry as to merit the award.

Kenneth and Dorothy Hayes Memorial Prize
This endowment provides an annual prize to the student who has demonstrated interest in physical chemistry. The prize is awarded at the end of the penultimate year in the honours chemistry program to that student who has achieved satisfactory academic standing in Third- or Fourth-Year level classes in physical chemistry.

Alain Chalons-Hill Memorial Bursary
Alison Bedermann-Hill, daughter of the late Alain Chalons-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 30, 1905 and was Life President of the Class of ’25 at Dalhousie. After earning his PhD from McGill in 1929 he went on to enjoy a very distinguished career in the Canadian pulp and paper industry. At the time of his retirement he was CEO of Anglo-Paper Products. Please apply to the Department of Chemistry.

Osvald Knop Prize in Chemistry
An endowment provides for an annual prize to the top student (or students, in the event of a tie) for the best achievement in both classes and laboratory work in the 2000-level inorganic chemistry class.
566 Awards

The Society of Chemical Industry, Canadian Section, Merit Award
This award (an engraved gold key and subscription to Chemistry and Industry) may be made to the Honours graduate in Chemistry with the highest standing in the final year. A minimum average of 75% is required.

Undergraduate Award in Analytical Chemistry
The Division of Analytical Chemistry of the American Chemical Society offers a number of gift subscriptions to Analytical Chemistry. These awards are intended to recognize students who have shown an aptitude for a career in analytical chemistry.

University Medal in Chemistry
The Department of Chemistry offers a medal to the top First Class Honours graduate in recognition of superior achievement in chemistry.

4. Earth Sciences

The David Barlow Memorial Award
The family, friends and classmates of David Barlow established in 1984 an endowment fund to provide an annual prize in his memory. The Dawson Geology Club in consultation with the Departmental Chairman will select a student in second-year Earth Sciences who has demonstrated both a good academic record and leadership qualities.

Canadian Society of Petroleum Geologists Award
The Society sponsors an annual award consisting of a certificate and a one-year student membership to an undergraduate student who has demonstrated outstanding competence in petroleum geology or closely related fields.

Canadian Society of Petroleum Geologists Student Industry Field Trip
The society sponsors a field trip to a third-year Earth Sciences student who has an interest in petroleum geology, sedimentology and stratigraphy. The award consists of travel expenses and most field expenses for a trip to the Sedimentary Basin and Rocky Mountains of Western Canada.

G.V. Douglas Memorial Prize in Earth Sciences
In 1959-59, friends and former students of the late Professor G.V. Douglas, established a memorial fund which the interest would provide a prize to be awarded to an outstanding student in first-year Earth Sciences.

Geological Association of Canada Student Prize
Based on overall academic standing, this prize is awarded annually to a student entering fourth-year. The prize will consist of a one-year free membership in the CAG and a GAC "Special Paper" volume to be chosen by the recipient.

Michael J. Keen Memorial Award
This award was established to encourage greater participation of women in science. It will be awarded to a female student entering the second year earth science program who shows an interest in and commitment to the pursuit of a career in science and whose performance is of honours calibre.

G. V. Douglas Memorial Prize in Earth Sciences
In 1959-59, friends and former students of the late Professor G.V. Douglas, established a memorial fund which the interest would provide a prize to be awarded to an outstanding student in first-year Earth Sciences.

The Mining Society Centennial Scholarship Medal
The Mining Society of Nova Scotia sponsors annual medals to students who have distinguished themselves during university studies in the mineral, metallurgical or petroleum fields. The Department awards the medal allocated to Dalhousie to the best all round graduating student.

University Medal in Earth Sciences
The Department of Earth Sciences offers to the top First Class Honours graduate a medal in recognition of superior achievement.

5. Economics

The Anonymous Economics Prize
This prize, consisting of a book(s) and a sum of money, is open to the Dalhousie undergraduate who is not in the final year of study and who has shown through an essay during the second year of study of economics, the best promise of successfully applying economics to the solution of human problems as determined by the selection committee.

University Medal in Economics
The Department of Economics offers a medal to the top First Class Honours graduate in recognition of superior achievement in Economics.

6. Environmental Programs

Environmental Programs Award
This award is given to an Environmental Programs student in her/his third year of study who has shown academic promise in her/his environmental course work.

Environmental Programs Honour Society Medal
The Honours Society Medal is awarded annually to students graduating with a BSc Honours Major in Environmental Science or BSc Combined Honours or a Double Major in Environmental Science who has achieved a cumulative GPA of 3.5 or more.

Environmental Science Thesis Prize
This prize is awarded annually to the student that is judged to have submitted and defended the best Honours Thesis.

Owen Hortman Prize
The Owen Hortman Prize is granted annually to an Environmental Programs student who has contributed significantly to Environmental Programs school life.

 subtracted and deferred the best Honours Thesis.

University Medal in Environmental Science
The Department of Environmental Science offers to the top First Class Honours graduate a medal in recognition of superior achievement in Environmental Science.

7. Mathematics and Statistics

Bernoudi Prize
The Bernoudi Prize will be awarded annually to a student who has submitted and defended the best Honours Thesis.

Katherine M. Buttenshaw Prize
This prize will be awarded annually to an undergraduate student who has completed the third year of an Honours program in Mathematics or Statistics, or a combined Honours program in Mathematics and Statistics.

Ken Dunn Memorial Prize
The fund which was established in memory of Ken Dunn will provide an annual prize to a student who has completed the third year of an Honours program in Mathematics or Statistics, or a combined Honours program in Mathematics and Statistics.

Barry Ward Fawcett Memorial Prize
Established by friends and colleagues of the late Dr. Barry Ward Fawcett who was an associate professor of Computing Science from 1982 until his untimely death at age 50 in 1991. This prize is awarded annually to a student in second-year calculus.
The Ellen McCaughin McFarlane Prize
A Fund has been established in memory of Ellen McCaughin McFarlane, Class of 1927. Initially, the Fund is to provide an annual prize to an honours mathematics student who at the end of his/her first year, in the honours program has achieved the highest standing. (*Normally, this would be upon the completion of the second year at Dalhousie.)

The Waverly Prize
This prize will be awarded annually to the student with the highest standing in Mathematics 1010.

The Sir William Young Gold Medal
Founded by the bequest of the late Sir William Young, this medal will be awarded on graduation to the student who stands first among those taking First Class Honours in Mathematics. (This is the University Medal in Mathematics.)

University Medal in Statistics
The Department established this medal to be awarded to the student who stands highest among the First Class Honours graduates in the Statistics program.

8. Microbiology and Immunology

Ron Carr Award
The Department of Microbiology and Immunology offers a book award to a student who displays academic achievement, commitment to the betterment of colleagues, makes substantive contributions to the broader community and is involved in extra-curricular activities in the arts or environment.

Honours Student Prize
The Department of Microbiology and Immunology offers $100 award for outstanding academic achievement during the Honours Program.

University Medal in Microbiology
The Department of Microbiology and Immunology offers the top First Class Honours graduate a medal in recognition of superior achievement in the third year of an Honours degree in Microbiology and Immunology.

9. Physics and Atmospheric Science

The Dr. William J. Archibald Prize in Physics
An annual prize will be awarded to a student who is considered by the Physics Department to be the most promising among those entering a second year Honours Physics program with first class standing.

The Dr. E.W. Goulphar Memorial Prize
This is to be awarded to the undergraduate student who best exemplifies the qualities of Dr. E.W. Goulphar 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.

Dr. A. Stanley MacKenzie Prizes in Physics
These prizes will be awarded by the Department of Physics and Atmospheric Science to the most promising students in the first two years of the Physics program. The fund was established under the will of the late Miss Mary Alice Smith.

The Burgess McKittrick Prizes in Physics
The funds for these prizes came from the estate of F.J.A. McKittrick who graduated in 1894 with Honours in Mathematics and Mathematical Physics. He was the first Dalhousie graduate to receive the 1851 Exhibition Scholarship. The prizes are in memory of his brother, Burgess McKittrick, who graduated in 1877. A prize will be awarded to undergraduate students achieving the highest standing in each of Physics 1300, 1301 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 student within the Physics program who at the end of her first year, in the Physics program has achieved the highest standing. (*Normally, this would be upon the completion of the second year at Dalhousie.)

Burgess McKittrick Summer Research Studentships in Physics
The Department offers up to two 3-4 month studentships for first year students intending to go into an Honours Physics program at Dalhousie.

Darrell Montgomery Memorial Prize
An endowment has been set up to provide an annual prize to a third-year student in the Physics 1000/2000/3000 experimental laboratory who is deemed to have shown a love of experimentation, the qualities of leadership and a genuine participation in student activities in physics related areas.

The Diploma in Meteorology Prize
This prize is awarded to the student with the highest GPA in the program.

Dr. Masayoshi Senba Memorial Prize
A prize will be awarded to an undergraduate student attending courses typically taught by Masayoshi Senba, who, in the opinion of the faculty, possess outstanding skills, interest, promise, and determination in theoretical physics. The prize will be awarded to a student in Physics (major or honours) in their third or fourth academic year who, compared to the previous academic year, exhibits the greatest improvement in his/her studies.

The University Medal in Physics
The Department of Physics and Atmospheric Science offers to the top First Class Honours graduate a medal in recognition of superior achievement in the Physics class.

10. Psychology

Susan Paula Forward Memorial Prize in Psychology
Established in the memory of Susan Paula Forward who graduated in 1994 with a Bachelor of Science with Honours in Psychology. She achieved academic excellence during her time, being on the Dean’s list for three consecutive years and receiving the University Medal in Psychology upon graduation. This prize is awarded to a graduating Psychology student who has achieved an excellent academic standing, with a strong background and demonstrated interest in pain research and child development.

Dr. W.K. Hong Prize in Psychology
A fund has been established to provide for one or more annual prizes to students who have achieved the highest performance in the introductory psychology class(es) and who are undertaking a Major or Honours degree in Psychology or Neuroscience.

The David and Ruth Hubel Undergraduate Neuroscience Prize
The Neuroscience Institute Prize was established in 1998 by donations from members of the Neuroscience Institute, Dalhousie University. Upon receiving a generous gift from Dr. David and Mrs. Ruth Hubel, the Neuroscience Institute changed the name in honour of the Hubes. The Prize is awarded to a fourth-year Neuroscience Honours student who shows outstanding potential as a student in Neuroscience.

The Neuroscience Institute Prize was established in 1998 by donations from members of the Neuroscience Institute, Dalhousie University. Upon receiving a generous gift from Dr. David and Mrs. Ruth Hubel, the Neuroscience Institute changed the name in honour of the Hubes. The Prize is awarded to a fourth-year Neuroscience Honours student who shows outstanding potential as a student in Neuroscience.

The Frances L. Stewart Memorial Prize in Psychology
A fund has been established to provide a prize to a fourth-year Honours Psychology student who shows outstanding potential as a scientist practitioner in Clinical Psychology.

The University Medal in Neuroscience
The Department of Psychology offers a medal to the top graduating student with First Class Honours in the program.

Dr. W.K. Hong Prize in Psychology
A fund has been established to provide one or more annual prizes to students intending to go into an Honours Neuroscience program at Dalhousie. The Department assigns prizes for use in recognizing the best performance of a student in second year in each program.

