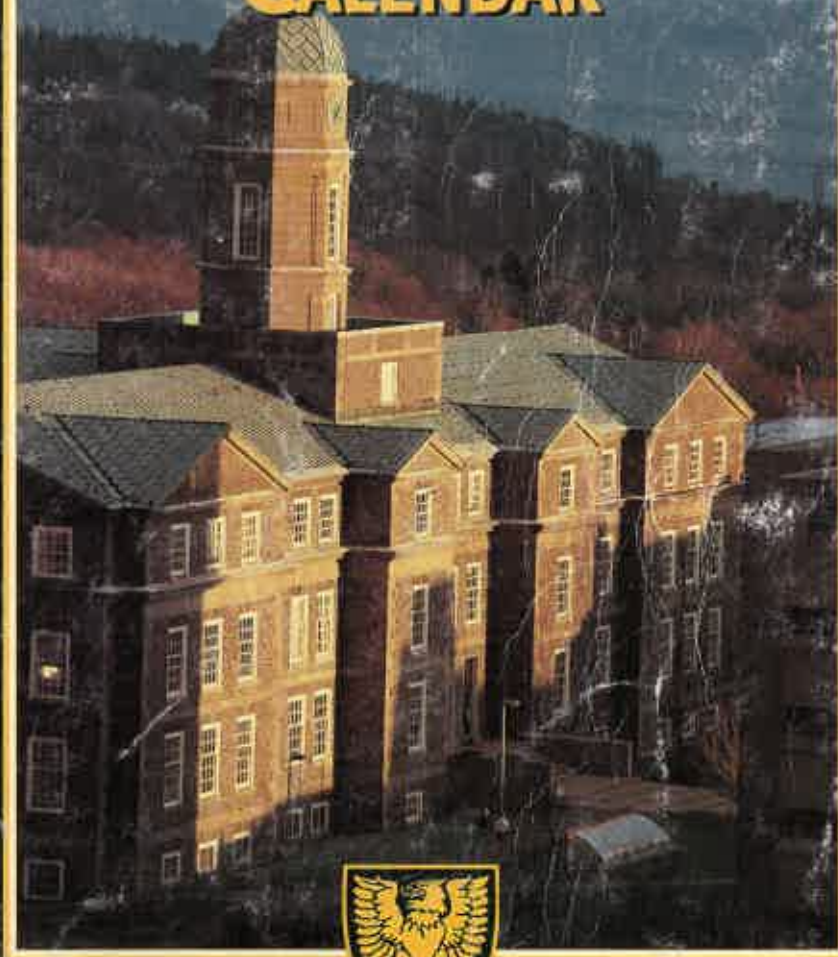


DALHOUSIE UNIVERSITY

**1996-97  
CALENDAR**



**ARTS & SOCIAL SCIENCES  
HEALTH PROFESSIONS, MANAGEMENT  
AND SCIENCE**

# DALHOUSIE UNIVERSITY

**ARTS AND SOCIAL SCIENCES  
HEALTH PROFESSIONS  
MANAGEMENT  
SCIENCE**

**1996/97  
CALENDAR**

*A  
Tradition  
of Excellence*





## IMPORTANT NOTICES

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

The University reserves the right to limit enrolment in any programme. Students should be aware that enrolment in many programmes is limited and that students who are admitted to programmes at Dalhousie are normally required to pay deposits on tuition fees to confirm their acceptance of offers of admission. These deposits may be either non-refundable or refundable in part, depending on the programme in question. While the University will make every reasonable effort to offer classes as required within programmes, prospective students should note that admission to a degree or other programme does not guarantee admission to any given class. Students should select optional classes early in order to ensure that classes are taken at the most appropriate time within their schedule. In some fields of study, admission to upper level classes may require more than minimal standing in prerequisite classes.

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

Inquiries should be directed to:

The Registrar  
Dalhousie University  
Halifax, Nova Scotia  
Canada  
B3H 4H6  
Tel: (902) 494-2450  
Fax: (902) 494-1630

## **A Statement of the Aims of Undergraduate Education at Dalhousie**

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

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

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

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

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

# Table of Contents

Schedule of Academic Dates .....	1	Co-operative Education in Science .....	156
Definitions.....	2	Comparative Religion.....	158
Dalhousie University .....	4	Computing Science .....	162
Executive Officers .....	4	Contemporary Studies.....	167
Academic Programmes.....	6	Dalhousie Integrated Science	
Introduction to Faculties.....	8	Programme.....	171
Henson College .....	12	Earth Sciences.....	171
Special Institutes .....	15	Earth System Science .....	180
Resources and Services .....	17	Economics .....	181
Application Submission Dates .....	26	Engineering .....	188
Degree Options.....	25	English.....	191
Admission Requirements.....	27	Environmental Science .....	198
Fees .....	36	French.....	205
Awards .....	46	German .....	214
Scholarships.....	46	Health Professions, Interdisciplinary.....	218
Prizes, Medals, and Awards .....	56	Health Services Administration .....	219
Financial Aid, Loans, and Bursaries .....	69	History .....	221
University Regulations .....	76	Humanistic Studies in Science.....	237
General .....	76	Interdisciplinary Studies .....	238
Official Examination Regulations.....	76	International Development Studies.....	238
Release of Information About Students ..	77	Linguistics .....	244
Intellectual Honesty .....	77	Mathematics, Statistics & Computing	
Discipline .....	78	Science.....	245
Code of Student Conduct.....	79	Mathematics .....	246
Suspension or Dismissal - Professional		Microbiology and Immunology.....	255
Unsuitability - Faculty of Health		Music .....	260
Professions .....	81	Neuroscience.....	272
Guide to Responsible Computing.....	82	Nursing .....	278
Academic Regulations.....	84	Occupational Therapy .....	289
Class Selection.....	84	Oceanography.....	298
Workload .....	85	Pharmacology .....	303
Registration.....	85	Pharmacy .....	305
Class Changes and Withdrawal .....	85	Philosophy.....	314
Audit of Classes .....	87	Physics.....	321
International/Exchange Programmes.....	88	Physiology and Biophysics .....	330
Assessment .....	90	Physiotherapy .....	332
Academic Standing.....	91	Political Science.....	339
Probation.....	92	Psychology .....	349
Academic Dismissal .....	93	Public Administration .....	360
Graduation Standing.....	93	Recreation, Physical &	
Deans' and Directors' Lists.....	94	Health Education.....	362
Appeals.....	94	Russian Studies.....	376
Degree Requirements.....	96	Science, Interdisciplinary .....	380
Departments, Schools, Colleges		Social Work .....	381
African Studies .....	104	Sociology and Social Anthropology .....	388
Anatomy and Neurobiology .....	104	Spanish.....	399
Architecture.....	106	Statistics .....	404
Arts and Social Sciences		Theatre .....	409
Interdisciplinary.....	106	Women's Studies.....	418
Biochemistry .....	107	Calendar .....	425
Biology .....	112	Campus Map .....	426
Marine Biology .....	122	Index of Awards .....	428
Canadian Studies		General Index.....	433
Chemistry.....	129		
Classics.....	139		
Commerce .....	145		



# Schedule of Academic Dates

## 1996-97

Classes offered at Dalhousie have one of the letters A, B or R following the number. A classes are given in the first term of any session, B classes are given in the second term of any session, and R classes are given throughout the entire session.

### 1996

#### May

- 6 Classes begin, Commerce Co-op Summer session  
Level I field work (second year, 6 weeks) and Level II fieldwork (third year, 8 weeks) begins, School of Occupational Therapy
- 8 Last day to register without late fee, Spring & Co-op Summer sessions
- 13 Classes begin, Spring session  
Outpost Nursing internship begins
- 17 Last day to cancel registration in or to add A and R classes, Spring session  
Last day to register with late fee, Spring session
- 20 Victoria Day - University closed
- 21 Last day to cancel registration in or to add R classes Commerce Co-op Summer session  
Last day to register with late fee, Commerce Co-op Summer session
- 21-24 Spring Convocations
- 23 Last day to withdraw from A classes without a 'W', Spring session
- 29 Last day to withdraw from A classes, Spring session

#### June

- 5 A classes end, Spring session
- 6 B classes begin, Spring session
- 7 Last day to withdraw from R classes without a 'W', Spring session
- 12 Last day to cancel registration in or to add B classes, Spring session
- 17 Last day to withdraw from B classes without a 'W', Spring session  
Last day to withdraw from R classes, Spring session
- 21 Last day to withdraw from B classes, Spring session
- 24 Last day to withdraw from R classes without a 'W', Commerce Co-op Summer session
- 26 Last day to register without late fee, Summer session
- 29 Classes end, Spring session

#### July

- 1 Canada Day - University closed
- 2 Classes begin, Summer session  
Last day to apply to graduate in October  
Fieldwork Level III (8 weeks) begins, School of Occupational Therapy
- 8 Last day to cancel registration in or to add A and R classes, Summer session

- Last day to register with late fee, Summer session
- 11 Last day to withdraw from A classes without a 'W', Summer session
- 17 Last day to withdraw from A classes; Summer session
- 19 Last day to withdraw from R classes, Commerce Co-op Summer session
- 23 A classes end, Summer session
- 24 B classes begin, Summer session
- 26 Last day to withdraw from R classes without a 'W', Summer session
- 30 Last day to cancel registration in or to add B classes, Summer session

#### August

- 2 Classes end, Commerce Co-op Summer session  
Last day to withdraw from B classes without a 'W', Summer session  
Last day to withdraw from R classes, Summer session
- 3 Examinations begin, Commerce Co-op Summer session
- 5 Halifax/Dartmouth Natal Day - University closed
- 8 Examinations end, Commerce Co-op Summer session
- 9 Last day to withdraw from B classes, Summer session
- 12 Classes begin, Outpost Nursing
- 16 Classes end, Summer session
- 30 Last day to register without late fee, Regular session  
First installment of fees due

#### September

- 2 Labour Day - University closed
- 3 Classes begin, Outpost Nursing
- 5 Classes begin unless otherwise specified, Regular session  
Last day for refund on first installment of fees - limited enrolment programmes
- 19 Last day to cancel registration in or to add A and R classes, Regular session  
Last day to register with late fee  
Last day to apply for Honours Programmes  
Last day to change from Dalhousie to King's and vice versa

#### October

- 14 Thanksgiving Day - University closed
- 18 Last day to withdraw from A classes without a 'W'  
Last day to change A classes from credit to audit and vice versa  
Last day for partial refund of first term fees
- 19 Fall Convocation

#### November

- 8 Last day to withdraw from A classes
- 11 Remembrance Day - University closed
- 15 Last day to apply for admission to Winter term



## 2 Definitions

### December

- 2 Last day to apply to graduate in May
- 4 Classes end
- 9 Examinations begin
- 18 Examinations end

### 1997

#### January

- 1 University closed
- 6 Classes resume, unless otherwise specified, second term begins  
Fieldwork (4th year) begins, School of Occupational Therapy
- 20 Last day to register without late fee, second term  
Payment of second term fees due  
Last day to cancel registration in or to add B classes, (except fourth year, Occupational Therapy)  
Last day to withdraw from R classes without a 'W'  
Last day to change R classes from credit to audit and vice versa
- 31 Last day for partial refund of regular session fees  
Second installment of regular session fees due

#### February

- 7 Munro Day - University closed
- 17 Last day to withdraw from B classes without a 'W' (except fourth year, Occupational Therapy)  
Last day to change B classes from credit to audit and vice versa  
Last day for partial refund if registered in second term only
- 24 Study break begins

#### March

- 3 Classes resume
- 10 Last day to add B classes, 4th year, Occupational Therapy
- 17 Last day to withdraw from B and R classes (except fourth year, Occupational Therapy)  
Last day to drop 4th year Occupational Therapy B classes without a 'W'
- 28 Good Friday - University closed

#### April

- 11 Classes end, Regular session
- 16 Examinations begin, Regular session
- 30 Examinations end, Regular session

#### May

- 5 Intra-session clinical practica begin, School of Nursing
- 12 Internship begins, Outpost Nursing
- 20-23 Spring Convocations

## Definitions

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

**Academic Dismissal:** A student's required withdrawal from a programme due to unsatisfactory academic performance.

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

#### Academic sessions:

Regular session: .....September - April

First term: ..... September - December

Second term: .....January - April

Spring session: ..... May - June

Summer session: .....July - August

Coop summer session: .....May - July

**Advanced Standing:** Students possessing advanced knowledge of a subject will be encouraged to begin their studies at a level appropriate to their knowledge, as determined by the department concerned. Unlike transfer credit, such students will still be required to complete the full number of credits required for the particular credential being sought.

**Audit Student:** A student permitted to attend classes but not expected to prepare assignments, write papers, tests or examinations. Credit is not given nor is a mark awarded for classes. Classes appear on the transcript with the notation "Aud". Audit students must apply, select classes and register in the normal way.

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

**Clerkship:** See Internship

**Clinical Practice:** See Internship

**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 year class is normally worth one credit.

**Exclusion:** Students may not register for a class which lists, as an exclusion, a class the student is also taking or has already passed.

**Externship:** See Internship

**Fieldwork:** See Internship

**Full-time Students:** Those registered for three full classes or more, or the equivalent of three half credit classes or more in either first or second term. For definition for fee assessment see fee schedule.

**Good Standing:** Students who meet the required GPA are considered to be in good academic standing. (see Academic Regulation 19)

**Grade Point Average (GPA):** Weighted sum of the grade points earned, divided by the number of classes enrolled.

- **Sessional GPA:** Classes taken in a single session.
- **Cumulative GPA:** All classes taken while registered in a programme.

**Internship, Fieldwork, Clinical practice, Externship, Practicum, Clerkship:** These terms are used in Faculty of Health Professions' programmes 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).

**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 or the equivalent of three half-credit classes in either first term or second term. A full credit class is equivalent to 6 credit hours.

**Practicum:** See Internship

**Prerequisite:** Requirement which must be fulfilled prior to registering in a specific class.

**Probation:** Warning to students that their academic performance is unsatisfactory and that they will be dismissed from their programme unless their performance improves by the end of the next regular session. (See Academic Regulation 20)

**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 or faculty 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, diploma or certificate.

**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.

**Writing Intensive:** Writing Intensive classes, designated by:

✍ Writing Intensive

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

## Class Codes

### Numbers

1000 level classes are Introductory  
2000 - 4000 level classes are advanced level  
5000 - 6000 level classes are Graduate level

### Term Codes

R - Sept. to April, Spring or Summer session  
A - Sept. to Dec. or first half of a Spring or Summer session  
B - Jan. to April or second half of a Spring or Summer session

**Credit Hour Extension** (examples only, other possibilities exist)

.06 credit hours = 1 full credit  
.03 credit hours = 1/2 credit

### Subject Codes

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

ANAT - Anatomy & Neurobiology	KINE - Kinesiology
ARCH - Architecture	KING - King's
ASOC - Arts and Social Sciences Interdisciplinary	LAW - Law
BIOC - Biochemistry	LEIS - Leisure Studies
BIOL - Biology	MARA - Marine Affairs
BUSI - Business Admin.	MATH - Mathematics
CANA - Canadian Studies	MEDI - Medicine
CH&E - Community Health and Epidemiology	MICR - Microbiology & Immunology
CHEM - Chemistry	MUSC - Music
CLAS - Classics	NESC - Neuroscience
COMM - Commerce	NURS - Nursing
COMR - Comparative Religion	OCCU - Occupational Therapy
COMP - Computing Science	OCRA - Oceanography
CIMP - Contemporary Studies	PATH - Pathology
DEHY - Dental Hygiene	PHAC - Pharmacology
DENT - Dentistry	PHAR - Pharmacy
ERTH - Earth Sciences	PHIL - Philosophy
ECON - Economics	PHSE - Physical Education
EDUC - Education	PHYC - Physics
ENGI - Engineering	PHYL - Physiology
ENGL - English	PHYT - Phytotherapy
ENVI - Environmental Studies	POLI - Political Science
FREN - French	PSYO - Psychology
GERM - German	PUAD - Public Administration
HEAS - Health Services Administration	RECR - Recreation
HEED - Health Education	RUSS - Russian Studies
HLTH - Health Professions	SCIE - Science Interdisc.
HIST - History	SOSA - Sociology and Social Anthropology
HUCD - Human Communication Disorders	SLWK - Social Work
INTD - International Development Studies	SPAN - Spanish
	STAT - Statistics
	THEA - Theatre
	TYPR - Transition Year Programme
	WOST - Women's Studies

## 4 Dalhousie University

# Dalhousie University

For over 129 years, Dalhousie University has played a crucial role in Nova Scotian higher education. Building upon a strong undergraduate base, the University has developed internationally recognized programmes of graduate and professional studies. The scope of its research is far-reaching, as is its public and community service. The range of the University's programmes, and in particular the obligations it has assumed for professional and graduate education, give it a unique role in higher education in Nova Scotia and in the Maritime region.

Dalhousie's enrolment stands at over 11,500 students. To accommodate them, Dalhousie occupies more than 60 acres in a residential area of Halifax. University facilities include buildings for teaching and research, libraries, residential housing for students, a Student Union Building, an Arts Centre for music, theatre, and an art gallery and facilities for physical recreation. The Nova Scotia Archive building, the Atlantic Regional Laboratory of the National Research Council, major provincial hospitals, and the Dr. D.J. MacKenzie Laboratories are located close to the University. Dalhousie benefits from a variety of arrangements for teaching and research collaboration with hospitals and federal and provincial research laboratories.

The University of King's College, situated adjacent to Dalhousie campus, is an affiliated institution, and its students in Arts and Science receive Dalhousie degrees in the name of both institutions. By agreement with Mount Saint Vincent University students have access to various courses and services. Cooperative arrangements for engineering and computer science studies have been made with the Technical University of Nova Scotia. Cooperation in a number of academic programmes, in administrative services, and in use of library resources is provided for in working arrangements with Saint Mary's University and other institutions in Halifax. Degrees in agriculture, awarded to students of the Nova Scotia Agricultural College, are awarded by Dalhousie in cooperation with the College.

Dalhousie University is a non-denominational co-educational university. Founded in 1818, the 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

Thomas D. Traves, BA, MA, PhD

### Vice-Presidents

#### Academic and Research

Deborah W. Hobson, BA, MA, PhD

#### Finance and Administration

Bryan G. Mason, BA

### Student Services

Eric A. McKee, BA, MA

### External

TBA

### Associate Vice-President Research

Robert O. Fournier, BSc, MA, PhD

### Deans of Faculties

#### Arts and Social Sciences

Graham D. Taylor, BA, PhD

#### Dentistry

William A. MacInnis, DSc, DDS, MEd, F.I.C.D.

#### Graduate Studies

Peter J. Ricketts, BA, PhD

#### Health Professions

Lynn McIntyre, MD, MHSc, FRCP(C)

#### Law

Dawn A. Russell, BA, LLB, LLM

#### Management

Philip J. Rosson, DAS, DM, MA, PhD

#### Medicine

John Ruedy, MDCM, FRCP(C), FACP

#### Science

W.C. Kimmins, PhD

#### Henson College of Public Affairs and Continuing Education

Mary Morrissey, BA, MSW, MPA

#### College of Arts and Science

W.C. Kimmins, PhD, Provost

## Administrative Officers

### University Secretary and Legal Counsel

Brian C. Crocker, QC, BA, LLB

### University Librarian

William F. Birdsall, BA, MA, PhD

### University Registrar

Gudrun E.L. Curri, MA

## Executive Directors

### Computer and Information Services

J. Morven Wilson, BSc, MSc

### Instructional Development and Technology

W. Alan Wright, BA, MA, PhD

### Lester Pearson Institute

William H. Montgomery, BA, LLB, LLM

### Office of Institutional Affairs

Brian Christie, BSc, MA, Assistant to the President for Planning

## Directors

### Alumni Affairs (Acting)

Marian Gray, BRec

### Arts Centre

Robert C. Reinholdt

### Athletics and Recreational Services

F.A. (Tony) Martin, BSc, MA

### Capital Campaign

William Straitton

**Counselling and Psychological Services**

Judith Hayashi, BA, MA

**Development**

Charlotte Sutherland, BA, MEd

**Environmental Health and Safety**

William J. Louch, PhD

**Financial Services**

Ian Nason, BCom

**Health Services**

Joyce Curtis, MD

**Housing and Conferences**

Heather Sutherland, BSc, MEd

**Personnel Services**

Michael J. Roughneen, CPIR, BA, MSc, FIPM

**Physical Plant and Planning**

William Lord, BAsC, PENG

**Public Relations**

Vacant

**Student Resources**

A. Susan McIntyre, MPA

**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**

Sir Graham Day

**Chancellor Emeritus**

H. Rueben Cohen, CM, QC, DCL, LLD

**Officers**

Dr. Thomas D. Traves, BA, MA, PhD

Mr. Allan C. Shaw, Chair

Mr. James S. Cowan, Vice-Chair

Mrs. Ann Petley-Jones, Honorary Secretary,  
Vice-Chair

Mr. John C. Risley, Honorary Treasurer

Mrs. Carol Young, Honorary Secretary

**Members**

Mr. David J. Almon

Mr. Peter Bryson

Mr. Gerald A. Clarke

Mr. David Cox

Prof. Joan Conrod

Mr. J. Dickson Crawford

Mr. Fred Fountain

Ms. Heather Gibson

Dr. Elaine Gordon

Mrs. Patricia Harris

Ms. Margaret Langley

Dr. Frank Lovely

Ms. Bernadette Macdonald

Mr. George W. MacDonald

Ms. Suzan MacLean

The Hon. Jacqueline R. Matheson

Ms. Josie Richard

Mrs. Patricia Roscoe

Mr. Kenneth C. Rowe

Dr. Donald C.R. Sobey

Mr. Geoffrey Stewart

Dr. Colin Stuttard

**Secretary**

Joann Griffin

**Observer for Faculty Association**

Dr. J. Andrew Wainwright

**Senate**

Senate consists of the President, Vice-President (Academic and Research), the University Librarian, Deans of Faculties, Dean of Henson College, thirty-nine elected Faculty members, four students elected by the Dalhousie Student Union, a representative of the University of King's College and a representative of the Nova Scotia Agricultural College.

Senate is the academic governing body of the University. Subject to the general approval of the Senate, faculties are responsible for supervision of programmes of study, of teaching and research, and for recommending candidates for degrees, diplomas, and university prizes. In addition, it is responsible for student discipline academic appeals, and faculty appointments, tenure and promotion.

**Chair of Senate**

Colin Stuttard, BA, PhD

**Vice-Chair of Senate**

J.E.D. Conrod, BComm, MBA, CA

**Secretary of Senate**

Marian E. Binkley, BA, MA, PhD

## 6 Academic Programmes

# Academic Programmes

## Degrees and Diplomas

### College of Arts and Science

#### Bachelor of Arts

Major 3 years, Advanced Major<sup>1,2</sup> 4 years, Honours<sup>1,2</sup> 4 years

#### Bachelor of Science

Major 3 years, Advanced Major<sup>1,2</sup> 4 years, Honours<sup>1,2</sup> 4 years

#### Bachelor of Music

4 years

#### Diploma in Costume Studies

2 years

#### Advanced Diploma in Costume Studies

3 years

#### Diploma in Engineering

2 years

#### Diploma in Meteorology

1 year

<sup>1</sup> BA and BSc with Minor in Business available for Advanced Major and Honours programmes.

<sup>2</sup> Co-op programmes are available in some subjects. See Departmental listings.

## Faculty of Management

### Bachelor of Commerce

Major and Honours 4 years

### Diploma in Public Administration

1 year

## Faculty of Health Professions

### Bachelor of Physical Education

4 years

### Bachelor of Recreation

3 years of Recreation following 1 year of Arts and Sciences

### Bachelor of Science (Health Education)

4 years

### Bachelor of Science (Kinesiology)

4 years

### Bachelor of Science (Nursing)

4 years

### Bachelor of Science (Nursing) with previous RN

3 years

### Bachelor of Science in Pharmacy

4 years of Pharmacy following 1 year of Arts and Science

### Residency Programme Pharmacy (post BSc Pharm)

1 year

### Bachelor of Science (Physiotherapy)

3 years Physiotherapy following one year of Arts and Science or minimum 2 years post Diploma programme)

### Bachelor of Science (Occupational Therapy)

3 years Occupational Therapy following one year of Arts and Science

### Bachelor of Social Work

3 years Social Work study following one year general study, a wide choice permitted

### Diploma in Health Services Administration

1 year

### Diploma in Outpost and Community Health Nursing

BN, BScN 9 months; RN, 15 months

## Faculty of Dentistry

### Doctor of Dental Surgery

4 years

### Diploma in Dental Hygiene

2 years Dental Hygiene following one year of Arts and Science

## Faculty of Law

### Bachelor of Laws

3 years

### Bachelor of Laws with Master of Business Administration

4 years

### Bachelor of Laws with Master of Public Administration

4 years

### Bachelor of Laws with Master of Health Services Administration

4 years

### Bachelor of Laws with Master of Library and Information Studies

4 years

## Faculty of Medicine

### Bachelor of Science (Medical)

4 years

### Doctor of Medicine

4 years

### Intern Year

1 year

### Residencies

various programmes ranging from 2-6 years post-intern

### Doctor of Medicine with Doctor of Philosophy

7 years

## Faculty of Graduate Studies

### Master of Arts

1 or 2 years with thesis in: Classics, Computing Science, Economics, English, French, German, Health Education, History, Leisure Studies, Mathematics, Philosophy, Political Science, Psychology, Sociology, and Social Anthropology

### Master of Science

1 or 2 years with thesis in: Agriculture, Anatomy and Neurobiology, Atmospheric Science, Biochemistry, Biology, Chemistry, Community Health and Epidemiology, Computing Science, Earth Science, Human

**Communication Disorders (3 years)** (Audiology or Speech Pathology), Kinesiology, Mathematics, Microbiology and Immunology, Oceanography, Oral and Maxillofacial Surgery (4 years), Pathology, Pharmacology, Pharmacy, Physics, Physiology and Biophysics, Physiotherapy, Psychology, and Statistics, also Neuroscience (combined with Anatomy and Neurobiology, Biochemistry, Pharmacology, Physiology and Biophysics, and Psychology).

**Doctor of Philosophy**

2 or 3 years, with thesis in: Anatomy and Neurobiology, Atmospheric Science, Biochemistry, Biology, Chemistry, Classics, Earth Science, Economics, English, French, History, Interdisciplinary Studies, Mathematics, Microbiology, Oceanography, Pharmacology, Pharmacy, Philosophy, Physics, Physiology and Biophysics, Political Science, Psychology and Statistics, also Neuroscience (combined with Anatomy and Neurobiology, Biochemistry, Pharmacology, Physiology and Biophysics, and Psychology)

**Doctor of Philosophy with Doctor of Medicine**

(Doctor of Philosophy thesis in: Anatomy, Biology, Microbiology, Pharmacology, Physiology, Biophysics)

7 years

**Doctor in the Science of Law**

2 years, with thesis

**Master of Business Administration**

2 years

**Master of Business Administration with Bachelor of Laws**

4 years

**Master of Environmental Studies**

1 or 2 years

**Master of Health Services Administration**

2 years

**Master of Health Services Administration with Bachelor of Laws**

4 years

**Master of Health Services Administration with Master of Nursing**

3 years

**Master of Laws**

1 year

**Master of Library and Information Studies**

2 years

**Master of Library and Information Studies with Bachelor of Laws**

4 years

**Master in Marine Management**

1 year

**Master of Public Administration**

2 years

**Master of Public Administration with Bachelor of Laws**

4 years

**Master of Development Economics**

2 years

**Master of Nursing**

2 years

**Master of Nursing with Master of Health Services Administration**

3 years

**Master of Social Work**

1 or 2 years

**Graduate Diploma in Public Administration**

1 year

# College of Arts and Science

### Introduction

The College of Arts and Science, established in 1988, consists of the Faculty of Arts and Social Sciences and the Faculty of Science. The College of Arts and Science meets to discuss matters of concern common to its units, in particular those relating to academic programmes and regulations. The Dean of Arts and Social Sciences and the Dean of Science alternate, year by year, as Provost of the College. The Provost chairs College meetings and prepares the agenda for those meetings. Administrative responsibility for what is decided in College meetings remains in the two Faculties. There are thirteen Departments and several interdisciplinary programmes in the Faculty of Arts and Social Sciences, and eleven Departments in the Faculty of Science. There are several interdisciplinary programmes of instruction in the College, the responsibility for which is shared among members from different Departments.

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

The College of Arts and Science consists of several groups: some 5,500 undergraduate students who typically spend three or four years in the College, nearly four hundred 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.

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

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

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

### Provost of the College

G.D. Taylor, PhD (Penn)

# Faculty of Arts and Social Sciences

**Location:** 3rd Floor, Arts & Administration Building  
**Telephone:** (902) 494-1440  
**FAX:** (902) 494-1957

**Administrator**  
 D.G. Miller, BCom (Acadia), CFP  
 Telephone: (902) 494-1441

## Departments and Programmes of the Faculty of Arts and Social Sciences

- Canadian Studies
- Classics
- Comparative Religion
- Contemporary Studies
- English
- French
- German
- History
- International Development Studies
- Music
- Philosophy
- Political Science
- Russian Studies
- Sociology and Social Anthropology
- Spanish
- Theatre
- Women's Studies

## Introduction

The Faculty of Arts and Social Sciences consists of those units that study and teach in the humanities, languages, social sciences, and the performing arts. In addition there are interdisciplinary programmes of study leading to the BA degree.

The central role of the Faculty of Arts and Social Sciences is the education of those wishing to comprehend the heritage of the past, recognize the complexities of the present, and use that understanding to plan for the future. The undergraduate programmes of the Faculty stimulate and refine the processes of critical analysis, disciplined speculation, and artistic expression. To understand more fully the conventions, history, and traditions of one's society is to understand more about oneself. Study and teaching in the Faculty of Arts and Social Sciences frequently involves questioning and analyzing why things are as they are, as well as understanding what they are. Some Departments in the Faculty teach and evaluate performance. The values associated with study and research in the Faculty of Arts and Social Sciences have long been recognized as central to a liberal education.

## Officers of the Faculty

### Dean

G.D. Taylor, BA, PhD (Penn), Professor of History

Telephone: (902) 494-1439

### Associate Dean

V. Thiessen, BA (Man), MA, PhD (Wis), Professor of Sociology and Social Anthropology

Telephone: (902) 494-1254

### Assistant Dean (Students)

R.D. Byham, BM, MM (Ill. Wealeyan), Associate Professor of Music

Telephone: (902) 494-1440

### Assistant Dean (External)

P.M. Butler, BA, MA, PhD (Tor), Associate Professor of Sociology and Social Anthropology

Telephone: (902) 494-6912

### Secretary

P.G. Clark, BA, MA (McM), PhD (UBC), Assistant Professor of Sociology and Social Anthropology

Telephone: (902) 494-6750



## Faculty of Science

**Location:** 3rd Floor, Arts and  
Administration Building  
**Telephone:** (902) 494-2373  
**FAX:** (902) 494-1957  
**e-mail:** science@dal.ca

### 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 are assisted to develop the capacity for inquiry, logical thinking and analysis, to cultivate the ability to communicate with precision and style, and to acquire the 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, biology, chemistry, computing science, earth sciences, economics, engineering, environmental science, marine biology, mathematics, meteorology, microbiology, neuroscience, physics, psychology, and statistics. Degree programmes (including a Co-operative Education in Science option where academic and work placement terms alternate) are available in most of these subjects. Details concerning particular programmes of study are found in the departmental entries.

### Officers of the Faculty

#### Dean

W.C. Kimmins, PhD (London), Professor of  
Biology

Telephone: (902) 494-3540

#### Associate Dean

W.R.S. Sutherland, MSc, PhD (Brown),  
Professor of Mathematics

Telephone: (902) 494-3421

#### Assistant Dean (Student Affairs and Space)

G.F.O. Langstroth, BSc (Alta), MSc (Dal), PhD  
(London), Professor of Physics

Telephone: (902) 494-2373

#### Secretary of Faculty

S. Swaminathan, MA, MSc, PhD (Madras),  
Professor Emeritus (Mathematics)

Telephone: (902) 494-2373

#### Administrator

A. Giddy, BA (Dal)

Telephone: (902) 494-1443

### Departments of the Faculty of Science

- Biochemistry (also in the Faculty of Medicine)
- Biology
- Chemistry
- Earth Sciences
- Economics
- Engineering
- Mathematics, Statistics and Computing Science
- Microbiology and Immunology (also in the Faculty of Medicine)
- Oceanography
- Physics
- Psychology

# Faculty of Health Professions

## Introduction

The Faculty of Health Professions consists of the School of Nursing, College of Pharmacy, School of Recreation, Physical and Health Education, School of Physiotherapy, School of Occupational Therapy, School of Human Communication Disorders, the Maritime School of Social Work and the School of Health Services Administration. The various undergraduate programmes are described in the College and School sections of this Calendar. Details of the graduate programmes offered in the College and the Schools are described in the calendar of the Faculty of Graduate Studies.

## Officers of the Faculty

### Dean

Lynn McIntyre, MD, MHSc, FRCP(C)

### Administrator

Cole, Lorna J.

### Administrative Coordinator

Read, Della H.

## Policy Statement on Affirmative Action

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

## Student Disclosure of Health Information - Faculty of Health Professions

Students registered in this Faculty are encouraged to inform both the School/College and the fieldwork 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.

### 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 fieldwork 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 fieldwork 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 fieldwork and/or academic sites produces difficulties, students are encouraged to report these difficulties immediately to the appropriate person(s) within both the fieldwork site and/or within their educational programme (see below). Discrimination in any form will not be tolerated.

Students are advised to make the initial contact with the person with whom they are most comfortable from the lists below. These individuals would be available for consultation/advocacy.

- Academic /faculty advisor
- Field work coordinator(s)
- Director of the School or College where student is enrolled
- Dean of the Faculty of Health Professions
- Advisor to Students with Disabilities, Dalhousie University
- Dalhousie/King's Association of Students with Disabilities
- Human Rights Commission
- College of Pharmacy
  - Preceptor
  - Site coordinator
  - Externship administrator
- School of Nursing
  - Clinical instructor
  - Class professor
  - Associate Director, Undergraduate Student Affairs
  - Coordinator, Outpost and Community Health
- School of Occupational Therapy
  - Preceptor
  - Site director in field site
  - Provincial fieldwork coordinator
- School of Physiotherapy
  - Clinical supervisor
  - Facility clinical coordinator
  - Provincial coordinator
- School of Social Work
  - Agency field instructor
  - Programme coordinator
  - Faculty field instructor
- Health Services Administration
  - Preceptor
- Human Communication Disorders
  - Clinical Educator
- Recreation, Physical and Health Education
  - Associate Director, Undergraduate Studies

# Faculty of Management

Location: 6152 Coburg Road  
Telephone: 494-2582

### Introduction

The Faculty of Management includes four schools - School of Business Administration, School of Public Administration, School for Resource and Environmental Studies, and School of Library and Information Studies. Undergraduate programmes are offered in the School of Business Administration in Commerce (BCom) and in the School of Public Administration (DPA). As of September 1991, the Bachelor of Commerce has been changed to a mandatory co-operative education programme.

Students wishing to enrol in programmes offered by the Faculty should address themselves directly to the Schools concerned for further information or for help in planning courses of study.

### Faculty Officers

#### Dean

Philip Rosson, Dip MS (Salford), MA (Lancaster), PhD (Bath)  
6152 Coburg Road, Telephone 494-2582

#### Associate Dean, New Programme Development, (cross-appointment with Henson College)

Alice Ireland, BA (Chatham), MSc (Car-Mel), MBA, PhD (Dal)  
6152 Coburg Road, Telephone 494-1769

#### Directors

##### School for Resource and Environmental Studies

Raymond Côté, BSc (Loyola), MSc (Memorial)  
1322 Robie Street, Telephone 494-3632

##### School of Library and Information Studies

Bertrum H. MacDonald, BSc (Acadia), MA, MLS, PhD (Western)  
3621 Killam Library, Telephone 494-3656

##### School of Public Administration

A. Marguerite Cassin, BA (Man), MA (UBC), PhD (Tor)  
6152 Coburg Road, Telephone 494-3742

##### School of Business Administration

R.E. Klapstein, BSc (Calgary), BA (Alberta), MBA, LLB (Dal), LLM (Osgoode), CGA  
6152 Coburg Road, Telephone 494-7080

# Henson College of Public Affairs and Continuing Education

### Introduction

Henson College was established as a senior academic unit at Dalhousie in 1984. Named in honour of Dr. Guy Henson, one of Nova Scotia's most outstanding adult education pioneers, the College builds on Dalhousie's 60-year tradition of action research, community development and outreach, and adult education.

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

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

Built upon this base, a number of Henson programmes are well-known and highly regarded outside the region; they serve national and international, as well as regional, constituencies.

### Faculty

#### Dean

M.C. Morrissey, BA (Western), MSW (Dal), MPA (Harvard)

#### Associate Dean

A. Ireland, BA (Chatham), MSc (Car-Mel), MBA, PhD (Dal)

#### Professors

L. Fraser, BA, BEd (MtA), MEd (Dal)  
R. MacMillan, BA, MPA (Dal)  
D. Myers, BA, BEd, MA (Tor), PhD (Edinburgh)  
J. Novack, BCom, MPA (Dal)

#### Associate Professors

J. Benoit, BA, MA (Guelph), PhD (Johns Hopkins)  
A. Bishop, BA (Tor)  
L. Day, BBA (MSVU)  
G. MacDonald, BBA, BA (UNB), MPA (Dal)  
P. Rans, BA (East Anglia), MA (Sheffield), MPA, PhD (Dal)  
M. Sampson, BBA (MSVU)

## Assistant Professors

S. Holmes, BSA (Acadia)

M.P. Williams, MSc (Guelph)

## Programmes and Services

Henson College offers a wide array of specific programmes and services (including needs assessment and survey services, special seminars and conferences, and specialized consultancy 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 programmes and themes. For detailed information, please contact the College directly at the address and phone number provided.

## Management Development and Training

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

The following are available in print-based distance education form:

- Certificate in Business Management
- Certificate in Small Business Management
- Certificate in Financial Management
- Certificate in Personnel Management
- Certificate in Organizational Management
- Certificate in Local Government Administration
- Certificate in Municipal Governing
- Certificate in Public Sector Management
- Certificate in Public Management
- Certificate in Fire Service Administration
- Certificate in Voluntary Fire Service Leadership
- Certificate in Police Leadership

In addition the College offers on-site certificate programmes in the Management of Voluntary Organizations, in Adult Education, in Community Development, and in Counselling.

## Specialized Professional Development

The College offers three major programmes of this type in cooperation with Dalhousie and external partners. All are provided via distance education.

The first is the Certified Employee Benefits Specialist (CEBS) Programme, in partnership with the International Foundation of Employee Benefits, aimed at professionals and senior managers in this field.

The second is the Credit Union Institute of Canada (CUIC) Management Studies Programme, in cooperation with the CUIC, and designed for credit union professionals across Canada.

The third programme, in cooperation with Dalhousie's School of Business Administration and the Institute of Canadian Bankers, is the Masters of Business Administration (Financial Services) aimed at professionals in the banking and trust company industry.

## Transition Year Programme

### Director

B. Johnson, BA, BSW, MSW (Dal)

### Instructors

L. Choyce, BA (Rutgers), MA (Montclair), MA (CUNY)

B. Johnson, BA, BSW, MSW (Dal)

T. Sabattis, BSW (Dal)

I. Saney, BA, MA (SMU)

A. Surovell, AB (Boston), MA (Mass)

The Transition Year Programme has served the post-secondary educational needs of the Mi'kmaq and Black Nova Scotian communities for over 25 years. It is a one-year programme designed for African-Canadian and First Nations students who wish to enter university but who may not yet meet standard entrance requirements. The TYP was established to redress historic educational disadvantages to members of the Mi'kmaq and Black Nova Scotian communities.

While preparing its members for full admission to regular programmes at the beginning of their second year on campus, the programme introduces students to the university in a wide variety of ways. Its curriculum, which includes a variable number of credit classes, can be adapted to individual needs and objectives. The TYP core curriculum includes classes in Black and Native Studies, Study Skills, English and Mathematics. Students may also choose a regular first-year elective that is of personal interest to them. Classroom instruction is complemented by an orientation week, special lectures, campus tours, workshops and field trips.

The programme's staff are drawn from the Dalhousie University community as well as the Nova Scotian Black and First Nations communities.

African-Canadian, non-status Native and Metis students accepted into the programme are eligible for university bursaries during their transition year. If they successfully complete this qualifying year, they become eligible for continued financial assistance as long as they remain in good academic standing and progress towards a first degree.

Status Native students attending the programme are funded through the Confederacy of Mainland Mi'kmaq, the Department of Indian Affairs or by individual band councils.

Enrolment is limited to ensure that each student receives personal attention and individual programming. Highly motivated

## 14 Henson College of Public Affairs and Continuing Education

First Nations and African-Canadian students of all ages and educational backgrounds are encouraged to apply. The TYP welcomes applications from students who did not complete high school or the classes required for university entrance and students who completed a general or mixed high school programme.

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

For further information or application forms, please contact:

Ms. Beverly Johnson  
Director  
Transition Year Programme  
Dalhousie University  
Halifax, Nova Scotia B3H 3J5  
(902) 494-3730

*Deadline for receipt of applications for the following September: March 15th.*

### Computer Training

The College, in partnership with University Computer Instruction and Services (UCIS) is a Novell Authorized Education Centre and provides a Novell Netware Training Programme, as well as a Training the Computer Trainer Programme and a wide range of Computer Applications offerings.

### Entrepreneurship and Job Creation

For most of the past decade, the College has been a leader in policy development, applied research, and programme design and delivery in the Self Employment/Micro Enterprise field. The College offers Self Employment Assistance training and support programmes for eligible candidates in Halifax and Bedford as well as innovative entrepreneurial development programmes for displaced fishers, Black youth, disabled adults, and others, as well as a Small Business Advisory Service.

### Programmes and Services for Full- and Part-Time Mature Students

#### Who is a Mature Student?

Mature student is a person 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.

#### Pre-Admission Counselling

Many mature students find it helpful to sit down and discuss their educational plans with a student advisor. All full and part-time mature student candidates are encouraged to contact Henson College for pre-admission counselling with our Mature Student Advisor. Call 494-2375 for more information or to make an appointment.

#### Mature Student Admission Programme

The University Exploration programme 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 85 for information on the number of classes a University Exploration student may take in a single academic year.

#### Pre-University Classes

Often, mature students decide they require upgrading prior to starting their university career, while other mature student applicants may be required by the University to upgrade prior to admission to Dalhousie. What ever the case, Henson College offers several pre-university classes designed with the needs of the mature student in mind. Pre-University English, Pre-University Biology, Pre-University Chemistry, Math Foundations and Pre-Calculus Math are all offered by Henson College.

#### Mature Student Orientation

The "Returning to Learning" orientation is an opportunity for mature students to learn more about University services, tour the university campus and meet other mature students. The orientation is offered the first Saturday in September, after classes begin.

#### Test Prep Classes

Henson College offers Kaplan preparatory classes designed to help students prepare for the LSAT, MCAT, GMAT, GRE, GRE (PSYCH), SAT, and NCLEX (RN) tests.

### Dalhousie Summer School

In cooperation with other Metro area universities, Henson College organizes and coordinates the Dalhousie Summer School, which offers a wide range of undergraduate classes in the arts, social sciences and sciences as well as in some areas of graduate and professional study.

### Intensive English Language and Cultural Enrichment Programmes.

The College provides an outstanding English language and cultural enrichment programme for senior high school Francophone bursary students. It also provides a version of this programme for Francophone adults wishing to upgrade their English language skills. Finally, in cooperation with the Dalhousie Alumni Hong Kong Chapter, the College will offer its first intensive language and cultural enrichment programme for senior high school Chinese students during the summer of 1996.

For further information on any of the programmes and services offered for mature students please call Henson College at 494-2526.

## Special Institutes

A number of special institutes for study and research in specific fields are based at the University. Among these are:

### Atlantic Health Promotion Research Centre

Director: Dr. M. Stewart

Co-ordinator: S. Crowell

The AHPRC was established in the spring of 1993 and is dedicated to research which can improve the health of individuals and communities - physically, mentally, socially, and spiritually. The AHPRC provides assistance with the development of health related research ideas. The main goal is to encourage health promotion research initiatives. The AHPRC works with community groups, individuals, academic researchers and health professionals to foster research that improves the quality of life in Atlantic Canada.

### Atlantic Institute of Criminology

Director: D.H. Clairmont, BA, MA, PhD

The Atlantic Institute of Criminology has been established to provide a centre for research in the areas of criminology, policing, and other concerns of the justice system. In this focus and in its contribution to the associated career development, the Institute is equivalent to those existing in other regions of the country. Research awards for graduate students in Criminology are available. Seed funding is also available for research relating to the justice system.

Policy for the Atlantic Institute of Criminology is developed with the assistance of an Advisory Board comprising representatives from the academic and professional community of the region.

Associate memberships are available to interested and qualified persons. Workshops and training classes also provide opportunities for professional development for employees of the Criminal Justice system in the Atlantic Region.

### Atlantic Region Magnetic Resonance Centre

Director Chair, Department of Chemistry

Manager: D.L. Hooper, BSc, MSc, PhD

Established in 1982 with assistance from the Natural Sciences and Engineering Research Council, the Centre is concerned with teaching and research programmes in magnetic resonance. The Centre has modern nuclear magnetic resonance (NMR) and electron spin resonance (ESR) instruments including Bruker AC 250 and AMX 400 NMR instruments and a Bruker MSL 200 NMR for solid state studies.

In addition to providing well-equipped laboratories and instrumentation for resident and visiting faculty, research scientists and students, the Centre provides NMR spectra and expertise to scientists in the Atlantic Region.

### Atlantic Research Centre

Director: H.W. Cook, MSc, PhD

Established in 1967, the Centre conducts basic biomedical research and population studies in the fields of human genetics, cell membranes, neurobiology, and developmental nutrition. It also provides education in these fields to undergraduate and graduate students and the general public. Special tests and consultative services for the prevention and treatment of diseases causing metabolic disorders and mental handicap are provided by the Centre. The Centre's professional staff hold appointments in various departments of the Faculty of Medicine. Its work is supported by grants from agencies such as the Medical Research Council of Canada, the Dalhousie Medical Research Foundation, the governments of the three Maritime provinces and by private donations.

### Centre for African Studies

Director: J.L. Parpart, MA, PhD

Location: 1444 Seymour Street

Telephone: (902) 494-3814/2105

Fax: (902) 494-2105

This Centre, established in 1975, coordinates instruction, publication, research and development education programmes in African Studies. Associated faculty hold appointments in departments and units concentrated in the social sciences and humanities. The Centre organises academic and informal seminars and public policy conferences on Africa and encourages interdisciplinary interaction at all levels on African subjects and issues. It cooperates with the International Development Studies programme and with the Pearson Institute and International Students Centre.

### Centre for Foreign Policy Studies

Director: Timothy M. Shaw, 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 and contracts.

The Centre's work is concentrated in the area of Canadian and comparative maritime and oceans policy and strategy but it also deals with international political economy and regional and global development. 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 Research & Doctoral Fellows and advances communication among local and international communities in these fields through seminars, workshops, conferences and colloquia, often co-sponsored by local, national and/or international organizations. It publishes occasional papers and monographs plus a monthly Defence Newsletter on Canadian defence and security policy issues.

## 16 Special Institutes

The Centre is an integral part of the Department of Political Science. Centre faculty offer classes through the Department in foreign and defence policy, international relations and development, and maritime affairs at both undergraduate (majors & honours) and graduate (MA and PhD) levels. They also supervise masters and doctoral theses in these fields.

### Centre for International Business Studies

Director: M.R. Brooks, BOT, MBA, PhD

The Centre was established in 1975 and is funded by the Department of Foreign Affairs and International Trade. Its purposes include the provision of specialist training in international business studies, research and outreach activity in international business. It carries out these functions within the administrative framework of the School of Business Administration.

### Centre for Marine Geology

Director: Paul T. Robinson, BSc, PhD

The Centre for Marine Geology was founded in 1983 to promote the interdisciplinary study of the continental margins and the sea floor. The Centre draws on the faculty and resources of the Departments of Earth Sciences, Oceanography and Physics and others. The objectives of the Centre are: (1) to expand the university's leading role in international studies of the oceanic crust, (2) to participate with industry and government in the geological aspects of oil and gas development on Canada's east coast and (3) to continue research on sedimentation and the recent history of the Canadian offshore.

### Dalhousie Health Law Institute

Interim Director: Robert G. Elgie, QC, BA, LLB, MD, FRCS(C)

The Health Law Institute is an interdisciplinary Institute which conducts, facilitates and coordinates research and teaching in the Faculties of Law and Medicine, and in Dentistry and Health Professions as well. The Director and his Faculty Associate are cross-appointed to the Faculties of Law and Medicine. They work with colleagues in those and other Faculties on grant and contract funded research, teach, facilitate and coordinate the teaching of law as it applies in the broad field of health to students in Dentistry, Health Professions, Law and Medicine, supervise graduate students; and conduct continuing education classes for health professionals on a contract basis.

### Lester Pearson International Institute

Director: W.H. Montgomery, BA, LLB, LLM

Associate Director/ Academic: B. Lesser, BCom, MA, PhD

Associate Director/ Projects and Administration: P. Rodee, BA, MBA

The Lester Pearson Institute (LPI) was founded in 1985 to promote Dalhousie's involvement in international development

activities. In mid-1987, LPI was merged with the Centre for Development Projects and was given responsibility for guardianship of all externally financed international development programmes and projects at Dalhousie. In mid-1994, the Institute's mandate was expanded to also include a broader responsibility of international activities and the internationalization of the University. Toward this end, LPI supports the Dalhousie community's involvement in international activities by facilitating student exchange opportunities with overseas partners and by enhancing networks among those with international experience and interest at the University. LPI also undertakes major activities such as a development education programme for the campus and local community, a lecture and seminar series, conferences, research, and a publications programme. Although LPI is not a degree granting arm of the University, it encourages and supports the study of international issues; serves as a resource centre for students, faculty and staff; houses the Lester Pearson Chair in Development Studies; and maintains a roster of associates known as Pearson Fellows who serve as advisors to the Institute in their particular area of expertise.

### Neuroscience Institute

Director: W. Tatton, MD, PhD, FRCP

The Neuroscience Institute was founded in 1990 to promote and coordinate research in neuroscience, the modern interdisciplinary study of the brain and nervous systems. The development of the Institute parallels the establishment of many such institutes throughout the world and marks dramatic recent progress in understanding the workings of the brain, as signalled for example by U.S. President Bush's declaration of the 1990's as the Decade of the Brain.

Currently housed in the Sir Charles Tupper Medical Building, the Institute serves as an umbrella organization to foster research and training in neuroscience at Dalhousie. A major objective is to increase understanding of the functions of the nervous system in health and disease and, to this end, the Institute coordinates the activities of neuroscientists in the Faculty of Medicine and the Faculty of Science, facilitating collaboration between clinical and basic scientists in the two Faculties. Some foci of current research activity include: the autonomic nervous system; development and plasticity of the nervous system; and, sensory physiology. The Institute also provides a vehicle to seek new sources of funding, and will encourage new initiatives in all areas of neuroscience research at Dalhousie. In addition, the Institute promotes and coordinates training programmes in neuroscience currently offered through constituent departments at both the undergraduate and graduate levels. Associated with the latter it sponsors a seminar series annually.

## Oceans Institute of Canada/Institut canadien des océans

The Oceans Institute of Canada/Institut canadien des océans is a federally incorporated, non-profit organization established in 1976 and dedicated to promoting responsible management of the world's oceans.

The Institute serves the public and private sectors at national and international levels. Work is carried out by a permanent staff and experts drawn from a multidisciplinary panel of associates.

The location of its head office in Halifax promotes full collaboration with many other establishments concerned with ocean affairs, including Dalhousie University. The Institute has a Pacific Office in Vancouver.

## Trace Analysis Research Centre

Director: L. Ramaley, BA, MA, 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.

# Resources and Services

## Advisory Committee on Sexual Harassment

Sexual harassment is sexually oriented behaviour of a deliberate or negligent nature that adversely affects the working or learning environment or participation in university life. Sexual harassment can take many forms, from constant joking to assault. It may involve promises of reward, or threats that you could fail in class or lose your job. It may make your work or study environment uncomfortable through continued sexual comments, suggestions or pressures. Sexual harassment may involve unwelcome sexual attention from a professor, a teaching assistant, a staff member, a student, or even a patient or a customer.

Dalhousie University is committed to an environment free from sexual harassment. A policy and procedures exist to deal with complaints of sexual harassment. Responsibility for monitoring the policy and coordinating educational programming rests with the President's Advisory Committee on Sexual Harassment, which includes representation from student, staff and faculty groups.

If you believe you are being sexually harassed at Dalhousie you are encouraged to discuss your questions or concerns with the Sexual Harassment Advisor, Room #3, Basement of the Arts and Administration Building, 494-1137 or 494-1659. Advice and information about the policy and possible options are available.

Persons found to have engaged in sexually harassing behaviour can be subject to a range of penalties, up to and including expulsion or dismissal from the the University.

## Alumni Association

The Alumni Association is composed of over 70,000 former students. Chapters scattered across the world keep alumni informed and involved with the Association. It coordinates a number of programmes including homecomings, reunions, branch meetings, sports events, information lectures, a Student Alumni Association, Scholarships and Bursaries, and the Alumni Award for Teaching Excellence and the Outstanding Alumnus Award. The Association publishes the Dalhousie Alumni Magazine which is sent to all alumni and friends.

The alumni play a vital role in the University in a wide variety of ways including representation on the Board of Governors.

## Athletics

Athletics and Recreational Services offers a wide range of programmes for every Dalhousie student. More than fifty clubs and intramural programmes offer fun, fitness and companionship while 13 varsity sports provide excitement for players and spectators alike. For those who prefer less competitive activities, there are a great number of fitness, leisure and aquatic instructional programmes.



## 18 Resources and Services

Recreation facilities on campus include: Dalplex—offering a 50,000 sq. ft. fieldhouse, olympic-size pool, two weight rooms, two hardwood basketball courts, numerous "no-fee" racquet courts, and an indoor jogging track, a golf putting green an driving cage, a cardio-fit area and family-fitness features such as the Fun Zone play area (the largest indoor soft modular play structure in Metro), a babysitting service, and our Family Change Room; the Dalhousie Memorial Arena, Studley Gym, and The F.B. Wickwire Memorial Field (one of the largest artificial playing surfaces in the world). For details on fitness and recreation at Dalhousie contact Dalplex at 494-3372 or the Intramural Office at 494-2049.

### Black Students

The Black Student Advising Centre is available to assist and support new, prospective and returning Black Students (African, American, Canadian, Caribbean, etc.) The Advisor may organize programme activities which assist Black students in developing contacts with other Black students both on campus and in the Black Community. The Centre is intended to foster a sense of support and community among the Black students, with other students and to increase intercultural awareness.

The Advisor will provide confidential services and programmes individual and/or group assistance, impartial observation, relevant resource materials, along with a referral service which may benefit your academic, personal and social development on and off campus. There is a small student resource room for meeting, peer support, reading and/or studying. Awards, scholarships, employment, community information and upcoming events are also made available.

The position of the Black Student Advisor was created by Dalhousie University to provide information to prospective students, increase access and promote retention of indigenous Black students.

The Centre may be beneficial to all students, faculty and staff as a means of increasing awareness and sensitivity to Black student issues and presence within the University community.

For further information contact: Office - Black Student Advisor, Student Union Building, Halifax, Nova Scotia, B3H 4J2; phone - (902) 494-6648; fax - (902) 494-2042; World Wide Web homepage URL - <http://www.dal.ca/~acswww/bsa.html>; Black Students homepage - <http://www.dal.ca/~acswww/blacks.html>.

### Chaplaincy at Dalhousie

The University provides facilities for chaplains appointed by various churches. There are five chaplains at Dalhousie, representing the Anglican, Baptist, Roman Catholic, Lutheran, and United Church traditions. In addition, contact ministers are designated by the Jewish, Presbyterian, and Orthodox traditions and can be reached through the Chaplains' Office on campus. The Chaplains' Office is located on the

fourth floor of the Student Union Building, telephone 494-2287. Office hours are Monday to Friday 9 - 4. Appointments can be made for other convenient times. The chaplains are available at any time for emergencies. Outside office hours, chaplains may be reached by calling the answering machine at 494-2287 to hear emergency numbers.

### Counselling and Psychological Services

The Counselling and Psychological Services Centre offers programmes for personal, career and educational concerns. Counselling is provided by professionally trained Counsellors and Psychologists. Strict confidentiality is ensured. Counselling is available both individually and on a group basis. Topics covered by regularly offered group programmes include Study Skills, Career Decision Making, Exam Anxiety Reduction, Public Speaking Anxiety Reduction, Overcoming Procrastination, Anger Management, Resume Writing and Job Search Skills. Information on a wide variety of careers and academic programmes is available in the Frank G. Lawson Career Information Centre. Students wishing to get a first hand view of careers they are considering entering, may contact alumni willing to discuss their career experiences through the Centre's Mentors and Models programme. Interest testing is also available to students.

The Counselling and Psychological Services offices and its Frank G. Lawson Career Information Centre are located on the 4th Floor of the Student Union Building. In addition to regular office hours, the Centre is open three evenings a week during the academic year. Inquire or make appointments by dropping in or calling 494-2081.

### 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 remains, after twenty-one years, an integral part of the cultural experience in our community and stands as the only arts complex of its kind in Nova Scotia.

Of the numerous performing arts spaces in the Dalhousie Arts Centre, the Rebecca Cohn Auditorium, or "The Cohn", as it is affectionately called, is the most familiar and prestigious. The 1040 seat concert hall is the home of Symphony Nova Scotia, as well as the venue of choice for a wide variety of performers ranging from The Royal Winnipeg Ballet to Blue Rodeo, The Chieftains, and Reveal to name a few. Other performing and visual arts space in the Arts Centre include: The Sir James Dunn Theatre (240 seats), the David MacK. Murray Studio, Studio II, The MacAloney Room, and the Art Gallery.

The Dalhousie Art Gallery offers the public access to national and international touring exhibitions and initiates many ambitious and exciting exhibition programmes.

Further information on the Music and Theatre Departments can be found in their separate listings.

## Dalhousie Student Union

Every Dalhousie student is automatically a member of the Dalhousie Student Union. The Student Union is recognized by an agreement with the University Administration and by an Act of the Nova Scotia legislature as the single voice of Dalhousie students. All student activities on campus are organized through the Student Union, and the Student Union is the focus of all student representation. The business of the Student Union is conducted by a Council made up of 40 members. Every student is represented by one or more representatives of their faculty, elected within their faculty in the spring. As well, students who live in residence and international students also elect their own representatives because they are uniquely affected by certain university policies. Also on the Council are the student representatives elected to the Senate and Board of Governors.

One of the most important resources of the Student Union is the Student Union Building located at 6136 University Avenue between Seymour and LeMarchant Streets. The SUB, which is exclusively operated by the Student Union and is paid for through Student Union fees, was opened in 1968 as a centre for student activity on campus. Every student has the opportunity to take advantage of the Union's financial, physical and organizational resources. Students have an opportunity to become involved in committees dealing with various student issues. The DSU also offers a full range of clubs, societies and organizations for any student 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 and is open from 8:30 a.m. to 4:30 p.m. Monday through Friday, phone number 494-1106.

## Housing/Residence Services

For the 55 per cent of Dalhousie University students whose homes are outside the Halifax Metropolitan area, where to live while attending university is a major question. The supply of University owned housing does not meet the demand and the vacancy rate in the various private, commercial units is low. It is therefore very important that students planning to attend Dalhousie think well in advance about their accommodation needs.

Students should be aware of the following points in reference to residence accommodation. You must indicate your interest in residence accommodation on your Application for Admission to a programme of study. Upon admission to a programme of study, those students who have indicated an interest will receive a Residence Application Form. It is important to return the Residence Application Form promptly as the applications will be considered as they arrive. Residence Application Forms will not be distributed to, nor received from, individuals who have not gained admission to a programme of study.

Students with disabilities are encouraged to contact the Residence Office at (902) 494-1054, for information and assistance.

The traditional style residences at Dalhousie are chiefly for undergraduate students; very few graduate spaces are allocated and in many cases students pursuing advanced degrees are not prepared to live with the exuberance of first and second year students.

The information below gives a description of A. traditional on-campus residences, B. off-campus housing owned by the university and C. the services offered by the off-campus housing office listing service. For information on housing fees, see the Fees section of the Calendar.

Please Note: Academic acceptance by the University, i.e., admission to a course of study, DOES NOT GUARANTEE admission to University Housing or provision of off-campus accommodation.

It is the responsibility of the individual student in all cases to make separate application for the university housing of her/his choice, or to avail him/herself of the listing services provided by the Off-Campus Housing Office.

As available space in University residences is limited students are encouraged to complete and submit their residence application immediately upon receiving it with their letter of academic admission.

### A. Traditional Style On Campus Residence Howe Hall

Centrally located on campus, Howe Hall, provides accommodation for 520 undergraduate students. The sprawling, grey ironstone complex is divided into five houses: Bronson, Henderson and Smith Houses are co-ed; Cameron, and Studley are for men only. Each house has its own distinctive identity and student government. The ratio of seniors to first-year students is approximately 40/60, except in Henderson house which is predominantly for first year students.

The houses offer both double and single rooms with the singles generally reserved for senior undergraduates and the doubles for first-year students. Facilities include two dining rooms, lounges, television rooms in each house, a canteen, games room, squash courts, weight room, study areas, laundry rooms and computer room.

### Shirreff Hall

The women's residence on the Dalhousie campus, Shirreff Hall, provides accommodation for 445 female students. Located in a quiet corner of the campus, it is minutes from classes, the library, Dalplex and other facilities as well as from the scenic Northwest Arm. It is divided into three houses - Newcombe, Old Eddy and New Eddy (which includes the Annex). Old Eddy and New Eddy have both single and double rooms while Newcombe has single rooms only. The Annex houses only 14 senior students and is distinct from the remainder of Shirreff Hall in that it has a separate outside entrance and is not directly accessible from the main residence.

## 20 Resources and Services

Shirreff Hall offers a dining room, an elegant library and visitors' lounge, study hall, study area, games room, television lounges, exercise room, kitchenettes, canteen, laundry room and reception desk. Students have access to two pianos.

### Eliza Ritchie Hall

Opened in 1987, Eliza Ritchie Hall is a co-ed residence. It provides traditional residence accommodation for 84 students in predominantly single rooms.

This three-storey building is located close to the Dalplex and to Shirreff Hall, where students take their meals. Facilities include study rooms, a multipurpose room, reception area, laundry facilities and leisure lounges with kitchenettes.

### B. Off Campus, University Owned Housing

#### Fenwick Place

Dalhousie's 33-storey Fenwick Place offers students the privacy and some of the independence of apartment living. Located in Halifax south end, it is only a 15-minute walk or a short bus ride from the campus. Because Fenwick houses both single and married students, the mix of people provides a harmonious living environment.

Many of the 252 apartments in Fenwick Place are furnished to accommodate students in groups of two, three or four. Priority is given to students who apply in groups and who are currently living in a Dalhousie residence. Each of these apartments has a full kitchen and bathroom, furnished living room and dining area and a balcony. Bedrooms have desks and a mate-style bed. Heat, hot water, electricity, and satellite television are included in the residence fee.

Fenwick also has a number of unfurnished bachelor, one and two-bedroom apartments which are rented to married and single students. 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.

#### Glengary Apartments

Located on the campus on Edward Street, Glengary Apartments is a four-storey brick building offering co-ed accommodation to 52 students. Preference is given to students in second and third year and especially to those who apply in groups of four.

Glengary has 12 furnished apartments, each with space for four students. The apartments feature two single rooms, a double room, kitchen, living room and bathroom. There are also four bachelor apartments which are always in high demand. Laundry facilities are located in the basement, where there is also a limited amount of storage space.

Coordinators are available for security and administrative services and also act as a resource for students who may need advice or assistance.

### Co-ed Apartment Units

Dalhousie has two co-ed apartment buildings which are open to students in graduate programmes. Located on University Avenue, on the main campus, the buildings include bachelor, one and two-bedroom apartments and accommodate a total of 20 students.

Each apartment has a living area and kitchen facilities with a fridge, stove and sink, a full bathroom and ample cupboard space but is otherwise unfurnished. A laundromat is located in the neighbourhood. Heat and hot water are included in the rent.

### Residence Houses

Dalhousie also has six residence houses, five of which are now co-ed. All were once single family homes, and have their own kitchens, living rooms and bathrooms. The character of these homes has been maintained as much as possible. The houses are all on campus. Although they are generally occupied by students in graduate programmes or professional schools, a few of the 46 spaces are reserved for undergraduates.

Two of the houses are designated as 24-hour quiet areas for students who want a particularly quiet environment in which to live and study. One of the houses is designated as a French house, reserved for male and female students who would like to live in a French-speaking environment.

All of these houses have both single and double rooms, each with a bed, dresser, study desk, lamp and chair. Linen, cooking utensils and small appliances are not provided. Students share kitchen and living room areas which are maintained by the clearing staff. A trained senior student acts as a house coordinator and liaises with the Howe Hall Residence Co-ordinator and Facility Co-ordinator to provide administrative and resident-related services.

### 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 the Student Union Building, this office is designed to help students find privately-owned accommodation.

The Off-Campus Housing Office provides centralized information on available housing in the Halifax metro area, including apartments, 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.

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 low vacancy rate in Halifax, it is advised that students start looking for off-campus housing well ahead of the academic year.

**General Information**

- Application forms must be accompanied by an application fee and a deposit in Canadian funds, payable to Dalhousie University. Deposit amounts are listed on the application form.
- Acceptance into an academic programme does not mean that application for a place in residence has been approved.
- To live in any of the University-owned buildings, students must maintain full-time status at Dalhousie throughout the academic year.

For further information on living at Dalhousie, or for additional copies of the residence application form, do not hesitate to contact:

Director of Housing and Conferences  
6250 South Street  
Dalhousie University  
Halifax, N.S. B3H 3J5  
(902) 494-3365

**For Howe Hall, Eliza Ritchie Hall, Shirreff Hall and the Residence Houses:**

Residence Office  
Howe Hall  
Dalhousie University  
6230 Coburg Road  
Halifax, N.S. B3H 4J5  
(902) 494-1054

**For Fenwick Place, Glengary Apartments and Co-ed Apartment Units:**

Accommodation Office, Fenwick Place  
Dalhousie University  
5599 Fenwick Street  
Halifax, N.S. B3H 1R2  
(902) 494-2075

**For Off-Campus Housing Assistance:**

Off-Campus Housing Office  
Student Union Building, Room 120  
Dalhousie University  
6136 University Avenue  
Halifax, N. S. B3H 4J2  
(902) 494-3831

**Instructional Development and Technology**

The Office of Instructional Development and Technology (OIDT) is mandated to initiate, lead, and coordinate activities which encourage reflection upon and improvement in teaching and learning at Dalhousie.

**Workshops** - To fulfil this primary goal, the OIDT develops and presents a variety of sessions and workshops to faculty and teaching assistants at Dalhousie. Annual events include the Orientation to Teaching at Dalhousie for new faculty and the Graduate Teaching Assistant Orientation for new GTAs. During the year, workshops are presented monthly or bi-monthly and are open to the Dalhousie community. The OIDT also cooperates with other universities in Nova Scotia to disseminate information about teaching improvement.

**Publications** - Focus on University Teaching and Learning, the OIDT newsletter, is published five times a year. Three other publications - Recording Teaching Accomplishment: A Dalhousie Guide to the

Teaching Dossier; University Teaching and Learning: An Instructional Resource Guide for Teaching Assistants at Dalhousie University; Learning Through Writing: A Compendium of Assignments and Techniques - may be purchased or borrowed from the OIDT. The extensive bibliography of materials available for loan includes both print and video resources on topics related to teaching. These may be borrowed by faculty, teaching assistants, and students.

**Instructional Media Services** - To complement its primary goal, the OIDT also has responsibility for the provision of instructional media services to the campus (excluding Medicine and Dentistry). These services include audiovisual equipment, videotaping, photography, and graphics. Facilities for borrowing discipline-specific audio and video tapes are located in the Learning Resource Centre in the basement of the Killam Library.

**Distance Education** - Through its support for the development of distance education classes, primarily in the Health Professions, the OIDT assists Dalhousie to respond to the needs of those who wish to upgrade their education. General inquiries about these classes should be directed to the Registrar's Office.

Information, teaching resources, and private consultations are available through the Office of Instructional Development and Technology. The Office is located in the Killam Library Courtyard (494-1622).

**International Student Centre**

The International Student Centre provides services and programmes for Dalhousie's students from around the world. It is a resource and activity post for international students, and is dedicated to ensuring that international students make the most of their stay in Canada.

The Centre provides information and advice on financial, legal, immigration, employment and personal matters and acts as a referral point to other services on campus. It organizes reception and orientation programmes that assist international students in adjusting to the new culture and in achieving their educational and personal goals. A variety of social, cultural and educational programmes are also held throughout the year. The Centre coordinates activities that facilitate fostering of relationships with the university and city communities.

The Centre has a lounge where students can meet and a reading room where students can study or read international publications. For further information, contact: The Advisor, International Student Centre, Student Union Building, 6136 University Avenue, Room 120, Dalhousie University, Halifax, N.S., Canada, B3H 4J2 or phone (902) 494-7077.

**Libraries**

The Dalhousie University Library System is organized to accommodate the needs of the undergraduate teaching programmes, graduate and faculty research projects, and professional schools. The system is made up of the following components: the Killam Memorial Library -

## 22 Resources and Services

Humanities, Social Science, and Sciences, the Sir James Dunn Law Library, and the Kellogg Health Sciences Library.

As of April 1, 1995, the total Dalhousie University Library System holdings include over 1,510,000 volumes of books, bound periodicals, documents, and bound reports, 414,000 microfilm & microfiche, 100,000 maps, and other media. Approximately 9,600 serials titles are currently received, and dead title holdings number over 11,000.

Dalhousie libraries participate in Novanet, a network which shares a single automated online catalogue of the holdings of the member libraries (Mount Saint Vincent University, Nova Scotia College of Art & Design, Saint Mary's University, Technical University of Nova Scotia, University College of Cape Breton, University of King's College, the Atlantic School of Theology and the Victoria General Hospital). Users borrow from Novanet libraries upon presentation of their University ID card.

### Ombudsperson's Office

The Dalhousie Ombudsperson's Office offers assistance and advice to students experiencing problems while at Dalhousie, including difficulties associated with finances, academics, or accommodations. The Ombudsperson's Office can help students resolve particular grievances and also 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 to students on any University-related complaint. Students retain full control over any action taken on their behalf by the Ombudsperson's Office, and all inquiries are strictly confidential.

The Dalhousie Ombudsperson's Office is located in the Student Union Building, Room 403. Regular office hours are posted on the door at the beginning of each Semester. The Ombudsperson's Office can also be reached by calling 494-6583. If no one is available to take a call, students are requested to leave a message on voice mail.

### 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 programmes. In addition, they are prepared to help students who are not quite sure what sort of assistance they are looking for, referring them as appropriate to departments for advice about specific major and honours programmes or to the office of Student Services or to specific service areas such as the Counselling Services Centre.

Among the staff are people with expertise in financial aid and budgeting who are available for consultation.

The summer advising programme for first year students in Arts and Social Sciences, Management, Engineering and Science is directed from the Registrar's Office. Prospective students may arrange a tour of the campus through this office.

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.

### Services for Students with Disabilities

#### Dalhousie University Policy on Accessibility for Students with Disabilities

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

- 4.2 inform the University community about the services available to qualified students with disabilities and seek to ensure that such services are delivered in ways that promote equity;
- 4.3 where warranted and without compromising the academic standards, and through the relevant academic authority, modify:
- workload;
  - examination procedures;
  - other course requirements; and
  - 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 programmes, 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:
- initiate contact with the Advisor to Students with Disabilities and make the nature of their disability and/or their needs known; and
  - 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.

The Advisor to Students with Disabilities should be contacted as early as possible at (902) 494-2836, TTY (902) 494-7091.

**Note:** Please note that where self-disclosure or prior arrangements have not been made with the University, Dalhousie is not liable to accommodate your special needs due to your disability.

### 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 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 the University less intimidating.

The Advocates may be contacted through:  
 Student Advocacy Service  
 Room 402  
 Dalhousie Student Union Building  
 Telephone: (902) 494-2205

### Student Clubs and Organizations

Students seeking information on clubs and societies should call the Dalhousie Student Union INFOLINE 494-2146. 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. The Student Handbook publishes a list of clubs, societies and organizations, and every fall new students are encouraged to select and participate.

### Student Employment Centre

The main function of the Dalhousie Student Employment Centre is to aid Dalhousie students in their efforts to obtain permanent, summer, or part-time employment. It is located on the fourth floor of the Student Union Building, and operates Monday through Friday from 9:00am to 4:30pm. Telephone: (902) 494-3537.

The Employment Centre also has useful information on résumé preparation, interview techniques, and job-search skills.

Interviews for graduating students are arranged with employers who visit Dalhousie each year (mid-October to mid-November are usually the busiest months).

Summer employment listings are received as early as October, while new part-time jobs are posted daily for both "on campus" and "off campus" locations.

### Student Services

Located at 1234 LeMarchant Street, Student Services provides a point of referral for any student concern. The Vice-President is the chief Student Services officer and coordinates the activities of Athletics and Recreational Services, the Dalplex, the Bookstore, Student Counselling and Psychological Services, Health Services, Housing and Conference Services, Office of the Registrar, Writing Workshop and the Ombud Office. Student Resources including Black Student Advising, Advising for Students with Disabilities, Chaplaincy, International Student Centre, the Student Employment Centre; Tutoring Services and the Volunteer Bureau are coordinated out of this office as well. Students who experience difficulties with their academic programmes or who are uncertain about educational goals, major selection, workload management, social or personal matters affecting their academic performance, inadequate study skills, or conflicts with faculty and regulations can seek the assistance of the Academic Advisors in the Vice-President's office.

### 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

## 24 Resources and Services

manuals and other reference material. The general book (trade) department carries an assortment of bestsellers, newspapers, magazines and books by Dalhousie authors.

The Health Sciences department has the largest and most complete medical book section in Atlantic Canada, with over 2000 titles in stock. Thousands of other titles are specially ordered annually, and the department ships out books to medical personnel and hospitals throughout the region.

The Stationery department carries all necessary and supplementary stationery and supplies, including scientific and engineering items. The Campus shop carries gift items, mugs, clothing and crested wear, cards, jewellery, class rings, backpacks, novelties, briefcases, and general University paraphernalia. A Special Order department is located in the office 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).

### University Computing and Information Services

University Computing and Information Services (UCIS) provides computing and communication services for students, faculty, and staff for instructional, research, and administrative purposes. It is responsible for all centrally managed computing and communications facilities.

UCIS manages a campus-wide communications network which interconnects office systems, laboratories systems, departmental computers, and central facilities. This network is connected to the Nova Scotia Technology Network, which in turn is connected to the national network CA\*net which has worldwide connections. UCIS is also responsible for University telephones.

Central computer systems include digital VAX4500 and two IBM RS/6000 computers which are used primarily for academic purposes; an IBM RS/6000 SP2, which is a powerful parallel processing system used for research; and an IBM 4381 and two IBM RS/6000 computers supporting the university's central administrative systems. UCIS also manages numerous micro computer teaching laboratories which are situated throughout the campus, including laboratories in the School of Business, Engineering, English, History, Sociology, Law, Political Science, Physics, Biology, Earth Sciences, Dentistry, Psychology, and at the central Computer Centre in the basement of the Killam Library.

All students may have access to these computing facilities on an individual basis or in conjunction with the classes that they take.

UCIS also manages the campus computer store (PCPC); provides short, non-credit computer related classes in conjunction with Henson College; and offers a hardware maintenance service for micro-computers.

### University Health Services

The university operates a medical clinic, in Howe Hall, at Coburg Road and LeMarchant Street staffed by general practitioners and two psychiatrists. 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. In the event of emergency, students should telephone the University Health Service at 494-2171 or appear at the clinic in person. The university maintains health services on a 24-hour basis.

All students must have medical and hospital coverage. All Nova Scotia students are covered by the Nova Scotia Medical Services Insurance. All other Canadian students must maintain coverage from their home provinces. This is especially important for residents of any province requiring payment of premiums. All non-Canadian students must be covered by medical and hospital insurance prior to registration. Details of suitable insurance may be obtained from the Student Accounts office prior to registration. Any student who has had a serious illness within the last 12 months, or who has a chronic medical condition, should contact and advise the Health Service; preferably with a statement from the doctor.

The cost of most medications prescribed by a physician is recoverable under a prepaid drug plan administered by the Student Union.

### Writing Workshop

The Writing Workshop programme recognizes 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. This English language resource centre offers classes in language and writing, a tutorial service, guidelines for acceptable standard language usage, and provides information about sources for reference. For more information about the Writing Workshop, please call 494-3379.

	One Year Programme	Two Year Programme	Three Year Major	Four Year Adv. Major	Four Year Honours
<b>Arts and Social Sciences</b>					
Classics	—	—	BA	BA <sup>4</sup>	BA <sup>4</sup>
Comparative Religion	—	—	BA	BA <sup>4</sup>	—
Contemporary Studies	—	—	—	—	BA <sup>4,6</sup>
English	—	—	BA	BA <sup>4</sup>	BA <sup>4</sup>
French	—	—	BA	BA <sup>4</sup>	BA <sup>4</sup>
German	—	—	BA	BA <sup>4</sup>	BA <sup>4</sup>
History	—	—	BA	BA <sup>4</sup>	BA <sup>4</sup>
International Development Studies	—	—	BA	BA <sup>4</sup>	BA <sup>4</sup>
Music	—	—	BA	—	BA <sup>4,6</sup>
Philosophy	—	—	BA	BA <sup>4</sup>	BA <sup>4</sup>
Political Science	—	—	BA	BA <sup>4</sup>	BA <sup>4</sup>
Russian Studies	—	—	BA	BA <sup>4</sup>	BA <sup>4</sup>
Sociology & Social Anthropology	—	—	BA	BA <sup>4</sup>	BA <sup>4</sup>
Spanish	—	—	BA	BA <sup>4</sup>	BA <sup>4</sup>
Theatre	—	—	BA	BA <sup>4</sup>	BA <sup>4</sup>
Women's Studies	—	—	BA	BA <sup>4</sup>	—
Music, Music Education	—	—	—	BMus, BMusEd <sup>3</sup>	—
Costume Studies	—	Diploma	Advanced Diploma	—	—
Dentistry	—	—	—	—	—
Dental Hygiene	—	Diploma <sup>1</sup>	—	—	—
<b>Health Professions</b>					
Nursing	—	—	—	BScN <sup>5</sup>	—
Nursing for Registered Nurses	—	—	BScN	—	—
Outpost and Community Health Nursing	Diploma <sup>7</sup>	—	—	—	—
Pharmacy	—	—	—	BSc(Pharm) <sup>1,3</sup>	—
Pharmacy	—	—	BSc <sup>1</sup>	—	—
Health Education	—	—	—	BSc(HE) <sup>3</sup>	—
Health Services Admin.	Diploma	—	—	—	—
Kinesiology	—	—	—	BSc(KIn) <sup>5</sup>	—
Occupational Therapy	—	—	BSc(OT) <sup>1</sup>	—	—
Physiotherapy	—	—	BSc(PT) <sup>1</sup>	—	—
Social Work	—	—	BSW <sup>1</sup>	—	—
<b>Management</b>					
Commerce	—	—	—	BComm (co-op) <sup>5</sup>	BComm (co-op)
Public Administration	Diploma	—	—	—	—
<b>Science</b>					
Biochemistry	—	—	—	BA, BSc <sup>2,4</sup>	BA, BSc <sup>2,4</sup>
Biology	—	—	BA, BSc	BA, BSc <sup>4</sup>	BA, BSc <sup>4</sup>
Chemistry	—	—	BA, BSc	BA, BSc <sup>2,4</sup>	BA, BSc <sup>2,4</sup>
Computing Science	—	—	BA, BSc	BA, BSc <sup>2,4</sup>	BA, BSc <sup>2,4</sup>
Economics	—	—	BA, BSc	BA, BSc <sup>4</sup>	BA, BSc <sup>4</sup>
Earth Sciences	—	—	BA, BSc	BA, BSc <sup>2,4</sup>	BA, BSc <sup>2,4</sup>
Marine Biology	—	—	—	BA, BSc <sup>2,4</sup>	BA, BSc <sup>2,4</sup>
Mathematics	—	—	BA, BSc	BA, BSc <sup>2,4</sup>	BA, BSc <sup>2,4</sup>
Microbiology	—	—	—	BA, BSc <sup>4</sup>	BA, BSc <sup>4</sup>
Neuroscience	—	—	—	—	BA, BSc <sup>4</sup>
Physics	—	—	BA, BSc	BA, BSc <sup>2,4</sup>	BA, BSc <sup>2,4</sup>
Psychology	—	—	BA, BSc	BA, BSc <sup>4</sup>	BA, BSc <sup>4</sup>
Statistics	—	—	BA, BSc	BA, BSc <sup>2,4</sup>	BA, BSc <sup>2,4</sup>
Engineering	—	Diploma	—	—	—
Meteorology	Diploma <sup>5</sup>	—	—	—	—

**Notes:**

1 - following one year of appropriate university studies

2 - Co-operative Education programs are available. These programs include all the work required for the advanced major or honours together with several work terms. At least four to four and one half years are required for completion.

3 - following an appropriate bachelor's degree

4 - Combined Honours only

5 - four year programmes which are not Advanced Major programmes

6 - These programmes are also available with a Minor in Business

7 - 15 month programme



**Final Dates for Receipt of Applications for Admission**

**Regular Session**

**College of Arts & Science**

Foreign Students (except USA).....	April 1
Students entering from Canada or USA <sup>1</sup> .....	June 1
Returning Dalhousie Students.....	August 15

**Health Professions**

Pharmacy.....	February 1
BSc (Nursing), Outpost and Community Health Nursing, Occupational Therapy, Physiotherapy, Social Work.....	March 1
BSc (Nursing) for Post RN <sup>1</sup> , Recreation <sup>1,7</sup> , BSc (Kinesiology) <sup>7</sup> , and Health Education <sup>1,7</sup> .....	June 1

**Management**

Foreign Students (except USA).....	April 1
Students entering from Canada or USA <sup>1</sup> .....	June 1

**Internal Transfers<sup>5</sup>**

Fall term.....	September 27
----------------	--------------

**Dentistry**

DDS.....	December 1
Dental Hygiene.....	February 1

**Medicine**

MD.....	November 15
Post-Graduate.....	December 1

Law <sup>1</sup> .....	March 1
------------------------	---------

Graduate Studies <sup>4,8</sup> (except as below).....	June 1
--	--------

Non-Canadian Students (Graduate Studies).....	April 1
---	---------

Law (Doctoral level).....	January 1
---------------------------	-----------

Environmental Studies and Social Work.....	February 1
--	------------

Human Communication Disorders.....	March 1
------------------------------------	---------

Nursing.....	April 1
--------------	---------

Health Services Admin. and Law (Master's level).....	May 1
--	-------

Oral and Maxillofacial Surgery <sup>2</sup> .....	June 1
---	--------

**Winter Term**

Diploma/Outpost & Community Health Nursing for RN's.....	October 1
--	-----------

BA and BSc programmes only <sup>3</sup> .....	November 15
---	-------------

BSc (Nursing) for Post RN only.....	November 15
-------------------------------------	-------------

Returning Dalhousie Students <sup>6</sup> .....	November 15
---	-------------

<sup>1</sup> Late applications may be considered up to August 1.

<sup>2</sup> Of year preceding commencement of programme

<sup>3</sup> Part-time and transfer students only

<sup>4</sup> All supporting documentation must be submitted by the appropriate deadline.

<sup>5</sup> For students currently registered at Dalhousie wishing to change degree programmes.

<sup>6</sup> For students returning to BA or BSc programmes, or attending as Special Students in any faculty.

<sup>7</sup> Effective for students applying for admission for September of 1996, the deadline will be April 1 for all programmes in the School of Recreation, Physical and Health Education, including Kinesiology.

<sup>8</sup> For Graduate Studies Scholarship consideration applications must be complete (including application, fee and all supporting documents) by March 1.

**Note:** In order to be considered for entrance scholarships, applications for admission from high school students must be received by April 1.

# Admission Requirements

Dalhousie University is an affirmative action and equal opportunity educational institution.

**Please note:** Not all classes listed in the calendar are offered each year. Contact the Registrar's Office for a timetable of available classes for each term.

## Acceptable Classes

Please note that the following are acceptable classes; admission requirements for specific programmes are listed beginning on page 29.

### Students from Nova Scotia high schools

Students wishing to study at Dalhousie should take at least five university preparatory classes designated as 44\* or 54\* or grade 12. Course distribution should be as follows:

- Category 1: English  
 Category 2: At least two of biology, chemistry, French, German, global history, history, Latin, mathematics or physics.  
 Category 3: The remaining classes may be from those listed above or from comparative religion, computer-related studies, economics, geography, geology, global geography, law, modern world problems, music, political science, sociology, Spanish, or theatre.

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

Special attention will be paid to grades in English and mathematics. 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%. Final grades in mathematics and English must be at least 65%.

For admission requirements to specific programmes, please refer to the Basic Requirements section on page 29. 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 for specific class requirements.

### Students from outside Nova Scotia

Students are admitted from other provinces and countries with preparation as shown below. The course distribution should be as for Nova Scotia.

Newfoundland and Labrador, New Brunswick, Prince Edward Island, Manitoba, Saskatchewan, Alberta and British Columbia: Grade 12.

Quebec: First year CEGEP with minimum 70% overall average, with no individual academic subject below 65%.

Ontario: Five O.A.C. or Grade 13 credits.

U.S.A: Strong B average in Grade 12; submission of SAT scores of 1100 or better.

The United Kingdom, West Indies, West Africa: General Certificate of Education (GCE) with "C" standing in at least five subjects, of which one must be English and at least two must be at the Advanced Level. Ordinary level mathematics is required for admission to Science and Commerce; Advanced level mathematics is recommended for admission to Science. Two advanced-supplementary ("AS") levels are considered equivalent to one advanced level subject.

Hong Kong: GCE as for Great Britain, or University of Hong Kong Matriculation Certificate under same conditions as for GCE.

Bangladesh, India, Pakistan: Bachelor's degree with first or second-class standing from a recognized university; or in certain circumstances, first-class standing in the Intermediate examinations in Arts and Science, provided the candidate has passes at the university level in English, mathematics, and a language other than English.

For other Regions: write to the Registrar's Office, Dalhousie University, Halifax, N.S., B3H 4H6, or e-mail: Admissions@Dal.Ca, for further information.

### Students with Learning Disabilities

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

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

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

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;

## 28 Admission Requirements

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

The policy on release of information about students with learning disabilities is consistent with the University Regulation on the Release of Information as detailed on page 77.

**Note 1.** Where self disclosure or prior arrangements have not been made with the University, Dalhousie is not liable to accommodate your special needs due to your disability.

**Note 2.** Appeals for students with learning disabilities will follow the usual procedures of the relevant Faculty at Dalhousie.

### Mature students

If you are at least 23 years old and have been out of full-time high school study for at least four years and have not attended university, you may apply for the University Exploration Programme under the "mature student" category. Dalhousie's Henson College provides a wide variety of services to mature and/or part-time students and welcomes the opportunity to discuss your special needs with you. It is recommended that prospective students meet with an advisor well in advance of their intended registration as upgrading classes may be required. Contact Henson College at (902) 494-2526. If you apply as a mature student, you should enclose a letter indicating your activities since leaving high school and your reasons for expecting to successfully complete a university programme if you are admitted.

Please see Academic Regulations, Workload, on page 85 for information on the number of classes a University Exploration student may take in a single academic year.

### Transfer Students

Students wishing to apply for transfer credit should consult Academic Regulation 8 on page 86 of this calendar as well as any additional requirements that may be listed herein under the appropriate degree heading. Certified copies of course 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.

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

International students must meet the following requirements:

- Good academic standing at the home institution
- Written academic approval from the appropriate department head, Dean or designate (e.g., Registrar) to undertake course work at Dalhousie (letter of permission)
- The required student visa to study in Canada
- Provide proof of adequate health insurance for the duration of the stay in Canada.

Students studying for less than one full academic year are not able to take full-year classes (see Class Codes, pg. 3, Definitions, pg. 2).

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

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

- A completed application for admission
- Letter of permission from the home university
- Students applying from outside the Metro Halifax area must also submit an application fee

Local students 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 local universities only. All other students must arrange for transcripts to be sent to the home university.

Please note that transfer admission to the Bachelor of Commerce Co-op programme will not be allowed after September of the second year. Students transferring into this programme will be assessed a co-op transfer fee.

### Application submission

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

- a completed application form; forms not properly completed will delay processing
- The appropriate application fee for the programme (refer to Application for Admission form)
- An official record of high school work
- An official academic transcript from all previous post-secondary institutions (if applicable)
- Evidence of competency in English for applicants whose native language is not English (see the following section on English Language Tests)
- Supplementary information as required for specific programmes, and

- Mature applicants should also enclose a letter as indicated in the preceding section

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

### January Admissions

Admission is normally for classes beginning in September. Except in special circumstances the university does not admit full-time, first-year students in January because the number of introductory classes starting in this term is very limited. Part-time students and transfer students, however, may be admitted for classes beginning in January in BA, BSc and Special Student programmes. The application deadline for January admission is November 15.

### Response to applications

Dalhousie will respond to your application as promptly as possible and will advise you of any documentation still required. Please notify the Registrar's Office if your address changes to avoid any delay in notification regarding your application.

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 programmes where competition for places is keen.

As soon as decisions are made, whether admission, deferral or rejection, applicants will be advised by mail.

Please note that admission to many programmes is limited. Possession of minimum requirements does not guarantee admission.

### 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.

### Final acceptance

Applicants must successfully complete high school classes in the required subjects with an average in the mid 70's or higher. Admission will then be offered in Bachelor of Arts, Bachelor of Science, or Bachelor of Commerce programmes provided there is space.

### English Language Tests

Dalhousie requires minimum TOEFL results of 580 and minimum MELAB results of 90. Information may be obtained by writing to the English Language Institute, Testing and Certification Service, Ann Arbor, Michigan 48104, USA OR TOEFL, Box 899, Princeton, New Jersey 08540, USA.

### International Baccalaureate and Advanced Placement classes

If you are taking any of these classes, you may qualify for advanced standing or transfer credits. Contact the Registrar's Office for specific information.

## Basic Admission Requirements

### Faculty of Arts and Social Sciences

#### Bachelor of Arts

- Minimum of 65% in Grade 12 English
- Distribution as outlined under Acceptable Classes section on page 27
- In addition to classes listed in category three on page 27, the following university preparatory class will be accepted: Business Organization and Management

#### Bachelor of Music

Students wishing to enrol in a degree programme offered by the Department of Music must fulfil the following admission requirements:

- Satisfy the requirements for admission to the Faculty of Arts and Social Sciences
- Demonstrate their proficiency as instrumental or vocal performers in an audition-interview
- Demonstrate knowledge of the basic rudiments of music theory (equivalent to Grade II theory, Royal Conservatory of Music in Toronto) and aural dictation: each is assessed through written diagnostic tests as part of the audition-interview
- Submit the supplementary application form for the Department of Music. It is recommended that students apply early for purposes of admission, audition, and music scholarship consideration. Audition dates are listed on the supplementary application form. All audition procedures should be completed no later than 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 foundational classes. Applicants with severe background deficiencies will be advised to seek further preparation through private instruction before reapplying.

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

#### Diploma in Costume Studies (2 years), Advanced Diploma in Costume Studies (3 years)

- Minimum of 65% in Grade 12 English
- Distribution as outlined under Acceptable Classes on page 27

## 30 Admission Requirements

- Applicants are asked to submit a brief letter outlining their interest in the programme and their background in sewing, costume study/design and/or the theatre

### Faculty of Science

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

- Minimum of 65% in English and Mathematics 441 or equivalent
- Distribution as outlined under Acceptable Classes on page 27
- It is recommended that students interested in Science programmes take two science subjects in addition to pre-calculus math and English
- Programme may be combined with a Diploma in Engineering

#### The Dalhousie Integrated Science Programme (DISP)

The Dalhousie Integrated Science Programme is a 5 credit integrated first year programme in the sciences. More information is found on page 171.

#### Admission Requirements

- Class distribution as for regular BSc
- 80% average in Grade 12/OAC
- Minimum 75% in mathematics and English
- Minimum of one Grade 12/OAC science class

This programme has limited enrolment. Meeting the minimum requirements does not guarantee admission. Applicants should be interested in a variety of sciences. For further information contact: Dr. Leigh Mazany, Department of Economics, DISP@Dal.Ca

#### Diploma in Engineering

- Grade 12 Chemistry and Physics (60% minimum)
- Minimum of 65% in English and Mathematics 441 or equivalent
- Distribution as outlined under Acceptable Classes on page 27
- Programme may be combined with a major in an Arts or Science subject (BA or BSc degree)

#### Diploma in Meteorology

Please note: The Diploma in Meteorology will not be offered every year. It will be offered in 1996-97.

BSc with major in physics or other appropriate subject is required; strong background in mathematics and physics is necessary, and classes taken should also include statistics and computing science. Specific recommended classes for admission to the Diploma in Meteorology include:

- PHYC 1100.06, 2000.03, 2005.03, 2010.03, 2015.03, 3170.03;
- MATH 1000.03/1010.03, 2001.03/2002.03, 2030.03/2040.03, 2060.03/2080.03, 3110.03/3120.03; and
- COMP 1400.03/1410.03.

### Faculty of Management

#### Bachelor of Commerce Co-op

- Minimum of 65% in English and Mathematics 441 or 442 or equivalent

- In addition to courses listed in category three, one of the following university preparatory courses will be accepted:
  - Accounting
  - Business Organization and Management
  - Entrepreneurship 12.

- Transfer admission to the Bachelor of Commerce Co-op will not be allowed after September of second year.
- The work term requirements of the Bachelor of Commerce Co-op may involve placement problems for visa students. Subject to approval by the School, students may be permitted to arrange their own work term positions. Some visa students may prefer to select admission to the Bachelor of Arts or Bachelor of Science with a minor in Business programme.
- Please be advised that students who transfer into the BComm programme will be assessed a co-op transfer fee which consists of the co-op fee which would have been assessed in the first year of the programme. Please refer to the Fees section of this calendar for further details.

#### Diploma in Public Administration

The programme leading to the Diploma in Public Administration is available to persons who meet the undergraduate admission requirements of Dalhousie University and who are not enrolled in a programme leading to a first degree. Those not meeting the formal admission requirements may apply for admission under the "mature student" category. Prospective students should submit the following documentation to the Registrar's Office:

- Application for admission
- Application fee
- Letter outlining work experience and other activities
- High school transcripts

Please note that an interview may be required.

### Faculty of Health Professions

Some of the programmes in the Faculty of Health Professions have been established to meet the needs of the Maritime or Atlantic provinces. Admission of applicants outside the preferred region is either severely limited or, in the case of Physiotherapy, not granted.

#### Deposit

Due to the large numbers of applicants to limited enrolment programmes in the Faculty of Health Professions, a non-refundable deposit of \$200.00 (applicable to tuition fees) is required from accepted students as proof of intent to register. The \$200.00 is payable within three weeks of notification of acceptance.

Note: This applies to all programmes within the Faculty of Health Professions, excluding the Bachelor of Recreation.

### School of Health Services Administration

#### Diploma in Health Services Administration

Applicants must meet the Dalhousie University undergraduate admission requirements.

A complete application consists of the following documents:

- An official transcript of the record of work done at high school and previous post-secondary institutions
- Mature students should include a letter indicating activities since attendance at high school and reasons for expecting to successfully complete a university programme if admitted
- One letter of reference
- Resume

### School of Nursing

#### Bachelor of Science (Nursing) - Basic

- Satisfactory completion of Nova Scotia grade 12 or equivalent at the University preparatory level.
- Grade 12 English, Chemistry, Mathematics and Biology.
- A 70% overall average and 70% in the required subjects.
- Mature applicants require GED, Grade 12 Chemistry and Grade 12 Mathematics, or have completed the Pre-Technology program at the Nova Scotia Community College.
- International applicants whose native language is not English will be required to pass either the TOEFL with a score of 580 or the MELAB with a score of 90.
- Transfer Students:
  - Students transferring from other university programmes must have a minimum grade point average of 2.5.

Priority consideration will be given:

- First to permanent residents of Nova Scotia
- Second to permanent residents of other Canadian provinces
- Third to all other applicants.

#### Bachelor of Science (Nursing) - for Registered Nurses

The requirements for admission to the BScN for registered nurses are as for the BScN basic programme with these additional conditions:

- Nurse registration as an active practising member in Nova Scotia or province/country of residence
- Successful completion of RN examination or equivalent
- Mature applicants will be considered on an individual basis. Upgrading in certain required subjects, e.g. chemistry and mathematics, may be recommended.

#### Diploma in Outpost and Community Health Nursing

- Nova Scotia Grade 12 or equivalent
- Current registration in a province or territory in Canada or recognized equivalent;
- At least one year of work experience as a registered nurse and recent acute-care hospital experience is desirable;
- Demonstrated leadership potential

Admission preference is given to nurses currently employed by Medical Services Branch, an Aboriginal health authority or Health Canada. Other nurses are considered

for admission if they agree to employment in a Canadian outpost setting upon completion of the programme. All applications must be approved by the sponsoring agency.

Aboriginal nurses are particularly invited to apply.

### School of Occupational Therapy

#### Bachelor of Science (Occupational Therapy)

Application to the School of Occupational Therapy should be made during the academic year in which it is expected that prerequisites will be completed.

Students considering Occupational Therapy should consult with the School of Occupational Therapy before their first registration. In Arts and Science at Dalhousie University the required first-year classes are:

- PSYO 1000.06, 1010.06 or 1500.06
- SOSA 1000.06, 1050.06, 1100.06, OR 1200.06
- One elective (writing class)
- Two classes in different subject areas from: BIOL 1000.06; CHEM 1010.06, 1020.06, 1030.06, 1040.06, OR PHYC 1100.06 or 1300.06
- Although not a requirement for admission, it is recommended that students complete STAT 1060.03 (or equivalent) prior to admission.

Students who complete the equivalent prescribed first-year programme at any recognized university will be given equal consideration for admission into the School of Occupational Therapy.

Since enrolment in the programme is limited, applicants should note that admission is on a competitive basis with preference given to residents of the Atlantic Provinces. The provincial quota system currently allocates 9 positions to New Brunswick, 8 positions to Newfoundland, 16 positions to Nova Scotia, and 2 positions to Prince Edward Island. Selection is based on completion of prerequisites, academic achievement and personal suitability for Occupational Therapy. Selection procedures may require an interview and personal evaluation.

A completed application for the School of Occupational Therapy consists of the required submissions, with the exception of an official record of high school work, listed in the Basic Requirements section on page 29 earlier in this section as well as:

- An autobiographical letter as described in the supplementary application material available from the Registrar's Office
- A confidential assessment by a class professor (as described in the supplementary application materials) sent by the professor to the Registrar's Office

### College of Pharmacy

#### Bachelor of Science (Pharmacy)

Applicants to the BSc Pharmacy programme must fulfil the requirements of a first year BSc student at Dalhousie University as outlined in the Degree Requirements section of

## 32 Admission Requirements

this calendar. Equivalent subjects from other universities will be given equal status for purposes of determining admission.

Classes required for admission are the following Dalhousie classes:

- CHEM 1010.06, 1020.06, 1040.06, 1500.06 or equivalent
- MATH 1000.03 and 1010.03 or equivalent (one full year) calculus
- One of PHYC 1000.06, 1100.06, 1300.06 or equivalent OR BIOL 1000.06 or equivalent
- One Humanities or Language
- One Social Science

One of the above classes must be a writing class as described in the "Degree Requirements" section of this calendar. The same class/subject cannot be used to satisfy both the Humanities/Language and the Social Science requirement. Examples of Humanities/Language and Social Science classes are given in "Degree Requirements" section of this calendar.

Information regarding transfer credit for advanced classes may be obtained from the Registrar's Office. Incomplete applications and applications submitted after the deadline, February 1 (see Final Dates for Receipt of Applications for Admission, page 26, for details), will not be considered.

### Selection Criteria:

The selection criteria used by the Admissions Committee include:

- Place of residence
- Academic performance
- Scores on the Pharmacy College Admissions Test (PCAT)
- Interviews

A maximum of 60 admission points is assigned to academic performance, 10 admission points to PCAT, and 30 admission points to interviews. The top 66 applicants constitute the first year class and the next 12 applicants are placed on the waiting list.

### Place of Residence:

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

Applicants are considered to be from the Maritimes if:

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

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

Exceptions to the above guidelines will be considered on an individual basis. Residency will be determined for each applicant on February 1st of the year for which admission is being sought.

No more than three students from outside the Maritimes are accepted into the first year class each year.

### Academic Performance:

Academic grades of applicants and/or the university classes chosen form the basis of the evaluation of academic performance. Applicants should note that admission is on a competitive basis so that the ability to obtain consistently better than average grades would definitely be an asset for the applicant. An academic record containing failures or poor grades makes the prospect of admission very unlikely.

### Pharmacy College Admission Test:

Applicants must write the Pharmacy College Admission Test (PCAT). Information on test dates, testing centres and test format may be obtained from the Registrar's Office or by writing to PCAT, Psychological Corporation, 555 Academic Court, San Antonio, Texas 78204. Applicants are required to write the test no later than the October sitting in the year prior to which the applicant is seeking admission (e.g. October 1996 for admission September 1997).

### Interviews:

Only those applicants who have obtained a high level of academic performance are invited for an interview.

In the interview, the following non-academic criteria are assessed.

- Motivation
- Ability to relate to others
- Self-Appraisal
- Maturity
- Professional attitude

### 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 two weeks into the start of the academic term.

### Deposit Fee:

In addition to the deposit requirement outlined on page 30, the following guidelines have been established for the College of Pharmacy: if the deposit is not received, the place will be offered to another applicant without any further notice. Students who have paid their deposits but who have not appeared at the College by the third day of classes will be considered to have withdrawn from the College unless they have written permission from the Admissions Committee.

### Special Cases:

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

### School of Physiotherapy

#### Affirmative Action Policy

The School has an affirmative action policy to increase the number of qualified physiotherapists who belong to the Black, Mi'kmaq or Inuit groups of the Atlantic region.

**Bachelor of Science (Physiotherapy)**

The minimum academic requirement for entry into the first professional year of the BSc (Physiotherapy) programme is successful completion of first year in Arts and Science at Dalhousie University or the equivalent at another University. Students studying at universities other than Dalhousie must ensure that the prerequisite classes they are taking are equivalent to the classes listed below by contacting the Registrar's Office.

- One credit from chemistry or biology. Acceptable classes are: CHEM 1010.06, 1020.06, 1030.06, 1040.06; OR BIOL 1000.06
- One credit in physics. Acceptable classes are: PHYC 1100.06 or 1300.06
- One credit from psychology or sociology and social anthropology. Acceptable Dalhousie University classes are PSYO 1000.06 or 1010.06 or 1500.06; OR SOSA 1000.06 or 1050.06 or 1100.06 or 1200.06
- One-half (½) credit introductory statistics (STAT 1060.03)
- The equivalent of 1½ credits in Arts or Science electives. (One credit must fulfil a writing requirement, see list in Degree Requirements section of this calendar)
- CPR (Cardiopulmonary Resuscitation) Certification must be completed by the end of Year 2
- A limited number of places may be made available for students who already possess a graduate degree in a discipline considered by the Admissions Committee to be relevant to Physiotherapy and whose course work may not include the prerequisite courses as described above. Such candidates are evaluated on an individual basis.
- The Admissions Committee will determine each year which applicants will be interviewed. A limited number of interviews will be conducted.
- All applicants must sign a declaration regarding their physical and emotional suitability to undertake Physiotherapy.

Since the demand for admission exceeds the number of places available, candidates are judged on a competitive basis. The decision of the Admissions Committee is final.

**Quota System:**

The School of Physiotherapy at Dalhousie University is the only School serving Atlantic Canada. Due to the shortage of physiotherapists in the Atlantic provinces, a provincial quota system has been implemented. The provincial quota system means that a specified number of places which are determined annually will be allocated to each Atlantic province.

Residency must be established by March 1 in the year for which application is being sought.

**Transfer Students:**

- Students who wish to transfer to the School of Physiotherapy from another university programme in Physiotherapy must submit a written request for transfer to the Chair of the Admissions Committee of the School of Physiotherapy and enclose official transcripts from all colleges and universities attended as well as the calendar descriptions

of all courses taken. Such requests are assessed on an individual basis. Admission is subject to the availability of space in the programme. In order to obtain the BSc (Physiotherapy) degree from Dalhousie University, any transfer student admitted into the School must conform with Faculty regulations.

- Students with previous elective academic work seeking exemption from classes are assessed on an individual basis. Prospective candidates are strongly advised not to include classes of similar description and content as those offered in the second, third, and fourth (professional) years.

**School of Recreation, Physical, and Health Education****Bachelor of Recreation**

The minimum requirement for entry into the Bachelor of Recreation programme is:

- Successful completion of one year of university with a grade point average of 2.30 or higher

High school students or new students wishing to pursue a career in the field of recreation administration should apply for admission into either the Faculty of Arts and Social Sciences or the Faculty of Science. The following classes are recommended for the first year of study:

- PSYO 1000.06 or 1010.06 or 1500.06 or equivalent
- SOSA 1000.06 or 1200.06 or equivalent
- POLI 1100.06 or ECON 1101.03/1102.03 or equivalent
- Any two electives
- Note that as per College of Arts and Science Degree Requirements one of the above classes should be designated a writing class (see "Degree Requirements").

The Bachelor of Recreation programme will normally be completed in three years after entry into the programme. The programme may be longer if the student has not completed the recommended prerequisite courses outlined above.

The deadline for receipt of applications to the programme is June 1st of each year. Selection will be made as soon as the final grades are available. There will be a limit of 40 places.

The Leisure Studies Division has an affirmative action policy to increase the number of students who have a physical disability or who belong to the Acadian, Black and Native minority groups of the Maritime region.

**Bachelor of Science (Health Education)**

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

- English
- biology or chemistry

NOTE: Mathematics 441 is a prerequisite for many classes in mathematics, science and computing science at Dalhousie.



## 34 Admission Requirements

Students already engaged in university programmes can transfer into the Health Education programme. Experienced persons in the workplace may be admitted as mature students. Inquiries about admission to this programme should be directed to the Undergraduate Associate Director of the School.

### Admission Criteria

Thirty students will be selected yearly for the fall term from applicants who have the following minimum requirements:

- Completion of Nova Scotia Grade XII (or equivalent) with a minimum average of 70% in each of five university preparatory subjects, including English, and biology or chemistry, or
- Completion of some post-secondary course work with a minimum grade point average of 2.00 in a 4.30 system
- Completion of a university degree, or
- Qualification as a mature student.

The deadline for receipt of applications to the programme is June 1st of each year.

### Bachelor of Science (Kinesiology)

Generally admission from high school requires an average of 70% or better in five grade XII subjects including:

- English 441
- A minimum of two of biology, chemistry, mathematics and physics; (Note: Mathematics 441 is a prerequisite for many classes in mathematics, science and computing science at Dalhousie).

### Transfer Students:

In order to be admitted to the Kinesiology programme, students transferring from other university programmes are expected to have a minimum GPA of 2.30. The second year programme for Kinesiology transfer students is outlined in the Kinesiology section of this calendar. The deadline for receipt of applications to the programme is June 1st of each year.

## Maritime School of Social Work

### Bachelor of Social Work

All applicants must meet the following minimum requirements:

- Completion of five university credits (30 credit hours) in subject areas other than Social Work that provide suitable academic preparation for Social Work
- Cumulative grade point average of 2.70 (on a 4.30 scale) or equivalent cumulative academic average of at least B-, or 65%
- Personal maturity and suitability for Social Work

### Degree Requirements

The BSW program consists of three years of full-time Social Work study following completion of the five prerequisite credits at the required average grade level. Persons with a degree on entry, however, normally complete the program in two full-time years, or part-time equivalent. Students with more than five credits and less than a fifteen-credit degree are

able to apply a limited amount of transfer credit to their BSW degree requirements, according to established School policies.

### Personal Suitability

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

- unethical behaviour. (See Nova Scotia Association of Social Workers Code of Ethics, revised October 1994.)
- any medical condition which affects an individual's ability to perform as a social worker if that condition is chronic and/or recurring and affects judgment
- persistent substance abuse (e.g., alcoholism, drug addiction, use of illegal drugs)
- conviction of criminal activity (e.g., assault, 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.

### Affirmative Action Policy

Recognizing the need to remedy the effects of systemic discrimination, the Maritime School of Social Work has an affirmative action policy for residents of the three Maritime provinces who belong to regional Aboriginal, Acadian and indigenous Black populations, and for persons with disabilities. Members of these groups who have five general (non-social work) university credits that average B- or 65% are encouraged to apply.

The School is committed to admitting and graduating the highest possible number of students who qualify under its affirmative action policy. Applicants who do not yet have the required university credits can request an assessment of their admissibility upon completion of five credits. Further information is available from the Admissions Coordinator.

### Recommended Academic Preparation for Social Work

High school and other students entering university for the first time are advised to wait until the final year of their first degree before applying to the BSW programme. Because of the highly competitive nature of the Social Work admissions process, potential applicants are reminded to keep alternate career choices open when selecting classes.

Recommended degrees for providing relevant preparation for Social Work are Bachelor of Arts, with concentration in social sciences, or Bachelor of Science in Psychology. Suggested first-year classes for a BA programme include:

- 1 credit - Writing class (preferably English)

- 1 credit - Introductory sociology
- 1 credit - Introductory psychology
- 1 credit - Introductory political science, women's studies, economics, history, or other social sciences
- 1 credit - Elective

Potential applicants are also strongly encouraged to include Social Science content in the second and third years of their undergraduate study.

#### Other Preparation

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 direct personal contact, preferably with on-the-job training and supervision can contribute meaningfully to the applicant's preparedness for Social Work practice.

#### Selection Criteria

Candidates with the best qualifications are selected once a year by the admissions committee for first-time enrolments in September on a combined basis of:

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

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 obtained related work/volunteer experience. Note: Interviews are not a part of the admissions process, unless specifically requested by the Admissions Committee to address a need for further clarification.

**Academic Achievement.** Only applications which meet the cumulative GPA 2.70 or equivalent prerequisite are considered.

All university classes are included in the cumulative academic average, including failures. Grades and grade point averages are interpreted according to the grading scale of the university attended, as stated in the transcript key. In the case of academic credits currently in progress, selections are made on the basis of mid-year grades.

**Related Work and Volunteer Experience.** In the Admissions Committee's experience, varying amounts of related work and/or volunteer experience contribute to the applicant's preparedness for undertaking social work education and practice.

Preference is given to those who are currently working in social or human services directly related to social work for a period of at least two years. Such applicants are considered on a

combined basis of their performance in five or more credits of previously completed university study and their demonstrated ability for the practice of social work.

Demonstrated ability for Social Work includes the nature and length of current or previous employment, and positive work references. Other experience in community services will also be taken into consideration. Places are offered only to the most qualified candidates with two or more years of related work experience.

Candidates with directly related work experience as above but no previous university study must complete the prerequisite five general university credits with a minimum GPA of 2.70 (B-, 65%) prior to the application deadline date. (See the Admissions Prerequisites section above.) Those who expect to complete their fifth credit by May will also be considered, on the understanding that their priority will be reduced in relation to the number of credits which have final grades by December.

**References and Personal Statement.** The BSW application package contains three reference forms and a personal statement, with instructions for completion. These provide a basis for assessing the candidate's personal suitability and readiness for professional training in Social Work.

#### Application Procedure

The absolute deadline date for postmark and personal delivery of applications and all supporting documents is March 1st. It is advisable to submit required forms and official transcripts early in January.

Candidates should ensure that they receive the undergraduate Application for Admission form and the BSW application package from the Registrar's Office at Dalhousie. Acknowledgment of receipt of all supporting documents and related follow-up are issued by the School.

Incomplete and late applications are not considered. Reminders will be sent to selected applicants in early April regarding missing reference forms or transcripts from files that are otherwise complete. A final date for resubmitting these will be given, after which all files with missing documents will not be considered.

Applicants are notified by mail during the first week of June of the Admission Committee's final recommendation to the University Registrar. Acceptances are conditional to the receipt of final transcripts.

#### Dentistry, Law, Medicine, and Graduate Studies

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

## Fees

### Student Accounts Office

The Student Accounts Office is located on the basement level of the Arts & Administration building.

**Address:** Dalhousie University, Student Accounts (Financial Services), Room 29 Arts & Administration Building, Halifax, Nova Scotia, B3H 4H6

**Telephone:** (902) 494-3998

**Fax:** (902) 494-2848

**E-mail:** Student.Accounts@Dal.Ca

**Office Hours:** 10:00 - 4:30 Monday to Friday (or by appointment)

**NOTE:** All the regulations in this section may not apply to Graduate Students. Please refer to the "Faculty of Graduate Studies" section of the Graduate Studies Calendar.

This section of the Calendar outlines the University Regulations on academic fees for both full-time and part-time students enrolled in programmes of study during the fall, winter and regular sessions. A section on University residence and housing fees is also included. Students wishing to register for the Spring or Summer session should consult the Summer School Calendar for information on registration dates and fees. Should you have any questions regarding these regulations or on the payment of fees generally, please contact the Student Accounts Office.

All fees are subject to change by approval of the Board of Governors of Dalhousie University. An Academic Fee Schedule will be available with the registration package. A list of miscellaneous fees is included in Table I.

Students should make special note of the registration deadlines contained in the calendar on pages 1 & 2. 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.

### Mail Registration

For the convenience of students, registration material and non-cash payments are accepted by mail. Registrations with cheques post-dated to August 30, 1996 will also be accepted. Please allow sufficient time to ensure that material sent by mail is received on or before the specified dates.

### General Regulations

The following general regulations are applicable to all payments made to the University in respect of fees.

- Fees must be made in Canadian funds by cash, negotiable cheque, or money order.
- 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 the first payment of tuition, the student's registration will be cancelled and, if permitted to re-register, a late fee will apply.

- Invoices for fees will not be issued. The receipt obtained from Student Accounts each time a payment is made will show the date and amount of the payment.
- Cash, certified cheque, or money order is required for payment of any account in arrears beyond the current academic year.

### Admission Deposit

A non-refundable deposit of \$200 is required by all new students in Specified Limited Enrolment Programmes within three weeks of receiving an offer of a place at Dalhousie. (Please refer to Table II for the definition of Specified Limited Enrolment Programmes.) Further information on the regulations governing the refund of admission deposits is contained in the section below on Changes, Refunds and Withdrawals (page 38).

### Foreign Students

Students registering at Dalhousie University who are not Canadian citizens or permanent residents are required to pay an additional fee of \$2,700 referred to as a "Differential Fee". Students registering in their current programme which commenced prior to 1994-95 Academic year will pay \$1,700. There is a proportionate charge for part-time foreign students. The differential fee is payable with the first instalment of fees each year.

### Academic Fees

Academic fees are comprised of:

- (a) the tuition fee;
- (b) an incidental fee comprised of Student Union, Society and Athletic fees.
- (c) auxiliary fee (specified Music and/or Theatre classes, Diploma Costume Studies programme and Graduate Studies programmes in management studies).
- (d) co-op fee if applicable.

The complete 1996-97 academic fee schedule is not yet available. For your information the 1995-96 fee schedule is included in Table V. Once all fees are approved for 1996-97 the complete fee schedule will be made available. The official schedule will be included in the registration package.

For purposes of this section of the Calendar, a full-time undergraduate student is one who is registered for the regular session for more than three full credits (21 credit hours or more), or, if registered for only one term, for more than three one-half credits.

Changes from full-time to part-time and part-time to full-time status often have cost implications beyond what the student expects (see table VI). Any part-time student planning to add classes, or full-time students who are considering part-time status (dropping classes) should consult with Student Accounts to determine the impact these changes will have on the fees assessed.

Students registered in more than one programme are required to pay separate academic fees for each programme. Full-time students taking classes not credited towards their degree or programme will be required to pay additional fees for these classes.

## Registration

A student is considered registered only after financial arrangements have been made with Student Accounts.

### All students:

- a) must submit to the Student Accounts Office on or before the specified registration dates the first instalment of academic fees unless they are receiving a scholarship, fellowship, Canada Student Loan, a fee waiver, or their fees are paid by external organizations;
- b) those holding external scholarships or awards paid by or through Dalhousie University must provide at registration documentary evidence of the scholarship or award;
- c) those whose fees are to be paid by a government or other agency must provide a signed statement from the organization at registration. (Please note: upon request, account status information will be made available to the sponsor.)
- d) those whose fees are to be paid by Canada Student Loan must indicate such on the appropriate section of the registration form. (Please note: Students registering by Canada Student Loan must negotiate the Loan or provide the letter of declination issued by Student Aid by September 19. A late registration fee and/or interest will be charged after September 19. Failure to comply or arrange an alternative method of payment may result in deregistration).
- e) those whose fees are paid by a Dalhousie University staff tuition fee waiver must present the approved waiver form and pay applicable incidental fees at time of registration.
- f) those who are Canadian citizens or permanent residents, 65 years of age or over and enrolled in an undergraduate degree programme will have their tuition fees waived but must pay applicable incidental fees.

The completion of the registration process shall be deemed to be an agreement by the student for the payment of the balance of fees unless written notification to withdraw is submitted to the Office of the Registrar. Students withdrawing in person must attend the Office of the Registrar and the Student Accounts Office before the withdrawal process is official. Students in Graduate and Professional programmes wishing to withdraw should initiate formal action to withdraw at the office of the appropriate Dean.

## Payment of Academic Fees

The complete 1996-97 academic fee schedule is not yet available. The Academic Fee Schedule shows the 1995-96 approved fees. Once all fees are approved for 1996-97 the complete fee schedule will be made available. The official schedule will be included in the registration package.

The payment of academic fees will be received at the Student Accounts Office located on the basement level of the Arts & Administration building.

Fees paid by mail must be received by Student Accounts on or before the deadlines specified below in order to avoid late payment and/or delinquency charges.

The following regulations apply to the payment of academic fees. For further information on regulations regarding withdrawal of registration, please refer to the Changes, Refunds and Withdrawals section. (page 38)

- a) Should students prefer to pay in two instalments, the first instalment is due on or before August 30 and the second instalment is due January 31, or the first subsequent working day.
- b) Students registering for either the fall or winter terms only must pay fees on or before August 30 and January 20, respectively.
- c) Scholarships or awards paid by or through Dalhousie University will be applied to tuition and residence fees.
- d) When Canada Student Loan, Provincial Loan or co-payable bursary is presented at the Student Accounts Office, any unpaid academic, residence fees and/or Temporary Loans will be deducted.
- e) Fees cannot be deducted from salaries paid to students who are employed at Dalhousie University.
- f) Any payments received will first be applied to overdue accounts.

## Audit Classes

Full-time students may audit classes which are related to their programmes without additional fees. Part-time students auditing a class pay one-half of the regular tuition. In such cases, the student is required to complete the usual registration process.

A student registered to audit a class and during the session wishes to change their registration to credit must receive approval from the Registrar and pay the difference in class fees plus a transfer fee of \$25.00. 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.

## 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 and pay a late registration fee of \$50.00. This fee is payable at the time of registration and will be in addition to the first instalment of fees.

## Changes, Refunds and Withdrawals

Please consult Student Accounts for all financial charges and the Office of the Registrar for academic regulations. Refer also to the Academic Fees section (Table III, IV and VI.)

A refund of fees will not be granted unless the following conditions are met:

**NON-ATTENDANCE AT CLASSES DOES NOT CONSTITUTE WITHDRAWAL.**

- a) Written notification of withdrawal must be submitted to the Office of the Registrar.
- b) After the approval of the Registrar has been obtained, (in the case of graduate and professional school, the appropriate Dean) application for a refund or adjustment of fees should be requested from the Student Accounts Office immediately. For students withdrawing in person, the withdrawal process is official on the date that application for withdrawal is made at the Student Accounts Office. Therefore, the calculation of the refundable portion of fees will be based on this date. (Retroactive withdrawals will not be permitted.)
- c) No refunds will be made for 30 days when payment has been made by personal or foreign cheque.
- d) A student who is dismissed from the University for any reason will not be entitled to a refund of fees.
- e) Refunds will not be made to a student who has paid an admission deposit for a Specified Limited Enrolment Programme.
- f) In any Specified Limited Enrolment Programme (See Table II and IV), the first instalment of fees is not refundable after the first day of classes except on compassionate grounds (eg. illness).
- g) Refunds will be made to the Bank if a student has received a Canada or Provincial Student Loan.
- h) Refunds will be prorated on fees paid by Scholarships and/or Fee Waiver.
- i) A valid Dalhousie University ID must be presented in order for the student to receive a refund cheque.
- j) No fee adjustment will be made for a student changing their degree or programme in the regular session after September 19.

**Dates for Refund - Regular Session**

A student withdrawing or changing a class after September 19 will be charged full incidental fees and may receive a refund of tuition fees on a proportional basis. Please refer to Tables III and IV.

A student withdrawing or changing a class in January will be charged the full first instalment of fees.

A student changing from full-time to part-time status before February 1, must have the approval of the Registrar and will then be eligible for an adjustment in tuition fees for the remainder of the session.

- No refunds will be made to students withdrawing or changing classes after January 31.

**Dates for Refund - First Term**

A student withdrawing or changing a class after September 19 will be charged full incidental fees and may receive a refund of tuition fees on a proportional basis. Please refer to Tables III and IV.

- No refunds will be made to students withdrawing or changing classes after October 18.

**Dates for Refund - Second Term**

A student withdrawing or changing a class after January 20 will be charged full incidental fees and may receive a refund of tuition fees on a proportional basis. Please refer to Tables III and IV.

- No refunds will be made to students withdrawing or changing classes after February 17.

**Dates for Refund - Commerce Co-op Summer session**

A student withdrawing after May 17 will be charged the BComm Co-op fee and may receive a refund of tuition on a proportional basis. Please contact Student Accounts for complete details.

- No refunds will be made to students withdrawing after June 24.

**Delinquent Accounts**

Accounts are considered delinquent when the balance of fees has not been paid by September 19 (January 20 for students registered for the winter term only). Where payment in two instalments is permitted, the remaining balance is due January 31 or the first subsequent working day.

Interest at a monthly rate set by the University will be charged on delinquent accounts for the number of days overdue.

At the time of printing the monthly rate of interest is 0.98% (11.75% per annum).

A student whose account is delinquent for more than 30 days will be denied University privileges including access to transcripts and records of attendance. The 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 for another session until all outstanding accounts are paid in full. Subsequently, if the bank returns the cheque, the student may be deregistered.

Students whose accounts are delinquent on March 15 may not be eligible, at the sole discretion of the University, for graduation at the May convocation. For October graduation the date is September 1.

Accounts which become seriously delinquent may be placed on collection or further legal action may be taken against the individual. Students will be responsible for charges incurred as a result of such action.

**Canada Student Loans**

Students planning to pay the first instalment of fees from a Canada Student Loan should apply to their Province in April or May so that funds will be available in time for registration. The University will deduct fees/charges from the loan at the time of endorsement. Please contact the appropriate provincial office to determine eligibility as well as course load requirements. A late fee of \$50.00 will apply if the loan is negotiated after September 19, 1996.

## Provincial Bursaries and University Scholarships

These cheques are distributed by the Student Accounts Office. Any unpaid Fees and/or Temporary Loans along with charges, if applicable, are deducted and a University cheque 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 these cheques. Please contact the appropriate provincial office to determine eligibility as well as course requirements for Provincial Bursaries. For more information on Student Loans, Bursaries or Scholarships inquiries should be directed to the Registrar's Office - Information Centre located on the first floor of the Arts & Administration building, Room 123. Telephone (902) 494-6557.

## Income Tax Credit from Academic Fees

The amount of academic fees constituting an income tax credit is determined by Revenue Canada, Taxation. Currently, the tax credit for students is calculated by deducting the following from Academic Fees: Student Union fees, Society fees, and Athletic fee. Seventeen percent (17%) of the remaining balance constitutes the tax credit.

A special income tax certificate will be available at Student Accounts annually no later than February 28. Replacement tax receipts or photocopies will be provided within 2 weeks of the request for a charge of \$5.00 per receipt. On request, a replacement tax receipt will be provided within 2 days for a charge of \$10.00 per receipt.

## Identification Cards

All full and part-time students should obtain identification cards upon registration and payment of proper fees. If a card is lost, a fee of \$15.00 is charged. Regular academic year ID cards remain valid until the beginning of the following academic year (including summer session).

## Laboratory Deposits

A deposit for the use of laboratory facilities in certain departments is required. The deposit is determined and collected by these departments. Students will be charged for careless or wilful damage regardless of whether or not a deposit is required.

## Athletic Fee

Membership at Dalplex for 1996-97 is included in the athletic fee for all full-time students at Dalhousie and all part-time students at Dalhousie taking a minimum of three full credit classes. Membership in Dalplex for ALL other part-time students at Dalhousie may be obtained at the office of Dalplex at the prevailing rates.

## Student Union Fee Distribution

Every student registered at Dalhousie is automatically a member of the Student Union and is therefore 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 in a budget.

What follows is the breakdown of how Student Union fees are spent. If you have any questions or comments please contact the Student Union Office located in Room 222 of the S.U.B. Telephone No. 494-2146

See Fee Distribution details below.

### 1995 - 96 Student Union Fee

(For Information Only)

	Full-Time (3 credits or more)
General Income	
General Operations	\$41.15
Student Health Plan Insurance	51.00
Capital Payback for	
Student Union Building	10.00
CKDU - FM	9.00
Yearbook Fee	5.00
Canadian Federation of	
Students' Membership	4.00
Students' Union of	
Nova Scotia Membership	2.60
Gazette	4.00
South African Trust Fund	1.00
WUSC	.50
Women's Centre Fund	2.00
Accessibility Fund	1.75
<b>TOTAL</b>	<b>\$192.00</b>

**Table I****Miscellaneous Fees - Quick Reference**

<b>Fees</b>	<b>Amount</b>	<b>Payable At</b>
Replacement Tax Receipt . . . . .	\$5.00 . . . . .	Student Accounts
Priority Replacement Tax Receipt . . . . .	\$10.00 . . . . .	Student Accounts
Late Registration . . . . .	\$50.00 . . . . .	Student Accounts
Reinstatement Fee . . . . .	\$50.00 . . . . .	Student Accounts
Returned Cheque . . . . .	\$20.00 . . . . .	Student Accounts
Distance Education Fee, per class . . . . .	\$100.00 . . . . .	Student Accounts
Admission Deposit . . . . .	\$200.00 . . . . .	Student Accounts
Change of Audit to Credit . . . . .	\$25.00 . . . . .	Student Accounts
Confirmation of Fee Payment . . . . .	\$5.00 . . . . .	Student Accounts
Leave of Absence Fee . . . . .	\$25.00 . . . . .	Graduate Studies
Application Fee . . . . .	\$35.00* . . . . .	Registrar
Confirmation of Enrolment . . . . .	\$5.00 . . . . .	Registrar/Graduate Studies
Late Graduation Application . . . . .	\$50.00 . . . . .	Registrar
Letter of Permission per class		
- maximum \$50.00 . . . . .	\$10.00 . . . . .	Registrar
Reassessment Fee . . . . .	\$25.00 . . . . .	Registrar
Replacement ID . . . . .	\$15.00 . . . . .	Registrar
Transfer Credit Assessment . . . . .	\$25.00 . . . . .	Registrar
Transcript . . . . .	\$5.00 . . . . .	Registrar
Priority Transcript Fee . . . . .	\$15.00 . . . . .	Registrar
<b>FAX Fees:</b>		
Metro . . . . .	\$5.00 . . . . .	Registrar
Canadian . . . . .	\$10.00 . . . . .	Registrar
International . . . . .	\$15.00 . . . . .	Registrar
Residence Application Fee . . . . .	\$25.00 . . . . .	Residence

\*Except for the following programmes which require payment of a \$55.00 application fee: Occupational Therapy, Pharmacy, Physiotherapy, Recreation, Social Work; Diploma programmes in Meteorology, Outpost and Community Health Nursing, and Health Services Administration; and all programmes in the Faculties of Medicine, Dentistry (including Dental Hygiene), Law, and Graduate Studies.

**Table II****Specified Limited Enrolment Programmes:**

- Master of Business Administration
- Master of Environmental Studies
- Master of Library and Information Studies
- Master of Public Administration
- All programmes in the following faculties:
  - Faculty of Dentistry
  - Faculty of Law
  - Faculty of Medicine
  - Faculty of Health Professions

**Table III**

**Fee Refunds (Withdrawals)**

All Faculties (except Specified Limited Enrolment Programmes, see Table IV), including Graduate Studies

**Student Union Fee:** Non-refundable after September 19 (Second Term January 20)

**Athletic Fee:** Non-refundable after September 19 (Second Term January 20)

**Society Fee:** Non-refundable after September 19 (Second Term January 20)

**BComm and Science Co-op Fees:** Non-refundable after September 19 (Second Term January 20)

**Distance Education Fee:** Non-refundable after September 19 (Second Term January 20)

**Differential Fee:** Non-refundable after November 30

**Tuition and Auxiliary Fees:** As follows:

Withdrawal Date	Regular Session	Graduate Students	Full-Time & Thesis, 1st Term	Full-Time Thesis, 2nd Term	Part-Time Students <sup>3</sup>		
	Full-time <sup>1</sup>	Except Thesis Term	Only <sup>2</sup>	Only <sup>2</sup>	A Class	B Class	R Class
Up to Sept 19	100%	100%	100%	100%	100%	100%	100%
Sept 20 - Oct 18	85%	85%	67%	100%	67%	100%	85%
Oct 19 - Nov 8	70%	70%	0%	100%	0%	100%	70%
Nov 9 - Dec 31	50%	50%	0%	100%	0%	100%	50%
Jan 1 - Jan 20	40%	40%	0%	100%	0%	100%	40%
Jan 21 - Jan 31	40%	40%	0%	67%	0%	67%	40%
Feb 1 - Feb 17	0%	0%	0%	67%	0%	67%	0%
After Feb 17th	0%	0%	0%	0%	0%	0%	0%

<sup>1</sup> Applicable to undergraduate students registered in regular session (Sept - Apr) taking more than three credits (21 credit hours or more).

<sup>2</sup> Undergraduate students registered in one term only taking more than three one-half credit classes (more than 9 credit hours). Graduate students registered as "Thesis Only" for one term.

<sup>3</sup> Applicable to undergraduate students registered in regular session (Sept - Apr) taking less than three and one-half credit classes (less than 21 credit hours). Undergraduate students registered in one term only taking three one-half credit classes or less (9 credit hours or less).

Fees

**Table IV**

**Fee Refunds - Specified Limited Enrolment Programmes**

**Admission Deposit:** Non-refundable

**Student Union Fee:** Non-refundable after September 19 (Second Term January 20)

**Athletic Fee:** Non-refundable after September 19 (Second Term January 20)

**Society Fee:** Non-refundable after September 19 (Second Term January 20)

**Tuition and Auxiliary Fees:** As follows:

Withdrawal Date	Regular Session	First Term Only	Second Term Only
Up to September 5	100%	100%	100%
September 6 - January 2	40%	0%	100%
January 3 - January 31	40%	0%	0%
After Jan. 31	0%	0%	0%



## Table V - Academic Fees

The 1996-97 academic fee schedule is not yet available. In order to provide some indication of the fee requirements, the schedule below shows the 1995-96 fees. Once fees are approved for 1996-97, a complete schedule showing total academic fees and the minimum instalments will be made available. The official schedule will be included in the registration package.