The Ellen McCaughin McFarlane Prize
A Fund has been established in memory of Ellen McCaughin McFarlane, Class of 1927. Initially, the Fund is to provide an annual prize to an honours mathematics student who at the end of his/her first year, in the honours program has achieved the highest standing. (*Normally, this would be upon the completion of the second year at Dalhousie.)
V. Financial Aid and Loans

A. Government Student Loans

IMPORTANT: Please note that federal and provincial student loan regulations include stipulations for the Borrower in terms of the minimum class load, expressed as a percentage of the normal class load at the University, which the Borrower must carry in order to benefit from the program. This minimum must be maintained throughout the academic year, e.g., a student who wishes to receive either money or interest-free status under the Canada Student Loan Plan for the entire academic year must carry not fewer than 40 per cent of the normal class load (expressed in credit hours) for each term. Please note, to be eligible for provincial loan funding from Newfoundland, you must be registered in 80% of the normal course load. At Dalhousie, the normal credit hour load for student loan purposes is 30. The Borrower must carry not fewer than 18 credit hours, distributed equally between the terms, i.e., 9. If your particular program does not conform to this scheme, you should apply to Student Aid for funding for only that term in which your class load would fulfill this regulation. Federal and provincial rules can differ on this matter. If you must drop or add classes, exercise care so as not to jeopardize your governmental student loan(s).

B. Addresses of Provincial Student Aid Authorities

Canadian students are to apply for government assistance to the appropriate agency in the province or territory in which the applicant is a bona fide resident.

Alberta
Alberta Students Finance
P.O. Box 28000
Station Main
Edmonton, AB  T6J 4R4
Fax: (780) 422-4516
Tel: (780) 427-3722
1-800-222 6485 (toll-free in Canada)
www.alis.gov.ab.ca

British Columbia
Student Services Branch
Ministry of Advanced Education
P.O. Box 9173
5th Provincial Government
Victoria, BC  V8N 9C7
Fax: 1-800-262-2152
1-800-361-1018 (toll-free in Canada/US)
www.aed.gov.bc.ca/studentaid

Manitoba
Manitoba Student Aid Advanced Education
409-1181 Portage Ave
Winnipeg, MB R3J 0M3
Tel: (204) 945-2313 (outside Manitoba)
1-800-361-1018 (toll-free in Canada/US)
www.studentaid.gov.mb.ca

New Brunswick
Student Financial Services
Department of Education
P.O. Box 6000
77 Westmount St., TD Tower, 5th Floor
Fredericton, NB E3B 5H1
Fax: (506) 444-4321
Tel: (506) 444-4353
1-800-667-9626 (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 630
St. John’s, NL  A1C 4R6
Fax: (709) 729-2298
 Tel: (709) 637-0800
www.edu.gov.nf.ca/studentaid

Northwest Territories
Student Financial Assistance
Department of Education
Government of NWT
P.O. Box 132
Yellowknife, NT X1A 2L9
Fax: 1-800-661-0905
Tel: (867) 875-7193
1-800-661-0793
www.nwtsfa.gov.nt.ca

Nova Scotia
Student Assistance Office
Department of Education
P.O. Box 2200, Halifax Central
Halifax, NS  B3J 3C8
Fax: (902) 424-0540
Tel: (902) 424-0540
1-800-561-0840 (within province)
1-888-657-0800
http://studentloans.ednet.ns.ca

Nunavut
Adult Learning & Post-Secondary Services
Government of Nunavut Department of Education
Box 390
Resolute, NU
Fax: 1-877-860-0167
Tel: 1-877-860-0167
www.gov.nu.ca/education

Ontario
Ontario Student Assistance Program
Student Support Branch
Ministry of Training, Colleges and Universities
P.O. Box 400
Thunder Bay, ON  P7B 6C9
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 2003
16 Henry St
Charlottetown, PE C1A 7N8
Fax: (902) 694-6145
Tel: (902) 694-6145
www.studentloans.pe.ca

Québec
Residents of Québec apply to:
Ministère de l’Éducation
Aide financière aux études
3055, rue De La Chaussee
Québec, QC  G1R 5A5
Tel: (418) 646-4505
Tel: 1-888-345-4505
www.educ.gouv.qc.ca
C. Temporary Loans

1. For all Dalhousie Students

Temporary Loans

The University has established a temporary loan program to assist registered Dalhousie students with certain types of short-term financial difficulty when no other resource is available. Students must provide proof of their ability to repay the loan within the time period. Loans are not made for tuition fee payment.

2. For Architecture and Planning, Computer Science & Engineering Students

Student’s Medical Response Trust Fund

The fund was established in response to a medical emergency. Prior to the establishment of this Fund, Students, Faculty and Friends of Dalhousie joined together to provide special funding to assist a student. A committee will decide upon the distribution of funds.

C. Temporary Loans

1. For all Dalhousie Students

The University has established a temporary loan program to assist registered Dalhousie students with certain types of short-term financial difficulty when no other resource is available. Students must provide proof of their ability to repay the loan within the time period. Loans are not made for tuition fee payment.

2. For Architecture and Planning, Computer Science & Engineering Students

Student’s Medical Response Trust Fund

The fund was established in response to a medical emergency. Prior to the establishment of this Fund, Students, Faculty and Friends of Dalhousie joined together to provide special funding to assist a student. A committee will decide upon the distribution of funds.

C. Temporary Loans

1. For all Dalhousie Students

The University has established a temporary loan program to assist registered Dalhousie students with certain types of short-term financial difficulty when no other resource is available. Students must provide proof of their ability to repay the loan within the time period. Loans are not made for tuition fee payment.

2. For Architecture and Planning, Computer Science & Engineering Students

Student’s Medical Response Trust Fund

The fund was established in response to a medical emergency. Prior to the establishment of this Fund, Students, Faculty and Friends of Dalhousie joined together to provide special funding to assist a student. A committee will decide upon the distribution of funds.

C. Temporary Loans

1. For all Dalhousie Students

The University has established a temporary loan program to assist registered Dalhousie students with certain types of short-term financial difficulty when no other resource is available. Students must provide proof of their ability to repay the loan within the time period. Loans are not made for tuition fee payment.

2. For Architecture and Planning, Computer Science & Engineering Students

Student’s Medical Response Trust Fund

The fund was established in response to a medical emergency. Prior to the establishment of this Fund, Students, Faculty and Friends of Dalhousie joined together to provide special funding to assist a student. A committee will decide upon the distribution of funds.

C. Temporary Loans

1. For all Dalhousie Students

The University has established a temporary loan program to assist registered Dalhousie students with certain types of short-term financial difficulty when no other resource is available. Students must provide proof of their ability to repay the loan within the time period. Loans are not made for tuition fee payment.

2. For Architecture and Planning, Computer Science & Engineering Students

Student’s Medical Response Trust Fund

The fund was established in response to a medical emergency. Prior to the establishment of this Fund, Students, Faculty and Friends of Dalhousie joined together to provide special funding to assist a student. A committee will decide upon the distribution of funds.

C. Temporary Loans

1. For all Dalhousie Students

The University has established a temporary loan program to assist registered Dalhousie students with certain types of short-term financial difficulty when no other resource is available. Students must provide proof of their ability to repay the loan within the time period. Loans are not made for tuition fee payment.

2. For Architecture and Planning, Computer Science & Engineering Students

Student’s Medical Response Trust Fund

The fund was established in response to a medical emergency. Prior to the establishment of this Fund, Students, Faculty and Friends of Dalhousie joined together to provide special funding to assist a student. A committee will decide upon the distribution of funds.

C. Temporary Loans

1. For all Dalhousie Students

The University has established a temporary loan program to assist registered Dalhousie students with certain types of short-term financial difficulty when no other resource is available. Students must provide proof of their ability to repay the loan within the time period. Loans are not made for tuition fee payment.

2. For Architecture and Planning, Computer Science & Engineering Students

Student’s Medical Response Trust Fund

The fund was established in response to a medical emergency. Prior to the establishment of this Fund, Students, Faculty and Friends of Dalhousie joined together to provide special funding to assist a student. A committee will decide upon the distribution of funds.

C. Temporary Loans

1. For all Dalhousie Students

The University has established a temporary loan program to assist registered Dalhousie students with certain types of short-term financial difficulty when no other resource is available. Students must provide proof of their ability to repay the loan within the time period. Loans are not made for tuition fee payment.

2. For Architecture and Planning, Computer Science & Engineering Students

Student’s Medical Response Trust Fund

The fund was established in response to a medical emergency. Prior to the establishment of this Fund, Students, Faculty and Friends of Dalhousie joined together to provide special funding to assist a student. A committee will decide upon the distribution of funds.

C. Temporary Loans

1. For all Dalhousie Students

The University has established a temporary loan program to assist registered Dalhousie students with certain types of short-term financial difficulty when no other resource is available. Students must provide proof of their ability to repay the loan within the time period. Loans are not made for tuition fee payment.

2. For Architecture and Planning, Computer Science & Engineering Students

Student’s Medical Response Trust Fund

The fund was established in response to a medical emergency. Prior to the establishment of this Fund, Students, Faculty and Friends of Dalhousie joined together to provide special funding to assist a student. A committee will decide upon the distribution of funds.
Awards

Constance Patricia Hamilton in the amount of $18,900, the income to be used to assist students. Apply through the general online bursary program.

The Rebecca Cohn Bursary Fund
From the Estate of Charles Gordon Cumming came a bequest of $10,000 US to endow a bursary fund to assist needy students. Mr. Cumming expressed a preference for matriculants from Naparima College in Trinidad should such students attend Dalhousie. Apply through the general online bursary program.

Lenore Smith Cumming Bursary
From the Estate of Charles Gordon Cumming came a bequest of $10,000 US to endow a bursary fund to assist needy students. Mr. Cumming expressed a preference for matriculants from Naparima College in Trinidad should such students attend Dalhousie. Apply through the general online bursary program.

Dalhousie Leadership Bursaries
A limited number of bursaries are available annually to students who have exhibited a record of considerable leadership achievement. Candidates must also demonstrate consistent satisfactory academic accomplishment. The Selecting Committee may consider such other matters as financial need, service to the University and the community, and character. Submit completed forms to the Department of Athletics and Recreational Services, which will forward your application with supplementary information.

Dalhousie Memorial Bursary Fund
From time to time at Dalhousie contributions have been made to the University and only the investment income will be awarded. The award will be made in the name of an accomplished alumna and long-time participant in the residence community. It is named in honour of Ann Lavers, staff member of Howe Hall from 1987-1994, who befriended many residents over her term of employment, in a variety of positions, at Howe Hall. The recipient must have a demonstrated financial need, be in good academic standing and also be an individual who has made a positive contribution to the residence community at Howe Hall. Application information is posted within the residence each January.

The Rev. Kenneth Mackenzie Bursary
An endowment has been established to provide an annual bursary in memory of an accomplished alumnus and long-time participant in the residence community. It is named in honour of Kenneth Mackenzie, B.A. 1930, who served in Military District No. 6. Applicants must fulfil the Corps' standing and also be an individual who has made a positive contribution to the residence community at Howe Hall. Application information is posted within the residence each January.

Howe Hall, to provide financial assistance to a Dalhousie student who is a current Howe Hall resident. It is named in honour of Ann Lavers, staff member of Howe Hall from 1987-1994, who befriended many residents over her term of employment, in a variety of positions, at Howe Hall. The recipient must have a demonstrated financial need, be in good academic standing and also be an individual who has made a positive contribution to the residence community at Howe Hall. Application information is posted within the residence each January.

The Annette S. Hill Bursary
This number of bursaries is available to any full-time Dalhousie student, already registered and in need of assistance. Apply through the general online bursary program.

The Number 6 Provost Mutual Association established this bursary fund to assist descendants of those members of the Canadian Provost Corps who served in Military District No. 6. Applicants must fulfil the Corps' selection criteria, show satisfactory academic progress and demonstrate financial need. There are several sets of criteria. Apply through the general online bursary program. Deadline: October 31.

The MacCallum S. Grant Charitable Foundation Bursary
The MacCallum S. Grant Charitable Foundation supports a number of bursaries for Dalhousie University students each year. The main priority will be given to students who have lived in Halifax County, Guysborough County and Preston for a period of at least two years immediately prior to receiving a bursary. Students from the former City of Halifax, Dartmouth and the town of Bedford are not eligible to receive a bursary. The recipients will have demonstrated financial need and satisfactory academic progress. Apply through the general online bursary program. Deadline: October 31.

Annies M. Harrison Bursary
The annual income from the bequest of $10,000 from the Estate of Annie M. Harrison provides a number of bursaries. Apply through the general online bursary program.

The Neil and Jessie Matheson Bursary
An endowment was provided to provide a bursary to a student from the rural areas of Nova Scotia. Apply through the general online bursary program. Deadline: October 31.
provide financial assistance to students who are residents of the town of Springhill, Cumberland County. Apply through the general online bursary program.

Mr. & Mrs. Morris Saffron Bursary
Established to provide financial assistance to students who are residents of the town of Millbrook, Cumberland County. Apply through the general online bursary program.

Tom Norwood Bursary
This bursary is established by Barbara and John Norwood to provide financial assistance to a full-time undergraduate or graduate student from Cape Breton in their first year of study. This bursary is available to students who are residents of Cape Breton. Apply through the general online bursary program.

Helen Tupper Memorial Bursary
This bursary is established by the estate of Helen Tupper and is available to students who are residents of Cape Breton who wish to undertake international placements as part of their degree program. Apply through the general online bursary program.

Supertemp Bursary
This bursary is available to students who are residents of Nova Scotia. Apply through the general online bursary program.

Robert Bruce Bursaries
Several bursaries are available to students in the third year of an Arts or Science class. Awarded annually to students who have demonstrated financial need. Application required. Deadline: April 30.

Women's Division Bursaries
A number of bursaries, based on financial need, will be offered directly from the Women's Division of the Dalhousie Alumni Association. Apply through the general online bursary program. A separate essay will be required to be submitted to the Adams Office addressed to the Chair of the Scholarship Committee, Women's Division. Deadline: October 31.

B. Faculty of Architecture and Planning
Unless otherwise noted, selection for these bursaries is made by the Undergraduate Awards and Scholarships Committee of the Faculty of Engineering augmented by representatives of the Faculty of Architecture and Planning. Application forms are available from the Offices of the Deans of the Faculty of Architecture and Planning.

Birks Family Foundation Bursary
The Birks Family Foundation provides two bursaries of $1,000 each. Eligible students must complete 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.

The Michael G. Johnston Memorial (Entrance) Bursary
This annual $500 bursary has been established in the memory of Michael G. Johnston by the Board of Governors of the University. Michael G. Johnston was a valued member of the Dalhousie Board of Governors who expressed sincere interest in all who came into contact with him. Candidates must have fulfilled or expect to fulfill the minimal entrance requirements for the BEd program in Architecture, or for entrance into the third year of Computer Science and Engineering. The bursary is awarded on the basis of community involvement, scholastic ability, and financial need. Application required. Deadline: April 30.

Eric Stanley Hillis Memorial Bursaries
An annual bursary for a student enrolled in the 2nd, 3rd, or 4th year of a Bachelor of Arts degree. Apply through the general online bursary program.

Awards 571
Awards

Dr. Rosemary Theresa Holtan & Stephen A. Holton Bursary

The Elizabeth McKenna Scholarship Fund was established in 1928 for the purpose of providing what are known today as bursaries. Applicants must be bona fide residents of one of the Maritime Provinces and be entering the first year in the College of Arts & Science. Apply through the general online bursary program.

The Ross Millar Bursary

Under the will of Dr. Ross Millar, the sum of $10,000 was bequeathed to the Board of Governors in trust to set up a bursary to be awarded annually. It is stipulated that “Other things being equal the recipient shall be an undergraduate in Arts or Letters who is qualifying himself for the Ministry of the Presbyterian Church in Canada by taking the Arts or Letters degree at Dalhousie.” Apply through the general online bursary program.

Reverend J.W.A. Nicholson Bursaries

This Fund was established in commemoration of the unselfish life of a distinguished Dalhousie graduate (BA 1917). One of his concerns was to help young people discover their talents. The income is used to assist Black Nova Scotians who are full-time students in the College of Arts & Science at Dalhousie. Awards are made at the discretion of the Registrar’s Office - Awards. Apply through the general online bursary program.

D. Faculty of Computer Science

Unless otherwise noted, selection for these bursaries is made by the Undergraduate Awards and Scholarships Committee of the Faculty of Engineering augmented by representatives of the Faculty of Computer Science.

Application forms are available from the Offices of the Deans of Engineering or Computer Science.

Deadline: September 30.

Dr. Ralph 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 bursary is awarded annually to a female student entering her third year of study in the Faculty of 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 Michael G. Johnston Memorial Entrance Bursary

This annual $500 bursary has been established in the memory of Michael G. Johnston by the Board of Governors of the University. Michael G. Johnston was a valued member of the Dalhousie Board of Governors who expressed sincere interest in all who came into contact with him. Candidates must have fulfilled or expect to fulfill the minimal entrance requirements for an undergraduate program in Architecture and Planning, or for entrance into the third year of Computer Science and Engineering. The bursary is awarded on the basis of community involvement, scholastic ability, and financial need. Application required.

Deadline: April 30.

The Red Showeller Memorial Bursary

The bursary has been established by the Student Union of Dalhousie and is supported by students, alumni, family, friends and colleagues. Mr. Showeller was the Athletic Director of TUNS from 1980 to 1991 and acted as councillor, mentor, and friend to hundreds of students who came to know his compassion and understanding. The award of $500 is made to a student who is maintaining an acceptable academic standard in the penultimate term of study in any faculty. Award is made on the basis of participation in Dalhousie athletics, with an emphasis on intramurals and financial need. Selection is carried out by the Scholarships & Awards Committee of the Faculty of Engineering. Application required.

Deadline: September 30.

E. Faculty of Engineering

Unless otherwise noted, students must apply for all bursaries available through the Faculty of Engineering. Please refer to specific bursary descriptions for further details.
1. Studley Campus

J. Winston MacDonald Bursary
An endowment has been established to provide an annual bursary to a student enrolled in the Engineering program at Dalhousie University. The recipient will have demonstrated financial need and satisfactory academic standing. The bursary is 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 1933. Apply through the Faculty of Engineering, Studley Campus. Contact the department for the deadline.

Lloyd Hopkins Wickwire Bursary
An endowment has been established through a bequest from the Estate of Lloyd H. Wickwire, an alumnus of the Nova Scotia Technical College and Dalhousie University. This endowment is meant to provide annual bursaries to students studying engineering at Dalhousie University. Applicants must demonstrate financial need and be in good academic standing. Apply through the general online bursary program.

Susan (Cox) Wickwire Bursary in Engineering
An endowment has been established in memory of Susan (Cox) Wickwire, a former school teacher whose four sons are University alumni. The bursary is open to students for promotion from Year 1 to Year II in the Dalhousie Faculty of Engineering. The recipient will have demonstrated financial need and satisfactory academic standing. Apply through the Faculty of Engineering, Studley Campus Office. Contact the department for the deadline.

2. Sexton Campus

Unless otherwise noted, selection of bursary awardees is carried out by the Scholarships and Awards Committee of the faculty of Engineering. Application forms are available from the Office of the Associate Dean of Engineering, Sexton Campus.

The Sam Anda Memorial Bursary
This $1,000 bursary is awarded annually to a student studying in his/her fourth year of Mechanical Engineering to honour the memory of the distinguished scientist, and engineering educator, Mr. Sam Anda. To be eligible, a student must be in good academic standing and display creativity through high academic performance in design courses and/or extra curricular activities. Deadline: September 30.

J.D. (Dan) Arbuckle Memorial Nova Scotia Road Builders Association Bursary
The N.S. Road Builders Association established this award of $1,500. Eligible students are to be registered in the Senior Year in the Faculty of Engineering. The Committee will consider the applicant’s financial need, academic standing, interest in highway or construction engineering, and executive ability in a construction company or highway department. Preference will be given to students registered in Civil Engineering. Deadline: September 30.

Margaret Archibald Memorial (Entrance) Bursary
The Family, Friends and Associates of Margaret Archibald established this award of $500. Mrs. Margaret Archibald was a Dalhousie employee from December 1952 to May 1979. During this period of time, she worked for three Presidents. After her official retirement as Administrative Secretary to the President, Mrs. Archibald continued with the University working in the Dalhousie Library until 1983. Margaret Archibald was a very loyal and dedicated employee with a keen interest in the Dalhousie community. The eligible candidate must be a woman who has fulfilled or expects to fulfill the minimum entrance requirements into third year of an undergraduate program in Architecture, Computer Science, or Engineering. Apply through Sexton Campus. Deadline: April 30.

Armagan Family Bursary
This annual bursary of $2,500 has been established to assist a student in his/her first year of Upper Division of Engineering. The recipient will have demonstrated financial need and satisfactory academic standing. Deadline: September 30.

Birks Family Foundation Bursary
The Birks Family Foundation provides two bursaries of $1,000 each. Eligible students must have completed at least their third year of study within the Faculty of Architecture and Planning or the Faculty of Engineering. The award is made on the basis of financial need; provided that the applicant is maintaining an acceptable academic standard. Deadline: September 30.

Dr. Ralph M. Goldblloom Bursary
This fund was established in 1995 to honour Dr. Goldblloom CM, on the occasion of her installation as Chancellor of the Technical University of Nova Scotia. This bursary is awarded annually to a female student entering her third year of study in the Faculty of Architecture and Planning, Faculty of Computer Science or the Faculty of Engineering. The recipient will have achieved satisfactory academic standing and demonstrated financial need. Application required. Deadline: April 30.

The John J. Jodrey (Entrance) Bursary
John J. Jodrey established two awards of $500 each. Eligible candidates must have fulfilled or expect to fulfill the minimum requirement for entrance into the third year of an undergraduate program in the Faculty of Engineering. This award is restricted to Atlantic Canadians. Deadline: April 30.

The Michael G. Johnston Memorial (Entrance) Bursary
This annual $500 bursary has been established in the memory of Michael G. Johnston by the Board of Governors of the University. Michael G. Johnston was a valued member of the Dalhousie Board of Governors who expressed sincere interest in all who came into contact with him. Candidates must have fulfilled or expect to fulfill the minimal entrance requirements for an undergraduate program in Architecture and Planning, or for entrance into the third year of Computer Science and Engineering. The bursary is awarded on the basis of community involvement, scholastic ability, and financial need. Deadline: April 30.

Ian Noseworthy Bursary
This bursary has been established in memory of Ian Noseworthy by his family and friends. Mr. Noseworthy was a fourth-year student in Chemical Engineering at the time of his death. Eligible students are to be registered in the fourth year of a Bachelor of Engineering in Chemical Engineering. The award is made on the basis of demonstrated financial need and satisfactory academic standing. Deadline: September 30.

Nova Scotia Department of Transportation and Public Works Bursary
This endowment has been established to provide a bursary (s) of $1,250 to one or more full-time student(s) who are considered permanent residents of Nova Scotia and entering the third year of the undergraduate program of the Faculty of Engineering. The student(s) will have demonstrated financial need and achieved a 3.0 average. Co-op placement with the Department of Transportation and Public Works may be made available. Upon completion of study / graduation, an opportunity of employment may be extended. Applications should be submitted to the Awards Committee of the Faculty of Engineering. Application deadline: April 30.

The Jason Paquet Memorial Bursary
This bursary, valued at $500 has been established in memory of Jason Paquet by his family, friends, fellow students, faculty and alumni of mechanical engineering. Mr. Paquet was registered as a fourth-year mechanical engineering student at the time of his death. Eligible students are to be registered in the Junior Year of the Mechanical Engineering program of the Faculty of Engineering. The award is based primarily on financial need. The Committee will also consider the academic record of the applicant and involvement in sports and community. Preference will be given to students who were residents of Prince Edward Island prior to attending Dalhousie. Deadline: September 30.