	For information only 1995-96 figures				For information only 1995-96 figures				
	Tuition	Athletic fee	DSU fee	Society fee	Tuition	Athletic fee	DSU fee	Society fee	
<b>Arts &amp; Social Sciences</b>					<b>Management</b>				
Full-time (1)	3,095	55	132	10	<b>BComm - Co-op (6)(7)</b>				
Full-time term (3)	1,550	55	132	-	Year of Study 1, 2 & 4	3,570	55	132	30
Part-time (2)					Co-op fee	590			
3 Credit Classes	1,890	55	132	10	Year of Study 3	1,785	55	132	30
1 Credit Class	630	-	30	-	Co-op fee	295			
1/2 Credit Class	315	-	15	-	<b>BComm &amp; CPA (6)(7)</b>				
<b>Auxiliary Fees</b>					Full-time (1)	3,125	55	132	30
Music (per specified class)	750	-	-	-	Full-time term (3)	1,565	55	132	-
Theatre (per specified class)	250	-	-	-	Part-time (2)				
Costume Studios (programme fee)	300	-	-	-	3 Credit Classes	1,890	55	132	30
					1 Credit Class	630	-	30	-
					1/2 Credit Class	315	-	15	-
<b>Science (Except Engineering)</b>					<b>Health Professions</b>				
Full-time (1)	3,585	55	132	15	<b>BSW</b>				
Full-time term (3)	1,795	55	132	-	Full-time (1)	3,470	55	132	25
Part-time (2)					Full-time term (3)	1,735	55	132	-
3 Credit Classes	2,160	55	132	15	Part-time (2)				
1 Credit Class	720	-	30	-	3 Credit Classes	2,070	55	132	25
1/2 Credit Class	360	-	15	-	1 Credit Class	690	-	30	-
Co-op Work Term	440	-	-	-	1/2 Credit Class	345	-	15	-
					<b>Nursing (2)</b>				
<b>King's (Arts &amp; Social Science) (8)</b>					Full-time (1)	3,655	55	132	20
Full-time (1)	3,095	(4)	-	10	Full-time term (3)	1,930	55	132	20
Full-time term (3)	1,550	(4)	-	-	Part-time (2)				
Part-time (2)					3 Credit Classes	2,340	55	132	20
3 Credit Classes	1,890	(4)	-	10	1 Credit Class	780	-	30	20
1 Credit Class	630	-	-	-	1/2 Credit Class	390	-	15	20
1/2 Credit Class	315	-	-	-	<b>Occupational Therapy &amp; Physiotherapy</b>				
<b>King's (Science) (8)</b>					Full-time	4,195	55	132	15
Full-time (1)	3,585	(4)	-	15	<b>Pharmacy</b>				
Full-time term (3)	1,795	(4)	-	-	Full-time	4,195	55	132	65
Part-time (2)					Clinical Residence				
3 Credit Classes	2,160	(4)	-	15	- Pharmacy	685	55	-	-
1 Credit Class	720	-	-	-	<b>Recreation, Physical, and Health Education</b>				
1/2 Credit Class	360	-	-	-	Full-time	3,655	55	132	15
Co-op Work Term	440	-	-	-	Full-time term (3)	1,930	55	132	-
					Part-time (2)				
<b>Engineering</b>					3 Credit Classes	2,340	55	132	15
Full-time (1)	3,660	55	132	25	1 Credit Class	780	-	30	-
Full-time term (3)	1,830	55	132	-	1/2 Credit Class	390	-	15	-
Part-time (2)									
3 Credit Classes	2,160	55	132	25					
1 Credit Class	720	-	30	-					
1/2 Credit Class	360	-	15	-					

For notes to Fee Schedule see next page.

## Notes to Fee Schedule

- (1) Students taking three and one-half credit classes (21 credit hours or more) in regular session (Sept - Apr).
- (2) Nursing students will pay society fee only once per year.
- (3) One term only taking more than 3 classes (1/2 credits).
- (4) King's students may purchase Dalplex membership at an additional cost of \$82.00 (1995-96 rate).
- (5) Undergraduate students taking less than three and one-half classes (less than 21 credit hours) or taking three one-half credit classes or less (9 credit hours or less) in one term only.
- (6) Students transferring into Co-op programme from another faculty pay a transfer fee of \$590.00 (1995-96 rate). This payment is non-refundable.
- (7) BComm and Science Co-op fees are non-refundable after September 19 (second term January 20).
- (8) Subject to approval by Board of Governors of University of King's College.

**Foreign Students** - Students registering at Dalhousie University who are not Canadian citizens or permanent residents are required to pay an additional \$2,700 fee referred to as a "Differential Fee". Students registering in their current programme which commenced prior to 1994-95 Academic year will pay \$1,700.00. There is a proportional charge for part-time foreign students. The differential fee is payable with the first instalment of fees each year. Graduate Students please see Section 4.5 of the Graduate Studies Calendar to determine the number of years a student is required to pay the differential fee.

**Health Insurance** - foreign students 1996-97 rates

Visa Students . . . . . Single - \$ 350 . . . . . Married - \$ 700

**Audits** - Students auditing a class pay one-half the regular tuition fee.

**Changes, Refunds and Withdrawals** - For all financial charges contact STUDENT ACCOUNTS, or please refer to Tables III & IV. Please note non-attendance at classes does not constitute withdrawal. Written notification of withdrawal is required. Refer also to Academic Fee section (page 42).

## Table VI

### Fee Adjustments (Class Changes)

Students contemplating a change in class activity should consider the financial implications as well as academic.

Please contact Student Accounts if you have any questions regarding changes, refunds or withdrawals.

Students changing to part-time<sup>2</sup> from full-time<sup>1</sup> will be assessed the same percentage of full-time fees as students withdrawing from the University. Please refer to the refund schedule (Table III) to determine the percentage. Fees for classes remaining will be assessed according to part-time fees less the percentage used to calculate the portion owing for full-time fees.

Part-time students<sup>2</sup> dropping a class will be assessed the same percentage as part-time students<sup>2</sup> withdrawing from the University. Please refer to the refund schedule (Table III) to determine the cost of classes being dropped. Additions are assessed according to the fee schedule.

<sup>1</sup> Applicable to undergraduate students registered in regular session (Sept - Apr) taking more than three credits (21 credit hours or more). Applicable to graduate students with full-time status.

<sup>2</sup> Applicable to undergraduate students registered in regular session (Sept - Apr) taking less than three and one-half credit classes (less than 21 credit hours). Undergraduate students registered in one term only taking three one-half credit classes or less (9 credit hours or less).

### Residence Fees

Please note the following are general statements. Given the diversity of residence facilities, available practices vary slightly from locale to locale.

Applications for accommodation in all residences are accepted on the understanding that the student will remain for the whole academic session.

When students who have chosen to live in residence and have secured a room withdraw from residence before the end of the school year, there are serious financial penalties. Written notice to withdraw is always required by the Residence Co-ordinator or Fenwick Facilities Coordinator. Complete information on withdrawal from residence is available from the Residence Co-ordinator or Fenwick Facilities Coordinator and is detailed in the residence agreement to be signed by all residence students. No refund will be made to any resident who is dismissed for misconduct. Discretionary power in exceptional circumstances remains with the Director of Housing and Conferences or designate. Residence Application Forms will not be distributed until the student has been accepted by the University for the coming session. To be considered for accommodation, a completed Residence Application Form and the \$125.00 residence application fee and deposit must be received. All residents, new and returning, who have accepted a room assignment, will be required to pay a second deposit of \$200.00 by June 30 to reconfirm the assigned space. Failure to make a second deposit by June 30 will result in automatic cancellation of room assignment. Once the \$200.00 deposit is paid it (along with the \$125.00) is not refundable; it is our guarantee of your intention to live in residence.

Deposits may be made by cheque, bank draft, or money order 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.

### Payment of Residence Fees

Payment may be made in full at registration, or for an extra charge of \$10.00, in two instalments. Scholarships may be applied to residence charges only after tuition fees for the full session are paid. The first instalment must be paid in full by September 30. Interest at a monthly rate as set by the University will be charged on all accounts outstanding after September 30 and on any second instalment outstanding after January 31. At the time of printing the monthly rate of interest is 0.85% monthly (10.25% per annum). The student will not be permitted to register for another session until all accounts are paid in full. A student whose account is delinquent for more than 30 days will be denied university privileges including access to transcripts and records of attendance and Dalplex. The student will be

reinstated upon payment of the fees outstanding, the arrears interest, and a \$50.00 reinstatement fee.

For Howe Hall, Eliza Ritchie Hall, Shirreff Hall and the Residence Houses fees are paid at the Student Accounts Office. For Fenwick Place and Glengary Apartments and Co-ed Apartment Units fees are paid at Fenwick Place.

Students should make an appointment as soon as possible with the Associate Director of Residence Life, Fenwick Facilities Coordinator, or the Supervisor of Student Accounts if they are having financial difficulties.

### Regulations and Additional Charges

The room and board session is defined as being from the Wednesday in September before classes begin in the College of Arts and Science to the last day of regularly-scheduled examinations in the College of Arts and Science in April. Please note that, except at Fenwick Place, students must vacate the residence twenty-four hours after their last exam and that residences are closed over the Christmas holidays.

No reduction in the board charge will be made for meals not taken, except that a rebate of \$200.00 per month may be considered in the case of illness or other cause necessitating absence of four weeks or more.

In Fenwick Place the rental period is based on a 34-week period beginning on Labour Day. For more specific details on dates of semesters, students should contact the accommodations office at Fenwick Place.

In all other cases, an additional fee is payable by all residents who are registered in a Faculty where the academic session commences before or continues after the session of the College of Arts and Science. Special arrangements are to be made with the Residence Co-ordinator or Fenwick Facilities Coordinator for accommodation for periods prior to or following the session as defined above.

RESIDENCE ROOM AND BOARD RATES 1995/1996 <sup>(1)</sup>

The residence term for Howe Hall, Shirreff Hall, Eliza Ritchie Hall, 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 regularly-scheduled examinations in the College of Arts and Science in April (Christmas vacation excluded).

The residence term for Fenwick Place is as follows: First semester - Labour Day to December 31; and second semester - January 1, 1996, to April 30, 1996. 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.

The student has two alternatives for payment after the first and second deposit have been paid:

- 1) Pay the balance in full by September 30th.
- 2) Pay the balance in two equal parts, first half by September 30th and the second half by January 31st, plus a \$10 service charge.

	FIRST DEPOSIT AND APP. FEE <sup>2</sup>	SECOND DEPOSIT AT JULY 15 <sup>3</sup>	BALANCE IF PAID IN FULL BY SEPT. 30	OR	PAY IN PART BY SEPT. 30	BALANCE DUE BY JAN. 31	TOTAL <sup>4</sup> (Includes \$10 Service Charge)
<b>Howe Hall <sup>2</sup></b>							
Single Room	\$125	\$200	\$4,990	Or	\$2,295	\$2,905	\$4,925
Double Room	\$125	\$200	\$4,240	Or	\$2,120	\$2,130	\$4,575
<b>Shirreff Hall and Eliza Ritchie Hall <sup>2</sup></b>							
Single Room	\$125	\$200	\$4,990	Or	\$2,295	\$2,905	\$4,925
Double Room	\$125	\$200	\$4,240	Or	\$2,120	\$2,130	\$4,575
<b>Residence Houses</b>							
Single Room	\$125	\$200	\$2,560	Or	\$1,280	\$1,290	\$2,895
Double Room	\$125	\$200	\$2,190	Or	\$1,095	\$1,105	\$2,825
<b>Glengary Apartments</b>							
Single Room	\$125	\$200	\$2,565	Or	\$1,285	\$1,290	\$2,900
Double Room	\$125	\$200	\$2,215	Or	\$1,110	\$1,115	\$2,550
Bachelor Apts.	\$125	\$200	\$3,660	Or	\$1,830	\$1,840	\$3,995
<b>Fenwick Place <sup>4</sup></b>							
2-Person (2-Bdrm)	\$125	\$200	\$3,385	Or	\$1,690	\$1,695	\$3,710
3-Person (3-Bdrm)	\$125	\$200	\$3,060	Or	\$1,525	\$1,535	\$3,385
4-Person (2-Bdrm)	\$125	\$200	\$2,700	Or	\$1,350	\$1,350	\$3,025

**Meals Only - Special Rate For Session**

3 Meals Per Day	\$1,945
2 Meals Per Day	\$1,880

Meals only plans may be purchased from the Dalhousie Food Services Group office, Student Union Building.

**Please note the following:**

- (1) The above fees will be superseded on July 1, 1996, when the 1996/1997 residence fee schedule will be published.
- (2) Howe Hall, Shirreff Hall and Eliza Ritchie Hall rates include a residence council membership fee (\$30) and the cost for a 21-meal plan per week. If the 14 meal plan option is chosen, the rates will be reduced by \$65.
- (3) For all residences the prepaid deposit of \$125 includes a \$25 non-refundable application fee.
- (4) At Fenwick Place \$100 of the \$125 prepaid is a damage deposit. See application form for details. The \$10 service charge is not applicable.
- (5) The second deposit due on June 30 is a \$200 non-refundable deposit to confirm the room.

# Awards

## Scholarships, Awards, Financial Aid, & Bursaries

The Awards Office, within the Office of the Registrar, is responsible for:

- Undergraduate Scholarships
- University Bursaries
- University Short-Term Loans
- Canada Student Loans
- Provincial Loans & Bursaries
- Awards and Financial Aid Advice & Information
- Canada Scholarships

**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.

### Statement of Scholarship Terms

The above document is given to each awardee at the time of the announcement of a scholarship from the Undergraduate Scholarship Committee. The Statement of Terms contains some of the more pertinent policy items for easy reference. Additional scholarship regulations are listed below.

## General Policy

### Full Class Load

- (a) Entering students to whom an entrance scholarship is awarded must undertake a full class load for the academic year immediately following the award in a designated degree or diploma programme at Dalhousie University. A full class load for most designated programmes consists of not fewer than five full classes (or the equivalent), i.e. 30 credit hours distributed equally between the two terms, unless the prescribed standard credit hour load should be otherwise.
- (b) Continuing regular students are asked to note: To be considered for an in-course scholarship, a student must have carried in the preceding year a full class load (five whole classes or the equivalent, i.e., 30 credit hours, or that stipulated by the designated requirements of the programme).
- (c) Continuing Co-operative Programme students will be considered as are the regular students except that the prescribed period may be either a term or an academic year depending upon where a given Co-op student is within that programme at the time.

### Where Scholarships Are Tenable

Dalhousie University scholarships are tenable only at Dalhousie unless the Will or Trust Deed should otherwise permit. (The University of King's College has its own scholarship programme.) In so far as

scholarships, bursaries and governmental student loans are concerned, Dalhousie and King's are separate. In order to receive Dalhousie money one must be registered at Dalhousie University.

## Portability of Undergraduate Scholarships

Entrance and In-course Scholarships are portable amongst the following faculties and schools for the eligible degree/diploma programmes as indicated:

### College of Arts & Science:

Bachelor of Arts; Bachelor of Music;  
Bachelor of Science; Diploma in Engineering

### Faculty of Health Professions:

- College of Pharmacy - Bachelor of Science in Pharmacy (in-course scholarships only)
- School of Nursing - Bachelor of Science in Nursing; Bachelor of Science in Nursing (RN) (for in-course scholarships only)
- School of Occupational Therapy - Bachelor of Science in Occupational Therapy (for in-course scholarships only)
- School of Physiotherapy - Bachelor of Science in Physiotherapy (for in-course scholarships only)
- School of Recreation, Physical and Health Education - Bachelor of Physical Education; Bachelor of Recreation (for in-course scholarships only); Bachelor of Science (Health Education); Bachelor of Science (Kinesiology)
- Maritime School of Social Work - Bachelor of Social Work (in-course scholarships only)

### Faculty of Management:

- School of Business Administration - Bachelor of Commerce

### Faculty of Dentistry:

- School of Dental Hygiene - Diploma in Dental Hygiene (for in-course scholarships only)

## When Scholarships Are Tenable

- (a) Undergraduate scholarships to regular full-time students are tenable in the academic year immediately following their award.
- (b) Similarly, undergraduate scholarships to Co-op students are to be taken up in the academic term or year immediately following their award.

## Scholarship Payments and Rebates

- (a) **Payments:** Dalhousie University scholarships are credited towards students' accounts first for tuition and prescribed fees, and secondly for residence fees if and only if you stay enrolled at the University.
- (b) **Rebates:** The portion of such scholarship money in excess of the aforementioned charges will be refunded to the student in one portion. The normal refund time is October, and the refunds are made by the Student Accounts Office.

## Scholarship Duration

Dalhousie offers both renewable and non-renewable Entrance Scholarships.

Renewable entrance awards are renewable for the duration of the programme in which the awardee was enrolled at the time of the award. 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 one-year scholarships from the Undergraduate Scholarship Committee.

### Eligible Classes

The Undergraduate Scholarship Committee considers those Dalhousie classes which are taken for credit in a designated degree/diploma programme during the academic year (or term in the Co-op programme). Summer Session classes are also considered. These classes will be assessed at the end of the summer if they should constitute part of the normal five credits or equivalent not yet considered for in-course scholarships.

Correspondence classes are considered for scholarship purposes.

Please note that classes taken at other institutions are eligible for scholarship assessment if such classes are taken on the basis of Letter of Permission towards an eligible degree/diploma here.

### Artificial Academic Year

The adoption of the policy of considering full-time and part-time students on the same grounds has necessitated the use of artificial academic years. An artificial academic year consists of the number of credit hours as prescribed by the year of study in a given programme and is constructed artificially (because full-time and part-time students are eligible) by gathering classes (1) by session chronologically, (2) by highest grade within session, and (3) by highest credit hour value among classes with the same grade, until the prescribed credit hour load is accumulated. Any classes remaining are first counted in the next assessment for scholarship. In this manner all eligible classes are counted once for scholarship purposes.

### Scholarship GPA

Each year of study within each eligible program has a prescribed credit hour load. This figure is used in the calculation of the student's Scholarship Grade Point Average. 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.

### Academic Year and Assessment Timing

The academic year consists of five sessions: Spring, Summer, Fall, Regular (Fall and Winter) and Winter.

For full-time students the University will normally assess records in mid-June (most programmes; the remainder will be done in October). Those co-op students who completed one academic year's studies as of the end of April will be included. For other co-op students, and part-time students the University will

normally assess records in mid-September for those students who at the end of August achieved the minimum threshold level for in-course scholarship consideration.

### 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 about the implications of such a change.

### Reduced Class Load and Retention of Scholarship

Continuing students to whom an undergraduate scholarship has been offered may retain the scholarship while undertaking a reduced class load. Scholarship holders considering taking a reduced class load should consult the Registrar's Office - Awards about the implications of making such a change.

### Record of Scholarships

Awards are recorded on the academic records of the students. The University retains the right to reassign the source funding of a student's scholarship as circumstances may warrant (but there would be no reduction in the amount).

### Graduation and Scholarships

If you hold a renewable scholarship and if you choose to graduate earlier than originally expected, and then you decide to return for an Honours Certificate or an Advanced Major Certificate, please note that you would forfeit eligibility for continuation of said scholarship. In other words, graduation constitutes completion of programme.

### Transfer Students

Please note that transfer students are ineligible for scholarships in the year of transfer. After one year, such students would be considered on the same basis as other students.

### 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 therefore retain copies of award letters so that you can readily forward copies for audit or confirmational purposes.

The University is required by law to prepare a T4A form for the recipient of a University scholarship (applies also to bursary or prize 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.

### Student Aid and Scholarships

Provincial Student Aid authorities require that students report their scholarships. On occasion the government may audit your awards. You should therefore retain copies of award letters so that you can readily forward copies for audit or confirmational purposes.

## Withdrawing

If it should become necessary to discontinue studies, it is most important that students 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 generic scholarship to be credited towards academic fees. Please note that no portion of said scholarship may be applied against residence fees if one is withdrawing from the University.

## Government Notification

Holders of Dalhousie University scholarships are to note that the University is required, upon written request, to report its award winners to the respective Provincial Student Aid Authority.

## Entrance Scholarships

Dalhousie University offers scholarships, which range from \$500 to \$6,000, to outstanding students who are admitted directly from high school to the first year of study. Depending on the value of the awards they are tenable for one or more years. Renewable Entrance Scholarships which are worth either \$6,000 or \$4,000 are tenable for the duration of the programme to a maximum of four years, provided that the holder achieves a competitive level of academic excellence. Entrance Scholarships worth \$500 to \$2,000 are tenable for one year.

Non-renewable scholarships for subsequent years are also available and they are described under "In-Course Scholarships." Entering students who may not qualify for an entrance scholarship will be considered for an in-course scholarship upon completion of first year (provided they have carried a full course load).

Please note that applicants will be considered for an entrance scholarship in one of four academic program groups, namely that program on record by the deadline date. Although applicants may change their minds, entrance scholarship consideration occurs only once. The program groups are arts, science, health professions and commerce, each consisting of one or more eligible degrees or diplomas. Applicants will be considered automatically for either a renewable scholarship or a non-renewable one, but not both. The number of scholarships allotted to each program group is proportional to the respective populations at Dalhousie. As a direct consequence cut-off averages will vary among the different program groups.

In order that applicants for admission to the University may be considered for scholarships, applicants must arrange with their high school for the submission of a completed Application for Admission Form to be received by the Office of the Registrar by April 1st.

## Criteria Summary

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 must be received by the Office of the Registrar by April 1st.
2. In its assessment of entrance scholarship candidates the University considers (i) admissions average (based on admission requirements); (ii) the degree of difficulty (AP, IB, Enriched, Honours) of courses; (iii) total number of university preparatory courses 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.
4. Admitted students will be considered for an entrance scholarship in only one of these academic groups: arts (includes music), health professions (health education, kinesiology and nursing), commerce and science (includes DISP and engineering).
5. Transfer Students are precluded from entrance scholarship consideration.

Please note that these criteria are subject to change without notice. Note also that the foregoing is not a definitive statement of criteria or policy.

## Entrance Scholarship Funds

The following endowments (without an asterisk) make possible the funding of the aforementioned Dalhousie entrance scholarships. Entries marked with an asterisk are selected by bodies other than the Undergraduate Scholarship Committee (USC). Unless otherwise noted, these scholarships are administered by the Office of the Registrar.

On occasion a given student may be eligible for more than one non-USC entrance scholarship. It is University practice to distribute scholarships among as many students as possible.

Among the funds listed below and marked with an asterisk, some have an application notation. Please refer to the last line of the entry.

**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.

**James and Abbie Campbell Memorial Scholarships:** A bequest from the late Elsie Alma MacAloney of Halifax made provision for the establishment of the James and Abbie Campbell Memorial Fund. The purpose of this fund is to promote the University's music programme through scholarships in music. Academically sound students who have demonstrated competency in music will be selected by the Department for one of several James and Abbie Campbell/Department of Music Scholarships. Other music students will be selected on the basis of their overall academic standing by the Undergraduate Scholarship Committee. The fund provides in-course scholarships also.

**\*Dalhousie Alumni Association Scholarships:** With a gift of \$20,000 in September 1968 the Dalhousie Alumni Association established an endowment from which the net annual income would provide two major scholarships to students of particular merit. These scholarships are open to students entering the University for

the first time directly from high school into a course of study leading to an undergraduate degree or diploma. For further information contact the President, Dalhousie Alumni Association, c/o The Alumni Office, Dalhousie University.

**\*Dalhousie Alumni Leadership Scholarships:** A small number of these scholarships are open to entering students who have demonstrated scholastic success in high school while maintaining a healthy extra-curricular involvement. For further information contact the Alumni Office.

**The 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 University in the College of Arts & Science from high school. The financial need of the candidates will also be considered. The fund provides in-course scholarships as well.

**\*The 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 the 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.

**\*Dover Elevator Scholarship:** One tuition scholarship will be awarded annually to a student entering the first year of the engineering or commerce programme. The recipient will have demonstrated high academic standing combined with a history of community involvement and leadership skills, and shown an interest in pursuing a career in business. The scholarship is renewable through second year, provided the recipient maintains a minimum Grade Point Average of 3.70. Please note that the value of the scholarship is that for tuition proper.

**\*The Rowland C. Frazee Undergraduate Scholarships in Business Administration:** Two scholarships of \$5000 each are to be awarded annually to students entering the Bachelor of Commerce programme. Sponsored by The Royal Bank of Canada, these scholarships honour Mr. Frazee's long and distinguished career with the bank.

**E. 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.

**\*C.D. Howe Scholarships in Engineering:** The C.D. Howe Memorial Foundation has established an endowment to provide annual scholarships of not less than \$5,000 each. The scholarships are open to matriculants from Nova Scotia high schools who have achieved high academic standing and who are enrolled full-time in either the Diploma in Engineering

or the BSc/Diploma in Engineering programme. Where candidates are deemed to be of equal merit, preference will be extended to female students. The scholarship is renewable on an annual basis for the duration of the programme provided that the holders maintain high academic standing and remain in the engineering programme. One scholarship will be offered initially; additional scholarships will be offered as the Fund matures.

**The Percy Bertram Jollota Scholarships:** From the Estate of Jean Minerva Jollota came a bequest, the annual income of which is to be used to provide scholarships in memory of her late husband, Percy Bertram Jollota. The awardees must be engaged in studies in engineering or physics.

**The 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.

**\*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.

**Frederick A. MacMillen Scholarships:** The late Frederick A. MacMillen bequeathed to Dalhousie University a sum of money, the net income therefrom to be used for scholarships. This fund has been designated for entrance scholarships.

**The Hector McInnes Memorial Scholarships:** In December 1937, an anonymous donor gave the University \$50,000 for undergraduate scholarships as a memorial to the late Mr. McInnes.

**Silvanus A. Morton Memorial Scholarship:** The Silvanus A. Morton Scholarship Fund was established in 1972 to endow one or more awards totalling approximately \$800. 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.

**\*The W. M. Nelson Scholarship:** Under the Will of the late Mr. William M. Nelson of Tatamagouche, funds have been made available to provide a scholarship to Dalhousie University open to students attending North Colchester High School.

**\*Nova Scotia Power Scholarship:** Beginning in 1995, Nova Scotia Power Inc. will sponsor an annual scholarship in the amount of \$1,500 for full-time study in an undergraduate degree programme. The recipient will have achieved a high level of academic excellence and demonstrated involvement in extra curricular activities. The Scholarship will be renewable for up to three years provided that the student maintains the required academic standing. As



part of the award, students are guaranteed summer employment with Nova Scotia Power. Recipients are to be Canadian citizens (or landed immigrants) and residents of Nova Scotia for at least three years.

**Harold Oxley Scholarship:** A bequest under the late Mr. Oxley's Will makes possible the funding of a scholarship, which has been allotted to the entrance scholarship plan.

**Arthur S. Payzant Scholarship:** Under the Will of the late Reverend Arthur Silver Payzant a bequest was established for scholarship purposes. The University has allotted this fund to the entrance scholarship plan.

**Pictou Academy Scholarship:** In recognition of the common origin and close relation existing between Dalhousie University and the Pictou Academy, the University in 1917 on the occasion of the hundredth anniversary of the academy established a scholarship.

**The Harold A. Renouf Scholarship:** An endowment has been established to provide an annual scholarship for students entering the Bachelor of Commerce programme.

**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.

**\*Shatford Memorial Trust Scholarships:** The J.D. Shatford Memorial Trust has established an endowment to provide assistance with the costs of attendance at Dalhousie University. The University's Fund is independent of any other such trust.

Candidates must fulfil the following conditions: i) be coming directly to Dalhousie from either Forest Heights Community High School or Sir John A. Macdonald High School; ii) be recommended by the appropriate high school confirming that the applicant has been a bona fide resident of the bequest area for at least three years; and be undertaking studies leading to their first baccalaureate degree.

Subject to the availability of funds, these awards are renewable to the first degree (or four years maximum), based on satisfactory academic performance. Please note that the value of a holder's scholarship may vary from year to year.

**\*Alexander Sinclair Scholarship:** Under the Will of the late Evangeline Marlon Winn, the University received an endowment for the purpose of providing scholarship awards to qualifying students from St. Mary's Municipality, Guysborough County, Nova Scotia. Candidates are recommended by the St. Mary's Rural High School in consultation with the Registrar's Office - Awards.

**Dr. David M. Soloan Scholarship:** Under the Will of the late Dr. David M. Soloan the University received a sum of money. The Board of Governors decided that the gift be used to provide one or more entrance scholarships in the College of Arts & Science.

**Joseph Duncan Stewart Scholarships:** A bequest under the Will of the late Joseph Duncan Stewart has made possible the funding of undergraduate scholarships.

**\*The I.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 I.C. Stewart Scholarships to qualifying students from St. Mary's District in the County of Guysborough, Nova Scotia. Candidates are recommended by St. Mary's Rural High School in consultation with the Registrar's Office - Awards.

**The J. Douglas Vair Scholarship:** This scholarship is available to students entering the University for the first time from Pictou County, Queen's County, and rural Halifax County. Failing a candidate from these areas, a student from other areas of Nova Scotia may be selected at the discretion of the Scholarship Committee. The award shall be based on scholarship and need, making it possible for a promising student to obtain a university education. The scholarship may be continued beyond the first year to students from the three preferred areas if standing is maintained, but only if there is no first-year student eligible for the award.

**The Women's Division of the Dalhousie Alumni Association Scholarships:** This fund provides up to three scholarships of \$1,000 each. Of the two entrance scholarships, one is named the Margaret Florence Newcombe Scholarship, which commemorates the 100th anniversary of the graduation of the first woman graduate of Dalhousie University in 1885. This scholarship includes a financial need component and consideration of extra curricular activities, in addition to the attainment of high academic standing. The second scholarship is named the Ruth Skaling Murray Scholarship, in memory of a dedicated alumna of the Dalhousie Women's Division. (The third award, the Christine Irvine Scholarship, is open to returning students.)

**The Lockward Memorial Scholarships:** These scholarships have been established from an endowment by the late Reginald and Anne T. Lockward of Liverpool, N.S. A number of scholarships, each valued at \$4,000, will be awarded annually; they are tenable for one year. Candidates for Lockward Memorial Scholarships must be attending, or be graduates of, a high school in Nova Scotia and be eligible for admission to the first year of an undergraduate course of study leading to a first degree at Dalhousie University. Preference will be given to students in Queen's County. High schools outside the preferred area but within Nova Scotia may each recommend one student for consideration. Students will be selected to receive Lockward Memorial Scholarships on the basis of academic standing, character and financial need. A student may not hold both a Lockward and another University scholarship simultaneously. Candidates must be recommended by the principal of their high school. Please use the regular admission form, accompanied by letters of reference. Two letters of reference from members of the community who are familiar with the student's character and activities, should be included. The deadline for receipt of nominations is April 1st. Nomination forms and letters of reference, identified for Lockward consideration, are to be sent to: Ava Czapalay, Office of the Registrar.

## Canada Scholarships

The federal government's Canada Scholarship Program awards over 2,500 scholarships annually to students in undergraduate studies in selected natural and physical sciences or engineering studies. The scholarship can be worth up to \$10,000 received => \$2,500 annually over four years. Effective for the 1995/96 academic year, the government discontinued the program for entrants.

Furthermore, outstanding Canada Scholars in their third and fourth years of study in certain disciplines may also be recommended by their faculty to receive an additional award sponsored by the corporate sector. For more information, contact your guidance counsellor, the Registrar's Office - Awards, or:

The Canada Scholarships Program  
Awards Division  
Association of Universities and Colleges of  
Canada  
151 Slater Street  
Ottawa, Ontario  
K1P 5N1  
Telephone: (613) 563-1236

Please note that Canada Scholars who chose early graduation and return (immediately the next year) for either an Honours or an Advanced Major Certificate, are eligible to retain their Canada Scholarship subject to the other criteria. We request that we be included in your plans beforehand so that your scholarship does not automatically become terminated with graduation.

## 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 \$3,000 (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 are to forward the requisite documents to the CMSF Area Committee to be received no later than the November deadline.

Details of the process and criteria are available from your high school. Nominees must meet the admission requirements for Dalhousie University and the program which the student wishes to undertake.

## In-course Scholarships

All Dalhousie students in eligible programmes in the participating faculties who have successfully completed a normal full class load will automatically be considered for

scholarships. The normal full class load will depend upon the requirements of specific faculties and schools. The Undergraduate Scholarship Committee decides the awardees and the amounts of money. The amount of money authorized for a scholar may be met wholly or partially by a Dalhousie University Scholarship and/or one of the named scholarships as described in the following sections.

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. Holders who fail to re-qualify for their renewable scholarship will be notified in writing.

Applications are not required for the scholarships which are listed in the following sections (a) through (d). These are endowments which the University assigns to fund students' generic scholarships.

### (a) General

**The Isabel Brown Scholarship:** The scholarship was endowed in 1982 by the Brown family under the auspices of the Women's Division of the Dalhousie Alumni Association. The interest provides an annual scholarship ordinarily to a student who is entering the final undergraduate year. Note, however, that this scholarship is portable to programmes outside the list of designated undergraduate programmes as listed earlier.

**Minnie F. Burbidge Scholarships:** In her Will the late Minnie F. Burbidge bequeathed the residue of her estate to Dalhousie University. In 1945 the sum of \$16,000 was endowed to provide undergraduate, usually in-course, scholarships.

**George H. Campbell Memorial Scholarship:** In 1917 Mr. and Mrs. G.S. Campbell established the George H. Campbell Scholarship Fund to provide annual scholarships in memory of their late son, George Henderson Campbell.

**Marjorie F. Ellis Scholarships:** The late Marjorie F. Ellis bequeathed one-half of the remainder of her estate to Dalhousie University for scholarships to worthy students.

**W.L. Harper Scholarship:** From the Estate of Arta Falconer Harper a bequest to the University makes possible the provision of a number of awards from the annual income.

**Christine Irvine Scholarship:** The Women's Division of the Dalhousie Alumni Association established this scholarship to honour the memory of a former Dean of Women.

**Mackenzie Trust Scholarships:** According to the Estate of Thomas George Mackenzie a Trust Fund was established for Archibald F. Mackenzie, and later bequeathed to Dalhousie University to provide (in-course) scholarships.

**The Hector McInnes Memorial Scholarships:** In December 1937, an anonymous donor gave the University \$50,000 for undergraduate scholarships as a memorial to the late Mr. Hector McInnes.

**The Lois J. Robertson Scholarships:** The University received a generous bequest from

the Estate of the late Lois Robertson. This fund has been allocated to undergraduate scholarships.

**Joseph Duncan Stewart Scholarship:** A bequest under the Will of the late Joseph Duncan Stewart has made possible the funding of undergraduate scholarships.

**The John L. and Glenna E. Towse Scholarships:** A bequest to the University provides for a number of in-course scholarships.

**Sir William Young Scholarship:** This fund was left by Sir William Young for the purpose of endowing scholarships.

#### (b) Arts and Science

**Nathan T. Ashkins Scholarship:** Each year the Nathan T. Ashkins fund provides for a scholarship to a student in Arts & Science who is beyond first year.

**Robert Bruce Scholarship:** Robert Bruce of Banlieue, Quebec, made a bequest to the University to establish bursaries and scholarships.

**The Charles and Cecelia Zwerling Scholarship:** This fund was created by members of the Zwerling family in memory of Mr. and Mrs. Charles Zwerling for scholarship beyond first year.

#### (c) Arts

**Dr. Frederick J. Gaudet Scholarship:** Dr. Gaudet bequeathed to the University in 1978 a sum of money to provide for a full tuition scholarship in Arts.

**The Hyman L. Jacobson Scholarship:** Under the will of the late Hyman Isaac Jacobson a bequest of \$5,000 was given to the University to benefit the Humanities and Social Sciences.

**The Khaki University Scholarships:** From the Khaki University of Canada and the Young Men's Christian Association Memorial Scholarship Fund, the trustees of Khaki University made a gift to Dalhousie University in 1921 of \$6,500 to endow scholarships.

#### (d) Science

**The Belle Crowe Scholarships in Chemistry:** A bequest by the late Belle Chisholm Crowe, formerly of Truro, and a student at the University in 1885-86, enables a number of scholarships to be offered annually. The Undergraduate Scholarship Committee and the Department of Chemistry (see also) share the net annual income equally. The former awards Belle Crowe Scholarships to students in the Honours Chemistry programme which students have qualified in the yearly competition for in-course scholarships. The scholarships are directed to the most promising students entering the third or fourth year in the Honours Chemistry programme.

**The L.A. DeWolfe Memorial Scholarship:** A fund has been established under the Will of the late Dr. L.A. DeWolfe to provide undergraduate scholarships in Mathematics or Science.

**The Percy Bertram Jollota Scholarships:** From the Estate of Jean Minerva Jollota came a bequest, the annual income of which is to be used to provide scholarships in memory of her

late husband, Percy Bertram Jollota. The awardees must be engaged in studies in engineering or physics.

**The Carl Mushkat Memorial Scholarships:** The Carl Mushkat Memorial Fund was established at Dalhousie University in 1979 as a bequest under the Will of the late Carl Mushkat. The fund provides scholarships to students in Mathematics or Science.

**The Ross Stewart Smith Scholarships:** A significant bequest established these memorial scholarships for students who excel in the sciences or mathematics.

**The Mr. and Mrs. S.H. Solomon Scholarship in Engineering:** This scholarship was made possible by Mr. and Mrs. S.H. Solomon and is to be awarded annually to a student entering the second year of Engineering.

**The C.W. Stairs Memorial Scholarship:** In 1960, William Stairs, Son & Morrow Limited of Halifax, on the occasion of the 150th anniversary of the firm donated \$10,000 to the University to set up this fund. It provides scholarships to students in Engineering, or in related subjects, who are entering the third year of the course and who, in the opinion of the Committee, are likely after graduation to contribute to the industrial development of Canada.

#### (e) Other

The following scholarships are administered separately from the regular in-course ones. Please note that the Beta Sigma Phi Scholarship requires its own application form and that the W. Andrew MacKay Alumni Scholarship requires its own nomination form.

**Beta Sigma Phi Scholarship to Dalhousie University:** The Halifax-Dartmouth City Council of Beta Sigma Phi sorority has established an endowment of \$2,000 whereby the annual income will provide for a scholarship to a student studying towards a degree full-time or part-time at either the undergraduate or graduate level. The successful candidate will be selected from the following categories, listed preferentially: first, an active Member; secondly, a daughter, son or husband of an active Member; and thirdly, some other student chosen by the Undergraduate Scholarship Committee. **NOTE:** this scholarship requires a designated application form which must be submitted to the Registrar's Office - Awards by the May deadline.

**The Constance MacFarlane Scholarship:** An endowment fund has been established to provide a scholarship to a deserving student in the second or subsequent year of the Honours programme in either biology or marine biology. Candidates must have completed at least one class in each of ecology and botany.

**The W. Andrew MacKay Alumni Scholarship:** The Dalhousie Alumni Association established an annual scholarship in honour of Dr. W. A. MacKay, a former president of the University. The scholarship is available to a student entering third year who has demonstrated high academic standing (a Grade Point Average of at least 3.30) and who has shown an excellence in qualities of leadership, citizenship and sportsmanship. The award is tenable for one

year in the faculties of Arts & Social Sciences, Health Professions, Management (Commerce), and Science. Candidates are to be nominated by each Department or School in the above list. Nominations are to be received by the Office of the Registrar by 15 May. The Undergraduate Scholarship Committee will select at least three candidates for final consideration by the Alumni Office.

**The Alan Pollok Scholarship:** This scholarship of \$750 was established by the North British Society in Halifax in memory of the Rev. Dr. Alan Pollok. The awardee will be the student, in second year in the College of Arts and Science at Dalhousie University, who stood highest in a course load of at least five full classes (or equivalent).

**The George B. Robertson Phi Delta Theta Fraternity Scholarship:** An endowment has been established to provide a scholarship to a student in full-time study in the junior or subsequent years at Dalhousie University. The selection of the awardee is based on several factors including a minimum Grade Point Average of 3.00, demonstrated activity in the Halifax Chapter and financial need.

**Sony Science Scholarship:** On the occasion of the 35th anniversary of the arrival of the first Sony product in Canada, Sony of Canada Ltd. has established an annual scholarship in the amount of \$3000. It is open to outstanding students in science or engineering.

**The Stora Undergraduate Scholarship in Arts & Science:** On the occasion of their 25th Anniversary Stora Forest Industries have established an endowment to provide one undergraduate scholarship open to students in Arts & Science. To be eligible candidates must reside in Nova Scotia, have demonstrated academic excellence and have exhibited a desire to learn. Students will be considered after one year at Dalhousie.

## Departmental Scholarships

### Biology

**Hugh P. Bell Scholarship in Biology:** In 1968 the Class of 1928 established the H.P. Bell Fund; the income therefrom is to provide one or more annual scholarships. The Biology Department each year will select the most promising honours biology student who is in Third year and that student shall hold the Hugh P. Bell Scholarship in the fourth year of the honours programme.

**The Sarah M. Lawson Scholarships in Botany:** At the discretion of the Chairman 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 research projects in botany at either the undergraduate or graduate level.

### Chemistry

**The Belle Crowe/Department of Chemistry Scholarships:** These scholarships are awarded on the basis of academic standing and demonstrated proficiency in chemistry to students in the honours programme.

**The E. Walter Todd Scholarship:** A bequest from the Estate of Mabel E. Todd in 1958 established a fund to provide a scholarship (and inscribed volume) in memory of her brother, E. Walter Todd, who was for many years a member of the Department.

## Earth Sciences

**Amoco Canada Undergraduate Scholarship in Earth Sciences:** Amoco Canada Petroleum Geology Limited offers an annual scholarship of \$1500 to a deserving student of outstanding merit in the Fourth and final year of an Honours BSc programme with a major in earth science. In addition to scholastic achievement, other criteria may include keen interest in earth science, participation in University and community affairs and economic need.

**Canadian Institute of Mining and Metallurgy Earth Science Scholarship for New Brunswick Students:** This is awarded to a student entering second or subsequent year in an earth science discipline. Applicants must have been in New Brunswick or resided in New Brunswick for seven years, or have his or her immediate family resident 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, Saint Mary's University or Technical University of Nova Scotia in a geology or mining-related bachelor degree programme are considered for this scholarship. The 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 Chairs of the Departments of Engineering and Earth Sciences, to a student who has completed his/her first year, who is planning on a career in the field of Mining Geology.

## Economics

**Professor W. Russell Maxwell Memorial Scholarship:** Friends and colleagues of Professor Maxwell have established a fund to provide scholarships to outstanding students entering the second, third or fourth year of the General Degree or Honours Degree programme in Economics. Preference will be given to candidates entering the fourth year of the Honours programme.

## Engineering

**The A. David Blair Scholarship:** An endowment has been established to provide an annual scholarship in memory of A. David Blair, who was graduated from Dalhousie in 1967 with a BSc degree. Candidates for the scholarship must be enrolled in the program leading to a Diploma in Engineering at

Dalhousie University. The awardee will have achieved high academic standing and demonstrated financial need.

**The James L. Hall Scholarship in Earth Sciences:** This scholarship is awarded on the joint recommendation of the Chairs of the Departments of Engineering and Earth Sciences, to a student who has completed his/her first year, who is planning on a career in the field of Mining Geology.

**John R. Kaye Memorial Scholarship:** The Founder of this scholarship gave a benefaction of \$10,000 to be invested. From the annual income therefrom, one (later more) scholarship may be awarded to a suitably well qualified Dalhousie graduate who is continuing studies in an accredited programme in engineering at the Technical University of Nova Scotia. The holder shall be a resident, native-born Nova Scotian who has completed the requirements for the Diploma in Engineering. The Selection Committee shall consider good marks, motivation, diligence, capability for making a contribution to the profession, and financial need. The amount of each scholarship shall approximate tuition fee (maximum of \$1,000) in the programme the awardee is to pursue. The scholarship will be paid upon presentation of proof of registration at TUNS.

**John Frederick Knodell Engineering Scholarship:** An annual award of \$5,000 has been established to honour the memory of J.F. Knodell, a graduate in electrical engineering from Dalhousie and Nova Scotia Technical College. The scholarship is awarded to a male Dalhousie engineering diploma graduate who was born in Nova Scotia and attended schools in the province. The recipient must have achieved excellent academic standing and demonstrated significant improvement from the first to second year of the engineering diploma programme.

## English

**Allan and Lura Bevan Memorial Scholarship:** Colleagues and friends of the late Allan Bevan have established a memorial scholarship fund. The scholarship selection in the first place is to be made by the Department of English to a student majoring in English either at Dalhousie or King's. In the absence of a suitable candidate from English, the selection will be made by the Department of Music.

**The Archibald MacMechan Chapter/IODE Scholarship in English:** In 1948 the Archibald MacMechan Chapter of the IODE gave the University a scholarship fund. This award is intended for students who have shown special ability in English and who are looking forward to further study in the field. Provided that suitable candidates apply, preference will be given to graduates who intend to study for a Master's degree in English. Application should be made to the Chairman of the Department of English not later than 31 March.

## French

**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 one of the following:

- (a) a programme of study at the University of Aix-en-Provence, France, or
- (b) an off-campus summer course in a francophone environment arranged and directed by the Department of French.

In any year when there are no students participating in these programmes, the income may be disbursed as scholarships to academically sound students majoring in French at Dalhousie.

## 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.

## Mathematics, Statistics & Computing Science

**The Ralph and Frances Lewis Jeffery Scholarship:** From the Estate of Frances E. Jeffery came a bequest in 1979 to endow a scholarship which is to be awarded to a student who has completed the final year of an honours course in Mathematics, and who has maintained at least a second-class standing during the first three years of the course.

## Music

**The James and Abbie Campbell Memorial Scholarships and the James and Abbie Campbell/Department of Music Scholarships:** The Undergraduate Scholarship Committee and the Department of Music make selections of winners for undergraduates. See entry under Entrance Scholarships.

**Honourable L.D. Currie Memorial Scholarship in Music:** The North British Society established this scholarship in memory of the Honourable Lauchlin D. Currie in 1971. An annual scholarship in the amount of \$750 is available to a Canadian in any year of Music. The successful student, will have demonstrated competence in vocal or instrumental performance. (under review)

**Halifax Ladies Music Club Scholarship:** The Halifax Ladies Music Club sponsors an annual scholarship of \$300 for a first-year student in Music at Dalhousie.

**Elisabeth Meyerhof Scholarship in Music:** An annual scholarship of at least \$1,500 awarded to the student entering the Fourth Year of his or her undergraduate degree programme in Music who has achieved a high average in the music classes of the first three years and who in the opinion of the Department has demonstrated exceptional promise for a professional career as an instrumentalist in the performance of classical music (including early music). If no instrumentalist qualifies, a voice student would be considered.

**The Effie May Ross Scholarships in Music:** An endowment fund of \$25,000 was established

under the Will of the late Effie May Ross. The income is to be used to establish yearly scholarships to (a) the most promising vocalist student from the Maritime Provinces or Newfoundland who requires financial assistance; and (b) on recommendation of the Senate of Dalhousie University to the most promising Maritime or Newfoundland student in the playing of the Piano, Organ, Violin or Cello who is in need of financial assistance. Scholarships range in value and in number.

**The Don Wright Scholarships in Music Education:** The Don Wright Charitable Foundation of Toronto established a generous endowment with which to fund these two scholarships. One scholarship is allocated to Classroom Vocal Music. Recipients of this award must fulfil the following criteria:

- a) be enrolled in the classes in classroom teaching methods and field experience at either the elementary or secondary level
- b) be studying voice
- c) have shown outstanding teaching skills and choral techniques in the Class, Music 4460A, and in choral practice in the classroom setting, Grades Five to Nine inclusive.

A second scholarship is allocated to Instrumental Music. Recipients of this award must fulfil the following criteria:

- a) be enrolled in classes in instrumental technique, teaching methods and field experience as well as classroom teaching methods and field experience at either the elementary or secondary level
- b) be studying a band or orchestral instrument; and c) have shown outstanding achievement in the above classes.

## Spanish

**Sonia Jones Scholarship:** The first claim upon the expendable income of the Fund is to provide scholarships to advanced students of Spanish (Honours or Major) who are studying abroad in programme approved by the University.

## Health Professions

### College of Pharmacy

**The Burroughs Wellcome Scholarship:** This scholarship of \$500 is available to an undergraduate student of outstanding merit in the second-year class.

**The Ralph H. Jenkins Memorial Pharmacy Scholarship:** This scholarship is awarded by the Prince Edward Island Pharmaceutical Association to a student from Prince Edward Island who has achieved a high academic standing.

**The Col. J.D.B.F. MacKenzie Scholarship:** This scholarship of \$500 is awarded by the New Brunswick Pharmaceutical Society to a student from New Brunswick who obtains the highest academic standing in the first-year classes of the Pharmacy course.

**The Dr. Jessie I. MacKnight Scholarship:** This scholarship of \$500 is awarded by the New

Brunswick Pharmaceutical Society to the student from New Brunswick who obtains the highest standing in the second-year classes of the Pharmacy course.

**The New Brunswick Pharmaceutical Society Scholarship:** This scholarship of \$500 is awarded by the New Brunswick Pharmaceutical Society to the student from New Brunswick who obtains the highest standing in the third-year classes of the Pharmacy course.

**Searle Summer Research Scholarship:** This scholarship in an amount of \$1,650 is made possible by funds from G.D. Searle & Co. of Canada, Limited and is to provide financial support for one undergraduate pharmacy student to take research training during the summer months under the supervision of a faculty member of the College of Pharmacy.

**The Upjohn Company of Canada Scholarship:** This scholarship of \$500 is provided by the Upjohn Company of Canada to a student in the first-year class. An engraved plaque is also awarded to the recipient.

## School of Physiotherapy

**Isabel M. Jackson Scholarships:** Miss Ida P. Jackson of Middleboro, Massachusetts, established this fund in memory of her sister, Isabel M. Jackson, in 1967 for the purpose of benefiting students with bursaries or scholarships. The fund's current use is the provision of scholarships to those students who have been accepted into the first physiotherapy core year from other universities. Assessment is based on the students' mid-semester examinations at Dalhousie.

**Hazel Lloyd Foundation Scholarship:** The Hazel Lloyd Foundation has been established by Miss Aphra Lloyd in memory of her sister, Miss Hazel A. Lloyd (1930-1985), Associate Professor, School of Physiotherapy. Friends, associates and alumni have made additional contributions. One purpose of the Foundation is to provide financial support to final year students attending Dalhousie University School of Physiotherapy for studies that will develop physiotherapy services in geriatrics and gerontology, one of Professor Lloyd's areas of interests. Occasionally, the Foundation will support other types of endeavours with an annual award. Written applications for the scholarship and the other types of award submitted to the School of Physiotherapy will be reviewed twice yearly (31st March and 30th September) by the administration committee of the Hazel Lloyd Foundation.

## School of Recreation, Physical and Health Education

**The Freda N. Wales Memorial Scholarship:** This is an in-course award given to a student entering the third or fourth year of study. The student must have a commitment to pursuing a programme specializing in outdoor leadership at Dalhousie University. Selection will be based on academic achievement and professional ability. Apply through the school.

**The VIIIth Pan American Wheelchair Games Scholarship:** This is an in-course award given

to a student entering the third or fourth year of study in the School of Recreation, Physical and Health Education. The student must be committed to pursuing study in the area of recreation and leisure for the disabled. Selection is based on academic and professional capability.

## Maritime School of Social Work

### Bachelor of Social Work

**The M. Caroline Prince Scholarship:** Under the Will of the late M. Caroline Prince the sum of \$5,000 was bequeathed to the University for endowment purposes to benefit the Maritime School of Social Work. The Faculty have decided that the endowment should fund one or more scholarships to students who are engaged either in full-time or part-time study leading to the baccalaureate degree.

## Management

### Bachelor of Commerce Programme

#### (a) Scholarships through the School

**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 programme and, who has demonstrated outstanding leadership in the University's programme of intercollegiate athletics.

**Knight-Bain, Seath, Holbrook Atlantic Limited Scholarship:** A scholarship in the amount of \$2000 is to be awarded annually to a student entering the Third or Fourth Year in the Commerce degree programme. The recipient will have demonstrated high academic standing and an interest in the investment field.

**The Wilfred Berman Scholarship:** A scholarship is offered to the student in Commerce who at the end of the second year has attained the highest average mark in Commerce 1101, 1102, 2111. The endowment for this scholarship was provided by friends and co-religionists of the late Professor Berman.

**Deloitte and Touche Scholarship:** A scholarship of \$400 will be awarded annually to a second-year student in Commerce obtaining a high standing in the course and who plans to enter articles with a practising firm of Chartered Accountants.

**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 course, of which one class must be in accounting.

**Ronald G. Smith Scholarship:** In 1981 the Nova Scotia Power Corporation established this scholarship in recognition of the distinguished service rendered by Ronald G. Smith as a member of the Power Corporations's Board of Directors from 1959 to 1981. An amount of \$400 will be awarded to a Nova Scotia student entering the fourth year of the Bachelor of Commerce programme based upon academic achievement, leadership ability and qualities of personality and character.

#### (b) Scholarships through the USC

The following scholarships are endowments with which the University funds generic in-course scholarships to students in commerce. Students are automatically considered for these; there are no applications.

**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.

**Samuel S. Jacobson Scholarship:** Beginning in 1975 the Samuel S. Jacobson Fund has provided one or more scholarships or bursaries as determined by the selection committee. Preference is to be given to Nova Scotian students who are proceeding towards the Bachelor of Commerce degree.

**The Harry Margolian Scholarships in Commerce:** A bequest of the late Harry Margolian, of Yarmouth, Nova Scotia, enables one or two scholarships per year to be awarded to students working towards degrees in Commerce. These will normally be awarded to students in their third or fourth years.

**McCurdy Printing and Typesetting Limited Scholarship:** The Halifax firm of McCurdy Printing and Typesetting Limited established an endowment in 1985 to provide annually for a scholarship in the School of Business Administration. The Scholarship is open to a student, beyond first year, who has distinguished himself or herself scholastically during the preceding year(s) of study in the Bachelor of Commerce programme.

## Undergraduate Prizes, Medals, and Awards

### General

**Alumni Swimming Award:** A fund has been established to provide awards to deserving Dalhousie University varsity swimmers. Recipients will be members of the Dalhousie Varsity Swimming Team who have demonstrated leadership and dedication to competitive swimming. They are to have completed at least one year of their academic programme and to have demonstrated above average academic ability. Two awards of equal value will be presented to varsity swimmers, one to a female and one to a male. The Selection Committee will recommend to the Undergraduate Scholarship Committee by 31st May, where appropriate, two candidates for each award. The awards will be tenable the following academic year.

**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 an prize which is to be awarded to the youngest student from Prince Edward Island who enters this University in each year. The Awards Section of the Office of the Registrar selects the winner.

**Black and Gold Awards:** Each year the Dalhousie Black and Gold Club funds a limited

number of awards that recognize the contribution to University life that student athletes make. Candidates must be beyond first year study at Dalhousie, must have a minimum Grade Point Average of 2.00 in four whole classes (or equivalent) and must have participated on a varsity team during the previous year of study. A number of awards up to \$1500 will be offered each year. For information and application forms contact the Department of Athletics, Dalplex. Completed application forms are to be returned to that Department to be received by **May 15th**. The Department of Athletics will forward nominations to the Selection Committee, which will make announcements through the Registrar's Office - Awards.

**Dalhousie Student Development Awards:** A limited number of awards of up to \$1,500 will be offered annually. The awards are open to entering or continuing Dalhousie students. Applicants must be engaged in full-time studies, have achieved a minimum Grade Point Average of 3.00 and must have demonstrated leadership ability. Application forms are available from the Department of Athletics. Completed applications and supporting documents are to be submitted to the Assistant Registrar - Awards, Office of the Registrar, to be received by the end of August.

**The Honourable W.H. Dennis Memorial Prizes for Literary Compositions in English:** Two Prizes known as the Joseph Howe Prizes are offered each year, a first prize of \$200 and a second prize of \$100, for a poem or collection of poems of any length greater than about one hundred lines. Two prizes known as the James DeMille Prizes are offered each year, one of \$150 for an essay, the other of \$150 for a prose short story. The attention of candidates for these prizes is drawn to the following regulations adopted by the Senate to govern the awards:

- Candidates for these prizes must be registered full-time undergraduate or graduate students at Dalhousie University.
- Three copies of each composition must be sent in by the competitor.
  - These compositions must be typewritten, double spaced and on one side of the paper only.
  - A pseudonym is to be typed at the end of each typescript and after the pseudonym a statement as to whether or not a first or second or no prize has been previously awarded to the writer.
  - Compositions are to be accompanied by a sealed envelope bearing the same pseudonym in typewriting to the Jury of Award for either the Joseph Howe Prize or for the James DeMille Prize, as the case may be.
  - The envelope shall contain in typewriting the pseudonym, the titles of the entries and the candidate's full name and address.
  - Candidates submitting more than one prose entry must use the same pseudonym for each; different pseudonyms may be used for prose and poetry.
- Candidates for the DeMille Prize may submit one entry in each of the essay and short story sections.

- The winner of a prize in the poetry contest is not debarred from competing in the prose contest, and vice versa.
- In the poetry contest no winner of a first prize is eligible to compete again, and no winner of a second prize is eligible for a second prize in a subsequent year.
- In the prose contest no winner of a first prize is eligible to compete again, and no winner of a second prize is eligible for a second prize in a subsequent year.
- Entries must reach the Department of English on the designated deadline.
- Entries are adjudicated by a panel of judges which includes a professional writer. The decision of the judges is final.
- No prize will be awarded for any composition that does not attain to a sufficiently high standard of merit.
- 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.
- Contestants are urged to retain a carbon or photostat copy of their typescript(s) since the copies cannot be returned.

**The Clare Murray Foosee Poetry Prize:** One or more prizes will be awarded for the best poems, of any length, submitted by Dalhousie undergraduates. Total prize money approximates \$400, which is the net income from a fund established by friends in memory of the poetess Mrs. Clare Murray Foosee, 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 Chairman of the Department of English by 1 March.

**The SLT Bruce Galloway Memorial Prize:** Friends, family and shipmates of Sub-Lieutenant Bruce David Galloway, a member of the Ship's Company of H.M.C.S. Fraser and a 1983 Arts graduate of Dalhousie, have established a memorial fund. The prize is to be awarded to the student, male or female, attending Dalhousie University on the University Training Plan Men who attained the highest academic standing (not less than a passing standing) in the programme in which he or she is enrolled. A prize is to be awarded in each year in which there is a student attending Dalhousie on the University Training Plan Men who achieves a passing standing. The Awards Section of the Office of the Registrar selects the winner.

**The Robert and Katherine MacDonald Award:** An endowment has been established to provide an annual prize for Chinese students at Dalhousie. The recipient will be engaged in undergraduate studies and be a member of the Dal-TUNS Chinese Students' Association or its successor. The recipient will have demonstrated good academic achievement combined with leadership qualities and contribution to University life. The Association will recommend a candidate or candidates to the Head of Student Services.



## College of Arts and Science Departmental Awards

### Biochemistry

**University Medal in Biochemistry:** The Department of Biochemistry offers a medal to the top First Class Honours graduate in the Biochemistry programme. The awardee will be the one who has attained the high scholastic standard of the Department.

**Kilmer MacMillan Memorial Book Prize:** This prize is awarded annually to the student who attains the highest aggregate mark for the three half-classes, Biochemistry 3200, 3300 and 3400.

### Biology

**The Aldous Prize:** On the occasion of the retirement of Dr. John G. Aldous, friends, colleagues and students established an endowment to provide for an annual prize to be awarded for the best achievement in Biology 4401. (This entry appears here for the information of Biology students. The Fund is administered by the Department of Pharmacology in the Faculty of Medicine.)

**B'nai B'rith Prize:** Two prizes are available annually to students, one for the highest standing in Biology 1000R and another for the highest standing in Biology 1001R.

**David Durward Memorial Prize:** This prize is to be awarded to the best student in the Physiology of Marine Animals (Biology 3071).

**University Medal in Biology:** The Department of Biology offers a medal to the top First Class Honours graduate in the biology programme in recognition of superior achievement therein.

**University Medal in Marine Biology:** The Department established this medal in 1963-84 to be awarded, where appropriate, to the student who stands highest among the First Class Honours graduates in the Marine Biology programme.

### Chemistry

**The John Hamilton Barrett Prize:** This is the gift of his widow, Mrs. Marjorie Barrett. It is offered annually at the end of the fourth year of the course to a student who has shown exceptional ability in Chemistry or some other science.

**The Canadian Society for Chemistry Silver Medal:** The CSC Silver Medal is provided to each university having 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 suitably inscribed certificate.

**Walter J. Chute Prize in Chemistry:** An endowment has been established to provide an annual prize to a chemistry student, with an outstanding record in organic chemistry, entering his or her final year in the Honours Chemistry programme.

**The Hugh Graeme Fraser Memorial Prize in Advanced Chemistry:** This award was founded by members of the Class of 1931. The

net interest will be awarded annually to that 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.

**Dr. 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 Society of Chemical Industry, Canadian Section, Merit Award:** This award (of an engraved gold key and a subscription to "Chemistry and Industry") may be made to the Honours graduate in Chemistry with the highest standing. A minimum average of 75% is required.

**Undergraduate Award in Analytical Chemistry:** The Division of Analytical Chemistry of the American Chemical Society offers a number of gift subscriptions to Analytical Chemistry. These awards are intended to recognize students who have completed the third undergraduate year and 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.

### Classics

**University Medal in Classics:** The Department of Classics offers to the top First Class Honours graduate in the classics programme a medal in recognition of superior achievement in classics.

### Earth Sciences

**Amoco Canada Petroleum Company Ltd. Award:** The company sponsors an award to a student in the fourth and final year of the Honours Earth Sciences programme who has attained at least a B- average, with a concentration in courses relating to petroleum exploration.

**The David Barlow Memorial Award:** The family, friends and classmates of David Barlow established in 1984 an endowment fund from which to provide an annual prize in his memory. The Dawson Geology Club in consultation with the Departmental Chairman will select a student in second-year Earth Sciences who has demonstrated both a good academic record and leadership qualities.

**Canadian Society of Petroleum Geologists Award:** The Society sponsors an annual award consisting of a certificate and a one-year student membership to an undergraduate student who has demonstrated outstanding competence in petroleum geology or closely related fields.

**Canadian Society of Petroleum Geologists Student Industry Field Trip:** The society sponsors a field trip to a third-year Earth Sciences student who has an interest in petroleum geology, sedimentology and stratigraphy. The award consists of travel expenses and most field expenses for a trip to the Sedimentary Basin and Rocky Mountains of Western Canada.

**G.V. Douglas Memorial Prize in Earth Sciences:** In 1958-59, friends and former students of the late Professor G.V. Douglas, established a memorial fund from which the net interest would provide a prize to be awarded to an outstanding student in first-year Earth Sciences.

**Geological Association of Canada Student Prize:** Based on overall academic standing this prize is awarded annually to a student entering fourth year. The prize will consist of a one-year free membership in the GAC and a GAC "Special Paper" volume to be chosen by the recipient.

**Michael J. Keen Memorial Award:** This award was established to encourage greater participation of women in science. It will be awarded to a female student entering the second year earth science programme who shows an interest in and commitment to the pursuit of a career in science and whose performance is of honours calibre.

**MacEachern-Ponsford Memorial Award:** Family, friends and classmates of Ian Joseph MacEachern and Mark Anthony Peter Ponsford have established a memorial fund. The purpose of the endowment is to provide an annual award from the net income to a student who has completed the second year of a programme majoring in Earth Sciences, whose academic performance is of an honours calibre and who has been an active participant in student activities. The award is to be made on the recommendation of the Chairman of the Earth Sciences Department after consultation with the Dawson Geology Club and departmental staff.

**Mineralogical Association of Canada Student Prize:** This prize is open to an undergraduate student who has completed at least second year and has demonstrated excellence in one of mineralogy, crystallography, geochemistry, petrology and mineral deposits. The recipient will receive his/her choice of one of the MAC special publications.

**The Mining Society Centennial Scholarship Medal:** The Mining Society of Nova Scotia sponsors annual medals to students who have distinguished themselves during university studies in the mineral, metallurgical or petroleum fields. The Department awards the medal allocated to Dalhousie to the best all round graduating student.

**University Medal in Earth Sciences:** The Department of Geology offers to the top First Class Honours graduate a medal in recognition of superior achievement.

## Economics

**The Anonymous Economics Prize:** This prize, consisting of a book (or books) 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.

## Engineering

**The Association of Professional Engineers of Nova Scotia Award:** The Association of Professional Engineers of Nova Scotia provides an award which is presented each year to that student graduating in Engineering who best demonstrates promise of using outstanding abilities to serve society in an ethical manner as a Professional Engineer. The award winner will be selected by students of the graduating class in consultation with the Engineering Faculty members. The award will consist of a cash prize, as well as, an engraved certificate.

**The Walter P. Copp Memorial Prize:** In 1979 an Anonymous Donor gave the University the sum of \$2,500 to establish an endowment for the purpose of funding this prize. It is awarded annually to the student graduating with the Diploma in Engineering with the highest average in Engineering classes.

**The Kenneth F. Marginson Award:** This prize is awarded annually to the student who achieves the highest standing in the first year of the Diploma in Engineering programme. Only students who are enrolled in University for the first time are eligible to receive this award. Presentation of the award takes place when the student enrolls in the second year of the Diploma in Engineering course. This prize is funded from an endowment of \$2,500 which has been established by an Anonymous Donor, in honour of Professor Kenneth F. Marginson, a former Head of the Department.

**The Dr. H.R. Theakston Memorial Award:** This non-monetary award is presented each year to the student who achieves the highest standing in Engineering Graphics. It was established in 1964 in remembrance of Dr. H.R. Theakston who for several decades was University Engineer and Head of the Engineering Department, taught Graphics throughout that period and enjoyed a long and prestigious career as a professional engineer. The award consists of a certificate suitable for framing.

**The Bob Walter Award:** Given to the student who best combines fellowship, sportsmanship and scholarship, the Bob Walter Award is the highest honour which the Engineering Society can bestow upon its graduates. The award consists of an appropriate engraved gift and a certificate which is 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.

## English

**Paul McIsaac Memorial Prize:** A memorial gift provides for an annual prize for an

undergraduate student, who shows an enquiring and original mind, in the second or third year of study in the Honours or Major programme in English.

**Margaret Nicoll Pond Memorial Prize in English:** This prize will be awarded to the woman graduate of Dalhousie University who leads her class in English.

**The James W. Tupper Graduate Fellowship in English:** This fellowship, of an annual value of approximately \$5,500 is awarded by the faculty of the Department of English to a student who proposes to do graduate work in English at a university approved by the faculty. The award need not be held at Dalhousie. Further information may be obtained from the Department of English.