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 member of the Department of Chemical Engineering at Dalhousie for many years. Eligible students are to be registered in Year 4 or 5 of an undergraduate engineering program with preference given to Chemical Engineering.
Awards

The Rod Shoveller Memorial Bursary
This $500 bursary has been established by the Student Union of Dalhousie and is supported by students, alumni, family, friends and colleagues. Mr. Shoveller was the Athletic Director of TUNS from 1980 to 1991 and acted as counselor, mentor and friend to the hundreds of students who came to know him compassionately and understandingly. Eligible students are entering their penultimate term of study in the Faculty of Architecture and Planning, Computer Science, or Engineering. The award is made on the basis of participation in Dalhousie athletics, with an emphasis on intramural and financial need, provided that the applicant is maintaining an acceptable academic standard. Selection is carried out by the Scholarships & Awards Committee of the Faculty of Engineering. Deadline: September 30.

The Jack Kidd/ANCA Bursary
This $500 bursary has been established in memory of Dr. H.G. Kidd, a dedicated professor in the Mining Engineering program at Dalhousie for many years. Eligible candidates must have fulfilled or expect to fulfill the minimum entrance requirements into year three of the Mining Engineering undergraduate program in the Faculty of Engineering. The Bursary is awarded on the basis of the applicant’s academic record at an Associated University or in the previous years at Dalhousie. While academic excellence will be the primary criterion for the award, the selection committee may also weigh other considerations in reaching a decision. Deadline: April 30.

F. Faculty of Health Professions

1. College of Pharmacy

PLEASE NOTE: The College administers the following bursaries. Applications are available directly from the College of Pharmacy and, upon completion, must be submitted by June 1.

Astra Zeneca Bursaries
Two bursaries of $750 each are awarded annually to students who have completed two or three years and who demonstrate financial need. Apply to the College of Pharmacy.

The Bert and Betty Collins Bursary
Two bursaries of $750 each are awarded annually to students who have successfully completed one or more years of the class leading to a degree in Pharmacy. The Bursary is awarded on the basis of the applicant’s academic record at an Associated University or in the previous years at Dalhousie. The students must have a satisfactory academic standing and demonstrate financial need. Apply to the College of Pharmacy.

The Pfizer Bursary
This bursary of $500 is offered to a student who shows future promise and an interest in independent community pharmacy. The student must have a good academic standing and demonstrate financial need. Apply to the College of Pharmacy.

The Dr. H.G. Sherwood Memorial Entrance Bursary
Deadline: September 30.

The Rod Shoveller Memorial Bursary
This $500 bursary has been established by the Student Union of Dalhousie and is supported by students, alumni, family, friends and colleagues. Mr. Shoveller was the Athletic Director of TUNS from 1980 to 1991 and acted as counselor, mentor and friend to the hundreds of students who came to know him compassionately and understandingly. Eligible students are entering their penultimate term of study in the Faculty of Architecture and Planning, Computer Science, or Engineering. The award is made on the basis of participation in Dalhousie athletics, with an emphasis on intramural and financial need, provided that the applicant is maintaining an acceptable academic standard. Selection is carried out by the Scholarships & Awards Committee of the Faculty of Engineering. Deadline: September 30.

The Jack Kidd/ANCA Bursary
This $500 bursary has been established in memory of Dr. H.G. Kidd, a dedicated professor in the Mining Engineering program at Dalhousie for many years. Eligible candidates must have fulfilled or expect to fulfill the minimum entrance requirements into year three of the Mining Engineering undergraduate program in the Faculty of Engineering. The Bursary is awarded on the basis of the applicant’s academic record at an Associated University or in the previous years at Dalhousie. While academic excellence will be the primary criterion for the award, the selection committee may also weigh other considerations in reaching a decision. Deadline: April 30.

F. Faculty of Health Professions

1. College of Pharmacy

PLEASE NOTE: The College administers the following bursaries. Applications are available directly from the College of Pharmacy and, upon completion, must be submitted by June 1.

Astra Zeneca Bursaries
Two bursaries of $750 each are awarded annually to students who have completed two or three years and who demonstrate financial need. Apply to the College of Pharmacy.

The Bert and Betty Collins Bursary
Two bursaries of $750 each are awarded annually to students who have successfully completed one or more years of the class leading to a degree in Pharmacy. The Bursary is awarded on the basis of the applicant’s academic record at an Associated University or in the previous years at Dalhousie. The students must have a satisfactory academic standing and demonstrate financial need. Apply to the College of Pharmacy.

The Pfizer Bursary
This bursary of $500 is offered to a student who shows future promise and an interest in independent community pharmacy. The student must have a good academic standing and demonstrate financial need. Apply to the College of Pharmacy.

The Dr. H.G. Sherwood Memorial Entrance Bursary
Deadline: September 30.

The Rod Shoveller Memorial Bursary
This $500 bursary has been established by the Student Union of Dalhousie and is supported by students, alumni, family, friends and colleagues. Mr. Shoveller was the Athletic Director of TUNS from 1980 to 1991 and acted as counselor, mentor and friend to the hundreds of students who came to know him compassionately and understandingly. Eligible students are entering their penultimate term of study in the Faculty of Architecture and Planning, Computer Science, or Engineering. The award is made on the basis of participation in Dalhousie athletics, with an emphasis on intramural and financial need, provided that the applicant is maintaining an acceptable academic standard. Selection is carried out by the Scholarships & Awards Committee of the Faculty of Engineering. Deadline: September 30.

The Jack Kidd/ANCA Bursary
This $500 bursary has been established in memory of Dr. H.G. Kidd, a dedicated professor in the Mining Engineering program at Dalhousie for many years. Eligible candidates must have fulfilled or expect to fulfill the minimum entrance requirements into year three of the Mining Engineering undergraduate program in the Faculty of Engineering. The Bursary is awarded on the basis of the applicant’s academic record at an Associated University or in the previous years at Dalhousie. While academic excellence will be the primary criterion for the award, the selection committee may also weigh other considerations in reaching a decision. Deadline: April 30.
as well as a desire to establish a career and practice in Cancer Nursing. Contact the School of Nursing for the deadline.

School of Nursing Undergraduate Bursary
This endowment was established to provide an annual bursary to one or more students in the second or third year of the Bachelor of Nursing program. Students enrolled in the accelerated program must have completed at least one full year of the undergraduate nursing program before applying. Students must be enrolled in at least four courses and be in good academic standing. Applications are available at the School of Nursing. Contact the School of Nursing for the deadline.

4. School of Social Work
1. The following Bursaries are offered by the Office of the Registrar.

Hannah G. Matheson Bursaries
These bursaries are open to students enrolled in studies in the School of Social Work at either the undergraduate or graduate level. Apply through the general online bursary program.
Lloyd MacBain Memorial Bursary
The Lloyd Y. MacBain Memorial Award Fund was established to provide an annual bursary to a qualifying student who is continuing his or her studies at the School in the baccalaureate program beyond first year. Apply through the general online bursary program.
Jane Wisdom Memorial Bursary
When Jane Wisdom began her caring work in Halifax shortly before the Great Explosion of 1917, she was truly a pioneer in what has come to be known as Social Work. It is in recognition of her distinguished service that anonymous donors in 1977 established an endowment fund whereby one or more annual bursaries to one or more deserving students would be granted to students in the baccalaureate program of the School of Social Work at Dalhousie University. Apply through the general online bursary program.

2. The following Bursaries are offered by the School.

The Janet Les Myers Memorial Bursary
For one or more students in the Bachelor of Social Work degree program at Dalhousie University who are in need of financial assistance. Deadline: October 15.
Nova Scotia Association of Social Workers’ Bursary
The NSASW provides an annual bursary to a BW student who best meets the selection criteria of financial need, satisfactory academic progress, and demonstrates social work values in prior endeavors. The recipient is expected to contribute in some way to the NSASW while a student at the School. Selection is made by the BSW Committee in the Full Term. Deadline: October 15.

The Sonja R. Weil Memorial Bursary
Family and friends established this endowment as a memorial to Sonja Weil in tribute to her work as a social worker and psychotherapist. This bursary is open to students in the MSW (preference is given to MSW students) and BW programs who demonstrate financial need, satisfactory academic standing and interest in those areas which most closely reflect Sonja Weil’s work in child and family therapy. Applications are available through the general online bursary program.

G. Faculty of Management

Knight, Bain, Sooth, Halfbrook Atlantic Limited Bursary
This Company sponsors an annual bursary of $1,000 to be awarded to a student in the Bachelor of Commerce program on the basis of financial need. The recipient will have achieved satisfactory standing. Apply through the School of Business Administration. Contact the School of Business for the deadline.

The Louisbourg Investments Bursary
Two bursaries are funded annually by Louisbourg Investments in order to assist students enrolled in the School of Business Administration. Students must demonstrate financial need and be of satisfactory academic standing. Application required to the School of Business Administration. Contact the School of Business for the deadline.

H. Faculty of Science

Andrey-Lea Diasson Memorial Bursary
A memorial bursary is open annually to one or more female students enrolled in the Bachelor of Science program who have demonstrated financial need and satisfactory academic standing. Apply through the general online bursary program.

David AndrewDougall 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.

H. Allen Halloran Hill Bursary
The Allan Chaloner Hill Bursary endowment was established by his daughter Alison Biedermann-Hill in her father’s memory. A bursary is available to a second- or third-year chemistry student. Please apply to the Department of Chemistry. Deadline: Check with Chemistry in September.

Mathematics & Statistics Bursary Fund
An annual bursary is to be awarded to a student enrolled in the second, third or fourth year of an undergraduate program, leading to a degree in Mathematics or Statistics at Dalhousie University. The recipient will have demonstrated financial need and satisfactory academic standing. Apply through the general online bursary program.

H. J. F. Russell Maxwell Memorial Bursaries
Any residual income remaining in the Fund after the annual scholarships have been determined may, after consultation with the Department of Economics, be used to fund one or more bursaries for deserving students entering the fourth year of the Honours program in Economics. Awarded by the Department of Economics and the Office of the Registrar. Application not required.

Elizabeth McKenna Bursaries
The Elizabeth McKenna Scholarship Fund was established in 1928 for the purpose of providing what are known today as bursaries. Applicants must be bona fide residents of one of the Maritime Provinces and be entering the first year in the College of Arts & Science. Apply through the general online bursary program.

John E. Tasman Memorial Bursary in Chemistry
Established in memory of John E. Tasman who graduated from Chemistry in 1962, this bursary is available to full-time students enrolled in the Faculty of Science and majoring in Chemistry. Apply through the general online bursary program. Deadline: October 31.

3M Canada Bursary
Two bursaries in the amount of $1,000 each are given to students entering their graduating year of studies in Science or Commerce who have maintained grades establishing them in the top quartile of their programs and who are in need of financial support. Apply through the general online bursary program. Deadline: October 31.

VII. Continuing Education Awards and Bursaries

Students who are engaged in part-time studies for credit are eligible to be considered for awards and financial assistance. Each of these is described briefly below.

The Frederick Thomas Parker Award for Part-Time Studies
This award will provide an appropriate and flexible means of encouraging students intending to undertake degree or diploma studies at Dalhousie on a part-time basis. The selection committee will take into account both...
Awards

academic performance and financial need, depending upon
circumstances. Applications are available at the College of Continuing
Education.

Canada Student Loan for Part-Time Students
This particular federal loan is intended to help students who have a small
cash-flow problem at the beginning of their studies. In order to qualify on
the basis of class load for a standard academic year, a student must be
planning to take between 20% and 99% of a course load. The application
form is available from Nova Scotia Student Aid Office, and is to be
completed by the Registrar’s Office.

Dalhousie University Undergraduate Bursaries
Students who are registered in 6 credit hours per term will be considered
for bursaries. Apply through the general online bursary program through
the monneymatters.dal.ca
Program dates: Fall: October 1 - October 31
Winter: January 15 to February 15
Summer: May 15 - June 15

Dalhousie Temporary Loans
Students who are engaged in part-time studies for credit will be
considered for temporary loans. Such loans are intended for short-term
needs, and repayment is required after the expiration of a predetermined
grace period. Application is to be made at the Office of the Registrar.
Index

A
Academic Advice .......................................................... 30
Academic Dates ................................................................ 1
Academic dismissal ......................................................... 3, 79
Academic Programs
International/Exchange Programs .................................. 33
Preparation for Other Programs ........................................ 33
Academic Regulations ...................................................... 30
Academic Dismissal ......................................................... 39
Academic Standing .......................................................... 39
Appeals ............................................................................. 41
Assessment ...................................................................... 37
Audit of Classes ............................................................... 32
Correspondence and Summer School ............................ 33
Counting of Credits for Two Dalhousie Undergraduate Degrees ......................................................... 31
Duration of Undergraduate Studies ................................... 33
Experimental Classes ....................................................... 32
Graduation ........................................................................ 41
Graduation Standing ....................................................... 40
Part-Time Students .......................................................... 32
Reassessment of a Final Grade ......................................... 38
Registration ..................................................................... 30
Transfer Students ............................................................ 31
Academic Sessions, definition ............................................ 3
Academic Standing .......................................................... 39
Accessibility for Students with Disabilities .................... 22
Accessibility Services ..................................................... 529
Accounts ......................................................................... 551
Admission Dates ............................................................ 1, 3
Admission Deposit ........................................................... 531
Admission Requirements .................................................. 9
Application submissions ................................................... 19
Early Acceptance ............................................................ 19
Final Acceptance ............................................................. 19
International Baccalaureate and Advanced Placement Classes 10
International Students ..................................................... 9
Language Tests ............................................................ 10
Learning Disabilities ...................................................... 22
Matriculants Students ...................................................... 11
Program Requirements ................................................... 9
Recreation ......................................................................... 14
Recruitment of Acceptance .............................................. 20
Response to Applications ................................................ 19
Transfer Students ............................................................ 19
Visiting Students - Canadian ............................................. 11
Visiting Students - International and Exchange ............... 10
Advanced Standing, definition .......................................... 3
African Studies ............................................................... 73
African Studies, Centre for .............................................. 518
Agriculture ........................................................................ 42
Bachelor of Science in Agriculture .................................. 42
Bachelor of Technology .................................................... 42
Alumni Association/Alumni Relations .............................. 524
Anatomy and Neurobiology ............................................. 389
Anthropology, see Sociology & Social Anthropology ........... 215
Anti-Plagiarism Service .................................................... 524
Appeals ............................................................................. 41
Application Dates ............................................................ 3
Arabic ................................................................................. 73
Architecture ....................................................................... 47
Architecture and Planning, Faculty of ................................ 47
Architecture, School of ..................................................... 47
Arts and Science, College of ............................................ 64
Arts and Social Sciences ................................................... 74
Arts and Social Sciences, Faculty of .................................. 72
Arts Centre ................................................................. 528
Assessment ...................................................................... 32
Athletics and Recreational Services .................................. 524
Audit of Classes ............................................................... 32
Audit fees ........................................................................... 3
Audit Student, definition .................................................. 3
Avery Prue ................................................................. 554
Awards .............................................................................. 536
Awards Index .................................................................... 582

B
Bachelor of Science in Agriculture .................................. 42
Bachelor of Technology .................................................... 42
Biochemistry and Molecular Biology ................................ 394
Biological Engineering ...................................................... 267
Biology ............................................................................. 399
Biophysics ........................................................................ 391
Black Student Advising Centre ........................................ 536
Board of Governors ....................................................... 8
Bookstore ......................................................................... 529
Bureaucracy .................................................................... 536, 560, 524
Business Administration, School of ............................... 374
Business, Minor in ......................................................... 69

C
Campus Map ................................................................. 589
Canadian Studies ............................................................ 76
Centre for African Studies ................................................. 518
Centre for Environmental and Marine Geology ............... 518
Centre for Foreign Policy Studies ..................................... 518
Centre for International Trade and Transportation .......... 519
Centre for Learning and Teaching .................................... 37
Centre for Marine Vessel Development and Research (CMVDR) ......................................................... 519
Centre for Risk Management, Faculty of Management .... 519
Centre for Water Resources ............................................. 533
Centers and Institutes
Canadian Residential Energy End-Use Data and Analysis Centre (CREDAC) ......................................................... 518
Centre for African Studies ................................................. 518
Centre for Environmental and Marine Geology ............... 518
Centre for Foreign Policy Studies ..................................... 518
Centre for International Business Studies ....................... 519
Centre for Marine Vessel Development and Research .... 519
Centre for Water Resources Studies ................................ 520
Health Law Institute ....................................................... 521
Institute for Research in Materials (IBM) ......................... 521
Law and Technology Institute ......................................... 521
Indexes

Campus Map .................................................................................. 24
Discipline .......................................................................................... 24
Disability Management ................................................................... 312
Diagnostic Medical Ultrasound ...................................................... 314
Diagnostic Cytology ....................................................................... 314
Deposits .......................................................................................... 531
Degree Requirements........................................................................ 65
Dalhousie University .......................................................................... 7
Dalhousie Integrated Science Program........................................... 424
CRN, definition................................................................................... 3
Credit, definition................................................................................. 3
Creative Writing ............................................................................. 103

Co-requisite, definition ....................................................................... 3
Co-operative Education, definition..................................................... 3
Computing, Guide to Responsible .................................................... 29
Computing and Information Services ............................................. 530
Computer Science, Minor in..................................... 69, 429, 461, 492
Computer Science ........................................................................... 244
Commerce ....................................................................................... 374
Commonwealth History Prize.......................................................... 556
Community Design ........................................................................... 57
Community Design, Minor in ......................................................... 69, 402, 417, 429, 461, 492
Computer Science, Faculty of......................................................... 244
Computer Science, Minor in ............................................................ 69, 429, 461, 492
Computing and Information Services ............................................. 530
Computing, Guide to Responsible .................................................... 29
Contemporary Studies ....................................................................... 87
Co-operative Education in Science .................................................. 422
Co-operative Education, definition .................................................. 3
Co-requisite, definition ..................................................................... 3
Costume Studies, see Theatre .......................................................... 95
Counselling Services ........................................................................ 525
Course, definition .............................................................................. 3
Creative Writing ............................................................................. 103
Credit, definition .............................................................................. 3
CRN, definition ................................................................................ 3

D

Dalhousie ......................................................................................... 525
Dalhousie Integrated Science Program ........................................... 424
Dalhousie University ........................................................................ 7
Board of Governors ......................................................................... 8
Executive Officers .......................................................................... 7
Senate .............................................................................................. 8
Dean’s List ....................................................................................... 41
Definitions ....................................................................................... 3
Degree Requirements ....................................................................... 65
Deposits ............................................................................................ 531
Admission ......................................................................................... 531
Laboratory ....................................................................................... 534
Registration ...................................................................................... 531
Diagnostic Cytology ........................................................................ 314
Diagnostic Medical Ultrasound ...................................................... 314
Disability Management .................................................................... 312
Discipline .......................................................................................... 24

E

Early Modern Studies ....................................................................... 95
Earth Sciences .................................................................................. 426
Eco-Efficiency Centre, Faculty of Management ................................ 520
Economics ....................................................................................... 418
Electrical and Computer Engineering ............................................ 277
Emergency Health Services Management, Diploma ...................... 332
Engineering ..................................................................................... 259
Engineering Mathematics and Internetworking ........................... 282
Engineering, Faculty of ................................................................. 257
English ............................................................................................. 102
English Language Proficiency Requirements ......................... 9
Entrepreneurial Skills Program ....................................................... 45
Environmental and Marine Geology, Centre for ...................... 518
Environmental Programs .................................................................. 441
Environmental Studies, Minor in .................................................. 69
European Studies ............................................................................ 111
Examinations Policy in the Event that a Formal Examination Cannot be Completed ......................................................... 21
Regulations ...................................................................................... 20
Religious Holidays .......................................................................... 21
Requests for an Alternative Final Examination ........................... 21
Scheduling of Classes/Examinations .............................................. 21
Special Arrangements ...................................................................... 38
Examinations and Tests ................................................................... 37
Exchange Programs ......................................................................... 35
Exchange Services, International Student and .......................... 528
Exclusion, definition ........................................................................ 4
Externship, definition ...................................................................... 4

F

Faculties Architecture and Planning ................................................ 47
Arts and Social Sciences ................................................................. 72
Computer Science ........................................................................... 243
Engineering ..................................................................................... 257
Health Professions .......................................................................... 310
Management .................................................................................. 374
Science ............................................................................................ 393
Fees ................................................................................................. 531
Academic Fees ................................................................................. 532
Additional Student Fees .................................................................. 534
Admission Deposit .......................................................................... 531
Audit Classes ................................................................................... 531
Bursaries ......................................................................................... 534
Class Changes ................................................................................ 533
Delinquent Accounts ...................................................................... 533
Health Insurance ........................................................................... 533
Identification Cards (DalCard) ........................................................ 534
Income Tax Credit .......................................................................... 534
International Students ................................................................... 533
Differential Fee .............................................................................. 533
Health Insurance ........................................................................... 533
Laboratory Deposits ........................................................................ 534
Late Registration ............................................................................. 532
Limited Enrolment Programs ........................................................ 531
Payment ......................................................................................... 532
Refunds ........................................................................................... 533
Registration ...................................................................................... 531
International Student & Exchange Services ........................................ 528
Internship, Fieldwork, Clinical Practice, Externship, Practicum, Clerkship, definitions .................................................. 4
Italian Studies ........................................................................... 168
J
Journalism ............................................................................. 170
Journalism Studies, Minor in .................................................... 69
K
Kinesiology ............................................................................ 340
L
Laboratory Deposits .............................................................. 534
Language Training ................................................................ 10
Latin - see Classics .................................................................. 79
Law & Society, Minor in .......................................................... 69
Law and Technology Institute .................................................. 521
Learning and Teaching, Centre for ........................................... 524
Learning Connections .................................................................. 46
Learning Disabilities .................................................................. 22
Leisure Studies .......................................................................... 344
Lexis Pearson International (LPIT) ............................................ 528
Letter of Permission .................................................................. 4, 32
Grade Points ............................................................................ 39
Libraries .................................................................................... 528
Linguistics .................................................................................. 173
Loans, Temporary ...................................................................... 569
M
Management ............................................................................ 384
Management, Faculty of .......................................................... 374
Marine and Environmental Law Institute .................................... 522
Marine Biology .......................................................................... 453
Marine Vessel Development and Research, Centre for ............... 519
Materials Engineering ............................................................... 290
Mathematics ............................................................................. 460
Matriculation Standing, definition ............................................. 4
Mature Students, definition ..................................................... 4, 10-11, 13-14
Mature Students, Programs and Services .................................... 43
Mechanical Engineering ................................................................ 291
Medical Laboratory Technology .............................................. 314
Medicine, Faculty of General Information .................................... 388
Mission Statement .................................................................... 388
Mineral Engineering Entrance Scholarship ................................ 548
Minerals Engineering Centre .................................................. 522
Mining and Metallurgical Engineering ....................................... 296
Multifaith Centre ........................................................................ 525
Music ....................................................................................... 173
N
Neuroscience ............................................................................ 474
Neuroscience Institute ........................................................... 522
Norman Newman Centre for Entrepreneurship ......................... 522
Nova Scotia CAD/CAM Centre .................................................. 522
Nuclear Medicine Technology ................................................... 314, 316
Nursing (Arctic Nursing) ............................................................ 352
Nursing, School of ..................................................................... 349
U
Undergraduates ........................................ 4
University Exploration Program ......................... 43
University Explorers, definition ......................... 4
University Health Services .................................. 530
University Regulations ........................................ 20
University Silver Medal ...................................... 554