**The University Medal in English:** Each year the Department of English offers a medal to the top First Class Honours graduate in recognition of superior achievement in the programme.

## French

**Prix du Consulat de France:** The French Consul Prize will be made upon recommendation of the Department of French, to a student graduating with Honours in French.

**Prix de l'Ambassadeur de France:** A prize in books, offered by the French Embassy in Ottawa, is awarded annually to the graduating student standing highest in the advanced French class.

**Prix de l'Ambassadeur de Suisse au Canada:** A prize of books, the gift of the Ambassador of Switzerland in Canada, is awarded to graduating students who have won distinction by their work in the French language.

**University Medal in French:** The Department of French offers to the top First Class Honours graduate a medal in recognition of superior achievement.

## German

**Janet Gwendolyn Coade-Dessauer Memorial Prize:** A prize, consisting of one or more books, will be offered to a deserving honours or graduate student in recognition of achievement in German language studies.

**Prize of the Ambassador of Austria in Canada, Prize of the Ambassador of Switzerland in Canada, and the Prize of the Ambassador of Germany in Canada:** The Austrian, German and Swiss embassies in Canada regularly offer German language books to the Department to be awarded to Dalhousie students whose achievement in German is outstanding. Awards are made at various levels of proficiency.

**University Medal in German:** The Department of German offers a medal to the top First Class Honours graduate in recognition of superior achievement.

## History

**The Edith and Rose Goodman Prize in History:** Under the Will of the late Mrs. Jeanette Goodman a bequest was made to Dalhousie University to fund a prize (or two prizes) for the highest (or the highest and

second highest) standing in the class in Canadian History. The prize is awarded on the recommendation of the Department of History.

**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.

**University Medal in History:** To the top First Class Honours graduate the Department of History offers a medal in recognition of superior achievement.

## 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.

## Mathematics, Statistics and Computing Science

**Bernoulli Prize:** The Bernoulli Prize will be awarded annually to the student registered in the Co-op Mathematics Programme who has the best cumulative academic record, subject to the restrictions that the prize can be awarded only once to a given individual and that the winner must have performed acceptably in all work term assignments.

**The Katherine M. Buttenshaw Prize:** This prize, being the net interest of an endowment of \$1,000, will be awarded annually to the student standing highest in the advanced Mathematics classes.

**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 programme has achieved the highest standing.

\* (Normally, this would be upon the completion of the second year at Dalhousie.)

**Mobil Oil Canada Award:** This is an award to the student enrolled in the Computing Science major or Honours Programme, who shows the best performance in the two third-year core half-courses CS 3690 and CS 3700. The recipient will be chosen on the basis of final grades and on the recommendations of the instructors in the courses and of the Director of Computing Science. Mobil Oil Canada Limited gave the University a gift of \$1,000 to endow this annual prize.

**The Waverly Prize:** This prize, being the net interest of an endowment of \$1,000 for the purpose, will be awarded annually to student standing highest 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 Computing Science:** In 1983-84 the Department established this medal to be awarded, where appropriate, to the

student who stands highest among the First Class Honours graduates in the Computing Science programme.

**University Medal in Statistics:** The Department established this medal to be awarded to the student who stands highest among the First Class Honours graduates in the Statistics programme.

## Microbiology

**University Medal in Microbiology:** The Department of Microbiology offers to the top First Class Honours graduate a medal in recognition of superior achievement in the programme.

## Music

**Dalhousie Alumni Association (Women's Division) Medal in Music:** The Women's Division provides an annual medal to the student who achieves the highest cumulative GPA in the programme.

**Dalhousie Women's Alumnae Medal:** This medal is presented to the graduating student who has achieved the highest cumulative average in Music subjects during the four-year Bachelor of Music degree programme.

**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.

**The Beatrice Daviss Music Prize:** A fund has been established by members of the Dalhousie community to mark Women's Centennial Year (1985) at this University. The purpose of the fund is to provide an annual in-course prize to a female student in the Bachelor of Music or Bachelor of Music Education programme 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.

**University Medal in Music:** The Department of Music offers a medal to the highest ranking student of the year who graduates with the equivalent of a First Class Honours degree in the Bachelor of Music programme.

## 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.

**University Medal in Philosophy:** The Department of Philosophy offers a medal to the top First Class Honours graduate in recognition of superior achievement in the programme.

## Physics

**The Dr. William J. Archibald Prize in Physics:** An annual prize will be awarded to a student who, having completed the first year, is considered by the Physics Department to be the most promising among those entering a second year Physics programme.

**The Professor J.B. and Mrs. H.H. French Prize:** A prize of \$1,000 is open to a female student at each of the second-, third- and fourth-year levels. An award is to be made only to those maintaining First Class standing in their honours programme. Consideration of candidates entering the third and fourth year will be made during May once final grades become available. Consideration of second-year candidates will occur in the fall.

**The Dr. E.W. Guptill Memorial Prize:** This is to be awarded to the undergraduate student who best exemplifies the qualities of Dr. E.W. Guptill in showing initiative, experimental skill, leadership and enthusiasm for Physics, thereby making an outstanding contribution to Physics in this University. This prize will not necessarily be awarded every year.

**The Dr. George Henderson Prizes in Physics:** Several prizes are awarded to students who have shown special aptitude 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 both undergraduates and graduates in the study of Physics. The undergraduate awards are in the form of prizes.

**The Omur Sezerman Prize in Physics:** A prize of \$500 will be awarded to a student who has completed the best physics honours project in the fiber optics, or a related, field with a grade of at least A-. The Omur Sezerman Prize in Physics

**The Dr. A. Stanley MacKenzie Prizes in Physics:** These prizes will be awarded by the Department of Physics to the most promising students in the first two years of the Honours Physics programme. The fund was established under the Will of the late Miss Mary Alice Smith.

**The Burgess McKittrick Prizes in Physics:** Four prizes of \$100 each will be awarded to undergraduate students achieving the highest standing in each of the four classes, Physics 1000, 1100, 1300, and Physics 2110 and 2120 combined. No student may receive more than one such prize in any one year. The funds for these prizes come from the estate of F.J.A. McKittrick who graduated in 1894 with Honours in Mathematics and Mathematical Physics. He was the first Dalhousie graduate to receive the 1851 Exhibition Scholarship. The prizes are in memory of his brother, Burgess McKittrick, who was graduated in 1877.

**Darrell Montgomery Memorial Prize:** An endowment has been set up to provide an annual prize to the third-year student in honours physics who is deemed to have shown a love of experimentation, the qualities of leadership and participation in student activities in physics related areas.

**The University Medal in Physics:** The Department of Physics offers to the top First Class Honours graduate a medal in recognition of superior achievement in the Physics course.

## 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.

**The Eric Dennis Gold Medal:** Founded by Senator William Dennis and Mrs. Dennis, this medal will be awarded on graduation to the student who stands first among those taking First Class Honours in Government and Political Science. (This is the University Medal in Political Science.)

**The H.B. McCulloch Memorial Prize in Political Science:** This prize will be awarded annually to the student who, among all the first and second year students registered in introductory classes in Political Science, is judged to have written the best essay in the second term.

## Psychology

**Brimer Memorial Prize in Psychology:** The Charles J. Brimer Memorial Fund was established during 1971 in memory of the late Dr. Brimer, Acting Chairman of the Department of Psychology. The income from this fund is awarded to a third-year Honours student. Students enrolling for the Honours certificate in Psychology in the year equivalent to the fourth year of the Honours Psychology programme are also eligible for the prize. The Brimer Memorial Prize is restricted to Dalhousie Honours Psychology students and is not open to Joint Honours students from other departments or other universities. The prize will be given to the student who shows the greatest potential as a researcher in experimental psychology.

**Frances L. Stewart Memorial Prize in Psychology:** A fund has been established to provide a prize to a Fourth Year honours student who shows outstanding potential as a scientist/practitioner in clinical psychology.

**University Medal in Neuroscience:** The Department of Psychology offers a medal to the top graduating student with First Class Honours in the programme.

**University Medal in Psychology:** The Department of Psychology offers to the top First Class Honours graduate a medal in recognition of superior achievement.

**Dr. Lilyan E. White Prize:** A bequest from the Estate of Dr. Lilyan E. White established an endowment to fund a prize to an undergraduate student in Psychology. The Department has assigned the prize for use in recognizing the best performance of a student in second-year.

## Russian Studies

**University Medal in Russian Studies:** The Department of Russian offers to the top First Class Honours graduate a medal in recognition of superior achievement in the programme.

## Sociology and Social Anthropology

**The Rev. S.H. Prince Prize in Sociology:** A bequest under the will of the late Dr. S.H. Prince established a fund to provide an annual prize to be available to students at either Dalhousie or King's.

**University Medal in Social Anthropology:** The Department of Sociology and Social Anthropology offers a medal to the top First Class Honours graduate in the Social Anthropology programme in recognition of superior achievement.

**University Medal in Sociology:** The Department of Sociology and Social Anthropology offers a medal to the top First Class Honours graduate in the Sociology programme in recognition of superior achievement.

## Spanish

**The de Carteret Memorial Prize:** The de Carteret Memorial Prize is payable from the net annual income of a fund which was provided as a gift in the memory of the late Norman S. and Helier S. de Carteret and their sister, Phyllis de Carteret Nielsen. The prize is to be awarded on the recommendation of the departmental chairman to an outstanding student in the Department of Spanish.

**University Medal in Spanish:** The Department of Spanish offers a medal to the top First Class Honours graduate in recognition of superior achievement in the Spanish programme.

## Theatre

**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 grade point average in the Costume Studies Programme.

## Transition Year Programme

**Morris Saffron Prize:** A bequest under the Will of the late Morris Saffron established an endowment to provide an annual prize to a student in the Transition Year Programme who is judged to have made the greatest academic achievement during the year.

## College Awards

**Note concerning top medals and Avery prize:** The Undergraduate Scholarship Committee adopted the following policy concerning the top medals and top prize, effective with the 1986-87 academic year:

In the event of a student taking a second degree at Dalhousie, then in order to be considered for the Governor-General's Gold Medal [since replaced by the Governor General's Silver Medal, 1988], the University Silver Medal or the Avery Prize, such a student must have completed at least 12 new credits at Dalhousie in the second degree programme and in the calculation of the student's average, only these new classes will be counted. Furthermore, any disciplinary action by the Senate Discipline Committee, which action is recorded on the student's transcript, shall be deemed sufficient cause for such a student to be ineligible for the aforementioned top medals and prize.

**The Avery Prize:** This prize, being the net interest on the sum of \$500 bequeathed for this purpose by J.F. Avery, MD, will be awarded on graduation to the student standing highest among those being graduated from the general course.

**The Governor-General's Silver Medal:** Offered by his Excellency the Governor-General of Canada, it will be awarded to the undergraduate student who has achieved the highest academic standing among graduates of baccalaureate programmes. This is interpreted to apply to those students in Honours programmes who are graduated with First Class Honours.

**The University Silver Medal:** This medal is awarded to the student who is judged to be the leading First Class Honours graduate of the year in either the arts or the sciences, in whichever field the Governor-General's Silver Medal was not presented.

(Please note that Commerce students are eligible for the above three awards and that such students are grouped with Arts students in the assessment process.)

## Faculty of Health Professions

### College of Pharmacy

**The Apotex Inc./PACE Future Leader Award:** An award of \$1000 is available annually to the qualifying student who is graduating from the program. The recipient will be selected from among 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.

**BMS Pharmacy Award:** This award of \$500 is presented annually to the student with the highest standing in second-year classes.

**The Dean George A. Burbidge Memorial Award:** This prize is awarded by the Nova Scotia Pharmaceutical Society 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:** A fund was established by Ortho Pharmaceutical (Canada) Limited 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, in the form 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 course.

**Clinical Pharmacy Award:** This award of \$150 is presented to a student in the fourth year therapeutics class. The student must have an

aptitude for clinical pharmacy practice and must have achieved a high level of performance during the clinical clerkship.

**The Dean J. Eamonde Cooke Award:** This award of \$500 is to be given annually to a student who has successfully completed one or more years of the course 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 must 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 of the candidate. This award is sponsored by the Pharmacy Association of Nova Scotia.

**Robert G. Crowell Memorial Pharmacy Award:** This award of \$1000 is open to a student who is a resident of Nova Scotia who is entering the fourth year of study at the College. The candidate must have attained a satisfactory academic standing and show promise of making future contributions to the profession of pharmacy. The Selection Committee may consider financial need in the determining of an awardee. The award, sponsored by Crowell's Pharmacy Ltd., honours its founder for his contributions to pharmacy in the province.

**Dale Daley Pharmacy Award for Excellence:** This award was introduced in 1990 by Shoppers Drug Mart to recognize the many contributions of Dale Daley to the profession of Pharmacy. It is awarded annually to a third year pharmacy student who has demonstrated a good academic standing and whose contributions to undergraduate life at the university excel. The award is valued at \$3,000.00.

**The Dalhousie Student Pharmacy Society Book Award:** A trust fund from various donations has been established in the name of the Dalhousie Student Pharmacy Society. The interest accrued each year is used to purchase a suitable book for presentation to a student completing the first year at the College of Pharmacy. The first-year students are asked to select the student who has contributed in an exceptional way to the life and spirit of their class. The main factors for consideration are active participation in student affairs and a keen interest in the profession of Pharmacy.

**Robert C. Dickison Memorial Award:** This award is presented to a student from New Brunswick on the basis of academic achievement, financial need and participation in student activities at the College of Pharmacy. The Award is made available through a bequest of the late Mr. Charles D. Dickison.

**The Sister Frances dePaul Award:** This award, consisting of a reference book or a subscription to a *professional journal*, is offered annually by the Nova Scotia Branch of the Canadian Society of Hospital Pharmacists and is presented to the student who attains the highest standing in the hospital pharmacy class. To be eligible for this award a student must have achieved a GPA of at least 3.00.

**Drug Information Award:** This award, in the form of a reference book or professional journal

subscription, is to be awarded to a worthy student in The Drug Information Class, Pharmacy 4900.03B.

**J.G. Duff Pharmacy Award:** This award, in the form of a medal, was established by Dr. Duff's former students and associates in recognition of his contribution and devotion to pharmaceutical education in the Maritimes. The award will be presented to a student entering the senior year for outstanding leadership and satisfactory scholastic attainment. A Senior Stick, bearing the names of the recipients, will be kept in trust by the Dalhousie Student Pharmacy Society. The recipient of the award will be selected by the student body.

**The Charles E. Frosst Award:** This award of \$1000 is presented by Merck Frosst Canada Inc. to an undergraduate student of outstanding merit in the third-year class.

**The Charles E. Frosst Medal:** This medal is presented by Merck Frosst Canada Inc. to the student who achieves the highest academic standing in the third-year class.

**Hoechst-Roussel Canada Inc. Award:** An award of \$1,500 is presented annually to an outstanding pharmacy student who has successfully completed one or more years at the College of Pharmacy.

**Home Prescription Services Prize:** This prize of \$200 is awarded annually to the student who obtains the highest standing in Physiology 4403.06R. To be eligible for this prize a student must have at least a GPA of 3.00.

**The Frank W. Homer Medal:** This medal is awarded to the pharmacy student who has attained the highest standing in the third year dispensing class.

**The William Killorn Award:** This award has been established by Shoppers Drug Mart Associates and the pharmaceutical industry to pay tribute to Bill Killorn in honour of his 46 years of service to pharmacy in Atlantic Canada. The award is presented annually to a pharmacy student who, in the view of the College after consultation with the Killorn family and the pharmaceutical industry, demonstrates strong leadership skills and excels in academic and extracurricular activities.

**The Honourable John J. Kinley Pharmacy Award:** 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 net income from an established fund will be used to provide a monetary award as well as a book.

**Eli Lilly Book Award:** The firm of Eli Lilly Canada Inc. provides an award for a deserving student in either first or second year pharmacy. The award consists of the sum of \$200 and the current edition of Martindale's Extra Pharmacopoeia.

**Dr. Jessie I. MacKnight-Miss Mona W. Fleming Award in Hospital Pharmacy:** This award is administered annually to a student from New Brunswick and to a student from Nova Scotia who have completed outstanding work in the hospital portion of the practical

training programme and in the third year dispensing laboratory class. It is desirable that the recipients demonstrate an interest in hospital pharmacy practice.

**The Helen Corston Marshall Award in Pharmacy:** This award is to be given annually to a student (or students) who has successfully completed one or more years of the course 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.

**Medis Atlantic 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 Sharp and Dohme Pharmacy Award:** This award, consisting of \$1000 and the books, The Merck Index and The Merck Manual, is presented to the student entering the final year who has attained the highest standing in the pharmaceutical chemistry classes.

**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, in the form of a book, will be awarded annually to the top student in the first year dispensing 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 Pharmaceutical Society 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 \$500.

**Nova Scotia Pharmaceutical Society Memorial Award:** The Society has established this award in memory of past members and friends of the Society. It 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 \$1000.

**Novopharm Pharmaceuticals Award:** This award of \$500 is presented annually to the student who obtains the highest combined standings in the following classes: Physical Pharmacy (second year), Biopharmaceutics (second year) and Pharmacokinetics (third year).

**The Parke-Davis Prize:** A prize of \$500 is presented annually to the student with the highest standing in the first-year classes of the pharmacy course.

**Practical Training Programme Prize:** A prize is presented to a student completing the College of Pharmacy Practical Training Programme who has achieved a high level of performance during the programme. Assessment will be based primarily on submitted assignments.

**The B. Trevoy Pugsley Memorial Pharmacy Award:** This award was established by a bequest from the Estate of B. Trevoy Pugsley for an undergraduate student who has completed one or more years of the pharmacy course. The criteria for the selection of the recipient are based on academic standing, aptitude for pharmacy and qualities of character. Financial need may also be considered.

**The Mrs. Vera B. Pugsley Award:** This award of \$500 will be presented annually to a student who has successfully completed one or more years of the course 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.

**Roche Award:** An annual award of \$750 is available to a pharmacy student in any year of study who has achieved satisfactory academic standing, has shown aptitude for the profession, and who may have financial need.

**John J. Ryan Pharmacy Administration Award:** This award of \$200 and a suitable memento is presented annually to the student earning the highest mark in Pharmacy 4700.03A. This Award was made possible through income from the John J. Ryan Fund.

**Sandoz Prize in Pharmacy:** This prize is presented annually to the graduating student who obtains the highest standing in fourth year pathophysiology and therapeutics class (PHAR 4500.13). The prize consists of an engraved plaque, a cheque for \$250 and a reference book.

**The Leigh Semple Memorial Award:** An endowment has been established to provide an annual award to a third-year pharmacy student from Prince Edward Island who has demonstrated strong academic ability and involvement in student activities.

**Dr. Samar B. Singh Prize in Anatomy:** An endowment fund has been established for the purpose of providing from the net annual income a prize to the highest standing student in ANAT 1010.03 among Nursing and Pharmacy enrollees. The prize, consisting of a book or books to the approximate value of \$100, is a memorial to Dr. Singh, a long-time member of the Department of Anatomy. The awardee will be selected by the Head of the Department.

**SmithKline Beecham Pharma Inc. Award:** Two awards of \$500 each will be presented annually to a student from Nova Scotia and a student from either New Brunswick or Prince Edward Island who have successfully completed one or more years of the course leading to a degree in pharmacy and who are enrolled in pharmacy at the University for the ensuing year. Candidates must have attained a satisfactory academic standing and must show promise of making future contributions to the profession of pharmacy.

**Pharmacy's Canada Centennial Award (External):** This award enables a student who is completing the third year to participate in the Canadian Pharmaceutical Association Conference and to visit governmental and industrial institutions. The award is based on acceptable academic achievement, participation, and leadership in student activities. The award is sponsored by the Canadian Pharmaceutical Association, Shoppers Drug Mart, and the Maritime provincial pharmaceutical societies and association.

**University Medal in Pharmacy:** This medal is awarded annually to the graduate who has obtained the highest academic standing in the pharmacy programme provided that she or he meets the requirements as set by the Faculty.

**Warner-Lambert Self-Medication Award:** An award of \$500 is presented by Warner-Lambert to recognize the pharmacy student who achieves the highest standing in course work related to over-the-counter drug products.

**Wyeth Award of Excellence in Pharmacy Research:** An Award of \$200 and a certificate will be presented to a fourth year student at the College of Pharmacy who completes the best research project in a given academic year. The research will usually be done in Pharmacy 4000.06R, 4010.03A, 4020.03A or B, or 4030.03R, but any paper completed by a fourth year student, which is deemed by the primary supervisor to be worthy of consideration for this Award, will be included in the competition. Each primary supervisor may submit no more than one paper. A committee will evaluate the research presentations in both a written and verbal form.

## School of Nursing

**Alumnae Award (Nursing):** This award is open to graduating students in the Basic or Post-RN programmes. The recipient will have achieved a Grade Point Average of 3.00 or better and have demonstrated clinical competency in the area of medical/surgical nursing in a hospital setting.

**Dalhousie Basic Degree Certificate and Dalhousie Post-RN Degree Certificate:** Information concerning these certificates may be obtained from the School of Nursing.

**Final-Year Degree Award:** A prize is awarded to the student in the graduating class who has achieved the highest academic standing. (On account of computer space limitations the older name has been retained on the code directory. In the School of Nursing this award is known as Prize for the Highest Academic Achievement in the Undergraduate Degree Programme.)

**The Grace Maternity Medical Staff Association Award for Excellence in Maternal Nursing:** Open to graduates from the Basic programme, the recipient of this award will be one who demonstrates excellence in the area of maternal nursing as determined by the faculty member teaching the NURS 3210.04 class or its equivalent.

**Halifax Children's Hospital Alumnae Prize:** This prize is given by the Izaak Walton Killam Hospital for Children to the student who meets the approval of the criteria as established by the



**School of Nursing and the Izaak Walton Killam Hospital for Children** in recognition of the student's work in the paediatric sector of the community.

**R.M. MacDonald and R.C. Dickson Prize in Outpost Nursing:** A prize is awarded for the student achieving the highest academic record in the graduating class of Outpost Nursing students.

**The Ruth May Award:** This prize was established by graduates and friends of the Outpost Nursing Program to honour the achievements of Ruth May, one of the founders of the Outpost Nursing Program. At the request of Ruth May, this prize is to be awarded annually to the graduating Outpost Nursing student who has demonstrated significant professional development and personal growth while enrolled in the program.

**C.V. Mosby Book Prize:** This award is given in recognition of a student's high academic standing and participation in the School.

**Anna Trenholm Memorial Prize:** A cash award has been donated by the family of the late Anna Trenholm (Diploma in Outpost Nursing, 1970; BN 1976). The prize is to be awarded annually to the student graduating from the Outpost Nursing Programme whose achievement in clinical practice has been outstanding.

**W.B. Saunders Award (Nursing):** This prize is presented to the student in the graduating class who has demonstrated progressive academic achievement and general proficiency. It is a one-year subscription to *Nursing Clinics of North America*.

**Dr. Samar B. Singh Prize in Anatomy:** An endowment fund has been established for the purpose of providing from the net annual income a prize to the highest standing student in ANAT 1010.03 among Nursing and Pharmacy enrollees. The prize, consisting of a book or books to the approximate value of \$100, is a memorial to Dr. Singh, a long-time member of the Department of Anatomy. The awardee will be selected by the Head of the Department.

**The Stern Award:** This prize was established to recognise the contribution of a graduating student to increased knowledge and participation of School members in an interdisciplinary international role.

**University Medal in Nursing:** This medal is awarded annually to the graduate who has obtained the highest academic standing in the Nursing programme provided that she (or he) meets the requirements as set by the Faculty.

## School of Occupational Therapy

### (a) For Graduating Students

**The Canadian Association of Occupational Therapists Book Prize:** This prize is awarded annually to the graduating student with the highest academic standing in the theory of occupational therapy.

**Class of '85 Award:** This prize is awarded annually to a graduating student (as chosen by the members of the graduating class) who has made an outstanding contribution to activities of the class, School, University and community.

**Dalhousie Women's Alumnae Medal:** The Women's Division of the Dalhousie Alumni Association sponsors an annual medal to be awarded to the graduating student with the highest cumulative grade point average in the occupational therapy program.

**Foundation Travel Award:** This award was established to recognise the founding of the School of Occupational Therapy. Presented annually to the President of the Dalhousie Occupational Therapy Student Society, the award provides funding to cover the cost of attending the annual Occupational Therapy Atlantic Conference. Funds for the award are provided by the professional organizations of occupational therapists in the four Atlantic provinces.

**C.V. Mosby Book Prize:** This prize is awarded annually to the graduating student with the second highest standing in the final year of the Occupational Therapy programme.

**New Brunswick Association of Occupational Therapists Award for Achievement in Fieldwork:** This prize is awarded annually to the graduating student who has shown outstanding achievement in fieldwork.

**1992 Tenth Anniversary Award:** This award will be presented annually to a graduating student who has demonstrated an outstanding level of personal growth and professional development while in the occupational therapy program.

**Nova Scotia Society of Occupational Therapists Student Society Award:** This prize is awarded annually to the graduating student who has contributed most to the Occupational Therapy Student Society.

**Newfoundland and Labrador Association of Occupational Therapists Book Prize:** This prize is awarded annually to the student entering fourth year who achieved the highest standing in third year Therapeutic Procedures classes (OCCU 3305.02, OCCU 3306.02, OCCU 3307.04 and OCCU 3308.03).

**PEIOTS and PEIAOT Award for Community Occupational Therapy:** This prize is awarded annually to the graduating student with outstanding academic achievement in Advanced Professional Practice (OCCU 4419.06) as well as an interest and involvement in community practice.

**The Sammons Award:** This prize is awarded annually to the graduating student with the highest overall standing in statistics (MATH 1060.03), research methods (OCCU 4407.03) and Independent Study (OCCU 4421.06). Mr. F. Sammons gave the University a gift to be used at the discretion of the School, which decided to endow an award for a graduating student.

**Sammons Research Award for Clinical Tutors:** An endowment has been established to provide an annual prize to the clinical tutor who has assisted the graduating student who won the Sammons Award for their independent research project.

**W.B. Saunders Book Prize:** This prize is presented annually to the graduating student

with the second highest cumulative grade point average in the Occupational Therapy programme.

**Smith & Nephew Award:** This \$500 annual award is open to graduating students who have by their innovative and creative contributions shown promise for the profession and who have demonstrated academic performance. Fourth-year students who by the end of their third-year have a cumulative GPA of not less than 3.3 are invited to submit by April 15 a summary of their contributions to the advancement of occupational therapy to the Chair of the Student Awards Committee.

**University Medal in Occupational Therapy:** This medal is awarded annually to the graduate who has obtained the highest cumulative academic standing in the occupational therapy programme provided that she or he meets the requirements as set by Faculty.

**Williams and Wilkins Book Prize:** This prize is awarded annually to the student entering fourth year with the highest cumulative academic standing.

#### (b) For Other Students

**The Cardwell/Robinson Prize:** An endowment has been established from which the net annual income will support a prize. The award is presented to a student entering fourth year who has achieved the highest standing in courses dealing with psychiatry and mental health (OCCU 3302.05 and OCCU 3307.04).

**The Norma Cassidy Prize:** This award is presented annually to a student entering fourth year with the highest academic standing in Therapeutic Procedures (Rehabilitative, OCCU 3306.02).

**T.B. Clift Ltd./NLAOT Academic Achievement Prize:** This prize is presented annually to the student entering Third Year who is a Newfoundland resident with the highest GPA in the second year of study.

**Dalhousie Occupational Therapy Student Involvement Award:** This award was established by the Occupational Therapy Student Society from a donation by the Dalhousie Student Union through their Capital Campaign pledge. The prize will be presented annually to a student entering the fourth year who shows financial need and who has been actively involved in the Occupational Therapy Student Society and other School activities. One award of \$500 will be made from income generated by the endowment.

**Nova Scotia Society of Occupational Therapists Book Prize:** This prize is awarded annually to a student entering third year who has been selected by classmates on the basis of outstanding contribution to activities in both the School and the community, interpersonal skills and general scholarship proficiency.

**School of Occupational Therapy Prize in Kinesiology:** This prize will be presented annually to the student entering Third Year with the highest standing in class OCCU 2210.03 (Kinesiology).

## School of Physiotherapy

### Fourth Year

**Canadian Physiotherapy Association Award:** A certificate and first-year membership in the Canadian Physiotherapy Association constitute this annual award. It is presented to the graduating student who has achieved the highest aggregate percentage in academic and clinical physiotherapy subjects during the entire programme.

**The Patricia Stanfield Covert Award in Physiotherapy:** An endowment has been established to provide an annual prize to a physiotherapy student who is entering the final year of the programme. The recipient is to be nominated by classmates on the basis of extra curricular activities, interpersonal skills and scholarship proficiency.

**Morris B. Kohler Award in Physiotherapy:** This prize is awarded to the student in the graduating class who has demonstrated the greatest interest in the treatment of long-term rehabilitation patients, while attending the Nova Scotia Rehabilitation Centre.

**Hazel Lloyd Foundation Book Prize:** The Hazel Lloyd Foundation has been established by Miss Aphra Lloyd in memory of her sister, Miss Hazel A. Lloyd (1930-1985), Associate Professor, School of Physiotherapy. Friends, associates and alumni have made additional contributions. The purpose of the Foundation is to foster interest in geriatrics and gerontology, Professor Lloyd's major areas of interest. The Hazel Lloyd Foundation will award an annual Book Prize to the student with the highest marks in PT 4120.03A, Gerontology and Geriatrics.

**Jean McAloney Memorial Prize:** This prize is awarded annually to the student in the graduating class who has demonstrated the highest clinical standing. The prize is sponsored by the New Brunswick Association of Physiotherapists.

**Newfoundland and Labrador Physiotherapy Association Prize:** This prize is awarded to the member of the graduating class who has attained the highest standing in Neuroscience. It is sponsored by the Newfoundland and Labrador Physiotherapy Association.

**Nova Scotia Neurosciences Section Book Prize:** The Nova Scotia Section of the Neurosciences Division of the Canadian Physiotherapy Association established a prize of \$50, effective with the 1984-85 session. The prize will be presented to the fourth-year Physiotherapy student with the highest combined grade from (1) the practical exam in third-year neurology course and (2) the average grade of the third-year and fourth-year clinical neurology placement(s). The recipient will be selected by the Dalhousie Professor who is managing the neurology course.

**University Medal in Physiotherapy:** This medal is awarded annually to the graduate who has attained the highest academic standing in the physiotherapy programme, provided that he or she meets the requirements approved by the Senate of Dalhousie University.

**Third Year**

**Canadian Physiotherapy Cardiorespiratory Society Book Prize:** This prize is awarded annually to the Physiotherapy student who has attained the highest standing in the Cardiorespiratory in the Third Year.

**Newfoundland and Labrador College of Physiotherapists Prize:** This prize is awarded to the physiotherapy student who has attained the highest standing in Orthopaedics. It is sponsored by the Newfoundland and Labrador College of Physiotherapists.

**Nova Scotia College of Physiotherapists Book Prize:** The College sponsors an annual cash prize for books to the third-year physiotherapy student who has demonstrated the greatest degree of leadership within her/his class during the second and third years within the School of Physiotherapy.

**Nova Scotia Physiotherapy Association Prize:** This prize is awarded annually to the student who shows the greatest overall improvement during the third year of the BSc Physiotherapy programme.

**Second Year**

**Prince Edward Island Physiotherapy Association Prize:** This prize is awarded annually to the student who has attained the highest academic standing in Gross Anatomy.

**School of Recreation, Physical and Health Education**

**Beaver Foods Awards:** Under the sponsorship of Beaver Foods Limited the School of Recreation, Physical and Health Education is able to offer a limited number of entrance awards between \$500 and \$1000 to students registering in this School for the first time. Winners will be selected from applicants who possess a strong background in academic performance, leadership activities and extra-curricular activities, especially varsity athletics. Further information may be obtained from the Director of the School of Recreation, Physical and Health Education.

**Anthea Bellemare Award for Excellence in Student Teaching:** The School selects for this award the graduating student in the Bachelor of Physical Education/Bachelor of Education programme who has demonstrated the highest degree of performance in student teaching activities.

**The E.G. Belzer Jr. Prize:** In 1986 colleagues and former students of Dr. E.G. Belzer Jr. established a prize that is to be awarded to the undergraduate health education major who is adjudged to have written the best paper among those submitted to health education courses. The adjudication is held annually, at mid-April. The prize will be a book chosen by Health Education Division faculty members. The prize is also open to graduands.

**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 programme. The recipient will be the graduating student who

has achieved the highest cumulative Grade Point Average over the duration of her/his academic record.

**Canadian Association for Health, Physical Education and Recreation Student Award:** This award is presented to a second- or third-year student who has demonstrated a significant involvement in the SAPHER organization and by so doing has demonstrated a commitment to the advancement of professional principles supported by CAPHER.

**The Dr. M.J. Ellis Award:** This award was established to give recognition to a graduating student who demonstrated exceptional interest and ability in research in one of the four undergraduate degree programmes.

**Duane Ervanowitz Memorial Award:** This memorial book prize is awarded to the graduand in the Recreation programme who is deemed to have an exceptional interest in and dedication to conservation and outdoor recreation.

**Health Education Awards:** Consisting of one-year subscriptions to a Health Education journal of the student's choice, there are two awards, one for each of years One and Two of the BSc Health Education programme. The awards are made to the student in each year who has achieved the highest GPA.

**Leisure Research Congress Award:** The Fifth Canadian Congress on Leisure Research set up an endowment to provide an annual award to a student who has graduated from the Bachelor of Recreation programme. The recipient will have attained a cumulative Grade Point Average of 3.00 or higher and will have demonstrated an aptitude for research related to recreation and leisure. The awardee must be planning to register in a graduate programme in Leisure Studies at Dalhousie University in the academic year following receipt of the award.

**The Dr. Hugh A. Noble Award:** This award is given to a graduating student from one of the four undergraduate degree programmes in the School of Recreation, Physical and Health Education. The awarding is based on academic accomplishments, qualities of citizenship as shown by involvement outside the University, leadership qualities as demonstrated in activities inside the University, and an estimate of the candidate's potential for contributing to the profession.

**John C. Pooley Sportsman Award:** This award is presented to the student who has contributed significantly to the development of a sport.

**Thomas Family Prize:** The Nova Scotia Heart Foundation and the Thomas family have established an award which is open to graduating students in the Health Education programme (BSc or MA). Candidates will have shown dedication to the field of heart health through volunteer work in community health promotion, demonstrated a commitment to a healthy lifestyle, and achieved a commendable level of academic performance.

**University Medal in Recreation, Physical & Health Education:** This medal is awarded annually to the graduate who has obtained the

highest academic standing in the physical education programme provided that she or he meets the requirements as set by the Faculty.

**The Women's Division of the Dalhousie Alumni Association RP&HE Medals:** Four awards are available to students in the School of Recreation, Physical and Health Education. For the students who achieve the highest standing in each of the Bachelor of Physical Education, the Bachelor of Recreation, the Bachelor of Science in Health Education and the Bachelor of Science in Kinesiology degree, the Women's Division sponsors of a medal.

### Maritime School of Social Work

**Dalhousie University Women Alumnae Medal:** This medal is presented annually to the graduating student with the highest cumulative grade point average in the baccalaureate programme in the Maritime School of Social Work.

### Faculty of Management

#### 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 four annual awards to recognize academic achievement. There is one award for each of Accounting, Finance, Management and Marketing.

**The Stewart Lockie Gibson Memorial Prize:** The School of Business Administration offers a prize to the graduating student in the general Bachelor of Commerce programme who has achieved the highest standing.

**University Medal in Commerce:** The School of Business Administration offers to the top First Class Honours graduate in the Bachelor of Commerce programme a medal. The awardee will be one who has fulfilled the high scholastic standard for this award.

### Financial Aid, Loans, and Bursaries

#### 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. Furthermore, this minimum must be maintained throughout the academic year. By way of example, a student who wishes to receive either money or interest-free status under the Canada Student Loan Plan for the entire academic year must carry not fewer than 60 per cent of the normal class load (expressed in credit hours) for each term. At Dalhousie, the normal credit hour load for student loan purposes is 30. Thus, the Borrower must carry not fewer than 18 credit hours, distributed

equally between the terms, i.e., 9. If your particular program does not conform to this scheme, you should apply to Student Aid for funding for only that term in which your class load would fulfil this regulation. Your attention is drawn to the fact that federal and provincial rules can differ on this matter.

#### Addresses of Provincial Student Aid Authorities

Canadian students, other than Quebec residents, are to apply for government assistance to the appropriate agency in that province or territory in which the applicant is a bona fide resident. The addresses for Canada Student Loan authorities of those provinces and territories participating in the plan are listed below:

##### Alberta:

Alberta Students' Finance Board  
10th Floor, Baker Centre  
10025-106 Street  
Edmonton, Alberta  
T5J 1G7  
(403) 427-2740  
fax: (403) 422-4516

##### British Columbia:

Student Services Branch  
Ministry of Advanced Education,  
Training and Technology  
2nd Floor, 1106 Cook Street  
Victoria, British Columbia  
V8V 3Z9  
(604) 387-6100/6101  
fax: (604) 356-9455

##### Manitoba:

Student Financial Assistance Branch  
Manitoba Education and Training  
Box 6, 693 Taylor Avenue  
Winnipeg, Manitoba  
R3M 3T9  
(204) 945-6321/6322  
fax: (204) 477-4596

##### New Brunswick:

Student Services Branch  
Department Of Advanced Education and  
Training  
P.O. Box 6000  
Fredericton, New Brunswick  
E3B 5H1  
(506) 453-2577  
1-800-667-5625  
(Atlantic Provinces, Ontario and Québec only)  
fax: (506) 444-4333

##### Newfoundland:

Department of Education  
Student Aid Division  
Thompson Student Centre  
Memorial University of Nfld.  
St. John's, Newfoundland  
A1C 5S7  
(709) 729-4235/5849  
fax: (709) 729-2298

##### Northwest Territories:

Manager-Student Services  
Department of Education  
Government of the Northwest Territories

## 70 Awards

Yellowknife, Northwest Territories

X1A 2L9

(403) 873-7190

or

1-800-661-0793

fax: 1-800-661-0893

**Nova Scotia:**

Student Aid Office

Department of Advanced Education and

Job Training

P.O. Box 2290, Station M

Halifax, Nova Scotia

B3J 3C8

(902) 424-8420 (metro)

1-800-565-8420 (within province)

fax: (902) 424-0540

(Street location: Trade Mart Building 2021

Brunswick at Cogswell Streets Halifax, N.S.)

**Ontario:**

Student Support Branch

Ministry of Colleges and Universities

P.O. Box 4500

Thunder Bay, Ontario

P7B 6G9

(807) 343-7260

fax: (807) 343-7278

**Prince Edward Island:**

Student Aid Office

Department of Education & Human Resources

P.O. Box 2000

Charlottetown, Prince Edward Island

C1A 7N8

(902) 368-4640

fax: (902) 368-4663

**Saskatchewan:**

Student Financial Assistance Branch

Saskatchewan Education

1855 Victoria Avenue

Regina, Saskatchewan

S4P 3V5

(306) 787-5620

fax: (306) 787-7537

**Yukon Territory:**

Students' Financial Services

Department of Education

P.O. Box 2703

Whitehorse, Yukon Territory

Y1A 2C6

(403) 667-5310

or

(403) 667-5929

fax: (403) 667-6339

The above authorities also administer provincial bursary and loan plans in conjunction with the Canada Student Loan, if applicable.

**Québec:**

Residents of Québec apply to:

Ministère de l'enseignement supérieur

et de la Science

Direction générale de l'aide financière

aux étudiants,

1033, rue de la Chevrotière

Québec, Québec

G1R 5K9

(418) 646-5245

Leave brief message, your name, your Code Permanent, and the day/time period you will be "home". Québec will telephone the student back at that time period.

(514) 864-4505 (24-hour automated service)

fax: (418) 528-0648

### Short-Term Loans

**For all Dalhousie Students**

**Temporary Loans:** The University has established a temporary loan programme to assist registered Dalhousie students with certain types of short-term financial difficulty when no other reasonable resource is available. Students must provide at the time of application documentary proof of their ability to repay the loan within the time period. (Such loans are not made for fee payment, however.) These loans have a short interest-free period, after which interest will be charged. Refer to the information sheet attached to the Temporary Loan Application for further details. Applications may be picked up in the Office of the Registrar, Room 133, A&A Building and handed in to the Information Centre, Room 123, A&A Building.

**For Occupational Therapy Students**

**Short-Term Loans for Occupational Therapy Students for Fieldwork:** Full-time students in Third Year or Fourth Year are eligible to apply for loans up to \$500. The first priority is for Third-Year students who are about to undertake fieldwork 4420 A or B; the second priority is for Fourth-Year students who are about to undertake fieldwork 4421R. Students who seek such assistance are to apply to: Office of the Registrar, Awards, and to present a letter of support from either the Director of the School or the Fieldwork Co-ordinator of the School. Further information is available at the Registrar's Office - Awards or the School of Occupational Therapy.

### Dalhousie Bursaries

**General Intent of University Bursaries**

The University has funds at its disposal for the purpose of assisting those of its students who may face certain types of financial situations. While these bursaries are awarded primarily on the basis of demonstrable need as determined by the appropriate University office or committee, satisfactory academic standing is also expected. Students whose financial needs are exceptionally large and/or students whose academic standing is unsatisfactory may not be assisted. Normally, bursaries will be awarded only to students who have availed themselves of assistance under the Canada Student Loan Program and/or corresponding provincial or territorial loan and/or bursary programs. Normally, receipt of the first instalment of such funding is a prerequisite to the University's consideration of an application for bursary assistance (the Academic Entrance Bursary being an exception).

### Arts & Science Specified as to Year

**First Year**

**Alfred George Darville Memorial Bursary:**

This fund provides one bursary to a qualifying

Dalhousie student. Applicants must be matriculants of Halifax West High School, be enrolled in first-year studies in an undergraduate programme (as commonly understood), and demonstrate financial need to the satisfaction of the Selecting Body.

**The John Dunlop Memorial Bursary:** An endowment was established to provide bursaries in first year.

**The Rev. Kenneth Mackenzie Bursary:** Mrs. Harriet Mackenzie Morrison of Stornoway, Scotland, daughter of the Rev. Kenneth Mackenzie of Pictou County, bequeathed \$1,000 to the university in 1887 to be used as a bursary fund. Candidates of the name of Mackenzie, MacLean, or Fraser are to be given preference.

**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.

#### Fourth Year

**Prof. W. Russell Maxwell Memorial Bursaries:** Any residual income remaining in the Fund after the annual scholarships have been determined may, after consultation with the Department of Economics, be used to fund one or more bursaries for deserving students entering the fourth year of the Honours programme in Economics.

#### Unspecified as to Year

**John David and Ellen Matheson Allen Endowment Fund:** The bursaries to be known as John David and Ellen Matheson Allen bursaries, are in memory of John David Allen and his wife, Ellen Margaret Allen, both graduates of the Department of Education of the University. The bursaries are for students in the Arts and Science faculties and the School of Education of Dalhousie University. In the selection of the recipients of the bursaries, priority is to be given to Canadian Indians and Inuit, but where no such persons apply, the bursaries are to be given to other applicants as determined by the appropriate office of the University.

**Ernest Brehaut Memorial Bursaries:** These bursaries were established by the gift of Mrs. Ernest Brehaut of Colorado Springs, USA, in memory of her husband, a distinguished graduate of Dalhousie, Harvard and Columbia. These bursaries are to be awarded by the Registrar's Office - Awards of the University, which will take into consideration any financial need of the applicant, to students from Prince Edward Island. Preference is to be given to relatives of the late Dr. Brehaut. The bursaries are to be continued throughout the courses of the students if they maintain creditable academic standing and show genuine need.

**The Robert Bruce Bursaries:** Several bursaries tenable in the third year of an Arts or Science course, will be awarded to students of promising abilities but of straitened circumstances.

**James and Abbie Campbell Bursaries:** Dalhousie students who are engaged in studies in one of our music programmes are eligible for consideration for a bursary from this fund.

**Dalhousie Science Society Bursary:** The Dalhousie Science Society provides \$1,500 to support three bursaries of \$500 each to students who are enrolled in Year III or IV of a program leading to a Bachelor of Science degree. Recipients will have demonstrated financial need, satisfactory academic standing, and involvement in extra curricular activities at the University. Applicants may use the regular University Bursary Application form to which they should append a letter wherein pertinent information of extra curricular activity is clearly stated. Applicants must have achieved eight Whole Class Equivalents at Dalhousie. The deadline for receipt of applications is 30th November. Please note that a separate application specifically for this award is necessary.

**Audrey-Lea Dawson Memorial Bursary:** A memorial bursary is open annually to one or more female students enrolled in the Bachelor of Science program who have demonstrated financial need and satisfactory academic standing.

**David Andrew Dougall Memorial Bursary:** The intent of this award is to encourage and assist one or more students whose academic and financial status merit consideration. The Department of Biology administers the fund.

**Wilfred E. Hillis Bursary:** The late Mrs. Olga Munro Hillis made provision for the establishment of the Wilfred E. Hillis Bursary Fund. The income derived therefrom is to be used as bursaries for worthy Arts and Science students who are in need of financial assistance.

**The J. Winston MacDonald Bursary:** This endowment provides for an annual bursary to a student enrolled in the engineering program who demonstrates financial need and satisfactory academic standing. This bursary honours the memory of John Winston MacDonald, a native of Balmoral Mills, N.S., who, after graduation from Dalhousie University in 1929, pursued a noteworthy career in engineering in Canada and British Guyana.

**Annie S. MacKenzie Class of 1911 Bursary:** Under the Will of the late Emelyn L. MacKenzie the University has been given a bequest to provide bursaries in Arts & Science, Dentistry and Law. One-third of the net income is allotted to the College of Arts and Science for the purpose of funding a bursary to one or more students. The recipient must be a bona fide resident of and domiciled in the County of Victoria (as defined by the boundaries then extant in AD 1900), Nova Scotia. Character and financial need are the main criteria.

**The Kenneth and Lloyd McDonald Bursary:** A gift of the McDonald family in 1976 makes possible the funding of an annual bursary to a deserving and needy student.

**Reverend J.W.A. Nicholson Bursaries:** This Fund was established in commemoration of the unselfish life of a distinguished Dalhousie graduate (BA 1897). One of his concerns was to

help young people discover their talents. About half the annual income is used to assist Nova Scotia Blacks who are full-time students in the College of Arts & Science at Dalhousie, and the balance is added to the fund's capital. Awards are made at the discretion of the Registrar's Office - Awards.

### Engineering

**J. Winston MacDonald Bursary:** An endowment has been established to provide an annual bursary to a student enrolled in the Engineering program at Dalhousie University. The recipient will have demonstrated financial need and satisfactory academic standing. The bursary is given in memory of John Winston MacDonald who was graduated from Dalhousie University in 1929 with a Bachelor of Science degree and the Diploma in Engineering, and from the Nova Scotia Technical College in 1931. Apply through the Registrar's Office.

**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 who are enrolled in the second year of the Diploma in Engineering program at Dalhousie University. The recipient will have demonstrated financial need and satisfactory academic standing. Apply through the Department.

### Divinity Candidates

**Dr. Alexander E. Kerr Bursary:** The Alexander E. Kerr Foundation Fund was established to provide a biennial bursary of \$500 to qualifying students to continue their theological studies within three years of having been graduated from Atlantic School of Theology and Dalhousie University. A Committee on Awards shall select one person from the applicants who must have been accredited candidates for the Ministry of the United Church of Canada. Each bursary shall be for one academic year. Additional information is available at Atlantic School of Theology and the Registrar's Office - Awards at Dalhousie University. Applications must reach the Director of Awards, Office of the Registrar by the first Monday in April. [Under review]

**Robert Archibald MacDonald Bursaries:** Candidates must be properly qualified students taking the Arts course in Dalhousie with a definite intention of proceeding to Theology at the Atlantic School of Theology in preparation for a ministry in the United Church of Canada. The bursaries are awarded by a committee of Dalhousie and Pine Hill representatives. First preference will be given to students from Cape Breton and then to those from Pictou Presbytery. [Under review]

**R.B. and Annie J. MacLennan Bursaries:** Candidates must be registered as students at Dalhousie University and must be certified as intending to pursue their studies in Theology at the Atlantic School of Theology in preparation for a ministry in the United Church of Canada. Those students who are awarded a bursary may be eligible for a renewal of the award in a succeeding year. [Under review]

**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." The Synod of the Presbyterian Church in the Maritime Provinces will present the names of the candidates to the Registrar's Office - Awards, and the necessary scholastic requirements will be decided either at the matriculation examinations or by ability as shown by the sessional examinations.

## Faculty of Health Professions

### College of Pharmacy

Please note that the College administers the following bursaries. Applications are available directly from the College of Pharmacy and, upon completion, must be submitted thereto by 1st June.

**Boehringer Ingelheim (Canada) Ltd. Pharmacy Bursary:** This bursary of \$500 is awarded to a pharmacy student entering third- or fourth-year classes who demonstrates financial need.

**The Bert and Betty Collins Bursary:** A fund has been established to award an annual bursary to a deserving pharmacy student from New Brunswick who demonstrates financial need and who has attained a satisfactory academic standing.

**The Jack Kidd/ANCA Bursary:** This award was established (as a scholarship until 1986-87) in 1982 to recognise 43 years of service of Mr. Jack Kidd, a pharmaceutical sales representative, with Anca Inc. It is awarded to a student from New Brunswick or Prince Edward Island who has successfully completed one or more years of the course leading to a degree in pharmacy and who is enrolled in pharmacy at the University for the ensuing year. The student must have a satisfactory academic standing and demonstrate financial need.

**Lawtons Drugs Bursary:** This bursary of \$500 is awarded to a second, third or fourth year student from the Atlantic Provinces, who has attained a satisfactory academic standing and who demonstrates financial need.

**George MacDonald Bursary:** This Bursary is awarded to a deserving pharmacy student, from the Atlantic Provinces who has satisfactorily completed at least one year of study at the College of Pharmacy and who demonstrates financial need.

**New Brunswick Pharmaceutical Society Bursaries:** The New Brunswick Pharmaceutical Society offers four bursaries to be awarded to the students from New Brunswick completing the first, second, and third years of the Pharmacy course. The amount of each bursary is \$500. The bursaries are awarded on the basis of need to those students whose academic achievement, promise, and character are acceptable.

**Apotex Inc./P.A.C.E. Bursaries:** Two bursaries of \$750 each are offered annually by Apotex Inc. for students who have completed at least one

year at the College of Pharmacy. The students must have a satisfactory academic standing and demonstrate financial need.

**The Pfizer Bursary:** This bursary of \$500 is awarded to a deserving student who demonstrates financial need and who has attained a satisfactory academic standing.

**Shoppers Drug Mart Community Pharmacy Bursaries:** Shoppers Drug Mart will sponsor three bursaries of \$600 each to awardees selected by the College. The selection committee will consider candidates on the basis of financial need, student involvement, academic proficiency and potential for contributing to the pharmacy profession. Normally, successful applicants will have completed the first year.

### School of Occupational Therapy

**Phyllis Kennedy Memorial Bursaries:** The Phyllis Aida Daly du Fresne Kennedy Memorial Bursary Fund was established in 1983 to provide from the annual income one or more bursaries to assist a student or students in Occupational Therapy in the fourth year. The applicants must show financial need, must have achieved a minimum GPA of 3.00 in each of the second and third years, and must demonstrate interest in their studies and the School.

**NOTE:** Students who need assistance with their fieldwork costs are referred to the entry on short-term loans.

### School of Recreation, Physical and Health Education

**The Jeff Bredin Memorial Bursary:** An endowment has been set up to provide bursaries to deserving students. Preference will be given to a varsity athlete at Dalhousie who has successfully completed at least one year of study at this University. In any one year the maximum award given to any student will be \$1,000. Consideration is based on financial need, contribution to varsity sport and academic standing. Apply to the School of Recreation, Physical & Health Education.

**Denton Hurdle Memorial Bursary:** An endowment has been established to honour the memory of Denton Gordon Clifford Hurdle (B.Phys. Ed. '80) by providing a bursary to a student in the School. The student must be a Bermudian citizen and, preferably, a graduate of Warwick Academy, Bermuda. The student must have achieved an academic average of at least 80% (or the equivalent in the Bermudian School system) in the year in which application is made. The student must have demonstrated a capacity to contribute to the University community through qualities of leadership and athletic ability.

### Maritime School of Social Work

The following bursaries are administered by the Office of the Registrar.

**Hannah G. Matheson Bursaries:** These bursaries are open to students enrolled in studies in the Maritime School of Social Work at either the undergraduate or graduate level.

**Lloyd MacInnis Memorial Bursary:** The Lloyd Y. MacInnis Memorial Award Fund was established to provide an annual bursary to a

qualifying student who is continuing his or her studies at the School in the baccalaureate programme beyond first year.

**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 programme of the Maritime School of Social Work at Dalhousie University.

The following bursaries are administered by the School

**The Maritime School of Social Work Alumni Bursary:** This bursary was established at the time of Mary Lou Courtney's retirement as a tribute to her more than 30 years of devoted teaching and work on behalf of the School, the University and profession. The Alumni Bursary will be awarded annually to a BSW student who demonstrates financial need and who best exemplifies the qualities of humanity, community and service which characterized Mary Lou Courtney's work.

**The Sonja R. Weil Memorial Bursary:** Family and friends established this endowment as a memorial to Sonja Weil and in tribute to her work as a social worker and psychotherapist. This bursary is open to students in the MSW and BSW programmes 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.

### Faculty of Management

#### Bachelor of Commerce Programme

**Kingt, Bain, Seath, Holbrook Atlantic Limited Bursary:** This Company sponsors an annual bursary of \$1000 to be awarded to a student in the Bachelor of Commerce programme on the basis of financial need. The recipient will have achieved satisfactory standing. Apply through the School of Business Administration.

#### Unspecified or Selected Faculties

The following bursaries, unless indicated otherwise, are administered by the Office of the Registrar.

**The Eva and David Ashkins Memorial Bursary:** The donors established this fund for the purpose of assisting pupils who have matriculated from selected high schools to enter Dalhousie. These high schools are (first) the North Queen's Rural High School or Bridgewater High School, and (secondly) other high schools in the province of Nova Scotia. The recipient may be considered in subsequent years for further assistance.

**The Birks Family Foundation Bursaries:** The Birks Family Foundation has established a plan of annual contributions to the Student Aid Fund of recognized Canadian universities for the creation of the Birks Family Foundation



**Bursaries.** The Bursaries are awarded by the Foundation on the recommendation of the Registrar's Office - Awards and are not restricted to faculty or year and may be renewed. The number and amount of such awards may vary annually, depending upon the funds available for the purpose from the Foundation.

**The Jotham Blanchard Bursary:** The New Glasgow Literary and Historical Society in 1912 established this bursary in memory of Jotham Blanchard. The bursary will be awarded to a student of meritorious standing who is in the sophomore year of an undergraduate programme.

**George Boyd Bursary:** The income from the George Boyd Trust will provide an entrance bursary. Preference is to be given to a needy student from the Sydney area.

**Enid Hager Clarke Textbook Fund:** A bequest from the Estate has set up an endowment from which to award bursaries to assist students from certain geographic areas of New Brunswick. Students who are domiciled in King's and Saint John counties are eligible under the terms of the bequest.

**The Rebecca Cohn Bursary Fund:** A gift of \$4,000 by the executors of the Estate of the late Rebecca Cohn provides an endowed bursary fund for needy students.

**Lenore Smith Cumming Bursary:** From the Estate of Charles Gordon Cumming came a bequest of US \$10,000 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.

**Dalhousie Alumni Association Bursaries:** The Alumni have established an endowment to provide bursaries for first-year undergraduate students and refugee students at Dalhousie University. Six bursaries of \$500 each will be awarded annually. Four of the bursaries will be awarded to first-year undergraduates who are not in receipt of any other University awards or bursaries and who satisfy the following criteria:

- i) achieved a minimum 75% average in his/her last year of high school;
- ii) shown considerable extracurricular involvement and leadership; and
- iii) demonstrated financial need.

The remaining two bursaries will be awarded to refugee students sponsored by the University. If, in any year, there are no refugee students attending Dalhousie, these two awards shall be made in the same way as the other four. Note: This fund is administered by the Alumni Office.

**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. Application forms are available at the Office of the Registrar.

**Dalhousie Memorial Bursary Fund:** From time to time at Dalhousie contributions have been made to the University as a memorial subscription in honour of some student or former student. Until now there has been no proper place into which these funds could be channelled. Because of these occurrences a Dalhousie Memorial Bursary Fund has been established. The existence of the fund will be commemorated by a book of remembrance to be located in a prominent place in the Killam Library. Names of persons in whose memory contributions have been made by relatives, friends, individuals or groups, to the Memorial Fund will be recorded in the book, along with the date of their birth and death. The pages would be turned on a regular basis. All money contributed to the Fund will be invested by the Board of Governors and only the investment income will be awarded. The award will be available to any full-time Dalhousie student, already registered and in attendance at classes, who can show a need for additional support. A student in straitened financial circumstances may be considered for possible assistance by making application on the standard undergraduate bursary application form which is available from the Office of the Registrar.

All contributions to the Memorial Fund are directed through the Dalhousie Annual Fund. For further information please contact the Development Office, Dalhousie University.

**The Frank R. Davis Memorial Bursaries:** The terms of this fund have been revised in consultation with the donor's family. Now income from this fund may be awarded on the basis of financial need. One or more bursaries may be made in consultation with the Supervisor of Schools for Bridgewater, Nova Scotia.

**Annie M. Harrison Bursary:** The annual income from the bequest of \$5,000 from the Estate of Annie M. Harrison provides a number of bursaries.

**Alice M. Haverstock Bursary:** From the Estate of Gertrude H. Fox came a bequest to endow a bursary fund in the name of Alice M. Haverstock.

**Frances Havergal Grant Bursaries:** An endowed bursary fund was established under the Will of the late Constance Patricia Hamilton in the amount of \$18,900, the income from which is to be used to assist students.

**The Annette S. Hill Bursaries:** The University received an endowment under the Will of the late Annette S. Hill to set up a fund, the income therefrom to be used to assist needy students.

**Annie E. Longard Memorial Bursary:** An endowment has been established to provide an annual bursary in memory of an accomplished alumna and long-time participant in the Women's Division of the Dalhousie Alumni Association. The bursary is available to an undergraduate student at Dalhousie on the basis of demonstrated need and satisfactory academic standing.

**The Neil and Jessie Matheson Bursaries:** Established under the Will of Miss Margaret J. Matheson, Truro, the income from this fund

provides several bursaries. Students from the rural districts of Pictou County are to be given preference.

**Military District No. 6 Provost Corps Bursary:** The Number 6 Provost Mutual Association established this bursary fund to assist descendants of those members of the Canadian Provost Corps who served in Military District No. 6. Applicants must fulfil the Corps' selection criteria, show satisfactory academic progress and demonstrate financial need.

**The Warren Publicover Class '25 Memorial Bursary:** The Warren Publicover Class '25 Memorial Fund was established in memory of Warren Publicover. The annual income from this fund is to be awarded in the form of a bursary for an individual who has successfully completed one year of university work at Dalhousie and is continuing as a full time student at this University. The bursary is to be awarded on the basis of satisfactory academic performance and demonstrated financial need, and is subject to renewal provided that the original requirements are maintained. It is a condition of the gift that applicants for this bursary need not have availed themselves of governmental funding as is usually required by the University.

**3M Canada Bursary:** Since 1980-81 3M Canada Inc. has sponsored an annual bursary of \$500 to assist an outstanding student in commerce or science. The bursary has been assigned to entrance.

**Dr. Gerald Turner Bursary:** An endowment has been established to provide a bursary to assist a needy student from Cape Breton in First Year.

**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. Application forms will be available at the Awards Section of the Office of the Registrar. Applicants are to forward their completed forms to the Chair of the Scholarship Committee, Women's Division, c/o Alumni Office, Dalhousie University, 6250 South Street, Halifax. Applications are to be submitted by either mid-October or the end of January.

### Continuing Education Awards and Bursaries

Students who are engaged in part-time studies for credit are eligible to be considered for awards and financial assistance. Each of these is described briefly below.

**The Frederick Thomas Parker Award for Part-Time Studies:** This award will provide an appropriate and flexible means of encouraging students intending to undertake degree or diploma studies at Dalhousie on a part-time basis. The selection committee will take into account both academic performance and financial need, depending upon circumstances. Applications are available at Henson College.

**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 not greater than the equivalent of 2.5 whole classes. The application form is available from Nova Scotia Student Aid Office, and is to be completed in part by both the Student Accounts and Registrar's Office - Awards. Please note that repayment of the loan begins 30 days following the borrowing of the funds, and payment must be completed within 24 months.

**Canada Student Loans Plan:** Some students who are "part-time" by the University criterion are still eligible for the regular Canada Student Loan. The class-load criterion for this loan is to enrol and to maintain a class-load of not fewer than three whole classes or the equivalent. Repayment of the loan normally begins six months after the time one ceases to be a "full-time" student according to governing regulations. During the summer months application kits will be available at the Registrar's Office - Awards on a pick-up basis. (These kits are available for pick-up or mail-out directly from Student Aid throughout the CSL assistance period.) Interested individuals may seek further details from the Registrar's Office - Awards (telephone 494-2416).

**Dalhousie University Bursaries:** Students who are engaged in part-time studies for credit will be considered for bursaries. Application is to be made at the Office of the Registrar - Awards. Please note that most University bursaries are restricted to Canadian citizens or permanent residents. Please read the main section regarding the Dalhousie Bursary Programme. If you are enrolled in fewer than 18 credit hours of course work the section on governmental loans does not apply.

**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 begins after the expiration of a predetermined grace period. Application is to be made at the Office of the Registrar.

# University Regulations

## General

1. The Senate is charged with the internal regulations of the University, including all matters relating to academic affairs and discipline, subject to the approval of the Board of Governors. Within the general policies approved by Senate, academic requirements are administered by the Faculty concerned.
2. All students must agree to obey all the regulations of the University already made or to be made; in addition to the above University regulations, students must also comply with the regulations of the Faculty in which they are registered, and pay the required fees and deposits before entering any class or taking any examinations. Additionally, students are advised that this Calendar is not an all-inclusive set of rules and regulations but represents only a portion of the rules and regulations that will govern the student's relationship with the University. Other rules and regulations are contained in additional publications that are available to the student from the Registrar's Office and/or the relevant Faculty, Department or School.
3. For the purpose of admission to the University, the place of residence of a student is the place of domicile. This is normally presumed to be the place (country, province, etc.) where the parents' or guardian's home is located. That place remains unchanged unless the Registrar is satisfied that a place of residence is established elsewhere. No person under sixteen years of age is admitted to any class except on the specific recommendation of the admissions committee of the relevant Faculty or School, which shall take into account all aspects of the applicant's preparedness for the class or programme involved, and which may attach such conditions to the applicant's admission as the committee judges appropriate.
4. All students must report their local address while attending the University to the Office of the Registrar, on registration or as soon as possible thereafter. Subsequent changes must be reported promptly.
5. Students who change their name while attending Dalhousie must provide proof of name change to the Registrar's Office.
6. Students taking classes in another Faculty as part of an affiliated course of study must conform to the regulations of that Faculty with respect to these classes. It should be noted, however, that regulations pertaining to the degree programme are those of the "home" Faculty.
7. In the interests of public health in the University, students are encouraged to have a tuberculin test. This is compulsory for Dentistry, Dental Hygiene, Physiotherapy and Nursing students. Facilities for testing are arranged by the University Health Services.
8. Except for university purposes, transcripts, official, or unofficial, will be issued only on the request of the student on payment of the required fee. A student may receive only an unofficial transcript. Official transcripts will be sent on a student's request to other universities, or to business organizations, etc.
9. Students withdrawing voluntarily from the University should consult the individual faculty regulations and the Fees section of this Calendar.
10. When the work of a student becomes unsatisfactory, or a student's attendance is irregular without sufficient reason, the faculty concerned may require withdrawal from one or more classes, or withdrawal from the Faculty. If a student is required to withdraw from a Faculty such a student may apply to another Faculty. However, in assessing the application, previous performance will be taken into consideration.
11. Any graduating student who is unable to appear at the convocation is expected to notify the Registrar in writing prior to May 1, for Spring convocations (or October 1 for Fall convocations), giving the address to which the degree/ diploma is to be mailed. Students whose accounts are delinquent on May 1 will not receive their degree/ diploma parchment nor their transcripts. For October graduation the date is September 1.
12. Students should be aware that certain classes at the University involve required laboratory work where radioactive isotopes are present and are used by students. Since there are potential health risks associated with the improper handling of such radioactive isotopes, Dalhousie University requires that, as a condition of taking a class where radioactive isotopes are to be used, students read and agree to comply with the instructions for the safe handling of such radioactive isotopes. In the event that students do not comply with the instructions for the safe handling of radioactive isotopes, students will receive no credit for the required laboratory work unless other acceptable alternatives are arranged with the instructor. In many cases, alternate arrangements are not possible and students should consider enrolling in a different class.

## 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.
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 must be deposited with the invigilator. Calculators may be used at the discretion of the instructor.

4. Smoking is not permitted in the examination room.
5. Candidates may not leave their seats during an examination except with the consent of the invigilator.
6. 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.
7. Each question should be started on a separate page.
8. 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.
9. Candidates found communicating with one another in any way or under any pretext whatever, or having unauthorized books or papers in their possession, even if their use be not proved, shall be subject to expulsion.
10. After the first thirty minutes have elapsed, students may hand in their examination book(s) to an invigilator and quietly leave the examination room. Candidates may not leave the examination room during the last fifteen minutes of the examination.

## Release of Information About Students

1. Disclosure to students of their own records
  - (a) Students have the right to inspect their academic record. An employee of the Registrar's Office will be present during such an inspection.
  - (b) Students will, on submission of a signed request and payment of the appropriate fee, have the right to receive transcripts of their own academic record. These transcripts will be marked "ISSUED TO STUDENT". The University will not release copies of transcripts if students owe monies to the University.
2. 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.
3. Disclosure to Third Parties
  - (a) The following information is considered public information and may be released without restriction:
    - Name
    - Period of Registration
    - Certificates, Diplomas, Degrees awarded
  - (b) 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.

- (c) 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.
- (d) Other than in the above situation, 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.

## Intellectual Honesty

A University should epitomise the quest for intellectual honesty. Failure to measure up to the quest for such a standard can involve either academic offenses at one end of the spectrum or substandard work warranting lowered or failing grades at the other. The seniority of the student concerned, the presence of a dishonest intent, and other circumstances may all be relevant to the seriousness with which the matter is viewed.

### Examples of Academic Offences

#### 1. Plagiarism or Self-Plagiarism

Dalhousie University defines plagiarism as the presentation of the work of another author in such a way as to give one's reader reason to think it to be one's own. Plagiarism is a form of academic fraud.

Plagiarism is considered a serious academic offence which may lead to loss of credit, suspension or expulsion from the University, or even the revocation of a degree.

In its grossest form plagiarism includes the use of a paper purchased from a commercial research corporation, or prepared by any person other than the individual claiming to be the author.

Self-plagiarism is the submission of work by a person which is the same or substantially the same as work for which he or she has already received academic credit.

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

Academic research is predicated on the presentation of accurate and honestly derived data. The falsification of data in reports, theses, dissertations and other presentations is a serious academic offence, equivalent in degree to plagiarism, for which the penalties may include revocation of degrees, loss of credits or suspension or expulsion from the University.

#### 3. Inaccurate or Inadequate Attribution.

The University attaches great importance to the contribution of original thought to scholarship. It attaches equal importance to the correct attribution of authorities from which facts and opinions have been derived.

The proper use of footnotes and other methods of attribution varies from discipline to discipline. Failure to abide by the standards of the discipline concerned in the preparation of essays, term papers and dissertations or theses can result, at the discretion of the instructor or faculty member involved, in lowered grades. It can also lead to the requirement that an alternative assignment be prepared. Such grading penalties can be involved even in the absence of any INTENTION to be dishonest.

Students who are in any doubt about the proper forms of citation and attribution of authorities and sources should discuss the matter in advance with the faculty member 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.

#### 4. Irregularities in Admissions Procedures

A person who gains admission or assists any other person in gaining admission by any irregular procedure, for example, by falsifying an academic record or by forging a letter of recommendation or by impersonating any other person, commits an academic offense and is liable to a penalty (see Senate Discipline Committee).

#### 5. Irregularities in Evaluation Procedures

A member of the University who attempts or who assists any other person in an attempt to obtain, by irregular procedures, academic standing in a course related to any degree, diploma or certificate programme, commits an academic offence and is liable to a penalty. Without limiting possible irregularities in evaluation procedures that may be considered by the Senate Discipline Committee, the following examples shall be considered irregular procedures:

- (a) arranging for or availing oneself of the results of any personation at any examination or test, or,
- (b) attempting to secure or accepting assistance from any other person at any examination or test, or,
- (c) having in one's possession or using any unauthorized material during the time that one is writing any examination or test, or,
- (d) without authorization procuring a copy of an examination, test or topic for an essay or paper, or,
- (e) in the absence of any enabling statement by the Faculty member in charge of that course, submitting any thesis, essay, or paper for academic credit when one is not the sole author, or,
- (f) without authorization submitting any thesis, essay or term paper that has been accepted in one course for academic credit in any other course in any degree, diploma or certificate programme.

## Discipline

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

## Senate Discipline Committee

### Composition

The Committee will consist of two representatives of the faculty of the University, two representatives of the student body, and a chairperson who is a member of the faculty of the University. A student who is a member of the Student Discipline Committee may not at the same time be a member of the Senate Discipline Committee.

### Terms of Reference

1. The Senate Discipline Committee is vested with original jurisdiction to consider all complaints or allegations respecting offenses or irregularities of an academic nature, including those relating to admissions procedures and evaluation procedures, and to impose penalties in cases where the Committee finds an offence or irregularity has occurred.
2. The Senate Discipline Committee is vested with 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:
  - (i) been compelled to withdraw academically;
  - (ii) chosen to withdraw from the University prior to being disciplined, or
  - (iii) chosen not to register at the University.
3. The Senate Discipline Committee shall assume jurisdiction when a complaint or allegation respecting offenses or

irregularities of an academic nature are brought to its attention by the Secretary of Senate.

4. The Senate Discipline Committee is required to evaluate the evidence of innocence or guilt of an accused student from the premises that the more senior the student in terms of chronological age, or year of registration at and/or extent to other exposure to university rules and regulations (whether at Dalhousie University or elsewhere), the less credible are assertions of ignorance or innocence and the stronger is the case for a more severe penalty than would be imposed on a less senior student.
5. The Senate Discipline Committee shall report its findings and any penalty imposed to the Secretary of Senate. The Secretary of Senate shall forward a copy of the report to the person or persons whom the Senate Discipline Committee has found to have committed the offence or irregularity, and if the member concerned be other than a student, a copy shall also be sent to the Vice-President (Academic).
6. From the decisions of the Senate Discipline Committee, an Appeal lies to the Senate on such grounds as it determines is appropriate.
7. Where a Faculty, such as Health Professions, wishes to dismiss a student for unethical conduct or unfitness for the Health Professions or any one of them, there is to be no appeal to the Senate Discipline Committee. Instead, there should be an appeal to a Senate ad-hoc committee.

### Penalties

The range of penalties which may be imposed by the Senate Discipline Committee be circumscribed only by the requirement that such penalty or penalties be of an academic nature and, without restricting the generality of the foregoing, may include any one or more of:

- (i) notation, for a period of one (1) or more years not exceed five (5) years, on the offender's transcript of the fact of discipline;
- (ii) repeat of the assignment that triggered the discipline;
- (iii) a failing grade or mark on assessment in the piece of work triggering the discipline;
- (iv) failure of the class or seminar or programme;
- (v) failure of the academic year;
- (vi) suspension for an academic term or for the academic year (to a maximum suspension, of three (3) academic years);
- (vii) expulsion from the University;
- (viii) loss of an existing and/or continuing scholarship, or loss of eligibility to receive or to maintain scholarships or prizes or bursaries; and
- (ix) removal from the Dean's List.

Please note: Transcripts will not be issued for a student while a Senate Discipline case is pending.

## Code of Student 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:
  - (i) 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
  - (ii) registered in, enrolled in, or attending any course or class, or otherwise participating as a learner in any activity which entitles the person to the use of a University library, library materials, library resources, computer facility or dataset.
3. In this Code, the words "Dalhousie University" refer to Dalhousie University and include any institutions affiliated with it, where such inclusion has been agreed upon by the University and the affiliated institution, with respect to the premises, facilities, equipment, services, activities, students and other members of the affiliated institution.
4. Unless otherwise stated, a student will only be liable for conduct that she or he knew or ought reasonably to have known would constitute conduct prohibited under this Code.
5. Nothing in this Code shall be construed to prohibit peaceful assemblies and demonstrations, or lawful picketing, or to inhibit freedom of speech.

### B. Offences

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

- (i) occurs on premises of Dalhousie University or elsewhere in the course of activities sponsored by Dalhousie University or by any of its faculties, schools or departments; and
- (ii) is not specifically assigned to another disciplinary body within the University as in the case of sexual harassment as described in the Policy and Procedures: Sexual Harassment; and
- (iii)
  - (a) has not already been dealt with as failure to meet standards of professional conduct as required by a college, faculty or school; or
  - (b) is not subject to the disciplinary authority of the Dalhousie Student Union; or
  - (c) is not subject to action under a residence discipline policy unless some non-residence University interests are deemed to be involved, in which case the President may specifically authorize proceedings under this Code.

**1. Offences Against Persons**

- (a) No student shall assault another person sexually or threaten any other person with sexual assault.
- (b) No student shall otherwise assault another person, threaten any other person with bodily harm, or cause any other person to fear bodily harm.
- (c) No student shall create a condition that unnecessarily endangers the health or safety of other persons.
- (d) No student shall threaten any other person with damage to such person's property, or cause any other person to fear damage to her or his property.

**2. Disruption**

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

**3. Offences Involving Property**

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

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

- (a) No student shall use any facility, equipment or service of the University, or enter or remain on any premises, to which he or she does not have legitimate access, or contrary to the expressed instruction of a person or persons authorized to give such instruction, unless the student has good reason for doing so.
- (b) No student shall gain access to or use any University computing or internal or external communications facility to which legitimate authorization has not been granted. No student shall use any such facility for any commercial, disruptive or unauthorized purpose, or in any other way that is incompatible with the principles in the Guide to Responsible Computing.
- (c) No student shall mutilate, misplace, misfile, or render inoperable any stored information such as books, film, data files or programs from a library, computer or other information storage, processing or retrieval system.

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

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

**6. Alcohol and Drug Use**

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

**7. False Information and Identification**

- (a) No student shall knowingly furnish false information to any person or office acting on behalf of the University.
- (b) No student shall forge, alter or misuse any document, record or instrument of identification.

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

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

**9. Contravention of University Regulations**

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

**10. Other**

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

**C. Procedures**

1. Whenever possible and appropriate, reason and moral suasion shall be used to resolve issues of individual behaviour before resort is made to formal disciplinary procedures.
2. Any person may make a complaint against any student for misconduct. A complaint shall be prepared in writing and directed to the Vice-President, Student Services. Any complaint should be submitted as soon as possible after the event takes place. All complaints shall be presented to the accused student in written form.
3. The Vice-President, Student Services, or designate shall conduct an investigation to determine if the complaint has merit and/or if it can be disposed of informally by mutual consent of the parties involved on a basis acceptable to the Vice-President, Student Services. The Vice-President, Student Services, shall invite the President of the Student Union or his or her designate to participate in any attempts to resolve the matter informally. If an informal disposition of the complaint results, such disposition shall be final and there shall be no subsequent proceedings.

4. 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.
5. Hearings shall be conducted by the Senate Discipline Committee according to procedures determined by the Committee.
6. The President or designate shall appoint a person to present the complaint.
7. If a student fails to appear at a hearing, the hearing may proceed, provided that the student has been given adequate notice. Except in the case of a student charged with failing to obey the summons of the Committee or University official, no student may be found to have violated the Student Code solely because the student failed to appear before the Committee. In all cases, the evidence in support of the complaint shall be presented and considered.

#### D. Sanctions

1. In each case in which the Senate Discipline Committee determines that a student has violated the Student Code, the sanction(s) shall be determined and imposed by the Committee.
2. The following sanctions may be imposed upon any student found to have violated the Student Code:
  - (a) **Warning**—A notice in writing to the student that the student is violating or has violated institutional regulations.
  - (b) **Probation**—A written reprimand for violation of specified regulations. Probation is for a designated period of time and includes the probability of more severe disciplinary sanctions if the student is found to be violating any institutional regulation(s) during the probationary period.
  - (c) **Loss of Privileges**—Denial of specified privileges for a designated period of time.
  - (d) **Fines**—Previously established and published fines may be imposed.
  - (e) **Restitution**—Compensation for loss, damage or injury. This may take the form of appropriate service and/or monetary or material replacement.
  - (f) **Discretionary Sanctions**—Work assignments, service to the University or other such discretionary assignments that are considered appropriate by the Discipline Committee.
  - (g) **Conditions**—Conditions may be imposed upon a student's continued attendance.
  - (h) **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.
  - (i) **University Expulsion**—Permanent separation of the student from the University.
3. More than one of the sanctions listed above may be imposed for any single violation.

4. Other than expulsion from the University and suspension for the duration of its effect, disciplinary sanctions shall not be made part of the student's academic record, but shall be kept on file in the Office of the Vice-President, Student Services, for use in the event of further breaches of this Code.
5. No student found guilty of an offence under this Code shall refuse to comply with a sanction or sanctions imposed under the procedures of this Code. Such refusal will constitute grounds for the imposition of additional sanctions.
6. The Committee may direct that a sanction be held in abeyance if a student's registration at the University is interrupted for any reason.

#### E. Interim Suspension

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

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

#### F. Review

This Code and its application shall be reviewed three years after its approval by Senate, or earlier if deemed necessary.

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

(subject to approval by Senate)

The Faculty of Health Professions, acting through its Committees on Studies at the School/College and Faculty levels, and in consultation with the Directors and Dean, may suspend or terminate a students from a programme if the student is judged to be unsuitable for the profession in which she/he is studying. Because of the nature of the study



and practice of the various health professions, which places clients 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 of examples illustrates the criteria used to assess unsuitability for the various health professions, the nature of which could grievously harm clients should it ever be repeated. This list should not be considered to be all inclusive:

- (i) conviction for criminal activity of a serious nature that brings disrepute to the profession or which is demonstrative of poor judgment or lack of integrity, or evidence that such a criminal act did occur, on a balance of probabilities, (e.g., assault, sexual assault, fraud and drug trafficking);
- (ii) being under the influence of alcohol or drugs while participating in client care, any professional activity, or any activity related to the study or practice of the health profession;
- (iii) in accordance with provisions of the Nova Scotia Human Rights Act, the occurrence of a health condition that affects basic performance requirements for the health profession;
- (iv) unethical behaviour as specified by the code of ethics/standard of practice of the health profession.

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

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

Appeals will follow the appeal procedures 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.

### Basic Principles

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

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

### Elaboration

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

**Disciplinary Actions**

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

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

# Academic Regulations

These regulations apply to all students in the College of Arts and Science and the Faculties of Health Professions and Management. Students in the Faculty of Health Professions should also consult the regulations specific to their school or college found in the appropriate sections of this calendar.

## Please Note:

- a) A student is governed by the regulations in place at the time of initial enrolment as long as the degree is completed within the time permitted (see section 17, p. 92), and that subsequent changes in regulations shall apply only if the student so elects. Students applying the old regulations should consult the calendar of the appropriate year.
- b) It is a student's responsibility to maintain documentation of and subsequent changes. For environmental and financial reasons, the Registrar's Office will rely solely upon computer records and will not maintain paper records of changes to a student's .

## 1. Definitions

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

Within these regulations, reference to the Student Appeals Committee should be interpreted as the Student Affairs Committee in the Faculty of Arts and Social Sciences, as the Committee on Studies and Appeals in the Faculty of Science, the Undergraduate Committee on Studies in the Faculty of Health Professions, and the Undergraduate Academic Appeals Committee in the Faculty of Management.

## 2. Faculties/Colleges

### 2.1 College of Arts and Science

- Biochemistry (also in the Faculty of Medicine)
- Biology
- Chemistry
- Classics
- Comparative Religion
- Earth Science
- Economics
- Engineering
- English
- French
- German
- History
- Mathematics, Statistics and Computing Science
- Microbiology and Immunology (also in the Faculty of Medicine)

- Multidisciplinary Studies Centre
- Music
- Oceanography
- Philosophy
- Physics
- Political Science
- Psychology
- Russian Studies
- Sociology and Social Anthropology
- Spanish
- Theatre

### 2.2 Faculty of Health Professions

- Nursing
- Occupational Therapy
- Pharmacy
- Physiotherapy
- Recreation, Physical, & Health Education
- Social Work

### 2.3 Faculty of Management

- Business Administration
- Public Administration

## 3. Class Selection

### 3.1 Numbering of Classes

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

An example of a class identifier is as follows: ENGL 1000.06R

ENGL ..... subject code  
1000 ..... class number & level  
06 ..... credit hours  
R .. session in which the class is taught

The letters A and B denote classes given in the first and second terms respectively. The symbol A or B indicates a class may be given in the first term or in the second term. Students should consult the academic timetable to verify whether a particular class will be offered in the A or B term in a given academic year. The letter R denotes a class spread over both terms (i.e., given for the full academic year). For the spring and the summer sessions, A denotes a class given in the first three and one half weeks, B a class given in the second three and one half weeks, and R a class continuing for seven weeks.

Classes with numbers below 1000 normally do not carry credit.

### 3.2 Academic Advice

At Dalhousie academic advice is available to all students prior to . First-year students, particularly those in BA and BSc programmes, may wish to consult with the Office of the Registrar, or with a faculty advisor in an

academic department/ school/ college of particular interest. After the first year, students plan their programmes in consultation with faculty advisors in their major department/school/college. Students complete and submit the Registration and Class Selection Form to the Registrar's Office.

## 4. Workload

### 4.1 Regular Year

#### 4.1.1 College of Arts and Science

Five full credits per academic year shall be regarded as constituting a normal workload for a student. Written permission from the Student Appeals Committee of the appropriate Faculty is required if this workload is to be exceeded, or if the planned workload in any term would amount to the equivalent of six half-credits. In no case may the workload exceed this. Applications from students who give good reasons for wishing to take an overload will be considered. Such permission will not normally be granted to any student in the first year of study, or to any student who, in the preceding academic year, earned a sessional GPA of less than 3.00.

**Note:** University Exploration students may take a maximum of 4 full-credits per academic year.

#### 4.1.2 School of Business

Six half credits per academic term in the first year, and five half credits per academic term in the following years will be regarded as constituting a normal workload for the BComm Co-op student.

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

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

Students who wish to exceed the normal workload must apply for permission to the Director Academic Programmes, 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 first year of study or who, in the preceding academic term, earned a sessional GPA of less than 3.00 on a full load of classes.

#### 4.1.3 Faculty of Health Professions

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

### 4.2 Spring and Summer Session

Students may normally take one full credit in each of the spring or summer sessions. Exceptions will normally be granted by the Student Appeals Committee of the appropriate Faculty or School with respect to attendance at a

university which operates a trimester system or its equivalent. Students in Co-op programmes in Science may increase the workload to a maximum of 2.5 credits by summer school in any one year with a maximum of 1.5 credits in any one summer session. Spring and summer credits are included in the calculation of the cumulative GPA at the end of the next regular academic year. A sessional GPA is not calculated.

## 5. Registration

5.1 Registration material will be sent to all eligible students. Students are strongly encouraged to register by mail. Students admitted late must register in person.

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

5.3 The final step in is obtaining an ID or validating an existing ID from the Office of the Registrar.

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.

## 6. Class Changes and Withdrawal

### 6.1 Class Changes

It is recognized that some students may wish to make changes in programmes already arranged. Class changes will normally be completed during the first two weeks of classes. (For Spring and Summer session information, see the Summer School Schedule.) The last dates for adding and deleting "A", "B" and "R" classes without "W" are published in the Schedule of Academic Dates at the front of the calendar.

Students may not transfer from full to part-time status by withdrawing from classes after the deadlines listed in the Schedule of Academic Dates. After these dates all classes for which a student remains registered will be recorded. To add or delete a class, students must complete a class change form which must be approved by the faculty member concerned and submitted to the Registrar. In Health Professions, class change forms must also be signed by the director, (NOTE: in the case of the School of Recreation, Physical, and Health Education, these are signed by the Undergraduate Associate Director, not by the Director,) and in the School of Business Administration, by the Director, Academic Programmes. No change is effective until a class change form is received by the Office of the Registrar.

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

## 6.2 Withdrawal

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

Withdrawals are not effective until written notification is received at the Office of the Registrar.

In Health Professions students who wish to withdraw from the University must obtain written approval from the 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.

## 7. Counting of Credits for Two Dalhousie Undergraduate Degrees

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

- Only credits that are applicable to the programme for the second degree may be counted for credit.
- Each credit carried forward must have a grade of C or higher.
- Grade points must be earned in the new credits as required by Regulation 22.

### 7.1 College of Arts and Science

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

For the Advanced Major (20-credit) degree, a minimum of eleven 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 degree (15 credits), a minimum of six new full credits must be taken. At least four of these are to be beyond the 1000-level in a new major subject, and at least two of the four must be beyond the 2000-level. Normally, two of these credits will be in a subject other than the new major.

### 7.2 Management

For the BComm Co-op degree a minimum of eleven (11) new full credits must be taken, of which at least eight (8) must be in the core area and include the three work term half course credits.

### 7.3 Health Professions

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

## 8. Transfer Students

### 8.1 Transfer Credits - All Faculties

At Dalhousie transfer credits may be granted for classes which are offered by a recognized university or equivalent institution

of higher learning and which are judged to be comparable to classes offered at Dalhousie and to be appropriate to a student's academic programme at Dalhousie. Transfer credit grants credit for a class and does not require substitution.

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

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

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

### 8.2 Transfer Credits from Dental Hygiene

Students who have completed the Diploma in Dental Hygiene may receive credit towards a BA or BSc with a major in Biology for BIOL 2100.03 and BIOL 4403.06. These classes are to be included within the 10 full credits which the Dental Hygiene students are eligible to receive as credit towards a BSc or BA degree upon completion of the current diploma requirements.

### 8.3 No Transfer Credits

No credit will be given for any work used as the basis of admission.

No transfer credit will be granted for any class in which a final mark of less than C (or the equivalent in Dalhousie terms) was obtained.

Credits that are more than ten (10) years old may not be used to fulfil degree requirements unless a waiver is granted.

No classes taken at another institution will be counted towards fulfilment of the major, advanced major or honours requirement of the Bachelor's degree without specific advance approval from the appropriate department/school/college at Dalhousie.

No credit will be given for any classes taken at another university while a student is not in good standing at Dalhousie.

### 8.4 Procedures

As soon as the student's record has been assessed the Office of the Registrar will inform the student which 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 programme, the student will choose the credits to be used. If the student fails to do so, the Registrar's Office will decide the

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

If by 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 programme at Dalhousie.

### 8.5 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 in the Office of the Registrar. A letter of permission will be provided if approval for the classes is given by the appropriate department/school/college. The workload at the other institution must conform to Dalhousie's limitations. (For details, see Regulation 4.)

The departments of French, German, Russian, and Spanish have special arrangements whereby up to a total of 5 full credits taken at other universities may be considered as part of a student's programme at Dalhousie. (See Regulation 15.)

The class fee will be paid by Dalhousie if:

- (a) the student is registered and has paid fees as a full-time student at Dalhousie,
- (b) the classes are approved as part of the student's programme, and
- (c) the class is not part of a spring/summer school programme.

## 9. Advanced Placement

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

## 10. Part-Time Students

Part-time students are reminded of University policy that limits programmes of study to 10 years from the date of initial. Note also, the regulation above concerning the number of credits that must be completed on campus at Dalhousie.

### 10.1 College of Arts and Science

Part-time students are admitted to most of the programmes offered in the College of Arts and Science. Admission requirements and regulations are the same for all students. Part-time students are encouraged to consult with Henson College for advice on their academic programmes and other matters (see Continuing Education).

### 10.2 School of Business

The School is committed to providing students with the opportunity to obtain a degree through full-time study. However, the School will consider applicants for part-time study.

### 10.3 Faculty of Health Professions

Because of the restriction on the duration of undergraduate studies (see Regulation 17), the opportunity for part-time study is limited in the majority of programmes.

The exceptions are the undergraduate programmes in the School of Recreation, Physical and Health Education, the Maritime School of Social Work, and the Bachelor of Science (Nursing) programmes for Registered Nurses.

## 11. Audit of Classes

Students who have been admitted to a Faculty may audit many of the classes offered with the permission of the instructor. 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. For those who are not full-time students, 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 dates). In order to change from audit to credit prior to the deadline an additional fee is required. It is essential that procedures as given in section 6 be followed.

## 12. Experimental Classes - College of Arts and Science

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

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

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

The class may be of one-year length or half-year length.

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 year or first half-year, or any time before the end of the second week of classes in the spring 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 Programme, if they are formed later, they shall

be announced (a) in the *Dalhousie Gazette*, (b) in the *Dal News*, (c) on a central bulletin board set aside for this purpose.

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

Students may have five one-year length experimental classes (or some equivalent combination of these with half-year length 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.

### 13. Coordinated Programmes - College of Arts and Science

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

- (a) that the equivalent of five credits constitutes a normal year,
- (b) that the function of each programme form part of the Calendar description of each programme,
- (c) that each two-year programme permits students at least one credit of their own choice in each of the second and third years,
- (d) that two-year programmes normally not be exclusively in a single discipline,
- (e) that the normal prerequisite for entry into a departmental one-year or two-year programme be the introductory class of the department in question, or an equivalent that the department considers acceptable, and not more than one introductory class in a related subject.

A student considering a Coordinated Programme should consult as early as possible with the departments concerned.

## 14. Correspondence and Summer School Classes Taken at Other Universities

### 14.1 Faculty of Health Professions

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

See section 8.5 for information on classes taken at other institutions on letter of permission.

### 14.2 Spring and Summer Session

Dalhousie currently offers a Spring and a Summer session of approximately seven weeks each, in May-June and in July-August. See Regulation 4 for permitted work-load. Those interested in the Spring and Summer sessions may request a summer schedule from the Office of the Registrar, Dalhousie University.

## 15. International/Exchange Programmes

The College of Arts and Science, the Faculty of Management and the Schools of Recreation, Physical and Health Education, Physiotherapy, and Nursing offer a number of programmes which enable students to pursue part of their studies in another country and culture, often in a foreign language environment. These include:

- (a) Up to one full year of study in a foreign-language environment. In recent years students have studied at the Université de Provence (Aix-Marseille) in France (consult the Department of French).
- (b) Up to one full year of study at a francophone university in Québec (consult the Department of French).
- (c) A summer of study in German in the DAAD Summer programme. Up to one full year of study at one of the following locations: Heidelberg, Freiburg, Munich, Dresden. (Consult the German Department)
- (d) One term of study at Colegio de España, Salamanca, Spain or Unibe University, Dominican Republic (Consult the Co-ordinator in the Spanish Department).
- (e) One term of study at St. Petersburg State University (Consult the Administrator of the Russian Studies Programme in the Department of Russian).
- (f) Up to one full year of study in Engineering in the Regional Academic Mobility Programme (RAMP), a trilateral exchange programme for engineering students in Canada, the U.S. and Mexico. (Consult the Engineering Department)
- (g) A reciprocal exchange programme with the Chelsea School of Physical

Education, Sport Science, Dance and Leisure and the University of Brighton, England. Contact the School of Recreation, Physical and Health Education.

- (h) Up to one full academic year at one of eighteen (18) universities in the New England States. Consult the Registrar's Office.
- (i) Up to one full academic year at Instituto Tecnológico Autónomo de México (ITAM). Consult the School of Business Administration or the Registrar's Office.
- (j) Up to one full academic year at Institut Supérieur de Commerce à Dunkerque (ISCID). Consult the School of Business Administration for details.
- (k) Up to one full year of study in a Commonwealth country. (Consult Pearson Institute)
- (l) A six week clinical practicum for Nursing students at Queen Margaret College, Edinburgh, Scotland. (Consult the School of Nursing)
- (m) A five week clinical practical internship for Physiotherapy students in England, Ireland, Scotland or Sweden. (Consult the School of Physiotherapy)
- (n) For students in the Advanced Diploma in Costume Studies, one term of study at an American institution. (Consult the Chair of the Theatre Department)

Students interested in the programmes listed (a) to (e) above should refer to the appropriate departmental listing in this calendar for more details. For details regarding classes taken at other universities see Regulation 19.4.

## 16. Preparation for Other Programmes

Work in the College of Arts and Science is prerequisite for various programmes in other Faculties and other institutions. A brief summary of the academic work required for admission to certain programmes is given here. Further information may be found later in this calendar, or in the separate faculty calendars.

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

**Architecture:** Two years of work, including at least one credit in mathematics, are required for entry to a programme in Architecture at the Technical University of Nova Scotia. For details, apply to the Faculty of Architecture at TUNS.

**Dental Hygiene:** Completion of 5 full credit university level classes of one academic year's duration in the following: Biology, Psychology, Sociology, a writing class, and one elective. For details, see the Dentistry, Law and Medicine calendar.

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

**Design:** Students completing one year in the College of Arts and Science at Dalhousie may

be admitted into the second year of the four year programme leading to the Bachelor of Design degree in Communication Design or Environmental Design at the Nova Scotia College of Art and Design.

**Engineering:** The Diploma in Engineering qualifies a student for entry to the Technical University of Nova Scotia to study Engineering.

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

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

**Occupational Therapy, Physiotherapy, Pharmacy, Recreation, and Social Work:** One year of work in the College of Arts and Science, or the equivalent elsewhere, is required for admission to these five programmes. For details, see the Admissions Information section of this calendar.

**Veterinary Medicine:** Normally three years of work at Dalhousie are required for admission to the Atlantic Veterinary College of the University of Prince Edward Island. Dalhousie credits should normally include COMP 1400.03; MATH 1000.03 and 1060.03; one of CHEM 1010.06, 1020.06, or 1500.06; CHEM 2400.06; BIOC 2200.03; one of PHYC 1000.06, 1100.06 or 1300.06; ENGL 1000.06; BIOL 1000.03, 2030.03, 2100.03 and 3323.06; and an additional two and a half credits from the humanities and social sciences.

## 17. Duration of Undergraduate Studies

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

Students are normally required to complete their undergraduate studies within ten years of their first, and to comply with the regulations in force at the time of that. 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.

### 17.2 Faculty of Health Professions

With the exception of the undergraduate programmes in the School of Recreation, Physical and Health Education and the Maritime School of Social Work to which Regulation 17.1 applies, students in the Faculty of Health Professions are normally required to complete their undergraduate studies within six years of first in professional classes or within five years in the post-diploma degree programme in Physiotherapy. This rule applies to such classes for transfer credits as well. The School or College Committee on Studies may grant permission to continue studies beyond this period subject to conditions specified by the Committee.



18. Assessment

18.1 Method

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

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

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

18.1.1. Academic Accommodation for Students with Learning Disabilities

Students are expected to self-identify that they have a learning disability with the Advisor to Students with Disabilities as early as possible and preferably before the beginning of the term and to provide the Advisor with a current (within three years) psychoeducational report documenting the presence of a learning disability. 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 types of academic accommodation provided for students with learning disabilities may vary depending on the nature of the learning disability and the class content. 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 a mastery of class material.

Appeal for students with learning disabilities will follow the usual procedures of the relevant Faculty or School.

The policy on release of information about students with learning disabilities is consistent with the University Regulation on the Release of Information as detailed on page 77.

Note: Where self-disclosure or prior arrangements have not been made with the University, Dalhousie is not liable to accommodate your special needs due to your disability.

18.2 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.

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 third 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.

No tests or examinations worth more than 50% of the final grade in an A, or B class, or more than 25% of the final grade in an R class may be held in the last two weeks of either term, without the explicit approval of the appropriate governing body of the Faculty or School. 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 Health Professions in which special facilities are required. Students may contact the Dean's/Director's Office of the appropriate Faculty/School/College for assistance if they are scheduled for more than two examinations on the same day.

18.3 Submission of Grades

On completion of a class, the instructor is required to submit grades to the Registrar. Such grades are to be based on the instructor's evaluation of the academic performance of the students in the class in question.

18.4 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 (A) ..... Feb 1
- Winter and Regular term classes (B or R) ..... June 1
- Spring term classes (A, B, or R) ..... Aug 1
- Summer term and Commerce Co-op Summer session classes (A, B, or R) ..... Oct 1

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

- BIOL 4800.03 and 4900.06;
- MUSC 3470.03 and 4470.03;
- HEBd 1495.02, 1595.02;
- LEIS 4496.06;
- PHSE 3398.06, and 3402.06;
- NURS 2220.06, 3240.03 and 3250.03;
- PHAR 3000.00;
- OCCU 2221.00, 3319.00, 3321.00, and 4420.00;
- SLWK 3020.06, 4020.15, and 4030.12;
- PHYT 2500.00, and 3500.00.

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

The Office of the Registrar is not permitted to accept a late clearance of INC or late grade changes other than those due to errors. If there are exceptional circumstances, a recommendation should be forwarded to the undergraduate coordinator or the Committee on Studies of the appropriate Faculty/School. Unless INC is changed it counts in the GPA and has a grade point value of 0.00 - it is a failing grade.

## 18.5 Marginal Failure

### Faculty of Health Professions

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. The highest grade that can be awarded is C for professional classes and D for other classes. Although both the original and supplemental grades are recorded on the transcript, only the supplemental grade will be included in the grade point average. Supplemental exams will be administered by the participating school/college. Students should check directly with their school/college for detailed information on the awarding of FM grades and eligibility for supplemental examinations.

## 18.6 Correction of Errors in Recorded Grades

Students must request correction in the calculation or recording of final grades by March 1 for first-term grades, July 1 for second-term grades, Sept 1 for spring session grades and Nov 1 for summer term grades and grades for the co-op summer session.

## 18.7 Reassessment of a Grade

Students who have questions about final grades that are assigned are encouraged to discuss them with the class instructor. In addition, students may consult the Chair of the Department, Director of the School/College, Dean of the Faculty, the Student Advocate or the Ombud. If their concerns cannot be resolved, students may also use the formal process that follows for the re-assessment of final grades.

Once a final class grade has been submitted to the Registrar, a student who wishes to have a final grade re-assessed should make a written request to the Registrar and pay the requisite fee of \$25.00. 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 March 1 for first-term grades, July 1 for second-term grades, Sept 1 for spring session grades and Nov 1 for summer session grades and for the co-op summer session. When such a request is received, the Registrar will forward it to the Dean of the Faculty or Director of the School/College offering the class. The re-assessment will be conducted according to procedures developed for the purpose by the Faculty or 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.

Students who wish information about grade re-assessment procedures should contact their Faculty or School/College office.

## 18.8 Special Arrangements for Examinations, Tests and Assignments

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

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

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

Requests for alternate arrangements should be made to the instructor in all cases. The deadline for changing a grade of ILL is February 1 for "A" classes and June 1 for "R" and "B" classes for the Regular session. For the Spring and Summer sessions the deadlines are August 1 and October 1 respectively. Requests to change grades after these deadlines must be submitted in writing to the appeals committee of the appropriate school or faculty.

## 19. Academic Standing

Students' academic standing is normally assessed at the end of the Regular session.

BComm Co-op students will be assessed after two consecutive academic terms or after a single academic term which is followed by a work term.

### 19.1 Scale and Grade Definitions

See table on page 92.

#### 19.1.1 Grade Point Average (GPA)

The Grade Point Average is calculated by summing the values obtained by multiplying the credit points obtained in each class in accordance with the scale in 19.1, by the number of credit hours of each class then dividing that sum by the total credit hours attempted. A Seasonal GPA includes only those classes attempted in the regular and prior spring/summer sessions; and the Cumulative GPA includes all classes attempted while registered for the current degree or carried forward from a previous degree.

## 19.1.1 Grade Scale and Definitions

Grade	Grade Point Value	Definition	
A+	4.30	Excellent	Considerable evidence of original thinking; demonstrated outstanding capacity to analyze and synthesize; outstanding grasp of subject matter; evidence of extensive knowledge base.
A	4.00		
A-	3.70		
B+	3.30	Good	Evidence of grasp of subject matter, some evidence of critical capacity and analytical ability; reasonable understanding of relevant issues; evidence of familiarity with the literature.
B	3.00		
B-	2.70		
C+	2.30	Satisfactory	Evidence of some understanding of the subject matter; ability to develop solutions to simple problems; benefiting from his/her University experience.
C	2.00		
C-	1.70		
D	1.00	Marginal Pass	Evidence of minimally acceptable (except in programmes where a minimum grade of 'C' is required) familiarity with subject matter, critical and analytical skills.
FM**	0.00	Marginal Failure	Only available in the professional Faculties.
F	0.00	Inadequate	Insufficient evidence of understanding of the subject matter; weakness in critical and analytical skills; limited or irrelevant use of the literature.
INC*	0.00	Incomplete	
W	Neutral, and no credit obtained	Withdrew after deadline	
ILL	Neutral, and no credit obtained	Compassionate reasons/illness	
P	Neutral, and no credit obtained	Pass for credit classes	
T	Neutral, and no credit obtained	Transfer credit on admission	

\* see 18.4

\*\* see 18.5

## 19.2 Grade Points in the Spring/Summer Session

Students enrolled in classes during the Spring/Summer session will earn grade points which will be included in their cumulative GPA and the sessional GPA for the next regular academic session. A sessional GPA will not be calculated for spring and summer sessions.

## 19.3 Grade Points on Admission

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

## 19.4 Grade Points on Letter of Permission

The grade earned in a class taken at another institution on a letter of permission is recorded and the appropriate Dalhousie grade points are assigned. For institutions which do not use letter grades, the Registrar's Office translates the grade into a Dalhousie grade and assigns the corresponding grade points.

## 19.5 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 sessional and cumulative GPA.

## 20. Probation

## 20.1 College of Arts and Science

20.1.1 Students with a cumulative GPA of less than 1.70 and greater than or equal to 1.00 who have completed at least four full credits will be placed on academic probation.

20.1.2 Students on probation are allowed to continue to register on probation provided their sessional GPA is at least 1.70. Students will be returned to "good standing" when they achieve a cumulative GPA of 1.70. Students on probation who do not achieve a sessional GPA of 1.70 will be academically dismissed for a 12-month period.

20.1.3 Students who are returning from a 12-month period of academic dismissal are allowed to register on probation. They are allowed to continue to register on probation provided their sessional GPA is at least 1.70. Students will be returned to "good standing" when they achieve a cumulative GPA of 1.70.

Students who do not achieve a sessional GPA of at least 1.70 will be dismissed academically for the second time for a 36-month period.

20.1.4 Students require a cumulative GPA of 1.70 to graduate. Therefore, no one will be allowed to graduate while on probation.

**20.2 Faculty of Health Professions and Faculty of Management**

20.2.1 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.

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

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

**21. Academic Dismissal**

**21.1 Academic Dismissal - College of Arts and Science**

21.1.1 Students with a cumulative GPA of less than 1.00 who have completed at least four full credits will be academically dismissed for a 12-month period.

21.1.2 Students on probation who do not achieve a sessional GPA of 1.70 or greater will be academically dismissed for a 12-month period.

21.1.3 Students who have been academically dismissed for the first time may re-register on probation after a 12-month period.

21.1.4 Students who have been academically dismissed for the second time will not be allowed to apply for re-admission for at least three calendar years.

**21.2 Academic Dismissal - Faculty of Health Professions and Faculty of Management**

21.2.1 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.

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

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

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

21.2.4.2 Faculty of Health Professions: Students who have been academically dismissed twice will not be allowed to apply for re-admission.

21.2.5 Faculty of Management: Students who have been academically dismissed and have subsequently been re-admitted after an absence of a 12-month period may re-register on probation.

21.2.6 Faculty of Health Professions - Suspension or Dismissal from a Programme on the Grounds of Professional Unsuitability, University Regulations page 81.

**22. Graduation Standing**

**22.1 Minimum Cumulative GPA**

22.1.1 A minimum cumulative GPA of 1.70 is required for the awarding of a degree in the College of Arts and Science except for Honours programmes. Please see the Degree Requirements section for details on Required Standing for Graduation for Honours programmes.

22.1.2 A minimum cumulative GPA of 2.00 is required for the awarding of an undergraduate degree in the Faculty of Health Professions and the Faculty of Management.

**22.2 Graduation with Distinction**

A cumulative GPA of at least 3.70 is required to graduate with distinction. For the purpose of determining whether a student will graduate with Distinction, all classes taken while at Dalhousie, including repeated classes, and classes for which non-passing grades were obtained, are included. At least half of the classes must be completed at Dalhousie.

**22.3 Scholarship Standing**

Please see Awards Section, Scholarship GPA (page 47) for information on the GPA required for scholarship purposes.

**23. Graduation**

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

Graduation Month	Deadline
May.....	December 1
October .....	July 1

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

**24. Change from BA to BSc Programme and Vice Versa**

All students who have completed all the requirements for a BSc degree have automatically completed all the requirements for a BA degree, provided they have included a language credit. Similarly most students who have completed all requirements for a BA degree in a science subject will have automatically completed all requirements for a BSc degree, provided they have completed the mathematics requirement. However, students

## 94 Academic Regulations

who are registered for a BSc degree and wish to be awarded a BA degree or vice versa must do so by submitting an admissions application to the Office of the Registrar by September 19.

### 25. Deans' and Directors' Lists

#### 25.1 College of Arts and Science and Faculty of Management

Students who have completed first, second, third or fourth year (where year is defined as the number of classes or credit hours deemed by the Faculty/School/College to be the normal yearly workload in the student's degree programme) and have achieved a sessional GPA of 3.70 in the last five credits or equivalent credit hours will be placed on the Dean's or Director's List of the Faculty or School. The notation "Dean's List" or "Director's List" will appear on the student's transcript. Normally, fewer than fifteen percent of students are on the Deans' and Director's Lists.

#### 25.2 Faculty of Health Professions

For those programmes enrolling full-time students, the Dean's list will be considered annually on a minimum (and no maximum) number of credits designated by the School/College as a normal yearly workload. For those programmes where there are part-time students, see 25.1 for the method used.

### 26. Appeals

#### 26.1 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 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 of the appropriate Faculty for students in the College of Arts and Science or the Director of Academic Programmes in the School of Business.

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

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

#### 26.2 Faculty of Health Professions

Students may appeal decisions pertaining to the College's or a School's interpretation of academic rules and regulations to the Faculty of Health Professions Undergraduate Committee on Studies. Normally, appeals to this committee occur after appeal procedures at the School or College level have been exhausted.

In the case of appeals initiated by students the following procedures shall normally be followed:

1. The student prepares and presents a written statement to the Dean requesting an appeal hearing and stating clearly which regulation is in question and the remedy being sought. The statement is to contain an outline of the circumstances that necessitate the appeal to the Faculty level and the expectations of the appellant. The student will also provide a telephone number and address through which the student can be reached.
2. The request for an appeal must be presented by the student to the Dean of the Faculty of Health Professions within thirty calendar days of notification of the student by the School/College of the disputed academic decision. The Dean will then ensure that the request for an appeal is forwarded to the Chairperson of the Committee on Studies within two business days.
3. Before acting upon the request for an appeal, the Chairperson of the Faculty Undergraduate Committee on Studies shall determine if School/College appeal procedures have been exhausted and that all the evidence presented to him/her has in fact been considered by the School/College Committee on Studies. If the Chairperson of the Undergraduate Committee on Studies is from the appellant's School/College, the Vice-Chairperson will preside over the appeal process.
4. When the Chairperson or Vice-Chairperson has determined that the Faculty Committee should hear the case, he/she will place the matter on the agenda of the next regularly scheduled meeting, unless in the judgement of the Chairperson there is reason to hold the hearing at an earlier date. The case must be heard within thirty calendar days of receipt by the Dean of a written request for appeal.
5. The Chairperson shall notify the student by telephone and by registered mail of the date, time, place of the appeal hearing, and of the student's right to appear before the Committee, either alone or with an advocate of his/her choice.
6. Documentation in support of the appeal must normally be distributed to the Committee with the agenda seven days prior to the meeting. The chairperson is to ensure that an identical package of all materials is made available to the appellant, the appellant's advocate and the School/College.
7. The members of the Committee whose decision is under appeal have the right to be present and to make representations before the Faculty Committee with, or without, an advocate of their choice and/or other School/College personnel.
8. After the student's appeal has been heard, the Committee will continue the meeting in camera to reach a decision. Other persons from the School/College (as noted in 7

- above) and the appellant and his/her advocate will be required to leave prior to the in camera deliberations.
9. The decision of the Faculty Undergraduate Committee on Studies will be dispatched directly to the appellant by the Chairperson of the Faculty Undergraduate Committee on Studies in writing within 72 (seventy-two) hours of the hearing by registered mail. A copy of the decision will also be sent to the Director of the School/College in question and to the Dean of the Faculty.
  10. Should the Committee decide against the student's appeal, the Chairperson of the Faculty Undergraduate Committee on Studies will advise the student of the right to appeal to Senate.
  11. In the case of appeals initiated by the School/College on behalf of a student, the School/College will be responsible for providing all documentation. Correspondence or communications from the Chairperson of the Faculty Undergraduate Committee on Studies, as described in procedures 3, 5, 6, 10 and 11 above, shall be with the Director of the School/College.

### **26.3 Appeals for Students with Learning Disabilities**

Appeals by students with learning disabilities will follow the usual procedures of the relevant Faculty at Dalhousie University.

## **27. Changes in Regulations**

In general, any change which affects a currently registered student adversely will not apply to that student. Any student suffering undue hardship from application of any of the regulations may appeal for relief to the appropriate academic appeals committee as in Section 26, 26.1 and 26.2 above.

## Degree Requirements

Following is a list of the faculty requirements needed to satisfy degree programmes at Dalhousie University. Details of these requirements can be found on the pages following these lists. Departmental requirements can be found in the appropriate departmental listing in this calendar. Please note that students must satisfy both departmental and faculty requirements. Before registering for the second year, each student must declare an area of concentration and obtain programme advice from a faculty advisor in the appropriate department.

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

### BA, BSc Major (3 year)

- 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 1.2.1., page 101)
  - One credit in a single language/humanities subject (see 1.1.1., page 100)
  - One credit in a single social science subject (see 1.1.2., page 100)
  - One credit in a single life or physical science subject (see 1.1.3., page 100)
  - One credit in a single language for Bachelor of Arts (see 1.2.3., page 101)
  - One credit in math for Bachelor of Science (see 1.2.2., page 101)
  - Minimum of four (4), maximum of eight (8) credits in the major subject beyond the 1000 level, including two (2) credits beyond the 2000 level. Chemistry majors and students enrolled in the combined Diploma in Engineering and 15 credit major programme in Math or Chemistry need take only one credit beyond the 2000 level.
  - Bachelor of Arts Major - subjects: Classics, Comparative Religion, Economics, English, French, German, Greek, History, International Development Studies, Latin, Music, Philosophy, Political Science, Russian Studies, Sociology and Social Anthropology, Spanish, Theatre, Women's Studies or any of the BSc major subjects.
  - Bachelor of Science Major - subjects: Biology, Chemistry, Computing Science, Earth Science, Economics, Mathematics, Physics, Psychology, or Statistics.
  - Within the last ten (10) credits, complete one (1) credit in each of two subjects other than the major.
  - Total credits required above 1000 level - 7
  - Total credits required for degree - 15
  - Required GPA for graduation - 1.70
    - Graduation with distinction - 3.70

### Advanced Major Programmes

Students who do not wish to attempt an Honours programme are encouraged to enter an Advanced Major programme which also

requires 20 credits but with a lesser degree of concentration in a single subject. Such students are advised to seek detailed information from the department in which they wish to concentrate. Unlike the Honours degree, the Advanced Major degree may not be adequate for admission to graduate programmes.

### BA, BSc Advanced Major (4 year)

- 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 1.2.1., page 101)
  - One credit in a single language/humanities subject (see 1.1.1., page 100)
  - One credit in a single social science subject (see 1.1.2., page 100)
  - One credit in a single life or physical science subject (see 1.1.3., page 100)
  - One credit in a single language subject for Bachelor of Arts (see 1.2.3., page 101)
  - One credit in math for Bachelor of Science (see 1.2.2., page 101)
  - Minimum of six (6), maximum of (9) credits in the major subject beyond the 1000 level, including three (3) credits beyond the 2000 level.
    - Bachelor of Arts Advanced Major - subjects: Classics, Comparative Religion, Economics, English, French, German, History, International Development Studies, Philosophy, Political Science, Psychology, Russian Studies, Sociology and Social Anthropology, Spanish, Women's Studies or from any of the BSc Major subjects.
    - Bachelor of Science Advanced Major - subjects: Biochemistry, Biology, Chemistry, Computing Science, Earth Sciences, Economics, Marine Biology, Mathematics, Microbiology, Neuroscience, Physics, Psychology, or Statistics.
  - 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 - 1.70
    - Graduation with distinction - 3.70

### Programmes in Co-operative Education

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

Co-op degree programmes conform to the requirements for the Advanced Major degree.

The following Departments currently offer Co-op programmes: Biochemistry, Chemistry, Earth Sciences, Marine Biology, Mathematics, Statistics and Computing Science, and Physics. For details of these programmes, consult the

Calendar entries for the Departments and the Cooperative Education in Science section, page 156.

### BA, BSc Advanced Major Co-op (4 year)

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

- Four (4) co-op workterms

### Advanced Double Major

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

### BA, BSc Advanced Double Major (4 year)

- 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 1.2.1., page 101)
- One credit in a single language/humanities subject (see 1.1.1., page 100)
- One credit in a single social science subject (see 1.1.2., page 100)
- One credit in a single life or physical science subject (see 1.1.3., page 100)
- One credit in a single language for Bachelor of Arts (see 1.2.3., page 101)
- One credit in math for Bachelor of Science (see 1.2.2., page 101)
- 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) and no fewer than four (4) in either, including at least 2 credits beyond the 2000 level in each of the two major subjects.
- Bachelor of Arts Advanced Double Major - subjects: Classics, Comparative Religion, Economics, English, French, German, History, International Development Studies, Philosophy, Political Science, Psychology, Russian Studies, Sociology and Social Anthropology, Spanish, Women's Studies or from any of the BSc Major subjects.
- Bachelor of Science Advanced Double Major - subjects: Biochemistry, Biology, Chemistry, Computing Science, Earth Sciences, Economics, Marine Biology, Mathematics, Microbiology, Neuroscience, Physics, Psychology, or Statistics. Choose both subjects from the BSc major subjects listed above or combine one of the BSc major subjects with one of the BA major subjects, provided that the larger number of advanced major credits is from a science subject.
- 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 - 1.70
- Graduation with distinction - 3.70

### Upgrading of a BA or BSc to an Advanced Major

A person who holds a Dalhousie BA or BSc (15 credit) degree may apply through the Registrar's Office for admission to an Advanced Major. On completion of the required work with proper standing, a certificate will be awarded which has the effect of upgrading the degree to Advanced Major status.

### Honours Programmes

Able and ambitious students are urged to enter Honours Programmes. These programmes require a higher quality of work than is required by the other undergraduate programmes of the College (15-credit Major and 20-credit Advanced Major). There are three types of Honours programmes: concentrated, combined and multidisciplinary.

Applications for admission to Honours programmes must be made to the Departments concerned on forms available in Departments and at the Office of the Registrar. 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 programme, including elective credits, is subject to supervision and approval by the Department or Departments concerned, or in the case of multidisciplinary honours, by an interdisciplinary committee.

Note: The last day to apply to an Honours programme is September 19.

### Joint Honours: Dalhousie-Mount Saint Vincent

Special arrangements exist under which students may be permitted to pursue an Honours programme 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 programme 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.

### BA, BSc Concentrated Honours (4 year)

- First Year
  - no more than three (3) full credit equivalents of the first five credits taken may be in a single subject



## 98 Degree Requirements

- One credit in a writing class (see 1.2.1., page 101)
- One credit in a single language/humanities subject (see 1.1.1., page 100)
- One credit in a single social science subject (see 1.1.2., page 100)
- One credit in a single life or physical science subject (see 1.1.3., page 100)
- One credit in a single language for Bachelor of Arts (see 1.2.3., page 101)
- One credit in math for Bachelor of Science (see 1.2.2., page 101)
- Two credits in a minor subject - not taken within first year, grade must be "C" or better
- Minimum of nine (9), maximum of eleven (11) credits in the honours subject - grade must be "C" or better, otherwise class will not count towards degree.
  - Bachelor of Arts Concentrated Honours subjects: Classics, Economics, English, French, German, History, International Development Studies, Philosophy, Political Science, Russian Studies, Social Anthropology, Sociology, Spanish, and Theatre or any of the BSc Honours subjects.
  - Bachelor of Science Concentrated Honours subjects: Biochemistry, Biology, Chemistry, Computing Science, Earth Sciences, Economics, Marine Biology, Mathematics, Microbiology, Neuroscience, Physics, Psychology and Statistics.
- Two (2) to four (4) - depending on the number selected in the major subject - elective credits, at least one of which must be in a single subject other than the major or minor.
- Honours Qualifying Examination: At the conclusion of an Honours programme a student's record must show a grade which is additional to the grades for the classes taken to obtain the required twenty credits. This grade may be obtained through a comprehensive examination, the presentation of a research paper (which may be an extension of one of the classes), or such other method as may be determined by the committee or department supervising the student's programme. The method by which this additional grade is obtained is referred to as the Honours Qualifying Examination. Departments may elect to use a pass-fail grading system for this examination. Unless pass/fail grading is employed, the grade must be "B-" or better for Honours, and "A-" or better for First Class Honours.
- Required standing for graduation:
  - Arts and Social Science Subjects require a GPA of 2.70 (3.70 for First Class) on classes in the major and minor.
  - Science subjects (Biochemistry, Biology, Chemistry, Computing Science, Economics, Earth Sciences, Marine Biology, Mathematics, Microbiology, Neuroscience, Physics, Psychology and Statistics) require a GPA of 3.00 (3.70 for First Class) in the major and minor classes.

## BA, BSc Combined Honours (4 year)

- 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 1.2.1, page 101)
- One credit in a single language/humanities subject (see 1.1.1., page 100)
- One credit in a single social science subject (see 1.1.2., page 100)
- One credit in a single life or physical science subject (see 1.1.3., page 100)
- One credit in a single language for Bachelor of Arts (see 1.2.3., page 101)
- One credit in math for Bachelor of Science (see 1.2.2., page 101)
- Minimum of eleven (11) credits beyond the 1000-level in two allied subjects, not more than seven (7) nor fewer than four (4) credits being in either of them. Students may, with the approval of the departments concerned, elect a maximum of thirteen (13) credits in two allied subjects with no more than nine (9) and no fewer than four (4) credits being in either of them. Grade must be "C" or better, otherwise, class will not count toward degree.
- Two (2) to four (4) - depending on the number selected in the major subject - elective credits in subjects other than the two offered to satisfy the requirement of the preceding clause.
  - Bachelor of Arts Combined Honours - subjects: Classics, Contemporary Studies, Economics, English, French, German, History, International Development Studies, Music, Philosophy, Political Science, Russian Studies, Social Anthropology, Sociology, Spanish, and Theatre or any of the BSc Honours subjects.
  - Bachelor of Science Combined Honours subjects: Biochemistry, Biology, Chemistry, Computing Science, Earth Sciences, Economics, Marine Biology, Mathematics, Microbiology, Neuroscience, 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, provided the larger number of Honours credits is from a science subject.
- Honours Qualifying Examination: see Concentrated Honours programme above for details.
- Required standing for graduation:
  - Arts and Social Science Subjects require a GPA of 2.70 (3.70 for First Class) on classes in the major.
  - Science subjects (Biochemistry, Biology, Chemistry, Computing Science, Earth Sciences, Economics, Marine Biology, Mathematics, Microbiology, Neuroscience, Physics, Psychology and Statistics) require a GPA of 3.00 (3.70 for First Class) in the major.

## BA, BSc Multidisciplinary Honours (4 year)

- 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 1.2.1., page 101)
- One credit in a single language/humanities subject (see 1.1.1., page 100)
- One credit in a single social science subject (see 1.1.2., page 100)
- One credit in a single life or physical science subject (see 1.1.3., page 100)
- One credit in a single language for Bachelor of Arts (see 1.2.3., page 101)
- One credit in math for Bachelor of Science (see 1.2.2., page 101)
- Twelve (12) credits beyond the 1000 level in three or more subjects. No more than five (5) of these may be in a single subject; no less than six (6) nor more than nine (9) may be in two subjects. Grade must be "C" or better, otherwise the class will not count towards degree.
- Bachelor of Arts Multidisciplinary Honours - at least ten (10) credits of the twenty selected must be from the following subjects: Classics, Economics, English, French, German, History, International Development Studies, Philosophy, Political Science, Russian, Social Anthropology, Sociology, Spanish, and Theatre or any of the BSc Honours subjects.
- Bachelor of Science Multidisciplinary Honours - at least eight (8) credits of the twenty selected must be from the following subjects: Biochemistry, Biology, Chemistry, Computing Science, Earth Sciences, Economics, Mathematics, Microbiology, Neuroscience, Physics, Psychology and Statistics.
- Three (3) elective credits.
- Honours Qualifying Examination: See Concentrated Honours programme above for details.
- Required standing for graduation:
  - Arts and Social Science Subjects require a GPA of 2.70 (3.70 for First Class) on classes in the major.
  - Science subjects (Biochemistry, Biology, Chemistry, Computing Science, Earth Sciences, Economics, Marine Biology, Mathematics, Microbiology, Neuroscience, Physics, Psychology and Statistics) require a GPA of 3.00 (3.70 for First Class) on classes in the major.

## Honours Programmes in Co-operative Education

Co-operative Education programmes are also available for the Bachelor of Arts and Bachelor of Science Honours degrees. The requirements for Co-op degrees conform to the regular Honours programmes which are described below.

## BA, BSc Honours Co-op (4 year)

Requirements are as for appropriate Honours programme with the addition of the following:

- Four (4) co-op workterms

## Upgrading of a BA or BSc to an Honours Degree

A person who holds a Dalhousie BA or BSc (15- or 20-credit) degree may apply through his/her department advisor or, for Multidisciplinary Programmes, their Coordinator, for admission to an Honours programme. On completion of the required work with proper standing, a certificate will be awarded which has the effect of upgrading the degree to Honours status.

## BA and BSc Programmes with Minor in Business

### BA, BSc Advanced Major with Minor in Business (4 year)

- First Year
  - no more than three (3) full credit equivalents of the first five credits taken may be in a single subject
- COMM 1000.03, 1501.03, ECON 1101.03/1102.03
- One credit in Mathematics (for the BSc the mathematics credit must be other than MATH 1001.03/1002.03, 1110.03/1120.03)
- One credit in a writing class (see 1.2.1., page 101)
- One credit in a single language/humanities subject (see 1.1.1., page 100)
- One credit in a single social science subject (ECON 1101.03/1102.03)
- One credit in a single life or physical science subject
- One credit in a single language subject for BA (see 1.2.3., page 101)
- Required Advanced Commerce classes:
  - COMM 2101.03, 2301.03, 2401.03 and 1.5 other Commerce classes above the 1000 level; one (1) Commerce credit above the 2000 level.
- Minimum of six (6), maximum of nine (9) credits above the 1000 level in the major, at least three (3) of which must be above the 2000 level.
  - Bachelor of Arts Advanced Major - subjects: Classics, Comparative Religion, Economics, English, French, German, History, International Development Studies, Philosophy, Political Science, Psychology, Russian Studies, Sociology and Social Anthropology, Spanish, Women's Studies or from any of the BSc Major subjects.
  - Bachelor of Science Advanced Major - subjects: Biochemistry, Biology, Chemistry, Computing Science, Earth Sciences, Economics, Marine Biology, Mathematics, Microbiology, Neuroscience, Physics, Psychology, or Statistics.

## 100 Degree Requirements

- Within the last fifteen credits, complete one credit in a single subject other than the major subject or Commerce.
- Total credits required above the 1000 level - 12
- Total credits required for degree - 20
- Required GPA for graduation - 1.70
  - Graduation with distinction - 3.70

### BA, BSc Honours with Minor in Business (4 year)

- First Year - first five credits
  - no more than three (3) full credit equivalents of the first five credits taken may be in a single subject
- COMM 1000.03, 1501.03, ECON 1101.03/1102.03
- One credit in Mathematics (for the BSc mathematics credit must be other than MATH 1001.03/1002.03, 1110.03/1120.03)
- One credit in a writing class (see 1.2.1., page 101)
- One credit in a single language/humanities subject (see 1.1.1., page 100)
- One credit in a single social science subject (ECON 1101.03/1102.03)
- One credit in a single life or physical science subject
- One credit in a single language for BA (see 1.2.3., page 101)
- Required Advanced Commerce classes:
  - COMM 2101.03, 2301.03, 2401.03 and 1.5 other Commerce credits above the 1000 level; one (1) Commerce credit above the 2000 level.
- Nine (9) credits beyond the 1000 level in the Honours subject - grade must be a "C" or better or credit will not count towards degree.
  - Bachelor of Arts Concentrated Honours subjects: Classics, Economics, English, French, German, History, International Development Studies, Philosophy, Political Science, Russian Studies, Social Anthropology, Sociology, Spanish, and Theatre or any of the BSc Honours subjects.
  - Bachelor of Science Concentrated Honours subjects: Biochemistry, Biology, Chemistry, Computing Science, Earth Sciences, Economics, Marine Biology, Mathematics, Microbiology, Neuroscience, Physics, Psychology and Statistics.
- Two (2) elective credits, one full credit of which must be in a single subject other than Commerce or the Honours subject.
- Honours Qualifying Examination: see Concentrated Honours programme for details.
- Required standing for graduation:
  - Arts and Social Sciences Subjects require a GPA of 2.70 (3.70 for First Class) on classes in the major and minor.
  - Science subjects (Biochemistry, Biology, Chemistry, Computing Science, Economics, Earth Sciences, Marine Biology, Mathematics, Microbiology, Neuroscience, Physics, Psychology and

Statistics) require a GPA of 3.00 (3.70 for First Class) on classes in the major and minor.

## Individual Programmes

In cases where students feel their academic needs are not satisfied under the above requirements, individual programmes may be submitted to the Student Affairs Committee of the Faculty of Arts and Social Sciences or to the Curriculum Committee of the Faculty of Science prior to or during the student's second academic year. The Dean shall act as advisor for such students.

## 1. College of Arts and Sciences

### 1.1. Subject Groupings in the College of Arts and Sciences

The various subjects in which instruction is offered are grouped as follows:

#### 1.1.1. Languages and Humanities:

Classics, Comparative Literature, Comparative Religion, English, French, German, Greek, History, King's Foundation Year, Latin, Music, Philosophy, Russian, Spanish, Theatre, and Women's Studies.

#### 1.1.2. Social Sciences:

Canadian Studies, Economics, Education, History, International Development Studies, King's Foundation Year, Political Science, Psychology, Sociology and Social Anthropology, and Women's Studies.

#### 1.1.3. Life Sciences and Physical Sciences:

Biochemistry, Biology, Chemistry, Computing Science, Earth Sciences, Economics, Engineering, Mathematics, Microbiology, Neuroscience, Oceanography, Physics, Psychology, Science and Statistics.

#### Please Note:

- (1) In cases where a subject is listed in more than one of the groupings, any credit taken in that subject may be used to satisfy only one of the grouping requirements. A second credit in the same subject cannot be used to satisfy another subject grouping requirement. The exceptions are the Dalhousie Integrated Science Programme and King's Foundation Year Programme. King's Foundation Year Programme (KING 1000.24, 1100.18) satisfies the Humanities-Languages and Social Science groupings and students must take a full credit in a single Life / Physical Sciences subject to complete the subject grouping requirements. The Dalhousie Integrated Science Programme (SCIE 1500.30) satisfies the Science and Social Science requirements and students must take a full credit in a single language/ humanities subject to complete the subject grouping requirement.
- (2) The subject groupings requirement should normally be completed in the first ten credits.

### 1.2.1. Writing Class

One of the five classes chosen must 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 Curriculum Committee and are listed below.

CHBM 1000.06;  
 CLAS 1000.06, 1010.06, 1100.06;  
 COMR 1301.06;  
 ENGL 1000.06;  
 GERM 1000.06, 1050.06;  
 HIST 1400.06;  
 King's Foundation Year;  
 MUSC 1010.06;  
 PHIL 1010.06;  
 POLI 1103.06;  
 RUSS 2051.03/2052.03 (both RUSS 2051.03 and 2052.03 must be successfully completed in order to satisfy the Writing Requirement);  
 SCIB 1500.30;  
 THEA 1000.06.

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 format description:

✍ Writing Requirement

Please note: Classes identified as Writing Intensive do not satisfy the Writing Requirement.

### 1.2.2. Mathematics Requirement

In order to qualify for a BSc degree candidates are required to complete successfully at least one full University credit in Mathematics other than MATH 1001.03/1002.03, MATH 1110.03/1120.03. A class taken to satisfy this requirement cannot also satisfy the requirement of a class from section 1.1.3.

Students may also satisfy this requirement by completing the Science Foundation year or passing the test which is administered by the Department of Mathematics, Statistics & Computing Science. Such students must nevertheless complete 15 or 20 credits in order to graduate.

### 1.2.3. Language Class

Students should consider becoming fluent in French. BA students are required to obtain one credit from the following language classes:

CLAS 1700.06, 1800.06;  
 FREN 1000.06, 1005.06, 1006.06, 1010.06, 1011.06, 1045.06 1060.06, or any second year French class  
 GERM 1000.06, 1010.06, 1050.06, 1060.06;  
 RUSS 1000.06, 1050.06;  
 SPAN 1020.06, 2000.03/2010.03 (both SPAN 2000.03 and 2010.03 must be successfully completed in order to satisfy the Language Requirement)

For students with advanced language skills, upper-level language classes may be substituted. Consult the Office of the Registrar if you require further information. A class

taken to satisfy this requirement cannot also satisfy the requirement of a class from section 1.1.1.

Students may satisfy this requirement by passing one of the tests administered by the language departments. Such students must nevertheless complete 15 or 20 credits in order to graduate.

BA students who choose to major in Economics, International Development Studies, Philosophy, Political Science, Psychology or Sociology and Social Anthropology may substitute for a language class at least one full class in Mathematics or Statistics, other than MATH 1001.03/1002.03 or MATH 1110.03/1120.03, to meet this requirement; or they may meet it by passing the test administered by the Department of Mathematics, Statistics & Computing Science. A class taken to satisfy this requirement cannot also satisfy the requirement of a class from section 1.1.3.

Students who have not completed their first year but wish to enrol for further study, must first complete the first-year requirements.

### 1.2.4. Cross-listed Classes

Please note that cross-listed classes will count as one subject only for the purpose of satisfying degree requirements, e.g. ECON 2260.03 cross-listed with MATH 2060.03 may count either as part of the Mathematics requirement or as part of a major in Economics, but not both.

### 1.2.5. Arts and Science Electives

Students may choose electives from any of the classes listed by departments offering major or honours programmes in the College of Arts and Science. In addition up to three credits may be obtained from the following:

- (a) ARCH 1000.06;
- (b) Education Foundation Offerings (classes with numbers below 4400); classes numbered 4400 and above are not available as Arts and Science electives;
- (c) Classes in Engineering and Oceanography. The restriction on Engineering electives does not apply to students in the Diploma in Engineering Programme who combine their studies with a programme leading to a BA or BSc in the College of Arts and Sciences. (See the Engineering entry in this calendar).
- (d) Classes in Music. Note: Music classes 1000.06, 1001.03, 1002.03, 2007.06, 2008.06, 2010.06, 2011.06, 2012.06, 2013.06, 2021.06, 2087.06, and 3064.03 are available as normal electives, but other classes in Music may be taken by special permission of the Department of Music.
- (e) The following approved classes from other Faculties: all Commerce classes and Health Education 4412.03.

Note: Students enrolling in elective classes must meet normal class prerequisites.

**1.3. Bachelor of Music and Bachelor of Music Education**

For the special requirements of these degrees, see the entry for the Department of Music.

**1.4. Diploma in Engineering**

For details of the requirements for the diploma, see the entry for the Department of Engineering.