V
Vehicle Safety Research Team .............................. 523
Visiting Student, definition ................................. 4
Volunteering ..................................................... 530

W
Water Resources Studies, Centre for ..................... 520
Withdrawal .......................................................... 31
Women's Studies, see Gender and Women's Studies ....... 124
Work Term, definition .......................................... 4
Workload ............................................................ 30
Writing Intensive, definition ............................... 4
Writing Resource Centre ..................................... 550
**Awards Index**

**Numerics**

3M Canada Bursary .................................................. 575
75th Anniversary Alumnae Family Scholarship ........... 543, 545, 546
8th Pan American Wheelchair Games Scholarship ....... 550

**A**

Academic Year and Assessment Timing .......................... 537
Acadian Lines Limited Scholarship ................................. 551
Address of Provincial Student Aid Authorities ................. 568
Adjutant Award in the Aesthetics of Structures ........................... 558
Aheui, Mr. and Kamal, Engineering Scholarship ............ 546
Air Liquide Canada Scholarship ...................................... 546
Aitchison, James H., Award ........................................... 557
Adams Prize ................................................................. 565
Allianz Ambassador Scholarship ....................................... 543, 546
Allen, John David and Ellen Mathison, Endowment Fund . 572
Alumni Association Medal .............................................. 553
Alumni Leadership Award ............................................. 561
Ando, Sam, Memorial Bursary ........................................ 573
Anonymous Economics Prize .......................................... 566
APENS (Association of Professional Engineers of Nova Scotia) Award .......................................................... 558
Apostol, J.P.A.C.E. Bursaries ........................................ 574
Arting, J.D. (Dan), Memorial Nova Scotia Road Builders Association Bursary .................................................. 573
Archibald, Dorothy Archibald Award ..................................... 561
Archibald, Dorothy Bursaries ........................................... 574
Archibald, Dr. William J., Prize in Physics ......................... 567
Archibald, Margaret, Memorial (Entrance) Bursary ............ 573
Armstrong Family Bursary ............................................... 573
Ashkin, Eva and David Memorial Bursary ......................... 569
Ashkin, Nathan T., Ashkin Scholarship ............................. 544
Association of Professional Engineers of Nova Scotia Award . 558
AstraZeneca Scholarship .................................................. 542, 551
Athletic Awards .............................................................. 553
MacLachlan Scholarships ............................................... 553
Mathematics Scholarship .................................................. 553
The Graham Family Athletic Awards .................................. 553
Atlantic Farm Mechanization Show (Entrance) Scholarship .... 546
Atlantic Farm Mechanization Show Award ...................... 558
Atlantic Farm Mechanization Show Environmental Engineering (Entrance) Scholarship ........................................ 546
Atlantic Industrial Engineering Society Prize .................. 558
Atlantic Land Improvement Contractors Association Award . 558
Aventis, Sanofi, Scholarship ............................................ 550
Avery Prize ................................................................. 554
B

B’nai B’rith Prize ............................................................. 565
Bachelor of Environmental Design Studies Year 3 Portfolio Prize 554
Bachelor of Environmental Design Studies Year 4 Portfolio Prize ......................... 554
Baker, Dr. Max L., Scholarship ......................................... 546
Baker, Louise I., Awards in Technical Communication ........ 559

Ball Scholarship, Marjorie ................................................. 542
Barlow, David, Memorial Award ........................................ 566
Barrett, John, Hamilton, Prize .......................................... 565
Barrett-Banks, Margaret Memorial Award ......................... 561
Becket Dickinson Award of Excellence in Endocrine Studies ...... 562
Beer, Ami, L., Prize .......................................................... 553
Bell Entrance Scholarship in Science, Francis Hugh ........... 540
Bell, Hugh, P., Scholarship in Biology ................................ 552
Bennett, Avie, Prize .......................................................... 553
Berman, Wilfred, Memorial Prize ....................................... 564
Berman, Wilfred, Scholarship ............................................. 551
Bernois Prize ................................................................. 566
Bernstein, Harry and Kaye Bursary ...................................... 569
Beta Sigma Phi Scholarship to Dalhousie University ............ 543
Bevan, Allan and Luna, Memorial Scholarship ..................... 544
BHS Faculty Award .......................................................... 560
Biochemistry and Molecular Biology ................................. 565
Biology ........................................................................... 552, 553
BioMedical Diagnostics Award ......................................... 562
Binks Family Foundation Bursary ....................................... 571, 573
Binks, Family Foundation Bursaries .................................... 569
Bisset, Scholarship ........................................................... 539
Black and Gold Awards ..................................................... 553
Blair, A. David, Scholarship ............................................... 546
Blanchard, J. Ewart Blanchard Memorial Scholarship ........... 552
Blanchard, Jothan, Scholarship ........................................ 543
Blom, Dr. Emil and Mrs. Stella, Prize in Mathematics ............ 566
Bosoff/Garonie Memorial String Scholarship ......................... 545
Boyd, George, Bursary ...................................................... 569
Brediv, Jeff Breidin Memorial Scholarship in Men’s Volleyball . 553
Brehant, Ernst, Memorial Bursary ........................................ 569
Breuer, L. (E) Harry J., MEM, CD, RCN (Ret.), Memorial Bursary ................................................................. 569
Brunner Memorial Scholarship in Psychology ....................... 553
Brunik, Margaret Newcomb-Layton Hartigan, Bursary .......... 571
Brown, Isabel, Scholarship ................................................ 543
Bruce, Robert, Bursaries .................................................... 571
Bruce, Robert, Scholarships ............................................... 541, 544
Burridge, Dean George A., Memorial Award ....................... 562
Burridge, Mimie F., Scholarships ........................................ 543
Burgess McKittrick Prizes in Physics .................................... 567
Burgess McKittrick Summer Research Studentships in Physics . 567
Burnis, George, Scholarship and Grant .............................. 539, 569
Buttendaw, Katherine M., Prize ......................................... 566
Byham, Professor Ray D., Memorial Prize in Piano Studies ... 556
Byron, Ada, Award ........................................................... 558

C

Cameron, Dr. Alan E., Scholarship ..................................... 547
Campbell, George H., Memorial Scholarship ............... 543
Campbell, James and Abbie, Memorial Scholarships .......... 541
Campbell, James and Abbie, The Memorial Scholarships and the James and Abbie Campbell/Department of Music Scholarships ..... 543
Campbell, James and Abbie, Prize, Campbell Incentive Award . 556
Canada Student Loan for Part-Time Students* .................... 576
Canadian Association for Health, Physical Education and Recreation Student Award ........................................ 560
Canadian Institute of Mining and Metallurgy Earth Science Scholarship for New Brunswick Students .......................... 552
Canadian Merit Scholarship Foundation ............................ 542
Canadian Society for Chemical Engineering Medal ............. 559