**1.5. 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.

**1.6. Diploma in Meteorology**

Details of the requirements for this diploma may be found in the entry of the Department of Physics.

**2. Faculty of Management**

**2.1. School of Business**

The Bachelor of Commerce Co-op is a four-year programme comprising 7 academic terms and 3 work terms. The equivalent of 20 full credits (40 half credits) are required for graduation. Note: all classes are half-credits except those designated as "R", which are full credits.

The work term requirements of the Bachelor of Commerce Co-op may involve placement problems for Visa students. Subject to approval by the School, students may be permitted to arrange their own work term positions. Notwithstanding, the best interests of most Visa students may be better served by seeking admission to a university that does not have a mandatory Co-op programme.

The classes in the programme are divided into five categories, as follows:

**2.1.1. Required Core Area Classes**

The equivalent of ten full credits (twenty half credits) COMM 1000.03, 2101.03, 2102.03, 1501.03, 2201.03, 2301.03, 2401.03, 2501.03, 2502.03, 2601.03, 2701.03, 2302.03, 3501.03, 4350.06R; (ECON 1100.06, 2200.03, or 2201.03; MATH 1000.03 and 1010.03, or 1110.03 and 1120.03\*

Note: MATH 1110.03 and 1120.03 are specifically designed for the Commerce programme, and are not normally accepted as the prerequisites for upper level Mathematics or Computing Science classes.

**2.1.2. Core Area Electives**

The equivalent of four full credits (eight half credits) to be selected from offerings in the core areas of Commerce, Economics and Mathematics (including Computing Science and Statistics).

**2.1.3. Non-Commerce Electives**

The equivalent of three full credits (six half credits) to be selected from all classes offered in the university except those designated as Commerce classes.

**2.1.4. Free Electives**

The equivalent of one and one-half full credits (three half credits) chosen, subject to the approval of the School of Business Administration, from all classes offered in the University above the 1000 level.

**2.1.5. Work Term Requirements**

The equivalent of one and one-half full credits (three half credits) requires the satisfactory completion of three work terms.

Students are expected to ensure that the classes taken comply with the above.

The Bachelor of Commerce Co-op is a structured programme, with most of its classes assigned to specific years and terms. The chart below summarizes the degree requirements and class sequencing through all seven of the academic terms and three work terms that constitute the Bachelor of Commerce Co-op

**Dalhousie University BComm Co-op**

Term	Fall Sept./Dec.	Winter Jan./April	Co-op Summer May/Aug.
Year I	MATH 1000.03 or 1110.03 (1) COMM 1000.03 (1) ECON 1101.03 (1)	MATH 1010.03 or 1120.03 (1) COMM 1501.03 (1) ECON 1102.03 (1)	
	3 Non-commerce Electives (6) *		COMM 1000.03 (1) COMM 1501.03 (1)
Year II	COMM 2101.03 (1) COMM 2301.03 (1) COMM 2401.03 (1) COMM 2501.03 (1) ECON 2200.03 or 2201.03 (1) Seminar *	Work Term (1)	COMM 2101.03 (1) COMM 2201.03 (1) COMM 2502.03 (1) COMM 2701.03 (1) COMM 2302.03 (1) *
Year III	Work Term (1)	COMM 2601.03 (1) COMM 3501.03 (1) 3 Core Electives (3) *	Work Term (1)
Year IV	COMM 4350.06 (2) 5 Core Electives (5) 3 Free Electives (3)		

\* Student's academic standing will be assessed at the end of this academic term (see sections 20, 21, and 22, Academic Regulations).

Programme. It will be noted that COMM 1000.03 and COMM 1501.03 will be offered in the Spring to permit students an opportunity to make up academic deficiencies and proceed to Year II of the Bachelor of Commerce Co-op.

#### 2.1.6. Competency in the English Language

All students in the Commerce programme must satisfy the School as to their competency in the English Language. This requirement is satisfied by successfully completing the Business Communication Course, Commerce 2701.03, which is a required course in second year. The School recommends, but does not require, that students take at least one course in first year, from their electives, in which written work is considered frequently and in detail. These writing classes are approved by the Writing Across Curriculum Committee and are listed as follows:

CHEM 1000.06;  
 CLAS 1000.06, 1010.06, 1100.06;  
 COMR 1301.06;  
 ENGL 1000.06;  
 GERM 1000.06, 1050.06;  
 HIST 1400.06;  
 King's Foundation Year;  
 MUSC 1010.06;  
 PHIL 1010.06;  
 POLI 1103.06;  
 RUSS 2051.03 / 2052.03 (both RUSS 2051.03 and 2052.03 must be successfully completed in order to satisfy the Writing Requirement);  
 SCIE 1500.30;  
 THEA 1000.06.

Classes which satisfy the Writing Requirement are identified by the following symbol and notation in their format description:  
 W Writing Requirement

Please note: Classes identified as Writing Intensive do not satisfy the Writing Requirement.

## 2.2. School of Public Administration

Please refer to the Public Administration entry in this calendar

## 3. Faculty of Health Professions

For degree requirements for programmes in the Faculty of Health Professions, refer to the entry in this calendar for the appropriate school or college.

## African Studies

Location: 1444 Seymour Street  
Multidisciplinary Studies Centre  
Telephone: (902) 494-3814  
Advisor: Jane Parpart 494-3667/2011  
Fax: (902) 494-2105

Dalhousie University offers a set of classes in different disciplines which focus on Africa. Its Centre for African Studies, established in 1975, coordinates teaching, seminar, research, community and publications programmes in African Studies. Its faculty associates hold appointments in the social sciences, humanities and professional schools. Undergraduate classes on Africa are usually available in Economics, History, International Development Studies and Political Science. Other classes with a broader Third World focus, which usually includes African content, are offered in Comparative Religion, English, Education, Health Law, and Sociology and Social Anthropology.

Students interested in Africa are encouraged to select classes from these several disciplines which concentrate on the continent. These could be included in single or combined major or honours programmes in Economics, History, International Development Studies, Political Science and/or Sociology and Social Anthropology.

## Anatomy and Neurobiology

Location: Sir Charles Tupper Medical Building, 13th floor, Halifax N.S. B3H 4H7  
Telephone: (902) 494-2052  
Fax: (902) 494-1212

### Dr. D.G.J. Campbell Professor and Head of Department

D.A. Hopkins

#### Professors

R.W. Currie, BSA, MSc, PhD (Man), Graduate Studies Co-ordinator  
D.H. Dickson, BA, MSc, PhD (Western), Associate Dean, Research and Planning, Faculty of Medicine  
D.A. Hopkins, BSc (Alta), MA, PhD (McM)  
J.G. Rutherford, BA (Cornell), MS (Syracuse), PhD (SUNY), Associate Dean, Faculty of Graduate Studies  
K. Semba, BEEd, MA (Tokyo), PhD (Rutgers)  
R.J. Wassersug, BSc (Tufts), PhD (Chicago)

#### Associate Professors

H.H. Ellenberger, BA, MSc, PhD (Miami)  
M.M. Hansell, BSc (Tor), PhD (Calif)  
I.G. Mobbs, BSc (Aberdeen), MSc (McM), PhD (Western)  
P.E. Neumann, BA, MD (Brown)

#### Assistant Professors

G.V. Allen, BSc, PhD (Dal)  
T. Hagg, BSc (Amsterdam), MD, MSc (Leiden), PhD (UCSD)  
W.B. Mathieson, MSc (Carleton), PhD (Ottawa)  
F.M. Smith, BSc, MSc, PhD (UBC)  
N.A. Tatton, BSc, MSc, PhD (Tor)

The Department of Anatomy and Neurobiology provides facilities for advanced study and research in Neuroscience, Histology, Embryology, Cell Biology, Neuroendocrinology and Evolutionary Biology.

#### Classes Offered

**ANAT 1010.03R: Basic Human Anatomy.** This class is offered by the Department of Anatomy and Neurobiology, for students in Nursing, Pharmacy and Special Health Education. 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. There are forty-four (44) hours of scheduled classroom lectures from September to April. A Distance Education version of this class is also available, as Section 99. There are no formal laboratory sessions with the Distance Education version.

Instructor: G.V. Allen  
Format: Lecture 2 hours  
Restriction: Section 01 is restricted to Nursing students, section 02 is

restricted to Pharmacy and Special Health Education students, section 99 is restricted to Dental Hygiene, Recreation, Physical and Health Education and Kinesiology students

Restriction: Restricted to Physiotherapy students (does not apply to the cross-listing)

**ANAT 2170.06R: Gross Anatomy.** A regional study of human gross anatomy with emphasis on functional anatomy of the back and limbs. Laboratory work/study includes radiology, osteology, living (surface) anatomy and dissection of the human body. Biology students, please see BIOL 3435 description for further details.

Instructors: R.W. Currie, R.J. Wassersug  
 Format: Lecture 1 hour, lab 4 hours  
 Restriction: Restricted to Occupational Therapy and Physiotherapy students

Cross-listing: BIOL 3435.06

**ANAT 3421.03B: Comparative Vertebrate Histology.** An advanced histology class surveying the whole range of vertebrate tissues and organs.

Instructor: M.M. Hansell  
 Format: Lecture 2 hours, lab 2 hours  
 Prerequisite: BIOL 3430.03  
 Cross-listed: BIOL 3421.03

**ANAT 1020.03R: Basic Human Anatomy.** This class is offered by the Department of Anatomy and Neurobiology and is reserved for students in Dental Hygiene, Recreation, Physical and Health Education and Kinesiology students. 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. There are forty-four (44) hours of scheduled classroom lectures from September to April.

Instructor: G. V. Allen  
 Format: Lecture 2 hours  
 Restriction: Restricted to Dental Hygiene, Recreation, Physical and Health Education and Kinesiology students

**ANAT 1030.03B: Gross Anatomy.** This class is taught by the Department of Anatomy and Neurobiology in the Faculty of Medicine and designed especially for Dental Hygiene students, and deals with detailed gross anatomy of the head and neck. This class complements ANAT 1020.03 and PHYL 1010.06.

Instructor: D.A. Hopkins  
 Format: Lecture/lab 2 hours  
 Restriction: Restricted to Dental Hygiene students

**ANAT 2100.03B: Neuroanatomy.** A survey of the histology, development and organization of the central nervous system, with emphasis on the developmental and structural relationships between spinal cord and brainstem. The organization of cranial nerves and microanatomy of the brain stem is discussed. The organization of sensory and motor systems is presented in detail. The cerebral cortex, cerebellum, basal ganglia, and limbic system are also covered.

Instructors: H.H. Ellenberger, F.M. Smith (Anatomy and Neurobiology Dept.)

Format: Lecture/lab 3 hours  
 Prerequisite: BIOL 2020.03 or 2015.06 or permission of instructor  
 Cross-listing: BIOL 3440.03, NESC 3440.03  
 Restriction: Restricted to Occupational Therapy and Physiotherapy students (BIOL 3440.03 and NESC 3440.03 do not have this restriction)

**ANAT 2160.03A: Introduction to Human Histology.** Histology is the study of the structure of cells, tissues and organ systems, and utilizes information derived from both light and electron microscopy. It complements studies in anatomy, cell biology, physiology and biochemistry, broadening the understanding of how organisms function.

Instructor: D.H. Dickson  
 Format: Lecture 2 hours, lab 2 hours  
 Prerequisite: BIOL 2020.03 or permission of instructor  
 Cross-listing: BIOL 3430.03



## Architecture

**ARCH 1000.06R: Introduction to Architecture.** An introductory class showing architecture as a bridge between the Arts and Science providing an insight into professional architectural studies. In the first term discussion centres around some components of architectural design; in the second term, architecture in present day life. Available as an elective in the general degree programmes in Arts and Social Sciences and Science. This class is held at TUNS.

**Instructor:** Staff  
**Format:** Lecture/seminar 1 hour,  
 practical 2 hours

## Arts and Social Sciences Interdisciplinary

**ASSC 1000.03A: Using Computers: An Introduction for Students in the Arts and Social Sciences.** This class is designed to introduce students in the BA programme to emerging information technologies and their practical value for the fine arts, humanities, and the social sciences. After a brief review of computer literacy, the class will focus on two fundamental computer applications: word-processing and communications. Students will learn the essentials of text-editing on both the PC and the Mainframe, how to use electronic mail, and how to access and retrieve information on both the Internet and CD-ROM. Previous knowledge of computers is desirable but not required.

**Instructor:** Phil O'Hara  
**Format:** Lectures 2 hrs, lab 1 hr  
**Prerequisites:** Desirable that students (in Arts/Social Sciences) know how to turn on computer and boot up, how computer uses bits & bytes to process information, how to format diskettes, how they store information, and how to care for them  
**Exclusion:** Students may receive credit for only one of COMP 1000.03, COMM 1501.03 or ASSC 1000.03  
**Restriction:** Students enrolled in the BA programme only

# Biochemistry

**Location:** Sir Charles Tupper Medical Building, College Street  
**Telephone:** (902) 494-2480  
**Fax:** (902) 494-1355

## Head of Department

W. Carl Breckenridge

## Faculty Advisors

C.J.A. Wallace - Undergraduate Advisor  
 (494-1118) cwallace@ac.dal.ca  
 R.A. Singer - Graduate Advisor (494-8847)  
 rasinger@ac.dal.ca  
 F.B. St.C. Palmer - Co-op Advisor (494-2570)  
 fpalmer@is.dal.ca

## Professors

A.H. Blair, BA, MSc (UBC), PhD (Calif)\*  
 W.C. Breckenridge, BSc (Queen's), MSc, PhD (Tor)  
 P.J. Dolphin, BSc, PhD (Southampton)  
 W.F. Doolittle, AB (Harv), PhD (Stan)  
 M.W. Gray, BSc, PhD (Alta)  
 C.W. Helleiner, BA, PhD (Tor)\*  
 C.B. Lazier, BA (Tor), MSc (UBC), PhD (Dal)  
 F.B. St.C. Palmer, BSc, PhD (Western)  
 D.W. Russell, BPharm, PhD, DSc (Lond), BEd (Dal)\*  
 R.A. Singer, AB (Princeton), PhD (Harv)  
 M.H. Tan, BSc, MD (Dal)  
 J.A. Verpoorte, BSc, Dns (Utrecht), DSc (Pretoria)\*  
 C.J.A. Wallace, BA, MA, DPhil (Oxon)  
 \* Post-retirement appointments

## Associate Professors

D.M. Byers, BSc, MSc (Dal), PhD (Alta)  
 H.W. Cook, BSc, MSc (McG), PhD (Dal)

## Assistant Professors

M. Dobson, BSc (Dal), DPhil (Oxon)  
 P.X.-Q. Liu, BSc (Wuhan), PhD (Cornell)  
 N. Ridgway, BSc (Dal), PhD (UBC)  
 H.-S. Ro, BSc, PhD (McM)  
 C. Too, BSc, PhD (Hawaii)

## Lecturers

D.C. Riddell, BSc, PhD (Kingston)

## 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 ranging from structure-function relationships in macromolecules to the dynamic aspects of metabolism. A set of classes has been identified to meet the needs of honours Biochemistry or

Microbiology 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 current and developing methodology (genetic engineering). The classes can be fully integrated with training in metabolism, enzymology, bacteriology, virology and immunology provided by the two departments, as they provide a good practical grounding in the recombinant DNA methods which have become essential in fields as diverse as genetic diagnosis and gene therapy, forensics, industrial microbiology, and molecular evolution.

## Degree Programmes

**Note:** Students interested in a Biochemistry degree should obtain from the department a special booklet that describes all of the programmes available and the special requirements relating to them. Degree programmes should be planned in consultation with the undergraduate coordinator (Dr. C.J.A. Wallace), or another faculty advisor (Dr. M. Dobson, Dr. P.X.-Q. Liu).

There is no three-year programme with a Biochemistry major. Students wishing to include Biochemistry in other programmes are welcomed. Note that all Biochemistry classes have prerequisites.

For general Degree Requirements, please see the Degree Requirements section in this calendar.

## BSc with Honours in Biochemistry

This is a special concentrated Honours Programme. Because Biochemistry and Chemistry are closely interwoven both conceptually and experimentally, the list of major classes required includes both subjects to a total of 10.5 credits. Additional chemistry classes may be taken as electives, or by choosing Chemistry as a minor subject. Students should consider MATH 1060.03 or 2060.03. For entrance to BIOC 2200.03, students require minimum grades of C in BIOL 1000.06 and CHEM 1010.06 (or equivalent). Honours students must meet the general degree requirements of the faculty.

## Departmental Requirements

### Classes required in Honours:

**2000 level:** BIOC 2020.03, 2030.03, 2200.03, CHEM 2201.03, 2301.03, 2302.03, 2400.06  
**3000 level:** BIOC 3200.03, 3300.03, 3400.03, CHEM 3402.03 and 3403.03 or MICR 3033.03  
**4000 level:** BIOC 4404.03, 4602.06, and 4603.03. Two more credits in Biochemistry including .5 in 43\*\* series and .5 in 47\*\* series

### Other required classes:

CHEM 1010.06, BIOL 1000.06; PHYC 1100.06, MATH 1000.03 and 1010.03

**Other requirements:**

Two credits in a minor subject and a pass in the Honours Qualifying examination (BIOC 8890.00).

A minor subject (see Degree Requirements) should be chosen in consultation with the department's Advisor. Elective and minor classes need not be taken in the order stated.

Laboratory exercises, many of the classes offered by the department of Biochemistry 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 the writing of reports is expected to be an individual effort, meeting the guidelines on plagiarism set out in the University Regulations in the Calendar.

**BSc with Combined Honours in Biochemistry and Another Science**

Biochemistry may be chosen along with one of Biology, Chemistry, Mathematics, Microbiology, Physics, Psychology, or possibly another subject, for a Combined Honours Programme.

**Departmental Requirements**

BIOC 2020.03, 2030.03, 2200.03, 3200.03, 3300.03, 3400.03 and one full credit from 43XX, 44XX, and 47XX and also CHEM 2400.06.

Consult the Undergraduate Advisor, Dr. C.J.A. Wallace, for details of recommended courses of study.

**BSc Advanced Major in Biochemistry**

The department offers a four-year, 20-credit programme of study leading to an Advanced Major Degree. The programme, while not designed as a preparation for graduate study in Biochemistry, nevertheless introduces students to all main aspects of the subject. As well as meeting the general degree requirements of the faculty.

**Departmental Requirements****Classes required in Advanced Major:**

2000 level: BIOC 2020.03, 2030.03, 2200.03, CHEM 2201.03, and 2400.06  
3000 level: BIOC 3200.03, 3300.03, 3400.03  
4000 level: Three full credits in Biochemistry at 4000 level

**Other required classes:**

CHEM 1010.06 and BIOL 1000.06

Students who have not passed Nova Scotia grade 12 Physics or its equivalent must include a 1000-level Physics class among their first ten credits.

**Co-operative Education in Biochemistry**

Co-operative education programmes provide an integrated sequence of academic classes and supervised work terms in industry, government and university laboratories. Co-op education is offered in Honours, Combined Honours and Advanced Major degrees. The programmes consist of eight academic terms and four work terms. A satisfactory written report describing activities during each work term is required. Class requirements are the same as for the regular degree programmes. Participation in a non-credit Co-op seminar (SCIE 8700.00) is required prior to the first work term which normally occurs in the summer following the second year of study.

See the "Co-operative Education in Science" section of this calendar for a general description of Co-op requirements. Students normally apply to the department at the beginning of their second year. Admission to the Biochemistry Co-op programme requires a GPA of at least 3.0 in the subjects of concentration (major and minor) to graduate with the Co-op designation.

**The work-study programme.**

Year	Fall	Winter	Summer
1	Acad	Acad	—
2	Acad	Acad	W1
3	Acad	Acad	W2
4	W3	Acad	W4
5	Acad		

For further information, contact Dr. Palmer, Biochemistry Co-op Coordinator and Science Co-operative Education, 4th floor, Student Union Building.

**Classes Offered**

The Department also teaches students in Dental Hygiene, Dentistry, Medicine, Nursing and Pharmacy; these classes are described in the appropriate sections of the Calendar. Classes marked \* are not offered every year; please consult the current timetable.

**BIOC 1420.03B: Introductory Biochemistry for Nursing Students.** Topics discussed are structure, biosynthesis, and function of carbohydrates, lipids, proteins and nucleic acids; enzyme kinetics; genetic engineering; nutrition. Medical aspects are stressed.

**Instructor:** Consult department  
**Format:** Lecture 3 hours/lab 2 hours  
**Prerequisite:** Chemistry 1410.03 or permission of Instructor

**Exclusions:** this class cannot be used as a prerequisite for any other biochemistry class and is normally restricted to students in the BScN programme.

**BIOC 2020.03A or B: Cell Biology.** See class description for BIOL 2020.03, in the Biology section of this calendar.

**BIOC 2030.03A or B: Genetics and Molecular Biology.** See class description for BIOL 2030.03, in the Biology section of this calendar.

**BIOC 2200.03B: Introductory Biochemistry.** This class will survey basic topics and concepts of Biochemistry. The structures, properties and

metabolic inter-relations of proteins, carbohydrates and lipids will be considered together with an introduction to nutrition and metabolic control. Although mammalian examples will predominate some consideration of special aspects of biochemistry of microbes and plants will be included. In the laboratory, fundamentals of peptides, proteins and enzymes will be explored.

Instructors: C.B. Lazier, F.B. St.C. Palmer, C. Too

Format: Lecture 3 hours, tutorial 1 hour alternating with lab 4 hours

Prerequisites: BIOL 1000.06, CHEM 1010.06, grades of B-. Students are advised to also take CHEM 2400.06

Cross-listing: BIOL 2010.03

SCIE 3000.06R: Science Fundamentals. See class description in Science, Interdisciplinary section of this calendar.

BIOC 3101.03A and 3102.03B: Introductory Biochemistry for Pharmacy Students. These classes deal with general aspects of biochemistry and include the chemistry of natural products. Classes are restricted to Pharmacy students.

BIOC 3200.03, 3300.03, and 3400.03 are half-credit classes, each of which deals with one important aspect of biochemistry. The level of instruction is such that adequate preparation is essential. These classes are described below.

Prerequisites: CHEM 2400.06, BIOC 2020.03, 2030.03, 2200.03, or instructor's consent

BIOC 3200.03A: Biological Chemistry. This class deals with chemical principles governing biochemical systems. We discuss the factors that determine how readily a given metabolic reaction proceeds and describe how these factors may be expressed quantitatively. Basic principles of protein structure, carbohydrates and lipids 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.

Instructors: A.H. Blair, J.A. Verpoorte  
 Format: Lecture 3 hours/lab 3 hours  
 Prerequisites: See above  
 Cross-listing: BIOL 3012.03

BIOC 3300.03B: Intermediary Metabolism. Emphasis is chiefly on metabolic pathways common to all organisms, notably the reductive synthesis and oxidative catabolism of carbohydrates, lipids, and some nitrogen compounds. Other pathways, significant in certain tissues or organisms, are included. Metabolic regulation is surveyed, and factors influencing the rate at which compounds flow through selected pathways are examined. Students learn how pathways are compartmentalized, interrelated, and affected by abiotic chemical changes in the environment. Laboratory exercises demonstrate the strategies and techniques used to study metabolic pathways.

Instructors: F.B. Palmer, W.C. Kimmins (Biology)

Format: Lecture 3 hours/lab 3 hours

Prerequisites: See above

Cross-listing: BIOL 3013.03

BIOC 3400.03A: Nucleic Acid Biochemistry and Molecular Biology. This class focuses on the relationship of structure to function in RNA and DNA. Methods for studying the primary, secondary, and tertiary structures of nucleic acids are explored in lectures and in the laboratory. Enzymic mechanisms for biosynthesis, rearrangement, degradation, and repair of nucleic acid molecules are studied, as are the processes of replication and transcription. In this context, nucleic acid biochemistry is emphasized as a basis for understanding storage and transfer of biological information.

Instructors: M.W. Gray, M. Dobson

Format: Lecture 3 hours/lab 3 hours

Prerequisite: See above

Cross-listing: BIOL 3014.03

4300 Series: Intermediary Metabolism and Control. These half-credit classes continue the study of metabolism begun in Biochemistry 3300.03, and introduce also some specialized topics of particular interest. Emphasis is on how metabolic systems are related and how the systems and their relations are controlled. Appraisal of experimental evidence and interpretation of data are stressed. Students are asked to note the prerequisites stated in each class description.

BIOC 4301.03B: Biochemical Communication. Membranes, Neurotransmitters, and Hormones:

This class examines current ideas of biochemical communication mechanisms, especially in the nervous and endocrine systems. The topics include membrane biogenesis, structural and functional relationships between cytoskeleton and membranes, intra- and intercellular trafficking and signal transduction. Recent advances in our knowledge of hormonal regulation of gene expression are emphasized and the mechanisms of action of peptide and steroid hormones and neurotransmitters are discussed in depth.

Instructors: D.M. Byers, H.W. Cook, C.B. Lazier

Format: Lecture 3 hours

Prerequisites: BIOC 3200.03, 3300.03, and 3400.03 or instructors' consent

Cross-listing: BIOC 5300.03

BIOC 4302.03A: Biochemistry of Lipids. The biochemistry and metabolism of a variety of lipids is studied, especially of those, such as fatty acids, glycolipids, eicoanoids, steroids and phospholipids, with specialized physiological or lipid-second messenger functions. Heavy emphasis is given to intracellular and inter-tissue transport and regulatory processes. 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.

Instructors: H.W. Cook, N. Ridgway

Format: Lecture 3 hours

Prerequisites: BIOC 3200.03 and 3300.03

Cross-listing: BIOC 5301.03

## 110 Biochemistry

**BIOC 4304.03B: Integration and Control of Metabolism.** (not offered in 1996/97) Topics include: generation and regulation of membrane potentials, roles of membrane potentials in energy generation and in modulating pathways requiring movement of metabolites among cellular compartments, adaptation of metabolic pathways to meet special needs or circumstances, and assessment of flux through competing pathways. Specific mechanisms by which metabolic pathways respond to both internal and external signals such as direct metabolite control, covalent and non-covalent modification of enzymes, enzyme translocation among cellular compartments and enzyme turnover are considered in detail. Interpretation of experimental data is emphasized.

**Instructors:** W.C. Breckenridge, P.J. Dolphin  
**Format:** Lecture 3 hours  
**Prerequisites:** BIOC 3200.03 and 3300.03  
**Cross-listing:** BIOC 5304.03

**4403.03B & 4404.03A: Molecular Biology of the Gene.** These half-credit classes consider the duplication, transfer, and expression of genetic material. The experimental evidence for current concepts of gene structure and function is stressed. Students study the language of molecular biology and learn about the experimental techniques peculiar to it. Lectures adopt a historical perspective so that students come to appreciate how the discipline of molecular biology has developed.

**BIOC 4403.03B: Genes and Genomes.** This class discusses the organization of genes into genomes. It deals with (i) compartmentalization of genetic material in nuclear and organellar genomes, (ii) the structure, behaviour and origins of components of both nuclear and organellar genomes which are not genes (transposable and other repetitive elements, introns), (iii) genetic and physical methods for mapping genomes, and (iv) the significance of genetic organization and higher order chromosomal structure and function. The methodology and prospects of the human genome project will be discussed at some length.

**Instructors:** P. Liu, W.F. Doolittle  
**Format:** Lecture 3 hours  
**Prerequisites:** BIOC 2030.03, 3400.03 & 4404.03 and MICR 3033.03  
**Cross-listing:** MICR 4403.03, BIOL 4011.03, BIOC 5403.03

**BIOC 4404.03A: 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:** R.A. Singer  
**Prerequisites:** BIOC 3400.03 or instructor's consent  
**Cross-listing:** MICR 4404.03, BIOL 4010.03, BIOC 5404.03

**BIOC 4602.06R: Honours Project & Thesis.** This class requires laboratory research, at least one day per week and an interim report at the end of the first term. A final report must be submitted at the end of the academic year.

**Coordinator:** C.J.A. Wallace  
**Format:** Lab 1 day per week

**Prerequisites:** Permission of coordinator and a member of the department who will serve as supervisor. At least a B average for BIOC 3200.03, BIOC 3300.03 and BIOC 3400.03

**Exclusions:** In exceptional cases the research project can be done outside the biochemistry department, prior approval must then be obtained from the class coordinator.

**BIOC 4603.03A: Advanced Laboratory in Biochemical Techniques.** The class will consist of a series of laboratory modules (each of 4 weeks' duration, 1 day per week or 72 hours total, with limited flexibility to accommodate the need to attend other classes) The class is organized collaboratively by the Departments of Biochemistry, Biology and Microbiology. Several 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 a concentrated Honours Biochemistry programme must complete 1 module from each section. Students in advanced major or other programmes may select their three modules from any section or sections, subject to availability of space. Such students should consult the department regarding prerequisites.

**Instructors:** C.J.A. Wallace and members of the departments of Biochemistry, Biology and Microbiology

**Format:** Lab 1 day  
**Prerequisites:** BIOC 3200.03, 3300.03, and 3400.03

**Cross-listing:** BIOL 4012.03/5012.03 and BIOC 5603.03

**BIOC 4700.03A: Proteins.** Selected aspects of the chemistry of proteins will be studied. The topics will include the relationship between protein structure and function, interaction between proteins and other compounds and a detailed analysis of selected enzyme reaction, kinetic and regulatory mechanisms.

**Instructor:** A.H. Blair, J.A. Verpoorte  
**Format:** Lecture 3 hours  
**Prerequisites:** BIOC 3200.03 and CHEM 2301.03 and 2302.03 or instructor's consent

**Cross-listing:** BIOC 5700.03

**BIOC 4701.03B: Enzymes.** (not offered in 1996/97) Our current understanding of enzymic catalysis and its experimental basis are examined. The relationship between structures of catalytic and regulatory sites and their functions is considered for selected enzymes. The kinetics of enzyme-catalysed reactions are studied, as is the way in which binding of regulatory molecules influences kinetic behaviour and thereby regulates cellular metabolism.

**Instructor:** A.H. Blair  
**Format:** Lecture 2 hours/tutorial 1 hour  
**Prerequisite:** 3000-level classes in Biochemistry, Bioorganic Chemistry and CHEM 2301.03 and 2302.03, or instructor's consent

**Cross-listing:** BIOC 5701.03

**\*BIOC 4900.06R: Clinical Medical Biochemistry.** This is an introductory class to the pathophysiology of disease. It provides the clinical and biochemical background of disease groups and system disorders.

**Instructor:** Members of the Pathology Department

**Format:** Lecture 3 hours including case presentations and problem situations

**Cross-listing:** BIOC 5800.06 and PATH 5010.06

**BIOC 4804.03A: Introduction to Pharmacology I.** See class description for BIOL 4404.03, in the Biology section of this calendar.

**BIOC 4805.03B: Introduction to Pharmacology II.** See class description for BIOL 4405.03, in the Biology section of this calendar.

**SCIE 8700.00 B: Co-Op Seminar (non-credit)**

**BIOC 8880.00: Honours Qualifying Examination.** Honours students must fulfil the requirements of this class (see Degree Requirements 1.3.5) by presenting two additional reports on their work in BIOC 4602.06. The first is a Progress Report, and the second an oral presentation and defence at a special year-end Departmental Seminar.

**BIOC 8891.00 R: Co-Op work term 1**

**BIOC 8892.00 R: Co-Op work term 2**

**BIOC 8893.00 R: Co-Op work term 3**

**BIOC 8894.00 R: Co-Op work term 4**

# Biology

**Location** Biology Wing, Life Science Centre, Main Office, 2nd floor, Room 2078  
**Telephone** (902) 494-3515  
**Fax** (902) 494-3736

## Chair

J.H.M. Willison

## Undergraduate Programme Advisors

C. Beauchamp (494-2145)  
 J. Breckenridge (494-8817)  
 C. Corkett (494-7016)  
 P. Harding (494-2349)  
 A. Mills (494-2893)  
 B. Retallack (494-7072)  
 E. Staples (494-2464)

## Honours Programme Advisors

P. Collins (Administration) (494-3847)  
 G. Hicks (494-3563)  
 M.J. O'Halloran, Marine Biology (494-2136)  
 A. Pinder (494-3322)  
 J. Wright (494-6468)

## Emeritus Professors

L.C. Vining, MSc (Auckland), PhD (Cantab), FRSC  
 K.E. von Maltzahn, MS, PhD (Yale)

## Professors

R.G. Brown, MSc (McG), PhD (Rutgers)  
 A.R.O. Chapman, PhD (Liv)  
 R.W. Doyle, MSc (Dal), PhD (Yale) Director, Marine Gene Probe Laboratory  
 J. Farley, MSc (Western), PhD (Man)  
 J.C. Fentress, PhD (Cantab) (major appointment in Psychology)  
 B. Freedman, MSc, PhD (Tor)  
 B.K. Hall, PhD, DSc (UNE), FRSC  
 O.P. Kamra, MS (NC State), PhD (Wash State)  
 W.C. Kimmings, PhD (Lond) Dean of Faculty of Science  
 P.A. Lane, MSc (SUNY Binghamton), PhD (SUNY Albany)  
 R.W. Lee, MA (Mass), PhD (SUNY Stony Brook)  
 T.H. MacRae, MSc, PhD (Windsor)  
 I.A. McLaren, MSc, (McG), PhD (Yale) - George S. Campbell Professor  
 E.L. Mills, MS, PhD (Yale) - (major appointment in Oceanography)  
 R.K. O'Dor, PhD (UBC)  
 D.G. Patriquin, MSc, PhD (McG)  
 R.E. Scheibling, PhD (McG)  
 J.H.M. Willison, PhD (Nottingham) - Chair  
 E. Zouros, MSc, PhD (Agri Col Athens), PhD (Chicago)

## Associate Professors

E.W. Angelopoulos, MS, PhD (Minn)  
 R.P. Croll, PhD (McG), major appointment in Physiology and Biophysics  
 G.S. Hicks, MSc (Carl), PhD (Saek)  
 B. Pohajdak, MSc, PhD (Man)

S. Walde, PhD (Calgary) University Research Fellow  
 H. Whitehead, PhD (Cantab), University Research Fellow  
 J.M. Wright, PhD (MUN)

## Associate Professor (Research)

G.F. Newkirk, PhD (Duke)

## Assistant Professors

J. Hutchings, PhD (MUN)  
 S.J. Iverson, PhD (Maryland), Women's Faculty Award  
 M.O. Johnston, PhD (Chicago)  
 M. Leonard, PhD (Ottawa), Women's Faculty Award  
 A. Pinder, PhD (Mass) University Research Fellow

## Adjunct Professors

J.D. Castell, MSc (Dal), PhD (Oregon State), Fish. & Mar. Serv., D.F.O.  
 J.S. Craigie, MSc, PhD (Queen's), Marine Biosciences Inst., NRC  
 E. Kenchington, BSc, MSc (Dal), PhD (Tasmania), D.F.O.  
 M. Silver, PhD (Syracuse)

## Senior Instructors

C. Beauchamp BSc., MSc (Memorial), BEd (Dal)  
 J. Breckenridge, BSc (Queen's), MSc (Dal)  
 P. Collins, BSc, MSc (Dal)  
 C. Corkett, BSc, DipEd (Technical), PhD (London)  
 P. Harding, BA (Tor), BEd, MSc (Dal)  
 A. Mills BSc (Carleton)  
 M.J. O'Halloran, BSc (Southampton), BEd, MSc (Dal)  
 B. Retallack, BSc, MSc (Dal), PhD (Manchester)  
 E. Staples, BSc (Dal), BEd (MSVU)

## Post Doctoral Fellows

S. Ekanayake, PhD (Dal)  
 A. Graveson, BSc (Bishop's), PhD (Ottawa)  
 W. Hoch, BSc, PhD (Michigan)  
 A. Hunter, BSc (Toronto), MSc (Queen's), PhD (McGill)  
 T. Miyake, MS (Michigan), PhD (Texas A&M)  
 E. Denovan-Wright, BSc, PhD (Dal)  
 C. Rose, MSc (Victoria), PhD (Harvard)  
 S. Smith, MSc, PhD (Ottawa)  
 D. Stewart, BSc (Acadia), PhD (Toronto)  
 Y. Tong, MSc, PhD (Dal)  
 K. Yang

## Areas of Specialty of Biology Faculty

### Animal Biology:

S. Iverson, M. Leonard, I. McLaren, A. Pinder

**Cell Biology:** T. MacRae, W. Pohajdak, M. Willison

### Developmental Biology:

B.K. Hall, G.S. Hicks, T. MacRae, A. Pinder

### Ecology/Environmental Science:

R.W. Doyle, B. Freedman, J. Hutchings, M. Johnston, P. Lane, M. Leonard, I. McLaren, R. Scheibling, S. Walde, H. Whitehead, M. Willison

<b>Entomology and Parasitology:</b>	E. Angelopoulos
<b>Evolutionary Biology:</b>	R.W. Doyle, J. Hutchings, M. Johnston, E. Zouros
<b>General Studies:</b>	K.E. vonMaltzahn
<b>Genetics:</b>	R.W. Doyle, M. Johnston, O.P. Kamra, R.W. Lee, E. Zouros
<b>Marine Biology:</b>	A.R.O. Chapman, J. Hutchings, S. Iverson, R.K. O'Dor, R. Scheibling, H. Whitehead
<b>Microbiology:</b>	R.G. Brown, L.C. Vining
<b>Molecular Biology:</b>	W. Pohajdak, J. Wright
<b>Physiology:</b>	S. Iverson, R.K. O'Dor, D. Patriquin, A. Pinder
<b>Plant Biology:</b>	A.R.O. Chapman, G.S. Hicks, M. Johnston, D. Patriquin, M. Willison

Biology, including a research project and thesis. At least 3 of the 9 required credits must be at, or above, the 3000 level. Some students may wish to choose a Combined Honours Programme and should consult the "Degree Requirements" section of this calendar. Students entering 1st year in September 1994 must include the following Biology classes in ALL Biology Honours programmes, concentrated or combined. Students presently in their 3rd and 4th year of University should follow the old departmental regulations described in earlier calendars. In addition to the overall University requirement for a minimum "B" average (GPA of 3.00) in the classes of the Major and Minor of an honours programme, Biology Honours students must obtain a minimum of a "B" average in the following Biology classes. (Also see "Academic Regulations", including the "Graduate Standing" section, and "Degree Requirements").

#### Classes required in Honours:

<b>1000 level:</b>	BIOL 1000.06 or 1001.06 or Science Foundation Year, SCIE 1500.30 (with a minimum grade of B-)
<b>2000 level:</b>	BIOL 2020.03; 2030.03; 2060.03, two from: BIOL2001.03, 2002.03 and 2101.03
<b>3000 level:</b>	BIOL 3041.03 and at least one class from: BIOL 3050.03, 3070.06, 3071.06 and 3077.06
<b>4000 level:</b>	BIOL 4900.00 and Honours Qualifying exam (graded as Pass/Fail: based on participation in BIOL 4900.00 class and the Cameron Conference for Honours students)

#### Other Required Classes

CHEM 1040.06 or 1010.06 or 1500.06

Two full credits above the 1000 level in any other subject for the **MINOR** requirement.

#### Other Recommended Classes

PHYC 1300.06 or 1000.06 or 1100.06 or 1500.03 and 1550.03

MATH 1000.03 and 1060.03

### Advanced Major in Biology

#### Departmental Requirements

##### Classes required in Advanced Major:

<b>1000 level:</b>	BIOL 1000.03 or 1001.03 or SCIE 1500.30 (with a minimum grade of B-)
<b>2000 level:</b>	BIOL 2020.03; 2001.03 or 2002.03 or 2101.03; 2060.03; 2030.03; plus one other Biology credit at or above the 2000 level not including the classes listed below.
<b>3000 level:</b>	minimum three credits at or above the 3000 level

## Degree Programmes

The department offers the following degree programmes: 15 credit (3 year) BSc and BA Major; 20 credit (4 year) BSc and BA Advanced Major; concentrated, combined, or unconcentrated BSc and BA Honours; and, 20 credit BSc Advanced Major (Co-op or Regular) and BSc Honours (Co-op or Regular) in Marine Biology.

Consult the "Degree Requirements" section of this calendar for full details.

### Honours Biology, BA, BSc

#### Honours Advisors:

G. Hicks (494-3563)

A. Pinder (494-3822)

J. Wright (494-6468)

P. Collins (administration, 494-3847)

Students contemplating doing honours are encouraged to consult annually with an honours advisor to ensure that their class selection is correct. One may normally officially register for an honours biology programme anytime after receiving Christmas grades in the 2nd year, and before the end of the 3rd year. To register for a programme, meet with one of the honours advisors (listed above) to complete an application and have it approved.

It is the responsibility of all students to arrange for supervisors for their thesis 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 should begin to search for a potential supervisor during their 3rd year of study and should have completed arrangements by May of their 3rd year. If students wish to be supervised by someone external to the department, they must consult with their honours advisor to determine the potential supervisor's eligibility.

#### Departmental Requirements

Students following a Concentrated Honours programme in Biology must take a minimum of 9 and a maximum of 11 credits in



**Major in Biology****Departmental Requirements****Classes required in Major:**

- 1000 level:** BIOL 1000.06 or 1001.06 or SCIE 1500.30 (with a minimum grade of B-)
- 2000 level:** BIOL 2020.03; 2101.03 or 2001.03 or 2002.03; 2060.03; 2030.03
- 3000 level:** At least two credits at or above the 3000 level

**Honours and Advanced Major in Marine Biology**

The Biology Department recognizes the special needs of the rapidly expanding marine field and offers BSc Honours and Advanced Major Degrees in Marine Biology, including a Co-operative Education Programme.

Details of the Marine Biology programme will be found under a separate listing for Marine Biology at the end of the Biology section.

**Classes Offered**

The normal entry requirement for admission to upper level classes in Biology is a grade of B- or better in BIOL 1000.06, 1001.06, or Science Foundation Year (SCIE 1500.30). Students with a grade lower than B- and extenuating circumstances may appeal to the department Undergraduate Coordinator.

**Note:** Due to the combined pressures of student numbers and a dearth of available space in some classes, the names of students not appearing on the first day of class may be deleted from class lists. Students are advised that being signed into a class is no guarantee of late admission.

Classes marked with an asterisk (\*) are offered in alternate years. Consult timetable for current year.

Biology classes are grouped into four general categories:

- 1. 1000 - Level classes:** BIOL 1000.06 This class is intended to be introductory university-level classes in biology.
- 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 programme is designed to provide a basis for more advanced studies in Biology as well as to ensure that all majors are exposed to the general discipline or subject areas of biology. A variety of skills including writing, oral presentation, computer literacy, library use, and problem solving are integrated into the curriculum of these core classes along with 'hands-on' activities in the laboratory or field. The second-year core programme covers four discipline areas; some evolutionary biology and some physiology will be included in these four areas:

**I Cell Biology**

- 2020.03

**II Diversity of Organisms (animals, plants and microbes)**

- 2001.03

- 2002.03

- 2101.03

**III Ecology**

- 2060.03

**IV Genetics and Molecular Biology**

- 2030.03

All students majoring in Biology are required to take a minimum of 4, 2000-level, half-credits, with one half-credit class being selected from each of these 4 discipline areas.

Students interested in biochemistry are advised to take the second-year biochemistry class offered by the Biology and Biochemistry departments. This class is not part of our core-programme but is a pre-requisite for entry into some higher level classes.

Students majoring in subjects other than Biology can design their own programmes and will not have to conform to these 2000-level core requirements. All students should ensure they have the necessary prerequisite classes required for entry into 3000-level classes.

**3. 3000-Level Classes:** These classes are mainly for second- and third-year students. No biology major will be allowed to register in any 3000 or 4000-level class without having completed, or being registered in 2000-level classes in biology totalling at least two full credits.

**4. 4000-Level Classes:** These classes are primarily for honours or advanced 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. Microbiology:** The following classes given in the Microbiology Department may be taken as a Biology credit toward BA, BSc, and BSc (Hons) Biology degrees even though they are not cross-listed with Biology: MICR 2100.03, 3033.03, 3114.03, 3115.03, 3118.03, 4026.03, 4027.03, 4037.03, 4038.03, 4114.03, 4115.03, 4118.03, and 4301.03.

**BIOL 1000.06R: Principles of General Biology.** This class surveys the fundamental principles of biology and prepares students for second-year biology classes. The class emphasis is on those features common to all organisms. It examines the requirements for life, its biochemical base, and its cellular organization. These are related to the function of whole organisms, their diversity, and evolution. Knowledge of high school level mathematics and chemistry is recommended.

**Instructors:** C. Corkett, P. Harding, R.W. Lee, A. Mills, D.G. Patriquin and other faculty

**Format:** Lecture 3 hours/week, lab/tutorial 3 hours/week.

**Exclusion:** BIOL 1001.06 (no longer offered)

**BIOL 2001.03A: Marine Diversity. (Area II)**

The sea was the cradle of life and the origin of most phyla. This class explores the enormous variety of living and fossil organisms from the sea and looks at the special problems and adaptations of benthic, planktonic and nektonic species. It examines functional and taxonomic relationships using lectures, laboratories with living organisms, and a field trip.

**Instructors:** A.R.O. Chapman, C. Corkett, R. Scheibling  
**Format:** Lecture 2 hours, lab 3 hours  
**Prerequisite:** BIOL 1000.06R or 1001.06R or SCIE 1500.30 (Grade B- or better)

**BIOL 2002.03B: Terrestrial Diversity.** (Area II)

A survey of the terrestrial organisms. The class emphasizes the restrictions imposed on terrestrial adaptations by the aquatic origins of the colonizers, discusses the physiology of living in a terrestrial environment, looks at the domestication of plants and animals by man, and speculates on the future diversification of the earth environment and its inhabitants.

**Instructors:** M. Johnston, M. Leonard and A.H.Mills  
**Format:** Lecture 2 hours, lab 3 hours  
**Prerequisite:** BIOL 1000.06 or 1001.06 or SCIE 1500.30 (Grade B- or better)

**BIOL 2010.03B: Introductory Biochemistry.** See class description for BIOC 2200.03, in the Biochemistry section of this calendar.

**BIOL 2020.03A or B: Cell Biology.** (Area 1) 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.

**Instructors:** T.H. MacRae, B. Pohajdak, and B. Retallack  
**Format:** Lecture 3 hours, lab 3 hours  
**Prerequisite:** BIOL 1000.06 or 1001.06 or SCIE 1500.30 (Grade B- or better)  
**Cross-listing:** BIOC 2020.03  
**Exclusion:** BIOL 2015.06, BIOC 2000.06

**BIOL 2030.03A or B: Genetics and Molecular Biology.** (Area IV) Genes contain the biological information that specifies the cell and the organism. Therefore, genetics, the study of genes, is a means to understand the function and propagation of cells and organisms. The power and prominence of modern genetics have grown from a blend of classical and molecular approaches; both of these approaches are emphasized in this class. Major topics discussed include: the structure and function of DNA, the nucleic acid that comprises genes and chromosomes; transmission genetics, concerned with the propagation of genetic information; gene function, the expression of genetic information; and manipulation of DNA (genes) by genetic engineering. A range of organisms is considered, including bacteria, single-celled and multicellular eukaryotes, and viruses.

**Instructors:** O. Kamra, C. Helleiner (Biochemistry), E. Staples, J. Wright, E. Zouros  
**Format:** Lecture 3 hours, lab/tutorial 3 hours  
**Prerequisite:** BIOL 1000.06R or 1001.06R or 1500.30 (Grade B- or better)  
**Exclusion:** BIOL 2035.06 (last offered in 1989-90)  
**Cross-listing:** BIOC 2030.03

**BIOL 2060.03A or B: Introductory Ecology.** (Area III) Ecology is the study of the interrelationships of organisms and their environments. The broad subject of ecology focuses upon the interactions of plants and animals, including humans, with each other and

with their non-living world. Three levels of ecology are studied: (1) Individuals, (2) Populations, (3) Communities and Ecosystems. Assignments and tutorials enlarge upon concepts presented in lectures. Students are instructed in elementary computer techniques and use the computer for most assignments. This class provides an overview of the science of ecology for the informed citizen, and also a good foundation for further work in ecology, marine biology and environmental studies.

**Instructors:** C. Beauchamp, J. Hutchings, R. Scheibling  
**Format:** Lecture 3 hours, lab/tutorial 2 hours  
**Prerequisite:** BIOL 1000.06R or 1001.06R or SCIE 1500.30 (Grade B- or better)  
**Exclusions:** BIOL 2066.03, BIOL 2046.06

**BIOL 2101.03B: Microbial Diversity.** (Area II)

An introduction to the basic concepts of microbiology through lectures, laboratory sessions and demonstrations. The diversity and uniqueness of different microorganisms is emphasized, in addition to their structure, growth, metabolism and interactions. The involvement of microorganisms in fields such as medicine, industry and ecology is also discussed. Students who plan to repeat the class must obtain permission from the instructor **before** they register in the class. This class serves as a pre-requisite for all third-year Microbiology classes offered in the Biology and Microbiology departments. Students can take this as well as MICR 2100.03 as content is different.

**Instructors:** J. Breckenridge, B. Pohajdak  
**Format:** Lecture 2 hours, lab 3-4 hours  
**Prerequisite:** BIOL 1000.06R or 1001.06R or SCIE 1500.30 (Grade B- or better) or permission


**SCIE 3000.06R: Science Fundamentals.** See class description in Science, Interdisciplinary section of this calendar.

**BIOL 3012.03A: Introduction to Biological Chemistry.** See class description for BIOC 3200.03, in the Biochemistry section of this calendar.

**BIOL 3013.03B: Intermediary Metabolism.** See class description for BIOC 3300.03, in the Biochemistry section of this calendar.

**BIOL 3014.03A: Nucleic Acid Biochemistry and Molecular Biology.** See class description BIOC 3400.03, in the Biochemistry section of this calendar.

**BIOL 3030.03A: Advanced Cell Biology.** Molecular and organellar aspects of cytoplasmic organization in eukaryotic cells are examined. A number of interrelated topics are discussed providing an opportunity to study new concepts in cell biology and to evaluate established ideas in the context of recent findings. Students must supplement lectures with assigned readings and discuss selected subjects in essays.

**Instructor:** T.H. MacRae  
**Format:**  Witing Intensive, 3 lectures of 1½ hours per week  
**Prerequisite:** BIOL 2020.03 (with a minimum grade of B-) or instructor's consent

**\*BIOL 3032.03B: Cytogenetics.** (may not be offered 1996/97) Detailed consideration of certain genetical and cytological mechanisms in relation to chromosomal modifications, gene mutations and evolution.

Instructor: O.P. Kamra  
Format: Lecture 2 hours, lab 3 hours  
Prerequisite: BIOL 2030.03

**\*BIOL 3034.03B: Biological Effects of Radiation.** (may not be offered 1996/97) A survey of current knowledge of the effect of ionizing radiation on biological material at three levels: physical, chemical and biological. In addition, methods of dosimetry, autoradiography, somatic and genetic effects, radiometric chemicals and biolasers are discussed.

Instructor: O. Kamra  
Format: Lecture 3 hours  
Prerequisite: First-year Biology and Chemistry

**\*BIOL 3039.03B: Human Genetics.** (may not be offered 1996/97) For students of Biology and Medicine with special interest in human genetics. Topics include human cytogenetics and abnormalities, inborn errors, genetic risk induced by environmental factors; prediction and detection of genetic risk, genetic counselling, genetic and non-genetic factors in behavioral characters and multi-factorial diseases; genetic variability; selection and genetic load in human populations; ethical and social issues associated with manipulation of human genetic pools.

Instructors: O. Kamra (Coordinator)  
Format: Lecture 3 hours, lab 2 hours  
Prerequisite: BIOL 2030.03

**BIOL 3041.03B: Evolution.** Evolution is a comprehensive, integrative class covering a great breadth of topics related to the process of evolution (patterns of diversity and evolutionary history of particular groups are covered in other classes). Topics will include the history of evolutionary thought, Darwinian evolution, the "Modern Synthesis", adaptation, the relationship between evolution and systematics, evolutionary developmental biology, molecular evolution, and current controversies such as the neutral theory of molecular evolution, group selection, non-adaptive evolution, and mass extinctions and chance as major influences on evolution.

Instructors: B.K. Hall, M. Johnston, M. Ragan, E. Zouros, and staff  
Format: Lecture 3 hours, tutorial 1 hour  
Prerequisite: BIOL 2020.03, 2030.03, 2060.03 and one of 2001.03, 202.03 or 2101.03

Co-requisite: BIOL 3050.03A would be useful, but not mandatory  
Exclusion: BIOL 3040.06

**BIOL 3050.03A: Developmental Biology.** The lectures describe development as a sequence of programmed events, in which 'simple' structures such as the fertilized egg are progressively transformed into complex organisms. These events are governed by a set of developmental 'rules'. Our knowledge of these rules comes from experimental study of developing systems such as sea urchins, frogs, peas, carrots, chick embryos and humans.

Laboratories stress the use of live material and give students practice with such techniques as test tube fertilization in echinoderms.

Instructors: P. Collins, B.K. Hall, G.S. Hicks  
Format: Lecture/discussion 3 hours, lab 3 hours

Prerequisite: BIOL 1000.06R or 1001.06R or SCIE 1500.30

Co-requisite: BIOL 2020.03, BIOL 2030.03

**BIOL 3051.03B: Advanced Animal Development.** This class is the follow-up to BIOL 3050.03 and deals with the mechanisms and controls which regulate the development of vertebrate and invertebrate embryos. Topics covered include cell determination and differentiation, morphogenesis, mechanisms of organ formation, inductive tissue interactions, growth, regeneration and wound healing. The two laboratory projects involve experiments designed to explore aspects of cell differentiation and morphogenesis, preparation of laboratory reports, and introduction to microdissection, sterile techniques, tissue recombinations and whole-embryo staining.

Instructors: P. Collins, B.K. Hall  
Format: Lecture 3 hours, lab/discussions 3 hours

Prerequisite: BIOL 3050.03A (with a minimum grade of B-) or instructor's permission; plus completed or concurrent registration in second-year core cell/molecular classes

**BIOL 3060.03A: Environmental Ecology.** This class considers the ecological effects of pollution, disturbance, and other stressors. Emphasis is on air pollutants, toxic metals, acidification, eutrophication, pesticides, forestry, extinction, resource degradation, warfare, and broader topics such as environmental impact assessment and ecological monitoring and research.

Instructor: B. Freedman  
Format: Lecture 2 hours, tutorial 3 hours  
Prerequisite: BIOL 2060.03A or B (or see instructor)

Cross-listing: BIOL 5060.03

**BIOL 3061.03A: Communities and Ecosystems.**

This class is divided into three sections: (A) Introduction, History and Concepts to Community Structure and Stability; (B) Environmental Assessment and Management at the Ecosystem level; and (C) Case Studies and Global Problems.

Instructor: P.A. Lane  
Format: Lecture 3 hours  
Prerequisite: BIOL 2060.03

**\*BIOL 3062.03A: Behavioral Ecology.** This class examines animal behaviour from an evolutionary perspective. Why do animals do what they do? 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: M. Leonard  
Format: Lecture 2 hours, tutorial 1 hour  
Prerequisite: BIOL 2060.03

**BIOL 3063.03B: Resource Ecology.** Introduction to ecologically sustainable

development and the management of renewable resources. Topics vary from year to year but generally include fisheries population models and bioeconomics, wildlife and forest management, biological control strategies and agro-ecology, genetic containment and the protection of genetic diversity.

Instructors: R. Doyle, B. Freedman, S. Walde  
 Format: Lecture/seminar 3 hours  
 Prerequisites: BIOL 2060.03; MATH 1010.03, 1060.03 or equivalent

**BIOL 3066.03A: Plant Ecology.** Ecology refers both to the interactions between organism and environment as well as to the formal scientific study of these interactions. In plants these interactions can involve other plants, as in competition, or animals, as in pollination, herbivory, seed predation and seed dispersal. Plants stand still after they have passed the seed stage. Standing still means that plants must survive and make offspring in an environment that is imposed upon them. This class examines the causes and consequences of being a plant from an evolutionary perspective. Ecological interactions both cause natural selection and are themselves the consequences of evolution. The overriding theme of the class, therefore, is that of the ecological theatre and the evolutionary play (in the words of G.E. Hutchinson). This class concentrates on individual interactions, adaptations and processes. Processes, such as nutrient cycling, that occur at the level of communities or ecosystems will receive little attention.

Instructor: M. Johnston  
 Format: Lecture 3 hours, lab/tutorial 3 hours, one/two field trips on weekends including first weekend after classes begin  
 Prerequisite: BIOL 2060.03  
 Cross-listing: BIOL 5066.03

**BIOL 3067.03B: 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, morphology, evolutionary ecology, behaviour, life history strategies, population biology, and fisheries management.

Instructor: J. Hutchings  
 Format: Lecture 3 hours, tutorial/lab 1½ - 3 hours  
 Prerequisite: BIOL 2001.03, 2060.03  
 Cross-listing: BIOL 5067.03


**BIOL 3069.03B: Population Ecology.** (may not be offered in 1995-96) An examination of selected topics in population ecology. Topics include the effect of species interactions (predation, competition, mutualism) on population fluctuations, cycles and extinction. The relevance of theory to particular case studies such as lynx-hare cycles and biological control of winter moth will be discussed. Recent literature will be emphasized. Written assignments and exams will contribute to the final grades.

Format: Lecture/tutorial 3 hours  
 Instructor: S. Walde  
 Prerequisites: BIOL 2060.03, MATH 1010.03, 1060.03, or equivalent

**BIOL 3070.06R: Principles of Animal Physiology.** A discussion of the mechanisms which coordinate the activities of cells within

multi-cellular organisms and permit such organisms to maintain a stable internal environment in a changing external environment. The emphasis is on the mechanisms most widely distributed through the animal kingdom. The laboratories are designed to illustrate these "principles of physiology" in a variety of organisms and to demonstrate the experimental approaches used to study physiology.

Instructors: S.J. Iverson, R.K. O'Dor, A. Pinder, M.-J. O'Halloran

Format:  Writing Intensive, lecture 3 hours, lab 3 hours

Prerequisite: BIOL 2001.03 or 2002.03, 2020.03  
 Exclusion: BIOL 3071.06, 3074.03, 3076.03


**BIOL 3071.06R (3074.03A/3076.03B)**

**:Physiology of Marine Animals.** The problems of animals in a marine environment are quite different from those found in air or fresh water, but the "physiological principles" are similar.

This class deals with the same principles as 3070, but emphasizes the special characteristics of marine animals and the techniques necessary to study them in laboratories and tutorials.

BIOL 3074.03/3076.03 Physiology of Marine Animals Parts I and II are only open to Marine Biology Co-op (Honours and Advanced Major) students that are unable to take BIOL 3071.06 because of work term schedules. These Co-op students must take both classes, normally BIOL 3074.03 in their 3rd year and 3076.03 in their 4th year. All other students should take BIOL 3071.06.

Instructors: S.J. Iverson, R.K. O'Dor, M.-J. O'Halloran, A. Pinder

Format:  Writing Intensive, lecture 3 hours, lab 3 hours

Prerequisite: BIOL 2001.03 or 2002.03, 2020.03  
 Exclusion: BIOL 3070.06

**BIOL 3077.06R: Human Physiology.** See class description for PHYL 4403.06 in the Physiology and Biophysics section of this calendar.

**BIOL 3100.03A: Aquatic Microbiology.** The main emphasis of this class is on the interactions of microbes and aquatic plants and animals including nutrition, disease, and immunization. The latter part of the class considers the role of microorganisms in nutrient availability and productivity in aquatic environments.

Instructors: R.G. Brown and D. Cone  
 Format: Lecture 2 hours, lab 3 hours  
 Prerequisite: Normally, Biology 2101.03 or Microbiology 2100.03, but Marine Biology Honours students are exempt.

**BIOL 3113.03A or B: 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: M. Silver  
 Format: Lecture 2 hours  
 Prerequisite: BIOL 2101.03

**BIOL 3211.03B: Systematic Survey of the Algae.** (may not be offered in 1996/97) An examination of the taxonomic and evolutionary relationships of the algae. Considerable emphasis is placed on practical work (field and laboratory) where students become familiar with the algal components of the local flora.

## 118 Biology

Instructor: A. Chapman  
Format: Lecture 2 hours, lab 3 hours  
Prerequisite: Grade B or better in BIOL 2001.03 or permission of instructor

**\*BIOL 3212.03A: Biology of the Algae.** A non-taxonomic examination of the cellular, organismic, population and community organizations of benthic and planktonic algae.

Instructor: A. Chapman  
Format: Lecture 2 hours, lab 3 hours  
Prerequisite: Grade B or better in BIOL 2001.03 or permission of instructor

**BIOL 3215.03A: Systematics of Higher Plants.**

This class is concerned with an organismal approach to the study of flowering plants: identification, relationship, and evolution. The course focuses on gross morphology rather than internal anatomy. It provides an introduction to basic botanical terminology and to the concepts and the scientific conventions concerned with plant description, classification and nomenclature. Lectures examine the development of systematics from Linnaeus to Darwin, to the advent of modern experimental taxonomy (biosystematics). Laboratory exercises centre on the identification and characterization of flowering plant families through the use of diagnostic keys. For this purpose, students are provided with native and exotic living plants and freshly frozen specimens. Field ecologists, environmental biologists, and naturalists should find the applied approach to this course broadens their general knowledge of plants and enables them to identify plant specimens. Each student submits a small collection of pressed plants. (see instructor, preferably before September, for details).

Instructor: P. Taschereau  
Format: Lecture 3 hours, lab 3 hours  
Prerequisite: Biology 2002.03, or instructor's consent

**BIOL 3218.03B: Plant Anatomy.** Lectures will explore the internal organization of the leaves, stems, and roots of both the flowering plants and the cone-bearing plants, emphasizing the common plan that is found at the tissue system level of organization. All major cell and tissue types will be reviewed in the light of modern evidence which correlates structure with function. These surveys will embrace both the primary and the secondary plant bodies, and developmental aspects will be emphasized. Laboratory exercises will illustrate these concepts, focusing on the study of a variety of economically important woody and herbaceous crop plants.

Instructors: P.A. Collins, G. Hicks  
Format: Lecture 3 hours, lab 3 hours  
Prerequisite: BIOL 1000.06 or 1001.06

**BIOL 3220.03B: Land Plants: A Survey.** A survey of the biology, systematics and evolutionary history of the main divisions of land plants including: conifers and their gymnosperm allies; ferns, horsetails, ground pines, and club mosses. Flowering plants are excluded. A framework for discussion of the comparative morphology of these groups will be alternation of generations. Evolutionary adaptations to the land will be emphasized.

Considering the fossil record in some detail, we will evaluate evidence for the origin of leaves, the seed habit, and a variety of forms. The class may be useful to those students considering the teaching profession, graduate study or who are interested in broadening their general knowledge.

Instructor: G. Hicks  
Format: Lecture/discussion 3 hours  
Prerequisite: BIOL 2002.03 or permission of the instructor

**BIOL 3321.06R (BIOL 3301.03A/3302.03B): Invertebrates.** Recent fossil findings in the Burgess Shale of British Columbia and elsewhere plus methods of cladistic analysis have profoundly changed our understanding of the relationships between and within the various invertebrate phyla. Thus this class will not only examine the structure, function, and classification of the invertebrates, using live material from the marine environment as much as possible, but will come to terms with some of the new ideas about their phylogenies.

Recommendation: This class is designed not only for honours students in marine biology, but for anyone who loves "mucking about" with some of the world's most beautiful organisms. BIOL 3301.03/3302.03 Invertebrates Parts I and II are only open to Marine Biology Co-op students who are unable to take BIOL 3321.06 because of work-term schedules. These Co-op students must take both classes, normally 3301.03 in their 3rd year and 3302.03 in their 4th year. All other students should take BIOL 3321.06

Instructor: TBA  
Format: Lecture 3 hours, lab 3 hours  
Prerequisite: BIOL 1000.06 or 1001.06, 2001.03 (third- and fourth-year Geology students interested in paleontology may take this class without any previous biology classes)

**BIOL 3322.03A: Parasitology.** (May not be offered in 1996/97) The lectures emphasize the parasite-host relationships, evolution of the parasites and adaptations to the host, modifications of physiology, structure and life cycle for a parasitic existence. Examples are taken from all major animal groups where a parasitic mode of existence has developed beginning with the protozoa. Since the most extensive research pertains to parasites of man, the emphasis is on human parasites. Recommended for Ecologists and Pre-Meds. The laboratory stresses recognition and identification of parasites.

Instructor: E. Angelopoulos  
Format: Lecture 2 hours, lab 3 hours

**BIOL 3324.06R: Entomology.** (May not be offered in 1996/97) Entomology is an important branch of academic biology and also one of the largest divisions of applied biology. The class is an introduction to the study of insects dealing with: (1) The classification and evolutionary diversity of insects. (2) The biology, ecology and behaviour of insects. (3) Applied aspects - medical, agricultural and forest entomology, harmful and beneficial insects; biological control of insects.

Instructor: E. Angelopoulos  
Format: Lecture 2 hours, lab 3 hours

**BIOL 3326.03B: Vertebrate Design: Evolution and Function.** Design of organisms is the result both of evolutionary history and natural selection for function. Organisms have to work, but do not have to be the best possible design. In this class we will analyse 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 3070.06/3071.06.

Instructor: A.W. Pinder  
Format: Lecture 3 hours, tutorial 1 hour  
Prerequisites: Biology second-year core

**\*BIOL 3402.03A: The History of Modern Science.** Science became separated from general knowledge between about 1500 and the early 19th century. It has proved to be a remarkably powerful cultural force from the time of the first Scientific Revolution of the 17th century until our own times. This class examines the ways that science and scientists have given us knowledge of the natural world from the time of Copernicus to the development of evolutionary theory and relativistic physics in the 19th and 20th centuries. It is intended for students interested in interdisciplinary knowledge who are prepared for extensive reading.

Instructors: E.L. Mills  
Format: Lectures 3 hours  
Cross-listing: HIST 3072.03, SCIE 4000.03

**\*BIOL 3404.03A or B: History of Medicine.** This class will examine the state of medicine in 1800, 1850, 1900 and 1950, and the transition of North American medicine from a low status, ineffective and poorly trained group of competing sects to what is it today. For each of these periods emphasis will be placed on education, therapeutics, disease etiology and public health. The class is designed for pre-medical students or those in the health professions.