582 Awards Index
<table>
<thead>
<tr>
<th>Indexes</th>
<th>538</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entrance Renewable Scholarships</td>
<td>538</td>
</tr>
<tr>
<td>Entrance Scholarships</td>
<td>537, 539</td>
</tr>
<tr>
<td>Entrance Scholarships - Separately Administered</td>
<td>540</td>
</tr>
<tr>
<td>Environmental Programs Award</td>
<td>566</td>
</tr>
<tr>
<td>Environmental Programs Honour Society Medal</td>
<td>566</td>
</tr>
<tr>
<td>Environmental Science Thesis Prize</td>
<td>566</td>
</tr>
<tr>
<td>Environment Scholarships</td>
<td>543</td>
</tr>
<tr>
<td>Eric &amp; Ryan Post-Pharmacy Leadership Award</td>
<td>563</td>
</tr>
<tr>
<td>Ernst and Young Scholarship</td>
<td>551</td>
</tr>
<tr>
<td>Export Development Canada Scholarship in International Studies</td>
<td>551</td>
</tr>
<tr>
<td>Etxon Mobil Canada Ltd. Undergraduate Scholarships</td>
<td>547</td>
</tr>
<tr>
<td>Faculty of Architecture and Planning</td>
<td>543, 571</td>
</tr>
<tr>
<td>Faculty of Arts &amp; Social Sciences</td>
<td>555, 571</td>
</tr>
<tr>
<td>Faculty of Arts and Social Sciences</td>
<td>544</td>
</tr>
<tr>
<td>Faculty of Computer Science</td>
<td>545, 572</td>
</tr>
<tr>
<td>Faculty of Engineering</td>
<td>546, 558, 572</td>
</tr>
<tr>
<td>Faculty of Engineering Scholarships</td>
<td>547</td>
</tr>
<tr>
<td>Faculty of Health Professions</td>
<td>550, 560, 574</td>
</tr>
<tr>
<td>Faculty of Management</td>
<td>551, 564, 575</td>
</tr>
<tr>
<td>Faculty of Science</td>
<td>551, 565, 575</td>
</tr>
<tr>
<td>Faculty of Science and Engineering</td>
<td>540</td>
</tr>
<tr>
<td>Fairfax Financial Holdings-Limited Entrance Award</td>
<td>539</td>
</tr>
<tr>
<td>Fanning, David F., Scholarship</td>
<td>547</td>
</tr>
<tr>
<td>Faulkner, Ross, Scholarships</td>
<td>541</td>
</tr>
<tr>
<td>Fawcett, Barry Ward, Memorial Prize</td>
<td>542</td>
</tr>
<tr>
<td>Financial Aid and Loans</td>
<td>568</td>
</tr>
<tr>
<td>Government Student Loans</td>
<td>568</td>
</tr>
<tr>
<td>Trade Loans</td>
<td>569</td>
</tr>
<tr>
<td>First Nations &amp; Indigenous Black Students Scholarship</td>
<td>559</td>
</tr>
<tr>
<td>Flynn, Dean, Memorial Prize</td>
<td>559</td>
</tr>
<tr>
<td>Fooshee, Clare Murray, Poetry Prize</td>
<td>554</td>
</tr>
<tr>
<td>Foran, M. Roy, Scholarship</td>
<td>547</td>
</tr>
<tr>
<td>Fountain, Frederick S., Scholarship</td>
<td>540</td>
</tr>
<tr>
<td>Fountain, Sheldon and Marjorie, Scholarships</td>
<td>540</td>
</tr>
<tr>
<td>Fumder, Helen C. McDowell Fumder Memorial Scholarship</td>
<td>539</td>
</tr>
<tr>
<td>Fraser, Hugh Gaume, Memorial Prize in Advanced Chemistry</td>
<td>565</td>
</tr>
<tr>
<td>Fraser-Davey, H.D., Award</td>
<td>561</td>
</tr>
<tr>
<td>Fraser, The Rowland C., Undergraduate Scholarships in Business</td>
<td>540</td>
</tr>
<tr>
<td>French Department Scholarship</td>
<td>545, 555</td>
</tr>
<tr>
<td>French, Charles E., Award</td>
<td>563</td>
</tr>
<tr>
<td>Fullersford College</td>
<td>536</td>
</tr>
<tr>
<td>G</td>
<td>554</td>
</tr>
<tr>
<td>Galloway, SLT Bruce, Memorial Prize</td>
<td>554</td>
</tr>
<tr>
<td>Garneau, Marc, P. Eng. Scholarship</td>
<td>547</td>
</tr>
<tr>
<td>Gash, Colin, Scholarship</td>
<td>543</td>
</tr>
<tr>
<td>Galloway, SLT Bruce, Memorial Prize</td>
<td>554</td>
</tr>
<tr>
<td>Gaskell, Stuart, Lockerie, Memorial Prize</td>
<td>564</td>
</tr>
<tr>
<td>Gibson, Stewart, Lockerie, Scholarship in Commerce</td>
<td>551</td>
</tr>
<tr>
<td>Glovin, The Irving and Jeanie, Award</td>
<td>554</td>
</tr>
<tr>
<td>Gold, Silver and Bronze Awards</td>
<td>558</td>
</tr>
<tr>
<td>Gilchrist, Dr. Ruth M. Gilchrist, Bursary</td>
<td>571</td>
</tr>
<tr>
<td>Gilchrist, Dr. Ruth M., Bursary</td>
<td>571-573</td>
</tr>
<tr>
<td>Golden Key International Honour Society</td>
<td>542</td>
</tr>
<tr>
<td>Goodman, Edith and Rose, Prize in History</td>
<td>556</td>
</tr>
<tr>
<td>Government Notification</td>
<td>537</td>
</tr>
<tr>
<td>Governor General’s Silver Medal</td>
<td>554</td>
</tr>
<tr>
<td>Graduation and Scholarships</td>
<td>537</td>
</tr>
<tr>
<td>Graham, Alex, Memorial Award</td>
<td>563</td>
</tr>
<tr>
<td>Grant, Frances Hamilton, Bursaries</td>
<td>570</td>
</tr>
<tr>
<td>Grant, MacCallum S., Charitable Foundation Bursary</td>
<td>570</td>
</tr>
<tr>
<td>Green, Milton G., Memorial Scholarship</td>
<td>540</td>
</tr>
<tr>
<td>Guptaill, Dr. E.W., Memorial Prize</td>
<td>567</td>
</tr>
<tr>
<td>Halifax Ladies Music Club Scholarship</td>
<td>543</td>
</tr>
<tr>
<td>Hall, James L., Scholarship in Earth Sciences</td>
<td>547, 552</td>
</tr>
<tr>
<td>Harper, W.L., Scholarship</td>
<td>543</td>
</tr>
<tr>
<td>Harrison, Annie M., Bursary</td>
<td>570</td>
</tr>
<tr>
<td>Haverstock, Alice M., Bursary</td>
<td>570</td>
</tr>
<tr>
<td>Hayes, Kenneth and Dorothy, Memorial Prize</td>
<td>565</td>
</tr>
<tr>
<td>Heighton, Ernest and Dorothy, Memorial Prize</td>
<td>556</td>
</tr>
<tr>
<td>Helpful Terms</td>
<td>556</td>
</tr>
<tr>
<td>Adjusted Average</td>
<td>556</td>
</tr>
<tr>
<td>Admissions Average</td>
<td>556</td>
</tr>
<tr>
<td>Faculty Groupings</td>
<td>556</td>
</tr>
<tr>
<td>Henderson, Dr. George, Prizes in Physics</td>
<td>567</td>
</tr>
<tr>
<td>Hertzan Prize</td>
<td>565</td>
</tr>
<tr>
<td>Hicks, Gary, Memorial Award</td>
<td>563</td>
</tr>
<tr>
<td>Hill, Allan, Chalmers, Bursary</td>
<td>573</td>
</tr>
<tr>
<td>Hill, Annette S., Bursaries</td>
<td>570</td>
</tr>
<tr>
<td>Hills, Wilfred E., Bursary</td>
<td>572</td>
</tr>
<tr>
<td>Hills, Eric, Stanley, Memorial Bursary</td>
<td>571</td>
</tr>
<tr>
<td>History</td>
<td>545, 556</td>
</tr>
<tr>
<td>History of Science and Technology</td>
<td>556</td>
</tr>
<tr>
<td>Holloway, Dr. James E. Holloway, Jr., Memorial Prize</td>
<td>557</td>
</tr>
<tr>
<td>Holston, Dr. Rosemary Theresa Holston &amp; Stephen A., Bursary</td>
<td>572</td>
</tr>
<tr>
<td>Hong, Dr. W.K., Prize in Psychology</td>
<td>567</td>
</tr>
<tr>
<td>Honours Student Prize</td>
<td>567</td>
</tr>
<tr>
<td>Howe, C.D., Scholarships in Engineering</td>
<td>540</td>
</tr>
<tr>
<td>Howitt Scholarship Fund, Mr. &amp; Mrs. H.D.</td>
<td>543</td>
</tr>
<tr>
<td>Hube, David and Ruth Hube, Undergraduate Neuroscience</td>
<td>567</td>
</tr>
<tr>
<td>Huber, Lome C., Prize in Music</td>
<td>556</td>
</tr>
<tr>
<td>Hurdle, Durrell Hurdle Scholarship</td>
<td>539</td>
</tr>
<tr>
<td>I</td>
<td>559</td>
</tr>
<tr>
<td>IEEE Medal</td>
<td>559</td>
</tr>
<tr>
<td>In-Column Scholarships</td>
<td>542</td>
</tr>
<tr>
<td>General - All Faculties</td>
<td>542</td>
</tr>
<tr>
<td>Industrial Engineering Entrance Scholarships</td>
<td>540</td>
</tr>
<tr>
<td>International Baccalauriate (IB) Extended Essay Prizes</td>
<td>539</td>
</tr>
<tr>
<td>International Baccalauriate (IB) Scholarships</td>
<td>539</td>
</tr>
<tr>
<td>International Development Studies</td>
<td>556</td>
</tr>
<tr>
<td>Irvine, Christine, Memorial Scholarship</td>
<td>540</td>
</tr>
<tr>
<td>IW&amp;K/Health Center Prize for Excellence in the Care of Children and their Families</td>
<td>562</td>
</tr>
<tr>
<td>IW&amp;K/Medical Staff Award for Excellence in Women’s Nursing</td>
<td>562</td>
</tr>
<tr>
<td>IW&amp;K/Medical, Dental and Scientific Staff Award for Excellence in Children’s Nursing</td>
<td>561</td>
</tr>
<tr>
<td>J</td>
<td>554</td>
</tr>
<tr>
<td>Jack, Jack/ANCA Bursary</td>
<td>574</td>
</tr>
<tr>
<td>Jacobson, Hyman L., Scholarship</td>
<td>544</td>
</tr>
<tr>
<td>Jacobson, Samuel S., Scholarship</td>
<td>551</td>
</tr>
</tbody>
</table>
Awards Index
INDEXES

Campus Map .................................................. 586

A

Awards Index .................................................. 540

Patterson, Everette, Memorial Scholarship ......................... 549

Parker, Frederick Thomas, Award for Part-Time Studies ............ 575

Paquet, Jason, Memorial Bursary ........................................ 573

Page, F. Hilton, Memorial Prize in Philosophy .......................... 557

Oxley, Harold, Scholarship .............................................. 542

Owen Hertzman Prize .................................................. 566

Oland, Commodore Bruce S., Scholarship ............................. 563

Nova Scotia Power Inc. Scholarship ..................................... 541

Nova Scotia Power Centennial Scholarship ............................ 549

Nova Scotia College of Pharmacists Memorial Award ............... 563

Nova Scotia College of Pharmacists Centennial Medal ......... 563

Nova Scotia College of Pharmacists Bursary .......................... 573

Nova Scotia Association of Social Workers’ Bursary ............... 575

Noseworthy, Ian, Bursary ............................................... 573

North Nova Scotia Highlanders Memorial Award* ................. 554

NORTHSTAR Trade Finance - Mary Grover LeBlanc Memorial Fellowship - International Business ......................... 551

New Brunswick Pharmaceutical Bursary ............................ 574

Novapharm Pharmacy Award ......................................... 563

Nova Scotia College of MEDICAL Laboratory Technologists (NSCMLT) Awards ........................................... 561

Nova Scotia Pharmacy Award .......................................... 563

Nova Scotia Women in Engineering Scholarship ..................... 549

Nicolson, Reverend J. W. A., Bursaries ................................ 572

Nicolson, Allan D., Memorial Scholarship ............................ 549

Noble, Dr. Hugh A., Award .............................................. 560

North Nova Scotia Highlanders Memorial Award* ................. 554

NORTHSTAR Trade Finance - Mary Grover LeBlanc Memorial Fellowship - International Business ......................... 551

Novapharm Pharmacy Award ......................................... 563

Nova Scotia College of Social Workers’ Bursary ............... 575

Nova Scotia College of Pharmacists Centennial Medal ......... 563

Nova Scotia Department of Transportation and Public Works Bursary .................................................. 573

O

O’Halloran Scholarship .............................................. 549

O’Halloran Scholarship .............................................. 549

Ogden Memorial Prize .................................................. 565

Oland Scholarship, Commodore Bruce S. ............................. 544

Oland, Commodore Bruce S., Scholarship ............................. 551

Olive, Senator Donald, Bursary for Black Atlantic Canadians .... 570

Outstanding Undergraduate Achievement in International Business Award .................................................. 564

Owens Hertman Prize .................................................. 566

Oxley, Harold, Scholarship .............................................. 542

Page, F. Hilton, Memorial Prize in Philosophy .......................... 557

Page, F. Hilton, Memorial Prize in Philosophy .......................... 557

Page, F. Hilton, Memorial Prize in Philosophy .......................... 557

Page, F. Hilton, Memorial Prize in Philosophy .......................... 557

Parker, Frederick Thomas, Award for Part-Time Studies ............ 575

Patterson, Everette, Memorial Scholarship ............................ 549

Paula, Susan, Forward Memorial Prize in Psychology ................. 567

Payzant, Arthur, S., Scholarship ........................................ 542

Peacock, Andrew, Memorial Award ..................................... 564

Pediatric Radiography Clinical Award .................................. 561

Perth, E. K., Memorial Award ........................................... 556

Peters, David, Music Scholarship ........................................ 543

Pfizer Bursary .................................................................. 574

Pfizer Cardiology Award .................................................. 563

Pfizer Consumer Group Drugs Self-Medication Award ............. 563

Pfizer Pain and Rheumatology Award .................................... 563

Pfizer Respiratory Award .................................................. 563

Pharmacology Scholarships .............................................. 574

Pharmaceutical Service Awards ........................................... 563

Pharmacia & Upjohn Pharmacy Innovation in Patient Care Awards .... 563

Philosophy ..................................................................... 557

Pillock, Alan Pollock Scholarship ......................................... 544

Pond, Margaret Nicoll, Memorial Prize in English .................... 555

Pooley, John C., Sportsperson Award ..................................... 560

Portability ...................................................................... 536

Potter, Hugh J., Scholarship .............................................. 541

Potter, Hugh J., Scholarship .............................................. 541

President’s Associates (Emestance) Scholarship ....................... 544, 546

President’s Associates Scholarship ....................................... 549

Prince, M. Caroline Scholarship ......................................... 550

Prince, R. H., Prize in Sociology ......................................... 557

Prix de l’Auberge française .................................................. 555

Prix de l’Ambassadeur de France ......................................... 555

Prix de l’Ambassadeur de Suisse au Canada ............................. 553

Prix for Highest Academic Standing in the Undergraduate Degree Program .................................................. 561

Prie of the Ambassador of Austria in Canada, Prize of the Ambassador of Switzerland in Canada, and the Prize of the Ambassador of Germany in Canada .................................................. 555

Prix, Medals, and Awards .................................................... 553

Pychology ....................................................................... 553

Publicover, Warren, Class ’25 Memorial Bursary ..................... 571

Pugsley, B. Trevor, Memorial Pharmacy Award ....................... 564

Pugsley, Mrs. Vera B., Award .............................................. 564

Q

QIEL Health Sciences Centre Award for Professional Practice in Nursing .................................................. 562