Instructor: J. Farley  
Format: Evening class 3 hours

**BIOL 3421.03B: Comparative Vertebrate Histology.** An advanced histology course surveying the whole range of vertebrate tissues and organs.

Instructor: TBA (Anatomy and Neurobiology Dept)  
Format: Lecture 2 hours, lab 2 hours  
Prerequisite: BIOL 3430.03  
Cross-listing: ANAT 3421.03

**BIOL 3430.03A: Introduction to Human Histology.** Histology is the study of the structure of cells, tissues and organ systems, and utilizes information derived from both light and electron microscopy. It complements studies in anatomy, cell biology, physiology and biochemistry, broadening the understanding of how organisms function.

Instructor: D.H. Dickson (Anatomy and Neurobiology Dept.)  
Format: Lecture 2 hours, lab 2 hours  
Prerequisites: BIOL 2020.03, or 2015.06 or permission of instructor  
Cross-listing: ANAT 2160.03

**BIOL 3435.06R: Anatomy.** A regional study of human gross anatomy with emphasis on functional anatomy of the back and limbs.

Laboratory work/study includes radiology, osteology, living (surface) anatomy and dissection of the human body. Instructor's consent and signature are required.

Instructor: R.E. Clattenburg (Anatomy and Neurobiology Dept.)  
Format: Lecture 3 hours, lab 4 hours  
Prerequisites: Must be in 3rd or 4th year and have a GPA of 3.00 (minimum). No formal prerequisites  
Cross-listing: ANAT 2170.06

**BIOL 3440.03B: Neuroanatomy.** A survey of the histology, development and organization of the central nervous system, with emphasis on the developmental and structural relationships between spinal cord and brainstem. The organization of cranial nerves and microanatomy of the brain stem is discussed. The organization of sensory and motor systems is presented in detail. The cerebral cortex, cerebellum, basal ganglia, and limbic system are also covered.

Instructor: D.A. Hopkins (Anatomy and Neurobiology Dept.)  
Format: Lecture/lab 3 hours  
Prerequisite: BIOL 2020.03 or 2015.06 or permission of instructor  
Cross-listing: ANAT 2100.03, NESC 3440.03

**BIOL 3580.03A or B: Philosophy of Biology.** See class description for PHIL 3420.03 in the Philosophy section of this calendar.

**BIOL 3601.03B: Nature Conservation.** Previously called "Man in Nature", the course traces the development of human economy and the resultant impact on the wild environment. Particular attention is paid to human population dynamics, biotic extinctions and land-use patterns. Having identified the causes of impoverishment of biodiversity the course examines possible cures, including: sustainable development, conservation science and environmental ethics. Special attention is paid to the establishment and management of protected areas.

Instructor: M. Willison  
Format: Lecture 3 hours/tutorial 1 hour  
Prerequisites: BIOL 1000.06 or 1001.06 or SCIE 1200.06, or SCIE 1500.30 or permission of instructor  
Exclusion: Biol 3410.03 taken in 91/92 or 92/93

**BIOL 3614.03R: Field Ecology.** This class provides practical experience in techniques of quantitative field ecology, including design of field sampling programmes and manipulative experiments. Students examine specific ecological questions by collecting, analyzing, and interpreting field data and by writing scientific reports. Projects include a variety of experimental and descriptive studies on plant and animal populations or communities in intertidal, lacustrine, and forest ecosystems. Lectures and field trips will involve other biology professors. Specific topics include spatial distributions of organisms, animal orientation and movement, disturbance and succession, lake trophic status, and function of behaviour. Instruction includes use of PC and MacIntosh computer analysis packages (e.g. Systat, Excel, Cricketgraph) and techniques of scientific writing. Evaluation is based on written assignments and participation in field,

lab, and data analysis. No exams are given. Prospective students must apply to the instructor prior to registration; fourth-year Biology students have priority. A special fee is charged to cover costs of transportation (consult department regarding fees or to obtain an application).

Instructor: C. Staicer  
 Format: Combined lecture/lab for 3 hours per week, plus 8 days of field work in September (the five days after Labour Day and the following three Saturdays)  
 Prerequisites: BIOL 2060.03 and MATH 1060.03, and 2080.03 or equivalent

**BIOL 3620.03A or B: Field Survey of Terrestrial Biodiversity.** This 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 daytime field trips to a variety of terrestrial habitats within a 90 min drive of Halifax. 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. Prospective students must fill out an application and pay a transportation fee to the department prior to registration (contact instructor or department for more information). All students must have the instructor's permission before they can register for this class.

**SIGNATURE REQUIRED**

Instructor: C. Staicer  
 Format: 12 intensive days and evenings in July  
 Prerequisite: BIOL 1000.06 or equivalent class that provides and introduction to ecology and the diversity of organisms.

**BIOL 3630.03A or B: Field Methods in Animal Behaviour.** This class provides first-hand experience in studying animal behaviour in the field, so that upon completion, students should be able to carry out field studies of their own. Topics include focusing questions, describing behaviour, choosing sampling regimes, and designing and conducting experiments. Lectures will provide background information, but most of the class will consist of day-long field projects that give students practical experience with each of the main topics. Specific exercises will involve various species from insects to mammals, and various behaviours, including visual signaling, foraging, and responses to playback to tape-recorded sounds. Students will also plan, conduct, write-up, and orally present a 3-day project of their own

choice. Prospective students must fill out an application and pay a transportation fee to the department prior to registration (contact instructor or department for more information). All students must have the instructor's permission before they can register for this class.

**SIGNATURE REQUIRED**  
 Instructor: A. Horn  
 Format: 12 intensive days and evenings, beginning in late April  
 Prerequisites: BIOL 3062.03 (or other animal behaviour class)

**BIOL 4010.03B: Genes and Genomes.** See class description for BIOC 4403.03, in the Biochemistry section of this calendar.

**BIOL 4011.03A: Gene Expression.** See class description for BIOC 4404.03, in the Biochemistry section of this calendar.

**BIOL 4012.03A: Advanced Laboratory in Biochemical Techniques.** See class description for BIOC 4603.03, in the Biochemistry section of this calendar.

**BIOL 4024.03A: Microscopy.** The class is concerned with biological ultrastructural analysis concentrating on transmission and scanning electron microscopy. The importance of a proper understanding of the physical and chemical principles governing technical procedures such as fixation, freeze-fracture, colloidal gold probes, stereology, autoradiography, x-ray microanalysis and photography are emphasized. During laboratory periods students have the opportunity through individual projects to participate in some of the techniques covered in the lectures. This class is designed primarily for honours and graduate students.

Instructors: G.T. Faulkner, L. Frotten-Maillet, D.B. Stoltz  
 Format: Lecture 3 hours, no formal lab  
 Prerequisites: Instructor's consent  
 Cross-listing: MICR 4024.03/5024.03, BIOL 5024.03

**\*BIOL 4060.03A: Marine Mammalogy.** (May not be offered in 1996/97) 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. Finally we will consider the factors that regulate marine mammal populations and how these influence attempts to manage and conserve them. Assignments will include a laboratory exercise, a review essay on some marine mammal adaptation, exploring a computer model of a marine mammal population, tests, projects, etc. and an examination.

Instructors: Staff  
 Format: Lectures 3 hours  
 Prerequisites: BIOL 2060.03

**BIOL 4061.03A: Experimental Design and Data Analysis in Biology.** 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 many real examples, especially from the ecological literature, we will show how experiments should be designed and

analyzed in different situations, with emphasis on potential problems and how they may be overcome. We will also introduce some of the more common techniques used in the analysis of univariate and multivariate biological data.

Instructors: R. Scheibling, H. Whitehead  
 Format: Lecture 2 hours/tutorial  
 Prerequisites: STAT 2070.03/2080.03; offered to well prepared honours students as well as graduate students

Cross-listing: BIOL 5061.03

**BIOL 4008.03A: Limnology.** (may not be offered in 1996/97) The class is divided into three sections: (A) Physical and Chemical Limnology — geology, morphometry, thermal properties, system hydrology & budgets, optical properties, oxygen, acidity/alkalinity, physical/chemical interactions, major/minor ions and heavy metals, organic molecules, ionic budgets and mass balances; (B) Biological limnology — paleolimnology, microbiology/phytoplankton, quantitative geochemistry, zooplankton/invertebrates, vertebrates, sampling technology; (C) Applied limnology — eutrophication, acid rain, water pollution.

Instructor: P. Lane  
 Format: Lecture 3 hours, lab/tutorial 3 hours  
 Prerequisite: BIOL 2060.03

**\*BIOL 4070.03B: 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 different problem is chosen each year and each student presents two seminars reviewing the literature of particular animals' solutions. The student also writes a short term paper based on one of their presentations.

Instructors: S.J. Iverson, R.K. O'Dor, A. Pinder  
 Format: Lecture 2 hours, open lab  
 Prerequisite: BIOL 3070.03 or 3071.03  
 Cross-listing: BIOL 5070.03

**\*BIOL 4073.06R: Animal Nutrition.** (May not be offered in 1996/97) General principles and techniques of animal nutrition are reviewed and used to examine current literature. Emphasis is on the assessment of nutrition requirements of aquatic and marine species.

Instructor: J. Castell

**\*BIOL 4101.03B: Industrial Microbiology and Biochemistry.** This class considers the industrial and environmental applications of micro-biology, particularly the industrial processes, like brewing, manufacturing, anti-biotic production, and waste water management. A fundamental and practical understanding of the biochemistry of these process is a key component.

Instructor: M. Silver  
 Format: Lecture/seminar 2 hours  
 Prerequisite: BIOL 2101.03 or MICR 2100.03

**BIOL 4103.03B: Infectious Diseases of Aquatic Organisms.** Infectious disease is a significant factor in the successful development of aquaculture. Each candidate species for aquaculture is sensitive to many types of pathogens. Studies of host-pathogen

interactions attempt to understand the immunity of the host in relation to virulence factors of pathogens. This class will examine a variety of pathogens (in particular, viral, bacterial, fungal, protozoan and metazoan pathogens) with emphasis on disease prevalence, diagnosis, control and pathogen identification using traditional and biotechnical methods. Immune systems of invertebrates and vaccine development. Some consideration will be given to the production of transgenic organisms with genes or antisense sequences which confer resistance to specific pathogens.

Instructors: D. Stolz, R. Brown, D. Strongman, D. Cone  
 Format: Lecture/seminar  
 Prerequisite: One third year class in Microbiology

**BIOL 4113.03B: Biology of the Prokaryotic Cell.** Although the class concentrates on the structure and function of the bacterial cell envelope, that is, the capsule, cell wall and cell membrane, other topics such as the physiology of obligate anaerobiosis, sporulation, motility etc. are also covered. As part of this class, students will write one essay.

Instructor: R. Brown  
 Format: Lecture 2 hours  
 Prerequisite: MICR 2100.03 or BIOL 2101.03 and CHEM 2400.06 or BIOL 2010.03

**\*BIOL 4214.03B: Physiology of Marine Algae.** (May not be offered in 1995-96) A comparative study of the physiology and biochemistry of the various algae classes is conducted, including studies of carbohydrates, proteins, fats, pigments and nutrition.

Instructor: R. Brown  
 Format: Lecture 3 hours  
 Instructor: J. Craigie  
 Prerequisite: Permission of instructor

**BIOL 4302.03B: Molecular Immunology.** (Not offered in 1995/96) An advanced class which investigates the molecules involved in the generation and expression of immune responses. Topics typically include the structure and function of cytokines, the generation of antibody diversity by immunoglobulin gene rearrangement, the structure and function of cell surface receptors such as the T cell antigen receptor, MHC and adhesion molecules, and the molecular interactions which lead to immune non-responsiveness. This class is offered on alternate years to MICR/Biol 4303.03.

Instructors: T. Lee, A.W. Stadnyk, B. Pohajdak  
 Format: Lecture/student presentations/discussion  
 Prerequisites: MICR 3115.03 and/or instructor's consent  
 Cross-listing: MICR 4302.03/5302.03, BIOL 5302.03

**BIOL 4303.03B: Granulocytes and the Immune Response.** An advanced class dealing with the contribution of granulocytes to immunologic function. Mast cells, basophils, neutrophils, carophages, NK cells and eosinophils will be considered with respect to their unique functions and contribution to a variety of



immune effector mechanisms. This class is offered on alternate years to MICR 4302.03/BIOL 4302.03.

Instructors: T. Lee, A.W. Stadnyk, B. Pohajdak

Format: Lecture/student presentations/discussion

Prerequisites: MICR 3115.03 and/or instructor's consent

Cross-listing: MICR 4303.03/5303.03, BIOL 5303.03

\*BIOL 4369.03B: Fisheries Oceanography. See class description for OCEA 4160.03, in the Oceanography section of this calendar.

**BIOL 4404.03A: 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. The interaction of drugs with the central and peripheral nervous systems will be covered. 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.

Instructors: H. Robertson, J. Blay

Format: Lecture 3 hours

Co-requisites/

Prerequisites: Upper level physiology or instructor's consent

Cross-listing: PHAC 5406.03, BIOC 4804.03, NESC 4374.03

**BIOL 4405.03B: Introduction to Pharmacology II.** This class is intended to cover specific aspects of drug action in greater depth than BIOL 4404.03 and to provide students with practical expertise in pharmacology. The laboratory component consists of prescribed exercises using varied techniques. Instructor's consent and signature are required.

Instructor: TBA

Format: Lecture 3 hours, lab 3 hours

Prerequisite: BIOL 4404.03

Cross-listing: PHAC 5407.03, BIOC 4805.03, NESC 4375.03

**BIOL 4600.03B: Invertebrate Fisheries and Aquaculture.** Subject matter will deal with commercially exploited invertebrates (crustaceans and molluscs) with a heavy emphasis on bivalves. Topics to be covered include: (1) Review of the major invertebrate harvest fisheries (locations, methods, population cycles, fisheries models) (2) Biology and ecology of the Bivalvia (feeding, bioenergetics, growth, and reproduction) (3) Shellfish aquaculture (methods, species, site location, economics). These topics will be covered with respect to the Maritimes as well as non-local fisheries. Course structure will be a mixture of lecture and class discussions. Course requirements will include a research paper and oral presentations.

Instructors: G. Newkirk

Format: Lecture/discussion 3 hours

Prerequisites: BIOL 2001.03, 2060.03, and 3321.06; fundamental knowledge of statistics; or instructor's consent

Cross-listing: OCEA 4600.03/5600.03, BIOL 5600.03

**BIOL 4660.03A: Principles of Biological Oceanography.** See class description for OCEA 4150.03, in the Oceanography section of this calendar.

**BIOL 4662.03B: Biology of Phytoplankton.** (Not offered in 1995/96) See class description for OCEA 4230.03, in the Oceanography section of this calendar.

**BIOL 4664.03B: History of Marine Sciences.** See class description for SCIE 4001.03 in the Science, Interdisciplinary section of this calendar.

**BIOL 4666.03B: Benthic Ecology.** See class description for OCEA 4330.03, in the Oceanography section of this calendar.

**BIOL 4900.06: Special Topics.** Available as 4806.03A, 4807.03B, 4808.03R. These classes involve independent study and are intended for fourth-year students who wish to study an area of biology not covered in other classes. The topic of study must be different from the student's honours thesis. Students should first consult with a faculty member to arrange the topic of study. An outline of the course 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.

SCIE 8700.00B: Co-op Seminar . (non-credit)

BIOL 8891.00: Co-op Work Term I.

BIOL 8892.00: Co-op Work Term II.

BIOL 8893.00: Co-op Work Term III.

BIOL 8894.00: Co-op Work Term IV.

**BIOL 4900.06R: Honours Research and Thesis.** Compulsory class in Biology and Marine Biology honours programme.

Instructor: A.R.O. Chapman, P. Collins, A. Pinder

Format: Student seminars

Restriction: Restricted to final year honours students

## Marine Biology

### Honours and Advanced Major in Marine Biology

The Biology Department offers a 4 year Honours and a 4 Year Advanced Major degree in Marine Biology. We also offer these two degrees in a Co-operative Education format where students integrate work experience into their academic programme.

These programmes are designed to provide a fundamental background in biological science while permitting concentration in Marine Biology. The Advanced Major prepares students for technical positions in government fisheries laboratories, fish farms, etc. The honours programme is more rigorous and provides research experience for the preparation of a thesis and is intended for students wishing to continue with further research training at graduate school.

The resources of the departments of Biology and Oceanography are combined in the Life Sciences building which is equipped with a sophisticated flow-through sea-water system.

The Life Sciences centre is located very close to the sea coast and this enables many classes to offer field work.

## Co-operative Education Programme in Marine Biology, Honours and Advanced Major

Programme Co-ordinator

M.J. O'Halloran (494-2136)

The Co-operative education degree is an integrated programme of 8 academic terms and 4 work terms in industry, government laboratories, aquaculture farms, etc. The work terms, each of 4 months duration, enable students to apply their knowledge of marine biology and provide them with work experience for making intelligent career choices. Upon successful completion of the programme, the student's transcript indicates that the degree was co-operative in format. The Co-op degree normally takes 4 1/3 years to complete.

### The Work-study programme

The work terms are of 4 months duration and alternate with study terms as follows:

Year	Fall	Winter	Summer
1	AT1	AT2	Free
2	AT3	AT4	WT1
3	AT5	WT2	AT6
4	WT3	AT7	WT4
5	AT8	May Graduation	

AT = Academic term

WT = Work Term

The Faculty's Co-op Placement Officers serve to co-ordinate the contacts between students and employer. Students are remunerated according to employers' policies on permanent employees of similar training and education. At the end of each work term, each student must submit an acceptable work report.

The academic programme and required classes for Honours and Advanced Major Co-op students are essentially the same as those for the non co-op programme (listed below). Students in the third and fourth year of their co-op programme will have difficulty taking R-term classes during the academic year because of their work terms. The two required full-credit third-year biology classes (BIOL 3321.06 and 3071.06) are split into Part 1 (A term) and Part 2 (B term) so that students can take Part 1 in the fall term of their third year and Part 2 in the winter term of their fourth year.

Many employers require basic computer skills (word-processing, data-base management), so students are strongly advised to take an introductory Computing Science class (COMP 1000.03) during their first 2 years.

During their second year Co-op students must attend a non-credit seminar class to prepare them for their work term placements.

### Eligibility

Students should obtain application forms from the Marine Biology Co-op Co-ordinator at the end of their first year. They should also contact the Co-op Co-ordinator during their first year of study to have their programme checked.

Both Honours and Advanced Major Co-op students are required to demonstrate sufficient academic potential and maintain a grade average of B (GPA 3.00) in BIOL 1000.06, 2001.03, 2020.03, 2030.03, 2060.03. Students must also be Canadian citizens or landed immigrants.

## Honours in Marine Biology

Programme Advisor:

M.J. O'Halloran (494-2136)

Honours students must take a minimum of 9 and a maximum of 11 credits in their major 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).

Students are recommended to take Oceanography as their minor subject and 2 credits are required.

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: Our department requires marine biology honours students to obtain a B average (GPA 3.00) in the following second-year classes:

- BIOL 2001.03, 2020.03, 2030.03, and 2060.03.

These classes must normally be completed by the end of year 2.

## Departmental Requirements

### Classes required in honours:

1000 level:	BIOL 1000.06
2000 level:	BIOL 2001.03, 2020.03, 2030.03, 2060.03
3000 level:	BIOL 3071.06 or 3074.03 & 3076.03; 3067.03; 3211.03 or 3212.03; 3321.06 or 3301.03/3302.03
4000 level:	BIOL 4900.06, Honours Qualifying exam (pass/fail grade based on participation in BIOL 4900.06)

### Other required classes:

CHEM 1040.06; MATH 1000.03 and 1060.03; OCEA 2850.06 or 2851.03/2852.03; STAT 2080.03

**Suggested biology credits and electives**

The following 3rd and 4th year classes are marine related and could be used for obtaining more biology credits or serve as electives. Other biology classes can also be taken if students want to concentrate in a specific area such as ecology, molecular or developmental biology but please discuss this with your Honours Advisor first.

All students should ensure they have the necessary pre-requisite classes for entry into higher level classes.

**Aquaculture**

BIOL 4600.03: Invertebrate fisheries and aquaculture

**Development**

BIOL 3050.03: Developmental biology

**Animal Diversity**

BIOL 3067.03: Ecology and Evolution of Fishes

BIOL 3326.03: Vertebrates and evolution

BIOL 4060.03: Marine Mammalogy

**Ecology**

BIOL 3061.03: Communities and ecosystems

BIOL 3063.03: Resource ecology

BIOL 3069.03: Population ecology

BIOL 4061.03: Expt'l design

BIOL 4666.03: Benthic ecology

**Earth Sciences**

ERTH 4280.03: Marine geophysics

**Evolution**

BIOL 3041.03: Evolution

**Microbiology**

BIOL 3100.03: Aquatic microbiology

**Oceanography**

BIOL 4369.03/OCEA 4160.03: Fisheries Oceanography

BIOL 4600.03/OCEA 4600.03: Invert. Fisheries and Aquaculture

BIOL 4660.03/OCEA 4150.03: Principles of biological oceanography

BIOL 4662.03/OCEA 4230.03: Biology of phytoplankton

BIOL 4664.03/OCEA 4331.03: History of Marine Science

BIOL 4666.03/OCEA 4330.03: Benthic Ecology

OCEA 3170.03: Physics and Chemistry of the Ocean

OCEA 4260.03: Biology of zooplankton

**Limnology**

BIOL 4068.03: Limnology

**Physics**

PHYC 1300.06: Physics in and around you

**Physiology**

BIOL 4070.03: Advanced topics in animal physiology

**Political Science**

POLI 3589.03: Politics of the Sea

**Resource Management/Economics**

BIOL 3063.03: Resource ecology

ECON 361.1(2): Fisheries economics (offered at St.Mary's University).

**Science**

**SCIE 3000.06: Science fundamentals**

**Biology field class**

(1/2 credit) offered at a recognized field station (see advisor for information).

**Class at Saint Mary's University**

**Fisheries Economics 361.1(2)A or B:** This class emphasizes the application of economic concepts to problems of fishery management and development. Topics to be discussed include: common property resources, the economics of fishery regulation, socioeconomics, fish markets, and the fishery as part of the national and regional economy. Particular attention will be paid to current issues in the Atlantic Canada fishery. (Check with the Finance and Management Science Dept at SMU to see if offered in 1994-95)

Instructor: T. Charles

Format: Classes 1.5 hours, seminars 1.5 hours a week in B term

Prerequisites: Instructor's consent. An introductory economics class would be useful

**Honours Co-op in Marine Biology**

**Departmental Requirements**

Same as for regular Marine Biology Honours as above in addition to the following:

- SCIE 8700.00 (Co-op Seminar),
- BIOL 8891.00, 8892.00, 8893.00, 8894.00 (Co-op Workterms)

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 advisor. If students wish to be supervised by someone external to the department, they must consult with the honours advisor, prior to starting the research, to determine supervisor and project's eligibility. The Honours Seminar class will normally be taken in two parts to accommodate students' workterms: Part 1 in B term of 4th year and Part 2 in A term of 5th year.

**Suggested Biology credits or electives**

Same as for regular Marine Biology Honours as above plus COMP 1000.03.

**Advanced Major in Marine Biology (4 year)**

Advanced major students are required to take a minimum of 6 and a maximum of 9 credits above the 1000 level in their major subject (Marine biology/Biology) in addition to the general rules for Advanced majors which are listed in the degree requirements section of the College of Arts and Science regulations in this calendar.

**Departmental Requirements**

**Classes required in Advanced Major:**

1000 level: BIOL 1000.06  
2000 level: BIOL 2001.03, 2020.03, 2030.03, 2060.03.

3000/

4000 level: Minimum of four (4) credits to be selected from these classes with strong marine emphasis: BIOL 3063.03, 3067.03, 3017.06,

3100.03, 3211.03, 3212.03,  
3321.06, 4060.03, 4369.03,  
4600.03, 4660.03, 4664.03,  
4666.03.

**Other required classes:**

CHEM 1040.06 MATH 1000.03 and 1060.03

**Useful electives**

These can be selected from those listed earlier in the Marine Biology Honours programme.

**Advanced Major Co-op in Marine Biology**

**Departmental Requirements**

Same as for regular Advanced Major in Marine Biology as above in addition to the following:

- SCIB 8700.00 (Co-op Seminar),
- BIOL 8891.00, 8892.00, 8893.00, 8894.00 (Co-op Workterms)

# Canadian Studies Programme

Location: Multidisciplinary House, 1444  
Seymour Street, Halifax, N.S.  
Telephone: (902) 494-3814  
Fax: (902) 494-2105

## Coordinator

J.A. Wainwright - (494-3814/3876)

## Faculty

R. Apostle (Sociology and Social Anthropology)  
B. Bednarski (French)  
M. Bradfield (Economics)  
S.A.M. Burns (Philosophy)  
D. Cameron (Political Science)  
D. Clairmont (Sociology and Social Anthropology)  
M. Cross (History)  
C. Danyak (History)  
R. Finbow (Political Science)  
W. Kemp (Music)  
B. Lesser (Economics)  
V. Miller (Sociology and Social Anthropology)  
P. Monk (English)  
I. Oore (French)  
D. Overton (Theatre)  
H. Runte (French)  
C.T. Sinclair-Faulkner (Comparative Religion)  
J. Smith (Political Science)  
D. Sutherland (History)  
G. Taylor (History)  
S. Tillotson (History)  
J.A. Wainwright (English)

## Aim

The purpose of the programme is to allow students to concentrate part of their work on Canadian Studies both within their major field and outside of it. For example, a student who is planning to major in a subject will take a number of classes in that subject that are designated as Canadian. The student will in addition take a number of classes that are designated as Canadian outside his or her major field.

In other words, the Canadian Studies Programme does not attempt to establish a new major field. It seeks to use any one of a number of departments in the Faculty of Arts and Social Sciences as a base around which a student may effectively cluster a number of classes in Canadian subjects. However, all students in the Canadian Studies programme must take the half-credit interdisciplinary seminar, CANA 3000.03. Students in this seminar will consider significant issues in Canadian history, politics, and literature and their interrelated contribution to this country's past, present, and future. Those who fulfil the Canadian-content requirements of this programme will have the words "With An Emphasis in Canadian Studies" on their transcript upon graduation.

## Classes

Before enrolling in any of the classes listed below, students should consult with the Coordinator of Canadian Studies in the Multidisciplinary House.

Students who are interested in a Canadian Studies programme should attempt in their first year to take an introductory class in the following subjects: English, French, History (preferably HIST 1200.06 if available), and in either Political Science or Sociology and Social Anthropology. (Prospective Economics majors may substitute an introductory class here).

With attention to prerequisite classes, in the second, third, and possibly fourth years of study, students, either as part of, or in addition to, fulfilling their major discipline requirements, should take at least one class in three different disciplines from the list below (in addition to CANA 3000.03).

NOTE: Classes marked \* are not offered every year. Please consult the current timetable on registration to determine if these classes are offered.

**CANA 3000.03A or B: A Seminar in Canadian Studies.** An interdisciplinary seminar for third, and fourth year students in the Faculty of Arts and Social Sciences who, in pursuit of their degree in a particular subject, are taking at least one class in three of the following disciplines: Canadian-content classes in Comparative Religion, Economics, English, French, History, Music, Political Science, Sociology and Social Anthropology and Theatre.

This seminar 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.

This seminar will be taught by a number of professors in various Faculty of Arts and Social Sciences disciplines. In individual weekly seminars students will consider essays and other short readings in Comparative Religion, English, French (in translation), History, Music, Philosophy, Political Science, Sociology and Social Anthropology and Theatre. 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, and literary. Students must consult with the Canadian Studies Coordinator before enrolling in the seminar.

Instructors: R. Apostle, B. Bednarski, S.A.M. Burns, D. Cameron, M. Cross, C. Danyak, R. Finbow, W. Kemp, V. Miller, P. Monk, I. Oore, D. Overton, J. Smith, H. Runte, G. Taylor, J.A. Wainwright

Format: Seminar/Discussion  
Co-requisite: Canadian-content classes in Comparative Religion, Economics, English, French, History, Music, Political Science, Sociology and Social Anthropology, Theatre

**Comparative Religion Classes  
Approved with Canadian Studies**

COMR 3003.06R: Religion in Canada

**Economics Classes Approved with  
Canadian Studies**

\*ECON 2232.06R: Canadian Economic History

\*ECON 3317.03B: Poverty and Inequality

\*ECON 3326.03A: Money and Banking

ECON 3332.03A or B: Resource Economics

\*ECON 3336.03B: Regional Development

\*ECON 4426.03B: 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.

**English Classes Approved with  
Canadian Studies**

\*ENGL 2207.06R: Canadian Literature

\*ENGL 4357.06R: Honours Seminar in Canadian Literature

**French Classes Approved with  
Canadian Studies**

FREN 2021.03A/FREN 2022.03B: Études pratiques/Practice in Language Skills (This is a multi-section class. Check with the French Department to determine which sections have Canadian content).

FREN 2203.03A or B: Approches du texte littéraire/ Approaches to Literary Texts

\*FREN 3025.03A or B: Les Parlers acadiens: Introduction linguistique/Linguistic introduction to Acadian Dialectology

\*FREN 3900.03A/FREN 3901.03B: La littérature canadienne-française/French Canadian Literature

\*FREN 3910.03A or B: Études acadiennes/Acadian Studies

\*FREN 4902.03A: Écrivains québécois contemporains/ Contemporary Quebec Writers

\*FREN 4904.03A or B: Écrivaines québécoises/Quebec Women Writers

**History Classes Approved with  
Canadian Studies**

HIST 1200.06R: Canada: An Introductory Survey

\*HIST 2202.03A or B: Canada's Industrial Revolution, 1850-1950

HIST 2211.03A or B: Social History of Canada Before 1870

HIST 2212.03A or B: Social History of Canada Since 1870

HIST 2221.03A or B: Rough Justice: Order, Disorder and Canadian Popular Culture, to the 1890's

HIST 2222.03A or B: Rough Justice: Order Disorder and Canadian Popular Culture, 1890 to Present

HIST 2230.06R: Canada in the Twentieth Century

HIST 2270.06R: The Atlantic Provinces

\*HIST 3220.03A or B: Youth Culture in Canada, 1950's to 1970's

\*HIST 3222.03A or B: Topics in Canadian Social History, 19th and 20th Centuries

\*HIST 3225.03A or B: Crime, Punishment and the Criminal Law in Canadian Society

\*HIST 3245.03A or B: French Canada

\*HIST 3255.03A or B: The Age of MacDonald and Laurier

\*HIST 3260.03A or B: History of the Canadian West

\*HIST 3261.03A or B: The Rural Experience in Canada

\*HIST 3272.03A or B: Themes in the History of Atlantic Canada

HIST 3273.03A or B: Nova Scotia: Pre-Confederation

HIST 3274.03A or B: Nova Scotia: Post-Confederation

\*HIST 3286.03A or B: The Urban Experience in Canada

\*HIST 3292.03A or B: Wealth and Power in North America

\*HIST 3302.03A or B: Technology and History in North America

\*HIST 3750.03A or B: History of Seafaring

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

**Music Classes Approved with  
Canadian Studies**

MUSC 3362.03A: Music in Canada to 1950

MUSC 3364.03B: Women in Canadian Music

**Political Science Classes Approved  
with Canadian Studies**

POLI 2200.06R: Canadian Government and Politics

\*POLI 3205.03A or B: Canadian Political Thought

POLI 3216.03A or B: Local and Regional Government

POLI 3220.03A or B: Intergovernmental Relationships in Canada

\*POLI 3224.03A or B: Canadian Political Parties

\*POLI 3235.03A or B: Regional Political Economy in Canada

\*POLI 3245.03A or B: The Judicial System and Canadian Government

\*POLI 3250.03A or B: Canadian Public Administration

POLI 4240.03A or B: Policy Formulation in Canada

POLI 4241.03A or B: Introduction to Policy Analysis

**Social Anthropology Classes  
Approved with Canadian Studies**

\*SOSA 3008.03A or B: Canadian Society and Politics

Please note that this class is 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.

**Theatre Classes Approved with  
Canadian Studies**

THEA 4500.03A or B: Canadian Drama

THEA 4501.03A or B: The History of Canadian Theatre

# Chemistry

Location: Chemistry Building  
 Telephone: (902) 494-3305  
 Fax: (902) 494-1310  
 e-mail: dalchem@ac.dal.ca

## Chairperson of Department

R.J. Boyd

## Faculty Undergraduate Advisors

T.P. Forrest (494-3315)  
 J.S. Grossert (494-3314)  
 K.R. Grundy (494-3409)  
 R.D. Guy (494-7079)  
 D.L. Hooper (494-3322)  
 P.G. Kusalik (494-3627)  
 P.D. Pacey (494-3334)  
 J.A. Pincock (494-3324)  
 R. Stephens (494-7075)  
 C.H. Warren (494-3323)

## Professors Emeriti

O. Knop, DSc (Laval), FCIC, Harry Shirreff  
 Professor of Chemical Research  
 D.E. Ryan, BSc (UNB), MA (Tor), PhD, DSc  
 (Lond), DIC, FCIC

## Professors

D.R. Arnold, BS (Bethany College), PhD (Roch),  
 FCIC, Alexander McLeod Professor of  
 Chemistry  
 W.A. Aue, PhD (Vienna)  
 R.J. Boyd, BSc (UBC), PhD (McG), FCIC  
 N. Burford, BSc (Wales), PhD (Calgary)  
 T.S. Cameron, BA, MA, DPhil (Oxon)  
 A. Chatt, BSc (Calcutta), MSc (Roorkee), MSc  
 (Wat), PhD (Tor), FCIC  
 J.A. Coxon, MA (Cantab), MSc, PhD (East  
 Anglia)  
 T.P. Forrest, BSc (MtA), MSc (Dal), PhD (UNB)  
 T.B. Grindley, BSc, MSc, PhD (Queen's), FCIC  
 J.S. Grossert, BSc, MSc, PhD (Natal), FCIC  
 J.C.T. Kwak, BSc, MSc, PhD (Amsterdam), FCIC  
 P.D. Pacey, BSc (McG), PhD (Tor), FCIC  
 J.A. Pincock, BSc, MSc (Man), PhD (Toronto)  
 L. Kamaley, BA (Col), MA, PhD (Prin), FCIC  
 R. Stephens, MA (Cantab.), MSc (Bristol), PhD  
 (London), DIC  
 R.E. Wasyliahen, BSc (Wat), MSc, PhD (Man),  
 FCIC, Faculty of Science Killam Professor in  
 Chemistry  
 M.A. White, BSc (Western), PhD (McM), FCIC

## Associate Professors

K.R. Grundy, BSc, MSc Hons, PhD (Auckland)  
 R.D. Guy, BSc (SFU), PhD (Carl)  
 D.L. Hooper, BSc, MSc, PhD (UNB), FCIC  
 C.H. Warren, BSc (Western), PhD (McM)  
 P.D. Wentzell BSc (Dal), PhD (Mich State)  
 R.L. White BSc (Dal), PhD (McM), FCIC

## Assistant Professors

F.L. Cozens, BSc (York), PhD (Tor), (NSERC  
 Women's Faculty Award)

P.G. Kusalik, BSc (Lethbridge), MSc, PhD  
 (UBC), (NSERC University Research Fellow)  
 N.P. Schepp, BSc, PhD (Tor)

## Visiting Scientists (1995)

K.G. Amoh, Ghana Atomic Energy  
 Commission, Ghana  
 N.A. Aras, Middle East Technical University,  
 Turkey  
 K. Crouse, Universiti Pertanian, Malaysia  
 S.B. Elegba, Ahmadu Bello University, Nigeria  
 I.D.B. Ewa, Ahmadu Bello University, Nigeria  
 I. Khamis, Atomic Energy Commission, Syria  
 J.W. Kideniuk, Fisheries and Oceans Canada, St.  
 John's, NF  
 L. Komorowski, Technical University of  
 Wroclaw, Poland  
 A. Korkin, Moscow State University, Russia  
 A. Laaksonen, University of Stockholm, Sweden  
 A.W. Whittle, Mount Allison University,  
 Sackville, NB

## Senior Instructors

S.A. Barkhouse, BSc (MSVU), BEd, MBA (Dal)  
 C.D. Burkholder, BSc (Wat)  
 C.M. Byers, BSc Hons (Dal)  
 J. Gabor, MSc (Budapest)  
 D.J. Silvert, MSc (CWRU)  
 K.E. Thompson, BSc (Acadia), MBA (SMU)  
 M.E. Warren, BSc (Western)

## Adjunct Professors (1995)

R.K. Boyd, BSc, PhD (St. Andrew's), National  
 Research Council, Institute for Marine  
 Biosciences  
 J.M. Curtis, BSc (Southampton), MSc (Guelph),  
 PhD (Swansea), National Research Council,  
 Institute for Marine Biosciences  
 D.G. Marangoni, BSc (Acadia), PhD (Dal), St.  
 Francis Xavier University  
 P. Thibault, BSc, PhD (Montreal), National  
 Research Council, Institute for Marine  
 Biosciences  
 K. Vaughan, BSc (UMIST), PhD (St. Andrew's),  
 Saint Mary's University  
 M. Zaworotko, BSc (London), PhD (Alabama),  
 Saint Mary's University

## Postdoctoral Fellows and Research Associates/ Assistants (1995)

R. Cordes, BSc (Dal), MSc (UBC)  
 S.T. Dimitrijevic, PhD (Belgrade)  
 K. Eichele, BSc, PhD (Tübingen)  
 H. Furue, BSc, MSc (Osaka), PhD (Queen's)  
 M.E. Lam, BSc (UBC), PhD (Dal)  
 M. Li, PhD (Dal)  
 C.B. Lucasius, PhD (Nijmegen)  
 J.M. Martell, BSc (SMU), PhD (Dal)  
 K.A. McManus, BSc, PhD (Dal)  
 P.H. Poole, BSc (St.F.X.), MA, PhD (Boston)  
 S.V. Serada, BSc (Kiev), PhD (Moscow)  
 I. Sviahchev, MSc, PhD (Moscow)  
 J. Wang, BSc, MSc (East China), PhD (Dal)  
 J. Wang, BSc (Hanan), MSc (Academia Sinica),  
 PhD (Queen's)



## Introduction

Chemistry is one of the fundamental sciences. It explores the interactions among different forms of matter and energy. Its main purpose is to gain a basic - but also a very useful - understanding of how compounds react and when and why they form particular products. The universe and the world in which we live are composed of chemicals. Therefore, chemical knowledge helps us to influence and protect our environment; chemical principles and procedures are found everywhere in the groundwork of the natural and medical sciences.

The Honours BSc is the expected professional requirement for a chemist. Chemists with honours degrees are employed in widely differing areas in industry and government. This degree will provide a background for further graduate work in chemistry or in such diverse areas as medicine, law, business administration, biochemistry, oceanography and geology. A postgraduate degree is essential for independent original research in an industrial career or in university teaching.

Chemistry 1010.06 (or 1020.06 or 1040.06 or 1500.06) is an introduction to the discipline. All students intending to take classes in chemistry beyond the first-year level should include classes in mathematics (Math 1000.03/1010.03) and physics (not PHYC 1000.06) in their first year. Final grades in these classes should not be less than C; if they are, the student is bound to find advanced classes in chemistry difficult and frustrating.

At the second-year 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 is concerned with both macroscopic phenomena, including why and at what rates chemical reactions occur, and with molecular phenomena through the application of spectroscopic techniques. Beyond the second-year level, a student's studies in chemistry become increasingly concentrated in one of these four areas. The student may also be introduced to biochemistry or the chemistry of living organisms, as well as such specialties as structural chemistry, radiochemistry, environmental chemistry and theoretical chemistry.

## Degree Programmes

The Honours in Chemistry, Joint Honours in Chemistry and Biochemistry and Advanced Major in Chemistry as described in this calendar, are programmes accredited by the Canadian Society for Chemistry (CSC). CSC accreditation ensures that graduates of these programmes have met certain criteria

concerning the quantity and quality of their instruction and qualifies such graduates for membership in the CSC.

See "Degree Requirements" section for complete details.

## Honours in Chemistry

This programme is intended to provide a broad training in chemistry while at the same time making provision for the individual interests of students. Competence in mathematics as well as chemistry is required. All honours students must consult annually with the Honours Student Advisor and obtain approval of their class selection.

All nine required chemistry credits must be passed with a grade of at least C.

## Departmental Requirements

### Classes required in Honours:

1000 level:	CHEM 1010.06, 1020.06, 1040.06 or 1500.06
2000 level:	CHEM 2101.03, 2201.03, 2301.03, 2302.03, 2400.06
3000 level:	CHEM 3101.03 or 3102.03, 3201.03, 3301.03, 3302.03, 3401.03 and 3880.00
4000 level:	CHEM 4880.00, honours qualifying credit (8880.00)

The remaining seven half credits in Chemistry must be chosen from the classes listed below, with at least one half credit from each of the groups A, B, C and D.

- A. CHEM 3101.03, or 3102.03, 4101.03, 4102.03
- B. CHEM 3202.03, 4201.03, 4202.03, 4203.03
- C. CHEM 3303.03, 4301.03, 4304.03, 4305.03, 4306.03, 4307.03
- D. CHEM 3402.03, 3403.03, 4401.03, 4402.03, 4403.03
- E. CHEM 3501.03, 4501.03, 4502.03, 4503.03, 4504.03

### Other required classes:

MATH 1000.03 and 1010.03, MATH 2001.03 and 2002.03 or equivalent, PHYC 1100.06

Two credits beyond the 1000 level must be taken in a minor subject. Minor subjects allowed for this degree are biochemistry, biology, computing science, earth sciences, mathematics, or physics. The minor, the unspecified credits in chemistry, and electives should be chosen according to the future plans of the student.

## Combined Honours Programme

The department has designed a number of programmes which allow a student to obtain a Combined Honours Degree in Chemistry with one of Biochemistry, Biology, Computing Science, Earth Sciences, Mathematics or Physics. To obtain an introduction to all the basic areas of chemistry, CHEM 2101.03, 2201.03, 2301.03, 2302.03 and 2400.06 must be part of any combined honours programme involving Chemistry, and must be passed with a grade of at least C.

The additional eight credits in chemistry and the other subject must be chosen in consultation with the two departments involved. Students must consult the Honours

Student Advisor of the Department of Chemistry and the Chair of the other area of study before registering in the combined programme. Students should also consult the Department's Handbook "Undergraduate Studies in Chemistry" for more information.

## Advanced Major in Chemistry

### Departmental Requirements

#### Classes required in Advanced Major:

1000 level:	CHEM 1010.06 or 1020.06 or 1040.06 or 1500.06
2000 level:	CHEM 2101.03, 2201.03, 2301.03, 2302.03 and 2400.06
3000 level:	CHEM 3101.03 or 3102.03; 3201.03, one half credit from CHEM 3301.03, 3302.03, 3303.03, 3401.03, 3402.03

The additional 2.5 credits minimum can be selected from the remaining 3000 and 4000 level Chemistry classes.

All Chemistry classes must be passed with a grade of at least C-.

#### Other required classes:

MATH 1000.03, 1010.03, 2001.03 and 2002.03 or equivalent and PHYC 1100.06 or equivalent

## Advanced Double Major Programme

The Department has a number of programmes which allow a student to obtain an Advanced Double Major Degree in Chemistry with one of Biochemistry, Biology, Computing Science, Earth Sciences, Mathematics or Physics. To obtain an introduction to all the basic areas of chemistry, CHEM 2101.03, 2201.03, 2301.03, 2302.03 and 2400.06 must be part of any advanced double major programme involving Chemistry, and must be passed with a grade of at least C-.

Additional credits in Chemistry and the other subject must be chosen in consultation with the two departments involved. Students are encouraged to consult the Chair of the Undergraduate Studies Committee in the Department of Chemistry and the Chair of the other area of study before registering in the programme. Students should also consult the Department's Handbook "Undergraduate Studies in Chemistry" for more information.

## Co-operative Education Programme in Chemistry

This programme is intended to provide students with practical training for careers in industry and in government laboratories. Students are expected to acquire excellent laboratory skills, augmented by a knowledge of 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.

The normal academic goal of this programme will be a 20-credit, advanced major BSc degree, augmented by four supervised work-terms, spread over a period of 52 months.

General features of cooperative programmes can be found in the Dalhousie University Calendar under the heading "Co-operative Education in Science". Students are urged to read and become familiar with this material.

## Advanced Major Co-op Programme Eligibility

Students may be admitted to the programme 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 programme. Students must register before August 1, but should, however, register their intention to enter the programme with the Chemistry Office in the Spring of their first year.

### Departmental Requirements

#### Year 1

##### Regular Session:

CHEM 1010.06, (or equiv); MATH 1000.03, 1010.03; PHYC 1100.06 (or PHYC 1300.06); BIOL 1000.06, and a writing class (suggested are ENGL 1000.06 or GERM 1050.06)

##### Spring or Summer Session:

CHEM 2400.06

#### Year 2

##### Fall Session (A):

CHEM 2101.03, 2201.03, 3402.03; SCIE 8700.00, STAT 1060.03 OR 2060.03; COMP 1000.03. The above classes must be successfully completed before proceeding to Work-Term 1.

##### Winter Session (B):

CHEM 8891.00 (Work-Term 1)

##### Summer:

COMP 1400.03, COMP 1410.03, plus 2 half-credit electives

Various options are possible for the remainder of the programme, which must include

- CHEM 2301.03, 2302.03, 3101.03, 3102.03, 3201.03, 3202.03, 3303.03, 3401.03;
- One half-credit Chemistry class at the 3000 or 4000 level;
- One of CHEM 42xx.03, 4501.03\*, 4502.03\*;

- CHEM 8892.00;
- CHEM 8893.00;
- CHEM 8894.00;
- STAT 2080.03; and
- Six half-credit electives.

Students may wish to consult the Coordinator of the Chemistry Programme for advice on scheduling options.

Please note: Classes marked \* may not be offered every year.

## Major in Chemistry

### Departmental Requirements

Classes required in Major:

- 1000 level: CHEM 1010.06 or 1020.06 or 1040.06 or 1500.06
- 2000 level: CHEM 2101.03, 2201.03, 2301.03, 2302.03 and 2400.06
- 3000 level: At least one credit at or above the 3000 level

All Chemistry classes must be passed with a grade of at least C-.

Other required classes:

PHYC 1300.06 or 1100.06, MATH 1000.03, 1010.03

### Earth System Science

Refer to the Earth System Science section in this calendar.

## Classes Offered

"A" or "B" indicates that a class is offered in either the A or B term or in exceptional circumstances in both terms. "R" indicates a class extending over both the fall and winter terms. The credit hour extension following the class number, eg. .06 or .03 indicates the credit hour weight of the class. An asterisk (\*) indicates that the class is not necessarily offered every year. 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 second-year Chemistry classes but may request that their names be put on a waiting list. Consult the Department for details. Duly registered students, who do not show up for the first two scheduled lectures in a class, may lose their place to students on the waiting list.

### Chemistry Resource Centres

First-year and Advanced Resource Centres are located in Rooms 122 and 115. The former is staffed with people who can help with Chemistry problems. Facilities include study areas, a computer laboratory with special programmes designed for Chemistry students, molecular models, audio-visual aids and a small library.

\*CHEM 1000.06R: The Chemical World. This class is intended for students who want to take only a first-year credit in science, and who wish to understand some of the chemical aspects of the world around us. The class does not use a

mathematical approach to science, and can be taken by students with no, or limited, previous chemistry experience. The class will cover the development of chemical knowledge from early times to the present. By means of lectures, frequent (and sometimes spectacular!) demonstrations, and laboratory or reading projects, students will be introduced to the world of chemistry and to chemicals and chemical ideas in everyday use. Students contemplating careers, e.g., in law, business, or government could profit from the material studied in this class. Students will be required to do extensive written assignments, which will be marked both on content and writing style. CHEM 1000.06 is an approved "writing class" in the College of Arts and Science. CHEM 1000.06 does not serve as a prerequisite for second-year chemistry classes.

Instructor: T.S. Cameron  
 Format: Writing Requirement, lecture 2 hours, lab/tutorial 2 hours  
 Exclusions: CHEM 1000.06R cannot be taken concurrently with or after CHEM 1010.06R, 1020.06R, 1040.06R and 1500.06R

CHEM 1010.06R: General Chemistry. A study of the fundamental principles of chemistry with particular reference to stoichiometry, atomic and molecular structure, gases, liquids and solids, solutions, thermochemistry, equilibria, chemical properties of common substances, acid-base and oxidation-reduction reactions and chemical kinetics. Students enrolling in this class should have a background in chemistry equivalent to the Nova Scotia XII level. Mature students should consult the Department. It is important that students be familiar with exponents and logarithms, and be able to solve quadratic and simultaneous equations.

Instructors: A. Chatt, T.B. Grindley, R.D. Guy, N.P. Schepp, R. Stephens, C.H. Warren  
 Format: Lecture 3 hours, tutorial 1 hr, lab 2 hours

Any of CHEM 1010.06R, 1020.06R, 1040.06R or 1500.06R may serve as a prerequisite for any 2000 level class in chemistry, and as a credit in the College of Arts and Science. However, credit will only be given for one of 1010.06, 1020.06, 1040.06 or 1500.06.

CHEM 1020.06R: General Chemistry for Engineering Students. This class is similar to Chem 1010.06, but with greater emphasis on quantitative topics, including chemical equilibrium, thermodynamics, reaction kinetics and electrochemistry. The class is open only to students enrolled in the Engineering programme, but it serves also as a regular prerequisite for all second-year chemistry classes.

Instructor: J.A. Coxon  
 Format: Lecture 3 hours, tutorial 1 hour, lab 2 hours

CHEM 1040.06R: General Chemistry for the Life and Health Sciences. The basic content and rigour of this class is the same as that of CHEM 1010.06. However, more emphasis is given to organic (as opposed to inorganic) structures, and topics that are of interest to the life and health sciences are favoured over those of the inanimate variety. Thus, chemical

principles are illustrated primarily by examples from living systems. Additional areas such as enzyme kinetics, isotopes in medicine, and several types of bio-analyses are introduced in short and simple form. Some chapters take note of the material covered in other prominent first-year classes, particularly in biology and psychology. Requisite high school chemistry (N.S. grade XI/XII) may be reviewed in tutorial but is not retaught in lecture. CHEM 1040.06 uses the same textbook and laboratory experiments as CHEM 1010.06 and serves as a regular prerequisite for all second-year Chemistry classes.

**Instructor:** W.A. Aue  
**Format:** Lecture 3 hours, tutorial 1 hour, lab 2 hours  
**Prerequisite:** N.S. Grade XII Chemistry (441) or equivalent

**CHEM 1410.03A: Introductory Chemistry.** A descriptive introduction to chemistry with emphasis on materials related to the life and health sciences. The class requires a background of high school chemistry and mathematics. Topics covered include units, matter, the Periodic Table, stoichiometry of reactions, gases, liquids, solids, solutions, simple concepts of equilibria, acids, bases, radioactivity hydrocarbons, alcohols, ethers, amines, amides, esters and simple carbohydrates and proteins. The organic chemistry deals primarily with structures and introduces molecules of medicinal interest.

**Instructor:** D.L. Hooper, P.D. Pacey  
**Format:** Lecture 3 hours, tutorial 2 hours

**Note:** This class does not serve as a prerequisite for any other chemistry class.

**CHEM 1430.06R: Introductory Chemistry and Biochemistry.** This class combines CHEM 1410.03A and Biochemistry 1420.03B for use by Nursing students.

**Note:** This class does not serve as a prerequisite for any other classes in chemistry or biochemistry.

**\*CHEM 1500.06R: Principles of Chemistry.** Similar to CHEM 1010.06 but with more emphasis on atomic and molecular structure, thermodynamics, equilibria and kinetics. This class is intended for prospective science students and for students wishing to gain a more thorough introduction to the principles of chemistry. Students enrolling in this class must have attained high standing in high school chemistry and are advised to contact the lecturer prior to registering for this class. Concurrent enrolment in MATH 1000.03 and 1010.03, or in MATH 1500.06 is advised.

**Instructors:** M.A. White  
**Format:** Lecture 3 hours, lab/tutorial 3 hours

**CHEM 2101.03A or B: Introductory Inorganic Chemistry.** The fundamentals of inorganic chemistry are covered. Specific topics include: ionic bonding and the nature of solids, the structure of atoms and simple bonding theory, coordination chemistry of the transition metals and selected topics in main group chemistry. The preparation, analysis and observation of inorganic compounds are the laboratory assignments.

**Instructor:** T.S. Cameron, K.R. Grundy

**Format:** Lecture 3 hours, lab 3 hours  
**Prerequisite:** CHEM 1010.06 or 1020.06 or 1040.06 or 1500.06

**CHEM 2201.03A or B: Introductory Analytical Chemistry.** An introduction to those analytical techniques most often employed in modern chemical analysis. Topics include: acid-base and redox chemistry and the theory of titrations based on these types of reactions; atomic and molecular spectroscopy in the visible and ultraviolet regions of the electromagnetic spectrum; potentiometry and the use of ion selective electrodes; and gas and liquid chromatography. Laboratory experiments will be based on topics selected from the lectures and will introduce the student to a wide variety of methods.

**Instructors:** R. Stephens, P.D. Wentzell  
**Format:** Lecture 3 hours, lab 3 hours  
**Prerequisite:** CHEM 1010.06 or 1020.06 or 1040.06 or 1500.06

**CHEM 2301.03A: Chemical Thermodynamics.** The physical chemist attempts to describe macroscopic systems and chemical reactivity based on an understanding of the atoms and molecules which make up the systems we study. This first class in physical chemistry will start with a discussion of the forces between molecules, and the properties of gases, liquids and solids. Energy relations in macroscopic systems are presented; further topics in thermodynamics include thermochemistry, entropy, and free energy relations, with many applications including phase equilibria, chemical equilibrium, solutions and colligative properties. In the laboratory students will perform experiments based on many of the concepts discussed in class, including an introduction to data handling by computer.

**Instructor:** P.G. Kusalik  
**Format:** Lecture 3 hours, lab 3 hours  
**Prerequisites:** CHEM 1010.06 or 1020.06 or 1040.06 or 1500.06, Mathematics 1000.03 and 1010.03

**Exclusion:** Students registered in/or having received credit for CHEM 2303.03 are not permitted to register in CHEM 2301.03

**CHEM 2302.03B: Chemical Kinetics and Dynamics.** This class examines the dynamics of systems by considering motion and reactivity of molecules. Topics include transport properties such as diffusion and ionic conductivity, the molecular kinetic theory of gases, and rates of chemical reactions. The latter are studied in detail, with applications in atmospheric chemistry, liquid and solid state reactivity, catalysis, enzyme kinetics and polymers. The laboratory experiments emphasize the determination of molecular motion and chemical reactivity using a variety of techniques and instrumental methods.

**Instructor:** P.D. Pacey  
**Format:** Lecture 3 hours, lab 3 hours  
**Prerequisites:** CHEM 1010.06 or 1020.06 or 1040.06 or 1500.06, Mathematics 1000.03

**Exclusion:** Students registered in/or having received credit for

CHEM 2303.03 are not permitted to register in CHEM 2302.03

\*CHEM 2303.03A or B: Physical Chemistry for the Life Sciences. Chemistry majors may not apply credit for CHEM 2303.03 towards the major requirements for a degree in Chemistry. Those who do not plan a career in chemistry, but who can use the principles and concepts of physical chemistry in related areas, are introduced to the basic ideas of physical chemistry with the necessary mathematical concepts in simple terms. Previous knowledge of calculus is not necessary. The principal topics: thermodynamics, rates of enzyme-catalyzed reactions, chemical equilibrium and spectroscopy are treated by application to examples of biological and environmental interest.

Instructor: D.L. Hooper  
Format: Lecture 3 hours, lab/tutorial 3 hours

Prerequisite: CHEM 1010.06 or 1020.06 or 1040.06 or 1500.06

Exclusions: Students registered in/ or having received credit for CHEM 2303.03 are not permitted to register in CHEM 2301.03 and/ or 2302.03.

CHEM 2400.06R: Introductory Organic Chemistry. This class gives a broad introduction to the chemistry of carbon compounds, including molecular shapes and bonding, characteristic reactions of functional groups and the way in which they take place, and the application of spectroscopy to organic chemistry. Laboratory work is designed to teach a broad range of fundamental operations and techniques used in modern organic chemistry laboratories.

Instructors: D.R. Arnold, T.P. Forrest, and J.A. Pincock

Format: Lecture 3 hours, lab 3 hours

Prerequisite: CHEM 1010.06 or 1020.06 or 1040.06 or 1500.06 with a grade of at least C.

SCI 3000.06R: Science Fundamentals. See class description in Science, Interdisciplinary section of this calendar.

CHEM 3101.03A or B: Chemistry of the Main Group Elements. This class gives an overview of the chemistry of the non-metal elements (p block), with particular emphasis on the elements of the second (B - F) and third rows (Al - Cl). Preparative methods, molecular structure, characterization, and bonding are discussed, with some examples examined in detail. The laboratory introduces synthetic procedures for the preparation of inorganic compounds and some study of their reactions. Some of these experiments involve special techniques, such as vacuum line manipulation and high temperature.

Instructor: N. Burford  
Format: Lecture 3 hours, lab 3 hours  
Prerequisite: CHEM 2101.03

CHEM 3102.03A or B: Coordination Chemistry of the Transition Metals. Modern bonding theories are used to unify discussion of the chemical and physical properties of compounds of the transition elements. The laboratory

experiments introduce procedures for the preparation and characterization of compounds of the transition elements. The compounds prepared illustrate the principles discussed in class and exhibit unusual structures, geometries, oxidation states and other interesting properties.

Instructor: T.S. Cameron  
Format: Lecture 2 hours, tutorial 1 hour, lab 3 hours

Prerequisite: CHEM 2101.03

CHEM 3201.03A: Analytical Spectroscopy 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 spectroscopic methods in the visible, ultraviolet, and X-ray regions of the spectrum. Various methods of separation including precipitation, solvent extraction, and the various types of chromatography are presented. Laboratory experiments illustrate the above techniques with practical examples.

Instructor: R.D. Guy  
Format: Lecture 3 hours, lab 3 hours

Prerequisite: CHEM 2201.03

CHEM 3202.03B: Instrumental Methods of Analysis. This class deals with the application of various important instrumental and computer techniques to problems in chemical analysis. These techniques include electrochemistry, radiochemistry, mass spectrometry, sampling theory, electrophoresis, data analysis and automation. Basic chemical, physical and mathematical principles are explained, instrumentation is described and analytical applications are examined. Laboratory experiments are designed to illustrate the techniques covered in the lectures.

Instructor: L. Ramaley  
Format: Lecture 3 hours, lab 3 hours

Prerequisite: CHEM 3201.03 or instructor's consent

CHEM 3301.03A: 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: C.H. Warren  
Format: Lecture 3 hours  
Prerequisite: Mathematics 2000.06 or 2480.03A/2490.03B and CHEM 2101.03 or 2301.03 or 2302.03

CHEM 3302.03B: Symmetry and Spectroscopy. Many different types of electromagnetic radiation, such as ordinary visible light, microwave radiation, and X-rays, are absorbed and emitted by all atoms and molecules. The understanding and uses of such phenomena constitute the subject of spectroscopy. Spectroscopic methods are used extensively in all areas of chemistry and a wide range of

applications have been developed. In recent years, the traditional approaches have been complemented by dramatic development of newer techniques, such as magnetic resonance and laser spectroscopies. This class provides an introduction to the physical basis and applications of most types of spectroscopy, including microwave, infrared, visible, ultraviolet, laser, Raman, and magnetic resonance techniques. The topics of molecular symmetry and elementary group theory are introduced at an early stage, and provide a satisfying and unifying thread extending over all areas of spectroscopy.

**Instructor:** J.A. Coxon  
**Format:** Lecture 3 hours, lab 3 hours  
**Prerequisite:** CHEM 3301.03 or permission of the instructor

**CHEM 3303.03A or B: 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:** M. A. White  
**Format:** Lecture 3 hours  
**Prerequisite:** CHEM 2301.03 or PHYC 3200.03A or EARTH 2100.06R or ENGI 2340.03A or permission of the instructor.

**CHEM 3401.03B: Intermediate Organic Chemistry.** This class is a continuation of CHEM 2400.06 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, an introduction to some of 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. Students should have a good comprehension of the principles studied in CHEM 2400.06, as evidenced by a grade of at least C, and should possess adequate laboratory skills, such as can be obtained from CHEM 3101.03, 3102.03 or 3402.03.

**Instructor:** J.S. Grossert  
**Format:** Lecture 3 hours, lab 3 hours  
**Prerequisite:** CHEM 2400.06 (or equivalent) with a grade of at least C.

**CHEM 3402.03A: Identification of Organic Compounds.** The class develops separation techniques, together with wet chemical and spectroscopic analysis methods, that were introduced in CHEM 2400.06. 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 2400.06, as evidenced by a grade of at least C.

**Instructor:** T.P. Forrest  
**Format:** Lecture 3 hours, lab 3 hours  
**Prerequisite:** CHEM 2400.06 (or equivalent)

**CHEM 3403.03B: Bioorganic Chemistry.** The principles of organic chemistry that are used by the organic chemist to explain and predict the reactivity of compounds will be used to study the behaviour of organic compounds in nature. To cause a reaction to occur in the laboratory it might be necessary to alter functional groups and provide other conditions necessary to induce particular reactivity. In a natural system the same principles can be considered in the analysis of the reactivity of the organic compounds involved. The basic principles controlling the reactivity of organic compounds will be reviewed and applied to a study of selected naturally occurring reaction pathways.

**Instructor:** R.L. White  
**Format:** Lecture 3 hours  
**Prerequisite:** CHEM 2400.06 or equivalent

**CHEM 3501.03B: Numerical Methods in Chemistry.** This class provides an introduction to numerical methods that can be applied to various problems in chemistry. Students will utilize these techniques on microcomputers. Topics to be covered include the treatment of experimental data by least squares methods; by curve fitting, smoothing, and interpolation techniques; and by numerical integration. Matrices, determinants, and eigenvalue equations will be studied and applied to problems in quantum chemistry and spectroscopy. Complex equilibria will be examined through the numerical solution of simultaneous equations. Computer graphics will be introduced and applied to topics such as wave functions, gas laws, potential energy contours, coordinate transformations and molecular geometries. Computer simulation of experiments will also be examined.

**Instructor:** C.H. Warren  
**Format:** Lecture 3 hours  
**Prerequisites:** CHEM 2301.03 and 2302.03 and Mathematics 2000.06 or 2480.03 and 2490.03 or instructor's consent

**CHEM 3880.06R: General Topics in Chemistry.** A non-credit seminar class to be given by invited speakers. Attendance at all seminars is required of all third-year Honours Chemistry students.

**\*CHEM 4101.03A or B: Topics in Non-Metal 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.

**Instructor:** N. Burford.  
**Format:** Lecture 3 hours  
**Prerequisite:** CHEM 3101.03  
**Cross-listing:** CHEM 5101.03

**\*CHEM 4102.03A or B: Advanced Transition Metal Chemistry.** Organotransition metal chemistry has grown over the last several

decades into one of the most important areas of research and development in inorganic chemistry. In this class the most important types of organic ligands and their bonding characteristics will be surveyed, as will the most important reaction pathways such as migratory insertion, oxidative addition, nucleophilic addition, etc. The class concludes by examining homogeneous catalysis by organotransition metal complexes.

Instructor: K.R. Grundy  
 Format: Lecture 3 hours  
 Prerequisite: CHEM 3102.03 or instructor's consent  
 Cross-listing: CHEM 5102.03

\*CHEM 4201.03A or B: **Advanced Topics in Separations.** Chemistry started as the science of separations and separations are still its most prominent feature in most laboratories around the world. This class will deal mainly with chromatography and associated techniques; in particular, gas chromatography in its regular, capillary and supercritical forms, high-pressure liquid (including ion) chromatographies, capillary electrophoresis, and gas and liquid chromatography combined with other instrumental techniques such as mass spectrometry. The original ideas behind the design of separation media and detection modes will be emphasized, and so will be their consequences for the analysis of living and environmental systems. This class will not present a survey of the field; rather, it will focus primarily on past (and future) innovation. Please consult the instructor for the detailed content of this class in a given year.

Instructor: W.A. Aue  
 Format: Lecture 2 hours, lab arranged  
 Prerequisite: CHEM 3201.03, or instructor's consent  
 Cross-listing: CHEM 5201.03

\*CHEM 4202.03A or B: **Topics in Advanced Analytical Spectroscopy.** The topics covered are applicable to elemental analysis: atomic absorption, emission, fluorescence; optical rotation; X-ray spectroscopy; neutron activation analysis. The class will cover the theory and application of the different spectroscopic methods, and will include discussion on instrument design and performance. The emphasis on different topics may vary from year to year; students are advised to consult with the instructor for further detail.

Instructor: R. Stephens  
 Format: Lecture 2 hours, lab arranged  
 Prerequisite: CHEM 3201.03  
 Cross-listing: CHEM 5202.03

\*CHEM 4203.03A or B: **Environmental Chemistry.** The first part of this class covers the chemical equilibria suitable for the description of metal ion and organic chemical interactions in the environment. Topics to be covered in this section include polyprotic acid equilibria in sufficient depth to describe carbonate and hydrogen sulphide systems (acidity, alkalinity, conservative quantities), redox equilibria (Eh-pH diagrams), solubility of oxides, hydroxides and carbonates and complexation equilibria. Adsorption equilibria are covered for metal ion and organic interactions with clays, humic and hydrous oxide materials. The second part of the class covers analytical

methodology for the determination of metals and organics in environmental systems. Particular interest is paid to analytical methods for the speciation of compounds in waters and sediments. Students should be familiar with or interested in using microcomputers for chemical calculations.

Instructor: R.D. Guy  
 Format: Lecture 3 hours, lab arranged  
 Prerequisite: CHEM 3201.03  
 Cross-listing: CHEM 6203.03

CHEM 4204.03A or B: **Nuclear Analytical Chemistry.** This class introduces basic concepts of nuclear chemistry and nuclear analytical methods. The class includes: discovery of radioactivity; nuclides and natural decay chain; types of radioactive decay; nuclear reactions; research reactors; instrumental, preconcentration and radiochemical neutron activation analysis; and two laboratory sessions on NAA.