Qualifying for In-Course Scholarships ................................ 537

Quick View Scholarships (subject to change) ......................... 538

R

Radiolopst’s Awards ..................................................... 561

Ramsay, The Clan of Nova Scotia Prize .................................. 556

Rankin, Gordon S. Rankin Memorial Scholarship .................... 554

Ratiopharm Award ......................................................... 564

Rebecca Cohn Bursary Fund .............................................. 570

Record of Scholarships ..................................................... 537

Reduced Class Load and Retention of Scholarship .................. 537

Registered Nurses Professional Development Centre Award ........ 562

Renouf, Harold A., Scholarship ........................................... 542

Respiratory Therapy Faculty Academic Award ........................ 561

Rhodes, Dr. Edward (Ted), Scholarship in Engineering ............... 549

586 Awards Index
Sociology and Social Anthropology ...............................................557

Robert Bruce Scholarship ............................................................544
Robertson, George B., Phi Delta Theta Fraternity Scholarship .... 543
Robinson, Lois J., Scholarships .......................................................542-543
Robinson, I.E. (Gene) Robinson Memorial Bursary .......................574
Rosetti, Bruce and Dorothy, Engineering Entrance Scholarships .... 546
Rosetti, Bruce and Dorothy, Engineering Scholarships ...................549
Rosetti, Bruce and Dorothy, Engineering Undergraduate Scholarships ..................................................546, 549
Ross, The Ellice May Ross Scholarships in Music ................................545
Roy Saint George’s Society of Halifax Prize in Music ....................556
Russell, Calvin, Scholarship ..........................................................550
Russel, Douglas, Memorial Book Prize ..........................................565
Russian Studies ..............................................................................557
Ryan, John J., Pharmacy Administration Award ..........................564

S
Saffron, Morris, Prize .....................................................................558
Saffron, Mr. & Mrs. Morris, Bursary ..............................................571
Sagegrove Group Award for Entrepreneurship .........................551
Sandhu, Marcelle Condesa, Memorial Prize ...................................555
Sandoz Pharmacy Administration Award ......................................564
Schlumberger Undergraduate Scholarship in Engineering ................549
Scholarship Appeals ......................................................................537
Scholarship Assessment Criteria ...................................................538
Scholarship Duration ......................................................................536
Scholarship GPA Calculation .........................................................537
Renewable Scholarships ...............................................................537
Scholarship Payments and Rebates ...............................................556
School of Health and Human Performance ..................................550, 560
School of Health Sciences ....................................................................560
School of Nursing ........................................................................550, 561, 574
School of Nursing BScN Entrance Scholarship for Non-Traditional Students ..................................................541
School of Nursing BScN Scholarship ..............................................541
School of Nursing Undergraduate Bursary ....................................575
School of Social Work ...................................................................564, 575
Scotia Aberdeen Group Scholarship .............................................549
Semple, Leigh, Memorial Award ..................................................564
Sethub, Dr. Masayoshi Senba Memorial Prize .................................576
Sepacor Graduate Award ...............................................................564
Sixton Scholar Award .....................................................................558
Shad Valley Scholarships ...............................................................564
Shaw, Leslie, Bursary .....................................................................571
Shaw, Leslie, Bursary .....................................................................571
Shaw, Leslie, Bursary .....................................................................571
Shaw, Leslie, Bursary .....................................................................571
Shaw, Leslie, Bursary .....................................................................571
Shaw, Leslie, Bursary .....................................................................571
Shaw Group Environmental Design Scholarship .........................544
Shaw Group Scholarship in Civil Engineering ...............................550
Shaw, Lena, Bursary ......................................................................571
Sherwood, Dr. H.G., Memorial Entrance Bursary .........................574
Shoppers Drug Mart Community Pharmacy Bursaries ......................574
Shoveller, Rod, Memorial Bursary ................................................572, 574
Sigma Theta Tau (Rho Rho Chapter) for Medical/Surgical Nursing ..........................................................562
Sinclair, Alexander, Scholarship ..................................................541
Singh Suneet Prize in Choral Music .................................................556
Singh, Dr. Samar B., Prize in Anatomy ..........................................562, 564
Skeete, Jonathan, Memorial Prize ..................................................558
Smith, Ronald G., Scholarship ........................................................551
Society of Chemical Industry Merit Award ....................................559
Society of Chemical Industry, Canadian Section, Merit Award .......565-566
Sociology and Social Anthropology ................................................557
Solano, David M. Scholarship ........................................................542
Solomon, Mr. and Mrs. S.H., Scholarship in Engineering ...............550
Spanish ..................................................................................545, 557
Spencer, Betty Scholarship .............................................................553
SSW Alumni Award .......................................................................564
Stairs, C.W., Memorial Scholarship ..............................................550
Stairs, William, Memorial Prize .....................................................559
Staford, The Rt. Honorable Robert L., Bursary ..............................571
Staford, Walter Gardner, Entrance Scholarships .........................546
Staford, Walter Gardner, Scholarships .........................................550
Statement of Scholarship Terms ....................................................536
Steele, Rosie, Award .....................................................................562
Strip Award ..................................................................................566
Stewart Smith, Ross, Scholarships ................................................552
Stewart, Dr. H.L., Memorial Scholarship ........................................537
Stewart, Frances L., Memorial Prize in Psychology .......................567
Stewart, I.C., Trust Fund .................................................................541
Stewart, Joseph Duncan, Scholarships ..........................................542-543
Stitt, Andrew and David, Memorial Prize .......................................557
Stora Enso Port Hawkesbury Ltd. Scholarship .................................550
Stora Enso Port Hawkesbury Undergraduate Scholarship in Arts & Science ................................................544
Student Aid and Scholarships ..........................................................537
Student’s Medical Response Trust Fund .......................................569
Supertem Bursary ..........................................................................571
SWH/ Study Work International Fund .........................................571

T
Tasman, John E., Memorial Bursary in Chemistry .........................555
Taxation and Scholarships .............................................................537
TD Bank Financial Group Bursary ................................................571
Teleglobe Canada Prize .................................................................559
Temporary Loans .........................................................................569
Therakon, Dr. H.R., Memorial Award ............................................559
Theater ..........................................................................................559
Titus, Lorne O.L., Scholarship .......................................................552-553
Todd E. Walter, Scholarship ..........................................................552
Tewse, John L., and Glimma E., Scholarships .................................543
Transfer Students .........................................................................537
Transition Year Program .................................................................535
Tihart, Dian and Maurice, Bursary ................................................571
Titt, William, Recital Prize ..............................................................556
Tritt, William/Scotia Festival Memorial Prize .................................556
Trudell Medical Marketing Limited Award ......................................561
Tupper, Helen, Memorial Bursary ...................................................571
Tupper, James W., Graduate Fellowship in English .......................571
Turner, Dr. Gerald, Bursary ............................................................571
Types of Awards ............................................................................536

U
Undergraduate Award in Analytical Chemistry .........................536
University Medal in Biochemistry and Molecular Biology ............565
University Medal in Biomedical Engineering .................................559
University Medal in Biology ..........................................................565
University Medal in Chemical Engineering .....................................559
University Medal in Chemistry .......................................................566
University Medal in Civil Engineering ............................................559
University Medal in Classics ..........................................................555
University Medal in Commerce .....................................................564
University Medal in Community Design ........................................555
University Medal in Computer Science .........................................558
University Medal in Contemporary Studies ....................................555

Awards Index 587
<table>
<thead>
<tr>
<th>Scholarship Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wisdom, Jane, Memorial Bursary</td>
<td>575</td>
</tr>
<tr>
<td>Wilson, George E., Memorial Scholarship</td>
<td>545</td>
</tr>
<tr>
<td>Wilson, G.P. Engineering in Business Scholarship</td>
<td>550</td>
</tr>
<tr>
<td>Wilson, Dr. George E., Prize in History</td>
<td>556</td>
</tr>
<tr>
<td>Wickwire, Susan (Cox), Bursary in Engineering</td>
<td>573</td>
</tr>
<tr>
<td>Wickwire, Lloyd Hopkins, Bursary</td>
<td>573</td>
</tr>
<tr>
<td>Weldon Scholarship</td>
<td>550</td>
</tr>
<tr>
<td>Walter, Bob, Award</td>
<td>560</td>
</tr>
<tr>
<td>Waverly Prize</td>
<td>567</td>
</tr>
<tr>
<td>Wahl, Jogia R., Memorial Bursary</td>
<td>575</td>
</tr>
<tr>
<td>Weldon Scholarship</td>
<td>550</td>
</tr>
<tr>
<td>White, Dr. William E., Prize</td>
<td>567</td>
</tr>
<tr>
<td>Wickwire, Lloyd Hopkins, Bursary in Engineering</td>
<td>573</td>
</tr>
<tr>
<td>Wilson, G.P. Engineering in Business Scholarship</td>
<td>550</td>
</tr>
<tr>
<td>Wilson, George E., Memorial Scholarship</td>
<td>545</td>
</tr>
<tr>
<td>Wisdom, Jane, Memorial Bursary</td>
<td>575</td>
</tr>
<tr>
<td>Wolter, Norbert Wolter Memorial Scholarship</td>
<td>552</td>
</tr>
<tr>
<td>Women’s Division - Dalhousie Alumni Association Medal in Costume Studies</td>
<td>557</td>
</tr>
<tr>
<td>Women’s Division of the Dalhousie Alumni Association H&amp;HP Medals</td>
<td>560</td>
</tr>
<tr>
<td>Women’s Division of the Dalhousie Alumni Association Scholarships **</td>
<td>542</td>
</tr>
<tr>
<td>Wright, Don, Scholarship of Excellence**</td>
<td>541</td>
</tr>
<tr>
<td>Wyeth Award of Excellence in Pharmacy Research</td>
<td>564</td>
</tr>
<tr>
<td>Young, Sir William, Gold Medal</td>
<td>567</td>
</tr>
<tr>
<td>Young, Sir William, Scholarship</td>
<td>543</td>
</tr>
<tr>
<td>Young, Sir William, Scholarship</td>
<td>543</td>
</tr>
<tr>
<td>Yuri Glazov Memorial Award</td>
<td>557</td>
</tr>
<tr>
<td>Zavre, Astra Zavre Zavre Bursaries</td>
<td>574</td>
</tr>
<tr>
<td>Zinck, Christine, Book Award</td>
<td>557</td>
</tr>
<tr>
<td>Zinck, Christine, Scholarships</td>
<td>543</td>
</tr>
<tr>
<td>Zonarveld, Tietje, Scholarship in Piano Studies</td>
<td>545</td>
</tr>
<tr>
<td>Zwitserling, Charles and Cecelia, Scholarship</td>
<td>544</td>
</tr>
<tr>
<td><strong>Withdrawal</strong></td>
<td>537</td>
</tr>
<tr>
<td><strong>V</strong></td>
<td></td>
</tr>
<tr>
<td>Vair, Douglas J., Scholarship</td>
<td>542</td>
</tr>
<tr>
<td>Varma Prizes in Gothic Literature</td>
<td>555</td>
</tr>
<tr>
<td>Vernon Scholarship in Marine Biology</td>
<td>552</td>
</tr>
<tr>
<td>Vernon, Margaret L., Scholarship</td>
<td>541</td>
</tr>
<tr>
<td>Victoria General Hospital School of Nursing Award for Oncology Nursing</td>
<td>562</td>
</tr>
<tr>
<td><strong>W</strong></td>
<td></td>
</tr>
<tr>
<td>Wales, Freda N., Memorial Scholarship</td>
<td>550</td>
</tr>
<tr>
<td>Walter, Bob, Award</td>
<td>560</td>
</tr>
<tr>
<td>Waverly Prize</td>
<td>567</td>
</tr>
<tr>
<td>Weil, Sonja R., Memorial Bursary</td>
<td>575</td>
</tr>
<tr>
<td>Weldon Scholarship</td>
<td>550</td>
</tr>
<tr>
<td>White, Dr. William E., Prize</td>
<td>567</td>
</tr>
<tr>
<td>Wickwire, Lloyd Hopkins, Bursary in Engineering</td>
<td>573</td>
</tr>
<tr>
<td>Wilson, George E., Prize in History</td>
<td>556</td>
</tr>
<tr>
<td>Wilson, G.P. Engineering in Business Scholarship</td>
<td>550</td>
</tr>
<tr>
<td>Wilson, George E., Memorial Scholarship</td>
<td>545</td>
</tr>
<tr>
<td>Wisdom, Jane, Memorial Bursary</td>
<td>575</td>
</tr>
</tbody>
</table>

**588 Awards Index**