Instructor: A. Chatt  
 Prerequisites: CHEM 3201.03, 3202.03 or equivalent.  
 Cross-listing: CHEM 6204.03

CHEM 4301.03B: **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: R.J. Boyd  
 Format: Lecture 3 hours  
 Prerequisite: CHEM 3301.03 or instructor's consent  
 Cross-listing: CHEM 5301.03

\*CHEM 4304.03A: **Kinetics and Catalysis.** This class relates the properties of molecules in motion to the rates of chemical changes. Collision, transition state and diffusion theories are applied to significant industrial, biological and atmospheric processes. Photochemistry, and its converse, luminescence, are interpreted. Mechanisms of catalyst activity are discussed.

Instructor: P.D. Pacey  
 Format: Lecture 2 hours  
 Prerequisite: CHEM 2302.03 or equivalent  
 Cross-listing: CHEM 5304.03

\*CHEM 4305.03B: **Introductory Statistical Thermodynamics.** The principles of statistical mechanics are introduced and the relationship between the laws of thermodynamics and the underlying microscopic processes is examined. Wherever possible applications to chemical systems are emphasized. An overview of modern techniques is also given.

Instructor: P.G. Kusalik  
 Format: Lecture 3 hours  
 Prerequisites: CHEM 2301.03 and 3301.03, or instructor's consent  
 Cross-listing: CHEM 5305.03

\*CHEM 4306.03A or B: **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, epr of organic radicals, relaxation, molecular rate processes, and two dimensional nmr. Students will be assigned problems on a regular basis.

Instructor: R.E. Wasyliashen  
 Format: Lecture 3 hours  
 Prerequisite: CHEM 3301.03 or instructor's consent  
 Cross-listing: CHEM 5306.03

**\*CHEM 4307.03A or B: Biophysical Chemistry.**

This class gives a theoretical and practical introduction necessary for the application of physical chemistry to life sciences and medicine. Topics include the structure and conformation of biological macromolecules, techniques for the study of biological structure and function, transport processes and biochemical spectroscopy. The laboratory is on an open basis with at least four experiments to be completed during the term.

Instructor: Staff  
 Format: Lectures 2 hours, lab 3 hours, alternate weeks  
 Prerequisite: CHEM 2301.03 and 2302.03 and CHEM 3301.03 and 3302.03 or instructor's consent

**CHEM 4401.03A or B: 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 and unnatural products.

Instructor: T.B. Grindley, R.L. White  
 Format: Lecture 3 hours  
 Prerequisites: CHEM 3401.03 and 3402.03 or equivalents, or instructor's consent  
 Cross-listing: CHEM 5401.03

**CHEM 4402.03A or B or R: Organic Structure Determination.** This class continues the study of molecular structure and conformation begun in CHEM 3402.03A, using methods and results from infrared and nuclear magnetic resonance. 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. A limited amount of material in infrared and mass spectroscopy is introduced to emphasize the importance of the use of combined spectroscopic methods in solving structural problems.

Instructor: D.L. Hooper  
 Format: Lecture 3 hours, lab 3 hours alternate weeks  
 Prerequisite: CHEM 3402.03  
 Cross-listing: CHEM 5402.03

**CHEM 4403.03A or B: Organic Reaction Mechanisms.** The fundamental concepts of bonding, structure, and dynamic behaviour of organic compounds are discussed. The

applications of molecular orbital theory and molecular mechanics calculations are introduced. Methods for determining the mechanisms of organic reactions are discussed. Topics considered include 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.

Instructors: D.R. Arnold, J.A. Pincok  
 Format: Lecture 3 hours  
 Prerequisites: CHEM 3401.03 and 3402.03 or equivalents, or instructor's consent

Cross-listing: CHEM 5403.03

**\*CHEM 4501.03A or B: Electronic Instrumentation for Scientists.** This class starts with basic electrical concepts and describes simple ac and dc circuits. Semiconductors are introduced, followed by a discussion of power supplies and the various types of amplifiers. Chemical instruments are used as examples whenever possible. Practical aspects of electronics such as basic measurements, the use of various electronic instruments, reading circuit diagrams and troubleshooting are emphasized. No knowledge of physics beyond the first year is required.

Instructor: L. Ramaley  
 Format: Lecture 2 hours, lab 3 hours  
 Prerequisite: CHEM 2201.03  
 Cross-listing: CHEM 6501.03

**\*CHEM 4502.03A or B: Polymer Science.** This class will cover aspects of synthesis, analysis, characterization, structure and application of synthetic and naturally occurring macromolecules. Emphasis will be on the application of standard methods of organic synthesis, analytical separations, and physico-chemical characterization. There is no laboratory, but students will do an independent literature project.

Instructor: J.S. Grossert  
 Format: Lecture 3 hours  
 Prerequisites: CHEM 2201.03 and 2301.03 and 2302.03 and 2400.06 or instructors' consent

**\*CHEM 4503.03A or B: Group Theory in Chemistry.** The theory of abstract groups and their representations, crystallographic and non-crystallographic point groups, and an introduction to space groups are given. Examples from stereochemistry, crystallography and spectroscopy illustrate the theory.

Instructor: Staff  
 Format: Lecture 3 hours  
 Prerequisite: CHEM 3302.03  
 Cross-listing: CHEM 5503.03

**\*CHEM 4504.03A or B: 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: T. S. Cameron  
 Format: Lecture 2 hours, lab 3 hours



**Prerequisites:** CHEM 2101.03 and MATH 2000.06 or 2200.06 or equivalent

**Cross-listing:** CHEM 5504.03

**CHEM 4801.03A or B or R: Advanced Major Research Project.** This class is designed for those students in the Advanced Major programme who wish to participate in original research. It will consist of a literature or experimental research project on some aspect of chemistry in which the student has an interest. The results of the research will be embodied in a report which shall be graded. Students taking this class must consult with the Coordinator at the beginning or each term.

**Coordinator:** T.S. Cameron

**CHEM 4880.00R: Advanced Topics in Chemistry.** A non-credit seminar class to be given by invited speakers. Attendance at all seminars is required of all fourth-year Honours Chemistry students.

**SCIE 8700.00B: Co-op Seminar.** The class provides an introduction to business practices, information retrieval and laboratory safety.

**CHEM 8880.00R: Honours Qualifying Examination.** This is an additional class required of all Honours students in Chemistry in order to satisfy regulation 1.3.5 (see Academic Regulations section of this calendar). It should be taken in the final year of a concentrated chemistry honours programme. All honours students, whether in a concentrated or unconcentrated programme, must consult with the professor in charge of the Honours Thesis Programme.

**Coordinator:** T.S. Cameron

**CHEM 8891.00: Co-op workterm 1**

**CHEM 8892.00: Co-op workterm 2**

**CHEM 8893.00: Co-op workterm 3**

**CHEM 8894.00: Co-op workterm 4**

# Classics

**Location:** 1244 LeMarchant Street Halifax, N.S.  
**Telephone:** (902) 494-3468  
**Fax:** (902) 494-2467

## Chair

J.F. Atherton (494-3468)

## Undergraduate Advisor

P.J. Calkin (494-2279)

## Professors Emeriti

A.H. Armstrong, MA (Cantab), FBA

J.A. Doull, BA (Dal), MA (Tor)

## Professors

J.F. Atherton, MA (Oxon.), PhD (Liverpool)

R.D. Crouse, BA (Vind), STB (Harv), MTh (Trin), PhD (Harv), DD (Trin)

R. Friedrich, Dr.phil. (Goettingen)

C.J. Starnes, BA (Bishop's), STB (Harv), MA (McG), PhD (Dal), President of University of King's College

## Associate Professors

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

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

P.P. Kusamul, Dr.phil (Basle), Dr.phil.habil. (Heidelberg)

## Assistant Professor

P.J. Calkin, BA (UBC), MA, PhD (Dal)

## 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.

Classics is the study of the intellectual forces that have shaped our civilization, and to understand fully the assumptions and ideas of that civilization we have to go back to their original formulation. Our literary forms, the shape of our political and social institutions, such disciplines as Philosophy, History, and many of the Natural Sciences all originated and took shape in the ancient cultures of Greece and Rome.

Classics is thus more than the study of ancient languages. Languages are not learned for themselves, but because they are necessary for the scientific study of ancient history,

literature, religion, mythology and philosophy. The Classics Department at Dalhousie provides instruction both in these subjects and in ancient languages. While previous preparation in one or more ancient languages is desirable, it is nevertheless quite feasible for students who discover an interest in classics to begin their language studies at university.

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

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

## Degree Programmes

See "Degree Requirements" section for complete details.

## Honours in Classics

The candidate may choose between three programmes: BA with Honours in Classics (Ancient Literature), BA with Honours in Classics (Ancient History), or BA with Honours in Classics (Ancient Philosophy). In each case, it is highly desirable, but not essential, that the student begin the study of at least one of the classical languages during the first year of study. For purposes of meeting grouping requirements, some Ancient and Medieval Philosophy classes may be counted either as Classics credits, or Philosophy credits.

## Departmental Requirements

### Classes required in Honours:

- 2000 level:** Six to eight credits at or above the 2000 level in Classics
- 3000 level:** At least three credits at 3000 level or higher in Classics must include work in Greek or Latin at the 3000 level in one and at the 2000 level in the other

Whether the Honours degree is awarded in Ancient Literature, History or Philosophy

depends on the area of the Department's offerings in which a larger part of the work is done.

Candidates for Honours and Combined Honours degrees who anticipate continuing their studies at the Graduate level in Classics should consult the calendars of the Graduate Schools of their choice concerning requirements for entry into Graduate programmes. It may be the case that additional preparation in the classical languages or in other aspects of ancient civilizations is required for entry into certain programmes.

### Combined Honours

Classics may be taken as part of a combined honours programme with other disciplines. Students interested in such programmes should consult with the undergraduate advisors of the respective departments.

### Advanced Major in Classics (20 credit)

#### Departmental Requirements

##### Classes required in Advanced Major:

- 2000 level: Three to six credits at or above the 2000 level in Classics  
 3000 level: At least three credits at or above the 3000 level in Classics

##### Other requirements:

Usually two language classes in Greek and/or Latin are required.

### Major in Classics, BA (15 credit)

#### Departmental Requirements

##### Classes required in major:

- 2000 level: Two to six credits at or above the 2000 level  
 3000 level: At least two credits at or above the 3000 level

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

Note: The following classes satisfy the first-year writing requirements for a degree: CLAS 1000.06; CLAS 1010.06; CLAS 1100.06.

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

### Classes Offered

Note: Classes marked \* are not offered every year. It is advisable to inquire at the Classics Department (494-3468) to determine if these classes are offered.

Note: 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.

CLAS 1000.06R: Classical Literature. An introduction to classical literature, read in

English translations. Authors studied are Homer, the Greek Tragedians, Plato, Vergil and St. Augustine. This class meets the first year writing requirement.

Instructors: W. Hankey  
 Format: Writing Requirement, lecture 2 hours

CLAS 1010.06R: Ancient History: An Introduction to the Cultural History of the Ancient World. The first term is devoted to a study of the major pre-classical civilizations (Mesopotamian, Egyptian, Hebrew, etc.) with attention paid to the art, religion and social forms of these cultures as well as their political development. In the second term the civilizations of Greece and Rome are studied, as well as their issue in the Early Christian world. As the class is intended as an introductory one, no special preparation is expected. There is no foreign language requirement. This class fulfils the first year writing requirement.

Instructor: D. K. House  
 Format: Writing Requirement, lecture 2 hours

\*CLAS 1021.03A: Ancient Art. Greece and the Ancient Near East: Aided by slides and films, in addition to lectures and readings, this class will study the origin and development of ancient art in Greece, Mesopotamia and Egypt to the end of the Hellenistic period.

Instructor: G. Thomas (this is given at St. Mary's University)  
 Format: Lecture 3 hours

\*CLAS 1022.03B: Ancient Art. Rome and Christian Europe: Aided by slides and films, in addition to lectures and readings, this class will study the art of Ancient Rome after the Hellenistic period and of the Christian world to the end of the 14th century.

Instructor: W. J. Hankey  
 Format: Lecture 3 hours

CLAS 1100.06R: Classical Mythology. Why has the mythology of the world of classical Greece and Rome been so central a part of the artistic, intellectual and religious culture of the Western world? This class explains the origin, meaning and importance of classical mythology. During the first term, work begins with a survey of pre-classical mythology: this is explored through myths of the origin and creation of the natural world; here the early cultures of the Sumerians, the Egyptians and the Jews are studied. After a historical lecture on the origins of Indo-European mythology, attention turns to the world of Mycenaean and Early Classical Greece; the works of Hesiod, and the myths of Prometheus are particularly closely considered in this section.

In the New Year the understanding of the human world (community & family) through myth is the principal pre-occupation; here the *Iliad* of Homer, the *Aeneid* of Virgil (for the Romans) and the *Oedipus* plays of Sophocles are the texts through which the mythological consciousness is analysed. The class concludes with a consideration of why the Greeks broke away from the world of myth and began to understand nature and human culture through science and philosophy. This class fulfils the first year writing requirement.

Instructor: J. P. Atherton

**Format:** Writing Requirement, lecture 2 hours

**CLAS 1700.06R: Introductory Greek.** An introduction to Classical Greek. Greek is a highly inflected language and as such presents English-speaking students with a number of challenges not found in most modern languages. This class introduces the student in a systematic way to the most common and important elements of Classical Greek grammar. The aim of the class is to bring the student by the end of the year to read connected passages from Xenophon and other Greek prose writers.

**Instructor:** Staff  
**Format:** Lecture 3 hours

**CLAS 1800.06R: 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.

**Instructor:** P.J. Calkin  
**Format:** Lecture 3 hours

**CLAS 2000.06R: Classical Literature.** An introduction to classical literature, read in English translations. Authors studied are *Homer*, the Greek Tragedians, *Plato*, *Vergil* and *St. Augustine*. This class is the same as CLAS 1000.06R and may therefore not be taken by anyone who has taken that class.

**Instructors:** W. Hankey  
**Format:** Lecture 3 hours

**CLAS 2100.06R: Classical Mythology.** Why has the mythology of the world of classical Greece and Rome been so central a part of the artistic, intellectual and religious culture of the Western world? This class explains the origin, meaning and importance of classical mythology. During the first term, work begins with a survey of pre-classical mythology: this is explored through myths of the origin and creation of the natural world; here the early cultures of the *Sumerians*, the *Egyptians* and the *Jews* are studied. After a historical lecture on the origins of Indo-European mythology, attention turns to the world of Mycenaean and Early Classical Greece; the works of *Hesiod*, and the myths of *Prometheus* are particularly closely considered in this section.

In the New Year the understanding of the human world (community & family) through myth is the principal pre-occupation; here the *Iliad* of *Homer*, the *Aeneid* of *Virgil* (for the Romans) and the *Oedipus* plays of *Sophocles* are the texts through which the mythological consciousness is analysed. The class concludes with a consideration of why the Greeks broke away from the world of myth and began to understand nature and human culture through science and philosophy. This class is the same as CLAS 1100.06R and may therefore not be taken by anyone who has taken that class.

**Instructor:** J. P. Atherton  
**Format:** Lecture 2 hours

**\*CLAS 2200.06R: Ancient History. The Ancient City: An introduction to Ancient History** through a study of the constitutions of the Greek city states (especially Athens) and of Rome. Basic texts, such as *Aristotle's Athenian Constitution*, are read in English translation.

This class is open to first-year students. There is no foreign language requirement. This class is given alternately with CLAS 2210.06.

**Instructor:** P. F. Kusmaul  
**Format:** Lecture 2 hours

**\*CLAS 2210.06R: Roman History: The Roman Empire and the Rise of Christianity.** A continuation of the introduction to Ancient History through a study of the institutions and constitutional arrangements of the Roman Empire from the time of Augustus. The relation of the Empire to Christianity is a topic of primary interest. This class is given alternately with CLAS 2200.06R and, like it, is open to first-year students. There is no foreign language requirement.

**Instructor:** P. F. Kusmaul  
**Format:** Lecture 2 hours

**CLAS 2361.03A/CLAS 2362.03B: Ancient Philosophy from its Beginning to the Sixth Century AD.** Proper attention is paid to the great classical philosophies of *Plato* and *Aristotle* studied in their historical context. Much emphasis is laid on the Greek philosophy of the first centuries AD and its influence on developing Christian thought. The first half considers the history from the Pre-Socratics to *Plato*. The second half moves from *Aristotle* to *Plotinus*.

**Instructors:** J. P. Atherton/W. J. Hankey  
**Format:** Lecture 2 hours  
**Cross-listing:** PHIL 2361.03/2362.03  
**Exclusion:** CLAS 3361.03/3362.03

**\*CLAS 2501.03A: Introduction to Classical Rhetoric.** In recent years rhetoric has attained great importance and significance for literary criticism and theory as well as for philosophy. The system of rhetoric and its terminology were developed and completed by the Greeks and Romans; therefore, Classical Rhetoric forms the basis of all modern approaches to rhetorical practice and theory. This class is intended to introduce the student to the system and to the central terms of rhetoric, as they have been developed and shaped in the relevant texts of Greek and Roman authors. All texts will be studied in English translation.

**Instructor:** R. Friedrich  
**Format:** Seminar/lecture 3 hours

**CLAS 2700.06R: Intermediate Greek.** A continuation of CLAS 1700.06R and the normal second-year class in Greek. The work of the class is divided equally between formal grammar sessions and the reading of Greek texts from *Xenophon*, *Lysias* and *Plato*. In the grammar sessions a complete and systematic review of all Greek grammar is undertaken during which the student meets the more difficult forms and constructions which are omitted in CLAS 1700.06R. The aim of the class is to prepare the student to read the philosophical and dramatic texts of the 5th century BC.

**Instructor:** P.J. Calkin  
**Format:** Seminar 3 hours  
**Prerequisite:** CLAS 1700.06 or 2710.06

**CLAS 2710.06R: Greek Prose.** A study of Greek grammar through the reading of Greek prose authors (*Xenophon*, *Lysias*).  
**Instructor:** Staff

## 142 Classics

**Prerequisite:** Any 1000 level Classics class or equivalent.

**Format:** Seminar 3 hours

**Prerequisite:** Any 1000 level Classics class or equivalent

**CLAS 2800.06R A: Study of Latin Prose and Poetry.** CLAS 2800.06R is a continuation of CLAS 1800.06R or CLAS 2810.06R. 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.

**Instructor:** P. F. Kussmaul

**Format:** Seminar 2 hours

**Prerequisite:** CLAS 1800.06 or 2810.06

**CLAS 2810.06R: Latin Prose.** A study of Latin accidence and syntax through the reading of Roman prose authors (Caesar, Cicero).

**Instructor:** P. J. Calkin

**Format:** Seminar 3 hours

**Prerequisite:** Any 1000 level Classics class or equivalent

**\*CLAS 2860.06R: Latin Historical Texts.**

**Instructors:** J. P. Atherton/P. F. Kussmaul

**Format:** Seminar 2 hours

**Prerequisite:** 1800.06 or 2810.06

**\*CLAS 3280.06R: Christian Beginnings and the Early History of the Church.**

**Format:** Seminar 2 hours

**Cross-listing:** CLAS 5708.03

**\*CLAS 3300.06R: Pagan and Christian Schools from Clement of Rome to Augustine.** The class considers the mutual effect of pagan and Christian intellectual, spiritual and institutional forms on one another in the first four centuries of the Common Era. In particular it treats the way in which the pagan schools and the Christian church mirror one another: the common elements and their opposed systematic relations. Students will ordinarily have some background in Ancient History and Philosophy.

**Instructor:** W. J. Hankey

**Format:** Lecture 2 hours

**\*CLAS 3370.06R: The Augustinian Tradition.**

The class considers the effect of Augustine on the philosophical and theological thought of late Antiquity and the Middle Ages. The relation to the Proclean Neoplatonism transmitted through Pseudo-Dionysius is a special concern. Texts from Dionysius, Eriugena, Anselm, Bonaventure, Aquinas and Cusanus are analysed. Students will ordinarily have begun either Greek or Latin though others may be admitted by permission.

**Instructor:** W. J. Hankey

**Format:** Lecture 2 hours

**Cross-listing:** CLAS 5370.06

**CLAS 3380.06R: Medieval Philosophy.** A study of texts written in the Middle Ages of Latin Europe selected to illustrate the development of philosophy in the period. Three texts will normally be read in their entirety: Boethius, *The Consolation of Philosophy*, Anselm, *Proslogion*, Bonaventure, *Itinerarium Mentis in Deum*. Selections from other works will normally include Augustine, *De Quantitate*

*Animae*, Eriugena, *Periphyseon*, Aquinas, *Summa Theologiae*, Nicholas of Cusa, *De docta ignorantia*. Texts of Ockham and John Duns Scotus will also be read. Themes emphasized in the consideration will include: the relation of

Neoplatonic and classical philosophic logics, the development and character of system, the relation of being to non-being and of ideal to sensible, the balance of Plotinian - Augustinian and Procline - Dionysian logics, the relation of logical, ontic and psychological structures. Participants will be required to make class presentations.

**Instructor:** W. J. Hankey

**Format:** Lecture/seminar, 2 hours

**Cross-listing:** PHIL 2380.06

**\*CLAS 3400.06R: The Dialogues of Plato.** This seminar involves the detailed study of a group of dialogues. The choice of dialogues varies from year to year.

**Instructor:** D. K. House

**Format:** Seminar 3 hours

**Cross-listing:** CLAS 5603.06

**\*CLAS 3410.06R: St. Augustine's Confessions.**

A study of the three parts of Augustine's *Confessions* with a view to understanding his dissatisfaction with the various positions he adopted prior to his conversion to Christianity (Part I), the practical consequences of this conversion (Part II), and the new theoretical understanding of time, space and motion which come out of his Trinitarian exegesis of the first chapters of Genesis (Part III). This class presupposes some knowledge of the history of Ancient Philosophy, and some of Latin. This class is given alternately with CLAS 3420.06.

**Instructor:** C. J. Starnes

**Format:** Seminar 2 hours

**Cross-listing:** CLAS 5705.06

**\*CLAS 3420.06R: St. Augustine's City of God.**

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

**Instructor:** C. J. Starnes

**Format:** Seminar 2 hours

**Cross-listing:** CLAS 5706.06

**CLAS 3470.06R: Reading and Research.**  
Ancient Literature

**CLAS 3480.06R: Reading and Research.**  
Ancient History

**CLAS 3490.06R: Reading and Research.**  
Ancient Philosophy

**\*CLAS 3500.06R: Aristotle.** This seminar involves the detailed study of either Aristotle's *Metaphysics* or *De Anima* or *Physics* or ethical and political treatises. The choice of texts varies from year to year.

**Instructor:** D. K. House

**Format:** Lecture/seminar 2 hours

**Recommended**

**background:** CLAS 2361.03/2362.03

**Cross-listing:** CLAS 5602.06

**CLAS 3510.06R: Ancient Drama: From Aeschylus to Seneca.** This class offers a comprehensive study of Greek and Roman Drama, both Tragedy and Comedy. Authors studied are the Greek tragedians Aeschylus,

Sophocles, Euripides, and the Greek comic poets Aristophanes and Menander; and on the Roman side, Plautus and Terence, the authors of comedies, and Seneca, the author of tragedies that exerted a strong influence on Elizabethan drama and more recently on the Theatre of Cruelty of Artaud. The study of the plays will be accompanied by the study of two theoretical texts: Aristotle's *Poetics*, which provides the theory of Greek drama; and Horace's *Art of Poetry* - two treatises whose influence on Western esthetic and literary theory can hardly be overestimated.

Instructor: R. Friedrich  
Format: Seminar 2 hours

**CLAS 3700.06R: Advanced Greek.** This class which reads both a prose and a poetic work is the normal third class in Greek.

Instructors: D. K. House/R. Friedrich  
Format: Seminar 2 hours  
Prerequisite: CLAS 2700.06

\***CLAS 3710.06R: Greek Epic.**  
Instructor: R. Friedrich  
Format: Seminar 2 hours  
Prerequisite: CLAS 2700.06  
Cross-listing: CLAS 5010.06

\***CLAS 3720.06R: Greek Lyric.**  
Instructor: Staff  
Format: Seminar 2 hours  
Prerequisite: CLAS 2700.06  
Cross-listing: CLAS 5013.06

\***CLAS 3730.06R: Greek Drama: Tragedy.**  
Instructor: R. Friedrich  
Format: Seminar 2 hours  
Prerequisite: CLAS 2700.06  
Cross-listing: CLAS 5011.06

\***CLAS 3750.06R: Greek Authors.**  
Format: Seminar 2 hours  
Prerequisite: CLAS 2700.06  
Cross-listing: PHIL 3750.06

**CLAS 3760.06R: Reading and Research of Greek Texts.**  
Format: Seminar 2 hours  
Prerequisite: CLAS 2700.06

\***CLAS 3780.06R: Greek Historians.**  
Format: Seminar 2 hours  
Prerequisite: CLAS 2700.06  
Cross-listing: CLAS 5032.06

**CLAS 3791.03A or B: Reading and Research**  
Format: Seminar 2 hours  
Prerequisite: CLAS 2700.06

\***CLAS 3800.06R: Roman Satire.**  
Instructor: P. F. Kussmaul  
Format: Seminar 2 hours

**CLAS 3810.06R: 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.

Instructors: J. P. Atherton/R. Friedrich  
Format: Seminar 2 hours

Prerequisite: A class in Latin at the 2000 level.  
Cross-listing: CLAS 5040.06

**CLAS 3820.06R: Advanced Reading in Latin Literature.**

Format: Seminar 2 hours  
Prerequisite: CLAS 2800.06

\***CLAS 3840.06R: Latin Philosophical Texts.** The purpose is to give students experience in reading philosophical Latin. Various authors are read from Cicero to the late Middle Ages.

Instructor: R. D. Crouse  
Format: Seminar 2 hours  
Prerequisite: CLAS 2800.06  
Cross-listing: CLAS 5890.06

**CLAS 3850.06R: Reading and Research of Latin Texts.**

Format: Seminar 2 hours  
Prerequisite: CLAS 2800.06

\***CLAS 3900.06R: 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 3910.06.

Instructor: J. P. Atherton  
Format: Seminar 2 hours  
Cross-listing: CLAS 5604.06

\***CLAS 3910.06R: Neoplatonism: Plato and Neoplatonism.** The philosophy of Plotinus and later thinkers considered as the resume of Greek Philosophy; in particular the role of Plato and other older philosophers in the formation of Neoplatonism is a principal interest. Given alternately with CLAS 3900.06.

Instructor: J. P. Atherton  
Format: Seminar 2 hours  
Recommended: CLAS 2361.03/2362.03  
Cross-listing: CLAS 5605.06

\***CLAS 4200.06R: Ancient Practical Philosophy.**  
Format: Seminar 2 hours

\***CLAS 4320.06R: Ancient and Modern Dialectic.**  
Format: Seminar 2 hours

\***CLAS 4400.06R: 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. Given alternately with CLAS 4450.06.

Instructor: R. D. Crouse  
Format: Seminar 2 hours  
Cross-listing: CLAS 5700.06

\***CLAS 4450.06R: Medieval Interpreters of Aristotle.** The precise topic of this seminar is chosen in consultation with prospective students. For example, it might concentrate upon the interpretation of a work of Aristotle by Thomas Aquinas, or Albert the Great, or Dante. Given alternately with CLAS 4400.06.

Instructor: R. D. Crouse  
Format: Seminar 2 hours  
Cross-listing: CLAS 5701.06

\***CLAS 4500.06R: Seminar on Neoplatonism.** Major Neoplatonic systems, pagan and Christian, are considered from Plotinus to Cusanus.

Instructor: W. J. Hankey

## 144 Classics

---

**Format:** Seminar 2 hours

**CLAS 4530.06R: Seminar on the Roman Empire and the Rise of Christianity.** Selected topics from the transition from Classical to Christian culture are studied. Particular attention is paid to the connection between religious innovation and the effect of the new beliefs on literature, art and philosophy.

**Instructor:** P. F. Kusssmaul

**Format:** Seminar 2 hours

**Cross-listing:** CLAS 5530.06

**CLAS 4580.06R: Reading and Research**

**CLAS 4680.03A/4690.03B: Reading and Research**

**CLAS 4710.03A/4720.03B: Special Topics**

**CLAS 4800.06R: Reading and Research**

**CLAS 4810.03A/4820.03B: Special Topics**

**CLAS 4850.06R: Reading and Research**

**CLAS 4900.06R: Departmental Seminar.**

**Format:** Seminar 2 hours

**CLAS 4910.06R: Departmental Seminar.**

**Format:** Seminar 2 hours

**CLAS 0400.00R: Honours Seminar.** In order to obtain their Honours degree, students must complete twenty credits plus the Honours Seminar and pass the exam at the end of it. This is a non-credit class which meets every two weeks. Details available from the department.

**Note:** Students are not required to take all units of this class in one year but may spread them out over two or three years to suit their individual programmes.

**instructor:** R. Friedrich et al

**Format:** Seminar

**Prerequisite:** CLAS 2810.06 and CLAS 2710.06

Classes in Ancient Hebrew, Coptic, Syriac and Arabic, are sometimes available as electives at the discretion of the Department, only in relation to the needs of the particular student.

# Commerce

## School of Business Administration

Location: 6152 Coburg Road  
 Telephone: (902) 494-7080  
 Fax: (902) 494-1107

The School of Business Administration offers a curriculum of undergraduate and graduate studies designed to equip students to serve the community in business, government, and the professions.

The undergraduate commerce programme includes studies in the humanities and social sciences as well as in the functional areas of business. It is offered on a co-operative education (work/study) basis.

In co-operation with the Faculty of Arts and Social Sciences, the School also offers a Bachelor of Arts, Advanced Major or Honours, with a Minor in Business.

### Administrative Staff 1995-96

#### Director, School of Business Administration

R.E. Klapstein

#### Administrative Assistant

Susan De Young

#### Director, Centre for International Business Studies

Mary R. Brooks

#### Academic Programmes Committee

Donald C. Cherry

Edgar Scott

Julia Sagebien

#### Administrator, Commerce Programme

Glenn Davis

#### Director, Co-op Programme

Earl Walsh

#### Co-op Professional Staff 1994/95

N. Battis, BA (Loyola), BCom (Concordia)

A. Young

D. Royle, BA, BEd (Memorial)

#### Chair Holders

Mary R. Brooks - Black Chair

Sir Graham Day - Lamb Chair

### Academic Staff 1995-96

#### Professors Emeriti

C.R. Brookbank, BA, MA, PhD (Tor)

R.E. George, BSc (Lond), MA (Bristol), PhD (Lond)

J.R.E. Parker, BCom (Dal), MBA (Wash), CPhil (Mich), FCA

#### Professors

M.R. Brooks, BOT (McG), MBA (Dal), PhD (Wales)

I. Fooladi, BS (Iran), MA (Tehran), MS, PhD (Oregon) (on leave Jan '97 - June '97)

L.C. MacLean, BA, BEd (StFX), MA, PhD (Dal) (on leave July '96 - July '97)

J.D. McNiven, BA, MA, PhD (Mich)

M.J.C. Martin, BSc (Nottingham), PhD (Sheffield)

P.J. Rosson (Dean, Faculty of Management), Dip MS (Salford), MA (Lancaster), PhD (Bath)

Y. Sankar, BA (McG.), MA (Tor.), PhD (Johns Hopkins)

D.A. Schellinck, BSc, MBA (Dal), PhD (Ill)

#### Associate Professors

B.C. Archibald, BA (Queen's), MSc (Stanford), PhD (Waterloo)

R.G. Blunden, BCom (Dal), MM (Northwestern), PhD (Western)

R. Carroll, BBA, BEd (St.FX), MBA (Dal), FCGA

D.C. Cherry, BCom (Dal), MBA (McM), CMA

J.E.D. Conrod, BCom (Dal), MBA (Tor), CA

C.J. Dirksen, MBA (Oregon), BS (Santa Clara), PhD (Oregon)

J.F. Duffy, BS, MS, PhD (Iowa)

R.A. Ellison, BSc (UNB), MBA (McM), PhD (Tenn)

H.I. Gassmann, Vordiplom (Stuttgart), MS (Oregon State), PhD (UBC)

A. Ireland, BA (Chatham), Msc (Car-Mel), MBA, PhD (Dal), CA

R.E. Klapstein, (Director), BSc (Calg), BA (Alta), MBA, LLB (Dal), LLM (Osgoode Hall), CMA

S.O. Larsson, BSc (SGW), MSc (Alta), PhD (UBC)

R.N. Maddox, BA, MBA, PhD (Ohio State)

L.W. Mealiea, AB, MBA (Rutgers), PhD (Mass) (on leave July '96 - June '97)

A. Oppong, BSc (Ghana), MBA (Chicago), PhD (Iowa), CGA

D.J. Patton, BA (UNB), MA (Tor), DBA (Indiana)

A.C. Peacock, BA, MA, PhD (Western)

R.S. Sandhu, BSc, BCL, LLM (Delhi), LLM

(Yale), MBA (Dal) (on leave Jan '97 - June '97)

E.W. Scott, BCom (Dal), MBA (Col), CA, CMA

Y. Shafai, BSc, MPA (Tehran), MBA, PhD (Mich State) (on leave Jan '97 - June '97)

D.P.J. Sheridan, CD, BA, BEd, MEd (Admin) (Sask), PhD (Alta)

F.S. Skinner, BCom (Memorial), MBA, PhD (Tor)

R.A. Street, BCom, LLB (Dal), MBA (Western), LLM (Dal) (on leave July 96 - June 97)

#### Assistant Professors

R.G. Baltazar, BSc (Ateneo de Manila), MIM (AGSIM)

B.W. MacLean, BCom, MBA (Dal), CA

Julia Sagebien, BA (Hampshire Coll), MA

(Naropa Inst), MBA (Simmon's Coll), PhD (London School of Economics)

#### Lecturers

S. Liu, BS (Nanjing), MA (Carleton), PhD (UBC)

M.L. Grise, BCom (Queen's)



**Part-Time Faculty**

E. Hertels, MA (Glasgow), MA (McGill)  
 S. MacDonald, BSc (St.F.X.), MSc (Alberta)  
 H. McNutt, MBA (SMU)  
 B. Miller, BS (SUNY), MA (William and Mary),  
 MBA (Dal)

**Bachelor of Commerce**

The School of Business Administration offers the undergraduate Bachelor of Commerce degree, which is a four-year programme. Starting in September 1991, the Bachelor of Commerce was changed to a mandatory co-operative education programme which allows students to combine relevant work experience with academic studies. The schedule for the Bachelor of Commerce Co-op includes seven academic terms (AT) and three work-terms (WT), as follows:

Yr/Term	Fall	Winter	Summer
1	AT1	AT2	FREE
2	AT3	WT1	AT4
3	WT2	AT5	WT3
4	AT6	AT7	

Students readmitted to the Commerce programme 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 Programme Administrator, 6152 Coburg Road, (902) 494-7080.

The co-op programme in Commerce requires a broad and general range of studies, including required and elective classes provided by the College of Arts and Science. The programme also allows students to choose a measure of concentration in a variety of special areas.

The three work-terms each receive ½ credit, but constitute a full work load. (See the Regulations section of this calendar for "overload" limits and conditions.)

The programme of studies for the Bachelor of Commerce Co-op is the programme described in detail in this calendar. Students who are qualified may join the programme no later than the beginning of the second year, and will be charged a transfer fee. (See Admissions and/or Fees section of this calendar)

**Degree Requirements**

- Four-year programme includes 7 academic terms and 3 work-terms
- Total credits required - 20
- Required GPA for graduation - 2.00
- Required core area classes - 10 credits:

COMM 1000.03, 1501.03, 2101.03, 2102.03, 2201.03, 2301.03, 2302.03, 2401.03, 2501.03, 2502.03, 2601.03, 2701.03, 3501.03, 4350.06  
 ECON 1101.03 and 1102.03; and 2200.03 or 2201.03

Math 1000.03 and 1010.03 or 1110.03 and 1120.03

- Core area electives - 4 credits selected from Commerce, Economics, Mathematics, Statistics and Computing Science
- Non-Commerce electives - 3 credits selected from all classes offered except Commerce

- Free electives - 1½ credits selected from all classes offered above the 1000 level, except with School approval
- Work-terms - 1½ credits

Note: Due to the growing awareness of the importance of ethics and language in the education of business managers, the School highly recommends that students consider taking Philosophy 2080.06 or 2081.03: Ethics in the World of Business, and at least one class in French, German, Russian, or Spanish amongst their non-Commerce or Free electives.

**Management Information Systems**

The School of Business Administration prides itself on the use of computers in all aspects of the curriculum. Initiated under the auspices of the Courseware Development Project, the prime objectives are to bring the most advanced information technology into the classrooms and to make hardware and software resources available to the students. This initiative was made possible through generous contributions from several Canadian corporations, as well as continuing support of the Capital Campaign for Dalhousie and the Annual Fund Campaign. Through this support the School of Business Administration has become a recognized world leader in the use of information technology.

Currently all faculty members and staff have their own personal computers and students have access to a computer lab with 60 personal computers. All personal computers in the School are based on the Intel 486 family of processors. They are fully networked and running Windows software and applications. All personal computers are linked through ethernet connections to the School's two MicroVAXes, scientific workstations, as well as a host of other computers on campus. Through internet connections there is also access to thousands of computers throughout the world.

**Programme Guide**

For their first four academic terms, students normally follow a fixed programme of study, as outlined below:

**Academic Term One**  
 COMM 1000.03  
 ECON 1101.03  
 MATH 1000.03 or 1110.03  
 Three non-Commerce electives

**Academic Term Two**  
 COMM 1501.03  
 ECON 1102.03  
 MATH 1010.03 or 1120.03  
 Three non-Commerce electives

**Academic Term Three**  
 COMM 2101.03  
 COMM 2301.03  
 COMM 2401.03  
 COMM 2501.03  
 ECON 2200.03 or 2201.03

**Academic Term Four**  
 COMM 2102.03  
 COMM 2302.03  
 COMM 2701.03  
 COMM 2502.03  
 COMM 2201.03

During their fifth, sixth and seventh academic terms, students can either pursue a general programme of study, by choosing electives from a wide range of the functional areas of business, or they can follow a more specialized programme, taking their elective classes in particular areas of concentration. (Note that the Commerce programme does not have formal Majors or Minors).

The School currently offers the following Areas of Concentration:

- Accounting
- Finance (combined with either Accounting, Economics or International Business)
- Marketing/Distribution
- Information Systems

Interested students should refer to the Programme Planning Guides which are available from the School before beginning their fifth academic term.

The professional accounting bodies allow certain exemptions in respect of classes taken in the School of Business Administration. These differ from province to province. Particulars can be obtained from the provincial offices of the Association of Certified General Accountants, the Society of Management Accountants, and the Chartered Institute of Secretaries. In Atlantic Canada, the Atlantic School of Chartered Accountancy provides the pre-qualification education for the CA profession, and can advise which of the classes completed at Dalhousie are accredited for their purposes.

### Honours Programme

Honours programmes may be designed with an area of concentration in Accounting, Finance, Human Resource Management, and Marketing. The Honours programme of each student must be approved by the Commerce Programme Administrator.

#### Honours Programme Requirements

The Requirements of Honours programmes are those of the BComm programme, with the following changes:

- (a) the student must attain a grade point average of at least 3.00 in all classes beyond the first year;
- (b) the student must have submitted to and had approved by a full time faculty member, a topic for a research paper to be completed during their fourth year of study in addition to their regular twenty credit programme. (Honours Qualifying Requirement)
- (c) the student must obtain a grade of at least B in the designated Honours Requirement and
- (d) to obtain First-Class Honours, students must, in addition to the above requirements, attain a grade point average of 3.70 in:
  - (1) all classes in the core areas of Commerce, Economics, and Mathematics (including Computing Science and Statistics), and
  - (2) all 20 classes.

### Admission to Honours

Students are normally admitted to an Honours programme after completion of three years of the regular programme. Students must meet the following admission requirements:

- (a) a grade point average of 3.00 in all classes taken in the second and third years of the BComm programme, and
- (b) a grade point average of at least 3.30 in the group of prerequisite classes to the relevant Honours seminar.

Students wishing to pursue an Honours programme should meet with the Commerce Programme Administrator before the beginning of their fifth academic term.

### Classes Offered

Note: Check 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 in every year. Students should bear this in mind when planning their programme.

**COMM 1000.03: Introduction to Business.** This class is designed to introduce the student to the various aspects of business and the areas of study within it, including economic systems, entrepreneurship, marketing, management, accounting, and finance. A wide range of teaching-learning methods are applied, including lectures, seminars, computer simulations, case discussion, and business games. The class prepares the student for the more rigorous treatment of functional topic areas in subsequent classes and establishes a business person's perspective.

Format: Lecture 1½ hrs per week, tutorial/seminar 1½ hrs per week

**COMM 1101.03: Introductory Accounting I: for Non-Commerce students.** An introduction to the principles and practices used by accountants in processing and communicating data both within and outside the entity. Emphasis is on financial statement accounting and reporting, with the following objectives:

- 1) to introduce the theoretical framework upon which financial statement accounting is based, and examine its major underlying principles;
- 2) to examine basic financial accounting methodology, and develop the analytical and procedural skills related thereto;
- 3) to develop an understanding of the information content of conventional financial statements, and an appreciation of the inherent limitations of accounting information.

Format: Regular lecture method: two 90-minute lectures per week, plus a 90-minute weekly tutorial, as required. Selected computer exercises may be part of the class, requiring some time to be spent in the Computer Lab

Exclusion: Credit can be given for only one of COMM 1101.03 and COMM 2101.03

**COMM 1102.03: Introductory Accounting II: for Non-Commerce students.** Emphasis is

placed on the need for accounting information by managers, with the following objectives: (1) to develop an understanding of the kinds of accounting information managers need; (2) to introduce managerial accounting methodology and develop the analytical and procedural skills related thereto; (3) to introduce 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:** Two 90-minute lectures per week; written and perhaps computer-based assignments  
**Prerequisite:** COMM 1101.03  
**Exclusion:** Credit can be given for only one of COMM 1102.03 and COMM 2102.03.

**COMM 1501.03: Introduction to Computers in Business Management.** The goal of this class is to enable students to be immediately productive within an information processing system. Successful completion of this class will provide students with a clear understanding of computers and how they may be incorporated into a business environment, as well as a proficiency with an integrated Windows-based word processing, spreadsheet and database software suite. The class combines traditional lectures with a completely self-paced, computer-managed, instructional environment, including on-line tutorials, quizzes and electronic mail. It is strongly recommended that students complete this class in their first year of study.

**Format:** Lectures/computer labs 3 hours  
**Exclusions:** Credit can be given for only one of COMP 1000.03 and COMM 1501.03

**Note:** COMM 1501.03 is designed specifically for students enrolled in Commerce, and COMP 1000.03, 1200.03 or 1400.03 are not eligible as substitutes for COMM 1501.03.

**COMM 2101.03: Introductory Accounting I: for Commerce students.** An introduction to the principles and practices used by accountants in processing and communicating data both within and outside the entity. Emphasis is on financial statement accounting and reporting, with the following objectives:

- 1) to introduce the theoretical framework upon which financial statement accounting is based, and examine its major underlying principles;
- 2) to examine basic financial accounting methodology, and develop the analytical and procedural skills related thereto;
- 3) to develop an understanding of the information content of conventional financial statements, and an appreciation of the inherent limitations of accounting information.

**Format:** Regular lecture method: Two 90-minute lectures per week, plus tutorials, as required. Selected computer exercises are part of the class, requiring some time to be spent in the Computer Lab.  
**Exclusion:** COMM 1101.03

**COMM 2102.03: Introductory Accounting II: for Commerce students.** Emphasis is placed on

the need for accounting information by managers, with the following objectives: (1) to develop an understanding of the kinds of accounting information managers need; (2) to introduce managerial accounting methodology and develop the analytical and procedural skills related thereto; (3) to introduce 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:** Two 90-minute lectures per week; written and computer-based assignments  
**Prerequisite:** COMM 2101.03  
**Exclusion:** COMM 1102.03

**COMM 2110.03: Accounting Information Systems.** This class provides a basic understanding of information systems, especially accounting information systems. It builds on material learned in COMM 1501.03, dealing with various hardware and software issues not covered in that class. The class emphasizes the topics of systems analysis, design, control and evaluation, and topics related to database systems. In addition, the class involves instruction in, and the use of, various computer programmes such as spreadsheets, databases and wordprocessors.

**Format:** Ranges from 3 hours of lectures per week to no classroom time, with extensive computer conferencing  
**Prerequisites:** COMM 1101.03 or 2101.03, 1102.03 or 2102.03, 1501.03; computer- and accounting-related work experience often provides an adequate background for this class; see instructors for further information.

**COMM 2201.03: Introduction to Managerial Finance.** An introduction to the problems business managers face in the acquisition and effective use of the firm's financial resources, and analytical concepts for evaluating financial decisions. How the firm can achieve successful interaction with its external environment and make an appropriate contribution to the operation of the economy is considered. Topics covered: time value of money; present value; financial ratio analysis; working capital management; and long-term financial decisions.

**Format:** Lecture 1.5 hours; tutorial 1.5 hours  
**Prerequisites:** COMM 1000.03, 1101.03 or 2101.03; ECON 1101.03 and 1102.03  
**Co-requisite:** COMM 1102.03 or 2102.03

**COMM 2301.03: Organizational Behaviour.** Insight into human behaviour in organizations and capacity for objective analysis is developed. Research and text material drawn from the fields of sociology, anthropology and psychology are used in the development of understanding and objectivity. Case material and substantive data from the behavioral sciences are considered. Covers such major topics as motivation, group behaviour, individual differences, personality, perception,

communications, leadership, inter-group behaviour, conflict management, job design, corporate culture, learning and creativity.  
**Format:** Lecture 1.5 hours, tutorial 1.5 hours

**Prerequisites:** COMM 1000.03 and 1501.03, ECON 1101.03 and 1102.03

**COMM 2302.03: Organizational Theory and Design (formerly 3302.03).** Surveys both theory and research pertaining to complex organizations with emphasis on design, structure and administrative practices in the environmental setting and how the interaction of these variables relates to organizational performance. Concomitant with this exposure to theory and research, students have the opportunity to apply this knowledge to case studies relevant to complex organizations. Emphasis is on the analysis of case studies and the formulation of general solutions and decisions for action. Covers such topics as bureaucracy, function-product structures, matrix structure, organizational goal-setting, organizational design and ethics, organizational decision-making, communications, control, management of change and innovation, new corporate designs, computer technology and organizational design.

**Format:** Lecture 3 hours  
**Prerequisite:** COMM 2301.03  
**Exclusion:** COMM 3302.03 (formerly)

**COMM 2401.03: Introduction to Marketing.** The student receives a basic understanding of the character and scope of marketing and its role in business operations and in society, with focus upon the concepts and techniques an organization must employ to anticipate and satisfy consumer needs. Emphasis is placed on the tools available to the marketing manager, the problems to be confronted, and the development of understanding and analytical ability in the following: the role of the consumer; product-line development; channels of distribution; pricing systems; selling and promotional activities. Case materials and problem sets are used to give insight into the analytical tools used in problem analysis and decision-making.

**Format:** Lecture/discussion 3 hours  
**Prerequisites:** COMM 1000.03 and 1501.03; ECON 1101.03 and 1102.03  
**Co-requisite:** COMM 1101.03 or 2101.03  
**Exclusions:** students cannot receive credit for both COMM 2401.03 and 1401.03 (as this class was formerly numbered)

**COMM 2501.03: Statistics for Business I.** An introduction to the principles and applications of statistics relevant to business and economics, with emphasis on making inferences based on observed data. Topics covered include descriptive statistics, probability, random variables, decision theory, estimation, hypothesis testing, statistical software.

**Format:** Lecture 3 hours  
**Prerequisite:** COMM 1000.03 and 1501.03; ECON 1101.03 and 1102.03; MATH 1110.03 and 1120.03; or permission of the instructor  
**Exclusions:** MATH 1060.03, 2060.03; STAT 1060.03, 2060.03; ECON 2260.03

**COMM 2502.03: Statistics for Business II.** A continuation of COMM 2501. 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.

**Format:** Lecture 3 hours  
**Prerequisites:** COMM 2501.03 or MATH 1060.03 or 2060.03, or STAT 2060.03, or ECON 2260.03; or permission of the instructor  
**Exclusions:** MATH 2080.03, STAT 2080.03, ECON 2280.03

**COMM 2601.03: Legal Aspects of Business - Contracts.** This class provides an appreciation of some of the legal problems that might be faced by the business community. It examines the meaning and sources of law, the machinery of justice, the law of torts, the formation of contracts, capacity to contract, legality of object, mistake, undue influence, duress, misrepresentation, statute of frauds, privity of contracts, interpretation, breach and discharge of contracts, and the law of agency. Students must make extensive use of the law library in writing reports on a series of cases.

**Format:** Lecture 3 hours  
**COMM 2602.03: Commercial Transactions.** This follow-up to COMM 2601.03 examines the law relating to the sale of goods, bailment, contracts of employment, negotiable instruments, real property, tenants and landlords, mortgages, partnerships, corporations, devices for securing credit and the rights of creditors. Students must make extensive use of the law library in writing reports on a series of cases.  
**Format:** Lecture 3 hours  
**Prerequisite:** COMM 2601.03

**COMM 2701.03: Business Communication.** The goal of this class is to teach students how to properly prepare both written and oral business communications. Stress will be on written communication, specifically business memos, letters and reports, although communication theories and the role of communication in business will be discussed. As well, one oral presentation per student will be required.  
**Format:** Lecture 3 hours

**COMM 2801.03: Work-Term One, Bachelor of Commerce Co-op.**  
**Prerequisites:** Successful completion of at least 7 credits, of which at least 4½ credits must be in the Core Area (Commerce, Economics, Mathematics/Statistics/Computing Science).

**COMM 3100.03: Financial Accounting and Statement Analysis.** This class is intended for non-accounting students. The approach to the class is analytical rather than procedural, with an emphasis on a user perspective. Topics include an in-depth treatment of liquidity and profitability analysis, pensions, leases, earnings per share, cashflow, accounting for inflation, special industry analysis, and non-profit accounting.

**Format:** Lecture 3 hours  
**Prerequisites:** COMM 1101.03 or 2101.03, 1102.03 or 2102.03

**Exclusions:** COMM 2111.03, 3111.03, 3113.03

**COMM 3101.03: Managerial Accounting and Decision Making.** The class applies, through a combination of case analysis and problem-solving, managerial accounting concepts to the planning and controlling activities in organizations. Coverage includes both manufacturing and non-manufacturing activities. This class is intended for students not concentrating in accounting.

**Format:** Lecture 3 hours

**Prerequisites:** COMM 1101.03 or 2101.03, 1102.03 or 2102.03, 2201.03

**Exclusions:** COMM 3112.03

**COMM 3111.03: Intermediate Financial Accounting Procedures.** This class and its follow-up, COMM 3113.03, are meant to provide an understanding of corporate financial reporting and the related conceptual framework. The class develops technical expertise in various financial accounting topics, some of which were introduced in COMM 2101.03 and 2102.03. The focus is on understanding the implicit inter-relationships in the framework and the environmental factors that work to establish GAAP (generally accepted accounting principles).

**Format:** Lecture 3 hours

**Prerequisites:** COMM 1101.03 or 2101.03 and 1102.03 or 2102.03 with a B-average

**Exclusion:** COMM 3100.03; COMM 2111.03 (formerly)

**Cross-listing:** BUSI 6108.03

**COMM 3112.03: Cost Accounting.** The purpose of this class is to provide the student with detailed knowledge of cost/managerial accounting concepts and practices which help organizations in their planning, decision-making and control activities. Topics to be covered include product costing systems, cost behaviour analysis and estimation, cost allocation, standard costs and budgeting. The class is intended primarily for students who plan to concentrate their studies in the accounting area. Students who wish to take a class in cost/managerial accounting beyond the introductory level, but do not plan to pursue a career in accounting, should consider taking COMM 3101.03 instead of this class.

**Format:** Lectures/case discussions 3 hours

**Prerequisites:** COMM 1101.03 or 2101.03 and 1102.03 or 2102.03, with at least a B-average

**Exclusions:** COMM 3101.03; COMM 2112.03 (formerly)

**Cross-listing:** BUSI 6106.03

**COMM 3113.03: Intermediate Financial Accounting Theory.** This class and its prerequisite, COMM 3111.03, are meant to provide an understanding of corporate financial reporting and the related conceptual framework. The class examines the assumptions underlying topics in the external reporting model, and the consequences of relaxing those assumptions in, for instance, the study of accounting measurement models. Quantitative technical skills are emphasized simultaneously with the qualitative factors governing accounting policy choice.

**Format:** Lecture 3 hours

**Prerequisite:** COMM 3111.03 (formerly 2111.03) or permission of the instructor

**Exclusion:** COMM 3100.03

**Cross-listing:** BUSI 6113.03

**COMM 3114.03: External Auditing.** This class covers the theory and practice of public auditing according to generally accepted auditing standards (GAAS). The first half of the class considers the forces impacting on the setting of standards and the current level of standards. This part includes pronouncements of the accounting profession, reporting standards, professional ethics, statute laws, legal liability and responsibilities, standards for examination of internal control in both manual and computerized environments, standards for the quality of evidence, statistical sampling and the sufficiency of evidence, documentation and working papers. The second part of the class considers typical audit programmes for examination of balance sheet and income statement accounts.

**Format:** Lecture 3 hours

**Prerequisites:** COMM 2110.03, 3111.03 (formerly 2111.03)

**COMM 3120.03: Information for Organizational Control.** The class develops and evaluates in detail management control systems in all types of organizations - profit and not-for-profit, manufacturing and service organizations. Case analysis is used to look at structures such as cost, profit and investment centres. Information requirements of specific control and planning models, such as linear programming, decision theory and forecasting, are also examined.

**Format:** Lecture/case analysis/problem-solving 3 hours

**Prerequisites:** COMM 3112.03, 2301.03, 2502.03, or permission of instructor

**Cross-listing:** BUSI 6107.03

**COMM 3201.03: Intermediate Finance.** A more intensive study of capital budgeting, cost of capital and valuation theory than that of COMM 2201.03. The class is intended to provide an overview of the theory of corporate finance and the application of that theory to the problems faced by a financial manager.

Emphasis is on principles of capital budgeting, valuation, investment decisions, financial structure, dividend policy and bargaining for funds vital in financing a business enterprise. Case analysis will be used.

**Format:** Lecture 3 hours

**Prerequisites:** COMM 2201.03

**Co-requisite:** One of 3111.03 (formerly 2111.03), 3112.03, 3100.03 or 3101.03

**COMM 3202.03: Security Analysis.** Introduces the theory and philosophies of investment, and concentrates on investment analysis using computers and other tools available to the institutional investor. The focus is on common stocks, bonds, and investment trusts. Case material is primarily Canadian and covers stocks, bonds, options and mutual funds. Reading assignments and case analysis provide opportunities to handle investment analysis and portfolio management on a problem-solving basis.

**Format:** Lecture 3 hours  
**Prerequisites:** COMM 2201.03, 2502.03; ECON 2201.03

**COMM 3203.03: Canadian Capital Markets.** Canada's capital markets and the flow of funds within them. Main sectors in the capital markets are identified and their historical development and function within the total structure is emphasized. Other areas include term structure and risk structure of interest rates, the risk-return relationship on financial assets and the efficiency of Canada's capital markets. Reading assignments, case analysis, evaluation of available research results and classroom discussion comprise the class.

**Format:** Lecture 3 hours  
**Prerequisites:** ECON 2201.03; COMM 2201.03.  
 The former may be waived with the consent of the instructor.

**COMM 3206.03: Portfolio and Money Management.** This class 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 promoted in various theories. The intention is to provide our students with the needed skills to successfully face the challenging world of portfolio management.

**Format:** Lecture/seminar 3 hours  
**Prerequisites:** COMM 2302.03 or permission of the instructor

**COMM 3303.03: The Personnel Function.** The role of personnel management and administration of the personnel function are analyzed, along with the major aspects of the personnel function: job analysis, human resource planning, selection, training, performance appraisal, compensation, labour relations, safety and health, and human resource information systems. Knowledge of the processes is supplemented by the development of analytical skill in coping with various personnel problems and in the integration of the processes with the many other functions required in the organization. This "system and process" analysis builds upon the skill and knowledge acquired in COMM 2301.03. Cases simulate work environments.

**Format:** Lecture 3 hours  
**Prerequisites:** COMM 2301.03  
**Cross-listing:** BUSI 5321.03

**COMM 3304.03: Labour - Management Relations.** Introduces students to some practical and theoretical aspects of labour-management relations in Canada. Examines historical, legal, behavioral, economic and political backgrounds of our system. Emphasis is on the key processes of industrial relations as they impinge on the activities of managers. Cases used are drawn mainly from Canadian sources.

**Format:** Lecture 3 hours  
**Prerequisites:** COMM 2301.03 and 2302.03 or instructor consent

**COMM 3305.03: Individual And Organizational Change.** Current concepts and methods of individual and organizational change. The primary objective: to develop the student's skills as a change agent and improve

performance as a manager, using lectures, exercises and case studies. Opportunity to fine-tune those analytical and decision-making skills necessary for the effective introduction of change into complex organizations, enabling the student to: (1) identify those situations where change is appropriate; (2) develop effective change strategies; (3) implement planned change; and (4) effectively monitor the change process.

**Format:** Lecture 3 hours  
**Prerequisites:** COMM 2301.03 and 2302.03, or permission of instructor

**COMM 3307.03: New Venture Creation.** This class is about entrepreneurship - the process of creating new businesses. It is designed to expose students to the issues, problems and challenges of creating new businesses and to provide students with the opportunity, within the framework of a formal class, to explore and develop business ideas they have been considering or wish to investigate. Cases are used to permit students to vicariously experience some of the issues entrepreneurs face. Experiential exercises enable the students to better understand themselves, their entrepreneurial potential and the merits of their new venture ideas. A major field project requires the development of a detailed business plan for the new venture.

**Format:** Lecture 3 hours  
**Prerequisites:** COMM 2102.03, 2201.03, and 2401.03, or permission of instructor

**Exclusion:** COMM 3308.03 (as this class was formerly numbered)

**COMM 3308.03: Managing the Family Enterprise.** This class is about the special problems and issues that confront family businesses. It explores the family system, the business system and their interactions-functional and dysfunctional. It provides a framework for students to understand the dynamics and special issues of family firms and allows them to explore their interest in joining a family firm. Special topics, examined from the family business perspective include: the decision to join the family firm, establishing credibility as a son or daughter, management succession, ownership succession, retaining key non-family employees, strategic planning, and other issues especially relevant for family firms. The class will include field projects, guest speakers, case studies, videos, research papers, and seminar discussions.

**Format:** Lecture/discussion 3 hours  
**Prerequisites:** COMM 2102.03, 2201.03, 2302.03, 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 designed to provide the students with behaviours which will help ensure that, when managing human resources, staff will perform at or near peak capabilities. Topic areas include: understanding what the successful manager needs to know, understanding the personal self, communications, interpersonal negotiations, goal setting, managing innovation and change,

handling conflict and anger, performance evaluation, counselling and feedback, and management attitudes needed for success. Significant amounts of classroom time will be devoted to behaviour modelling exercises, role plays, case studies, and group discussions.

Format: Lecture/discussion 3 hours

Prerequisites: COMM 2302.03, or permission of the instructor

**COMM 3401.03: Buyer Behaviour.** In view of the very competitive situation in Western 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. The emphasis of the class is empirical research on an outside project. The theoretical background for the projects and their progress are discussed in class. Students must do a considerable amount of background reading from the text and outside sources.

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 situation. Problems of the promotion manager will be presented to help students appreciate those factors which affect promotional decisions. The completion of a marketing communications plan for an outside organization is required, as is group case work.

Format: Lecture/case method/applied project work 3 hours

Prerequisite: COMM 2401.03

**COMM 3404.03: Marketing Research.** The scientific method in solving marketing problems. Emphasis on planning and formulating research problems, research design, application of sampling methods, statistical design of experiments, and analysis of data collected. A real-life research project is required, its nature to be determined considering student interests and backgrounds.

Format: Lecture/discussion 3 hours

Prerequisites: COMM 2502.03, 2401.03

**COMM 3405.03: Export Marketing.** The class will discuss reasons why Canadian companies get involved in exporting, and will focus on the development of marketing plans for the export of Canadian goods and services. Also discussed will be barriers faced by companies engaging in international trade, and government agencies providing support services to facilitate international transactions.

Format: Lecture/discussion 3 hours

Prerequisites: COMM 2102.03, 2401.03; ECON 1101.03 and 1102.03

Recommended: COMM 3701.03

**COMM 3406.03: Retailing.** Retailing is designed to provide an understanding of the functions, problems and practices of retail

management. It provides an exposure to location planning, layout, organizational structure, retail personnel management, buying, pricing, retail accounting and control mechanisms. A major component of the class is the completion of a strategic plan for a retail business concept.

Format: Lecture/case method/applied project work 3 hours

Prerequisites: COMM 2201.03, 3401.03, 3410.03

**COMM 3407.03: Logistics Management.** An examination of the decision problems faced by the manager of the channels of distribution, the transportation and storage of products, and the communications and data processing system, in order to minimize the total cost of these activities and satisfy the marketing requirements of the firm and its customers. Topics include: the integrated logistics management concept, customer service, transportation, distribution centres, inventory management, materials management, packaging, purchasing, order processing and information systems, financial control, logistics organization, international logistics, reverse distribution and recycling, and the strategic logistics plan.

Prerequisites: COMM 3410.03 and 3501.03, or permission of the instructor

Cross-listing: BUSI 6407.03

**COMM 3408.03: Transportation Modes and Policy.** This class examines the development and operation of various transportation modes and national transportation policy in Canada. Topics include the characteristics, cost structures and pricing decisions of the various modes (air, pipeline, rail, road and water); the National Transportation Act and other relevant legislation; the structure of the industry and government agencies; regulation; subsidies, passenger transportation and tourism, urban and metropolitan transportation; traffic and carrier management; transportation and environmental issues; current and emerging freight and passenger issues (with particular reference to the role of transportation in the Atlantic Region).

Format: Lecture/discussion/seminar 3 hours

Co-requisite: COMM 3410.03, or permission of the instructor

Cross-listing: BUSI 6406.03

**COMM 3409.03: Sales Management.** This class is designed to provide an understanding of the tasks and problems facing today's sales manager and to familiarize one with current sales force management practices. Specifically, this class provides an exposure to the concepts, techniques and procedures in buyer-seller relations, salesmanship, organization of the sales force, personnel management, selection, sales training, motivation, compensation, evaluation and supervision, budgets, quotas, territories and sales control. Extensive use is made of the case method, and classroom discussion is used to extend the basic text material and examine other points of view.

Format: Lecture/case method/field work 3 hours

Prerequisite: COMM 2401.03

Co-requisites: COMM 2201.03, 2301.03, 3101.03

**Exclusion:** COMM 2402.03 (as this class was formerly numbered)

**Cross-listing:** BUSI 6405.03

**COMM 3410.03: Channels of Distribution.** Few companies deal with their final customers directly, most relying on a network of distribution channel intermediaries to get their products to market. This requires that producers carefully design, select and manage their distribution channel operations to achieve the desired level of performance. This class reviews theory and practice in this field of management, employing case analysis and projects to enhance student learning.

**Format:** Lecture/discussion 3 hours

**Prerequisites:** COMM 1102.03 or 2102.03, 2401.03, 2201.03, 2301.03, or permission of the Instructor

**Exclusions:** Prior to 1988/89, this class was numbered COMM 2401.03. Credit will be given for only one of COMM 2401.03 (taken prior to 1988/89) and COMM 2403.03 (taken after 1987/88) and COMM 3410.03

**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)

**Prerequisites:** COMM 2201.03, 2301.03, 2401.03, 2501.03

**COMM 3511.03: Management Information Systems.** This class is meant to provide the student with a basic knowledge of information systems and their role in business organizations. Fundamental to this basic knowledge is an understanding of the variety of information systems in business. An understanding of the use of computers in current and future information systems is stressed. Hardware configurations, software concepts and systems, and data base management issues, as well as system analysis, design and evaluation will be introduced.

Operating, tactical, and strategic management uses of MIS are covered. Applications from marketing, purchasing, production, personnel management and finance will be studied.

**Format:** Lecture/lab 3 hours

**Cross-listing:** BUSI 5511.03

**COMM 3701.03: The Firm in the International Environment.** As an introduction to international business, this class examines the principal methods of doing business abroad and the dimensions of the international business environment that are important to each. Successful exporting calls for an

understanding of, among others, international trade flows, national trade policies, international financial flows and foreign exchange movements. Accordingly, selected aspects of the theories of international trade and finance are presented, as well as the origins and current operations of major international institutions - the GATT, IMF and World Bank Group. Regional trading areas and international commodity arrangements are also covered. The class also treats the theory of the multinational enterprise, along with methods for analyzing the economic, political and social dimensions of host countries.

**Prerequisites:** COMM 2102.03, 2201.03; ECON 2200.03 or 2201.03

**COMM 3801.03: Work-Term two, Bachelor of Commerce Co-op**

**Prerequisites:** At least 9½ full credits earned, including COMM 2801.03 and at least 6½ other credits in the Core Area (Commerce, Economics, and Mathematics/Statistics/ Computing Science).

**COMM 3802.03: Work-Term three, Bachelor of Commerce Co-op**

**Prerequisites:** At least 12 full credits earned, including COMM 3801.03 and at least 8½ other credits in the Core Area (Commerce, Economics, and Mathematics/Statistics/ Computing Science).

**COMM 4101.03: Advanced Topics in Accounting I.** This class covers advanced concepts in accounting. Topics include non-profit accounting, current pronouncements, special industry accounting, valuation, capital market and information efficiency, estates and trusts, bankruptcy, as well as an in-depth review of certain topics treated in prerequisite classes.

**Format:** Lecture 3 hours

**Prerequisites:** COMM 3111.03, 3112.03 and 3113.03, or permission of the instructor

**Cross-listing:** BUSI 6110.03

**COMM 4102.03: Advanced Topics in Accounting II.** This class has two objectives: (1) to provide an in-depth study of the interrelated topics of intercorporate investments, business combinations, consolidated financial statements and foreign operations, and (2) to develop a framework that may help to resolve controversial issues in advanced financial accounting.

**Format:** Lecture 3 hours, extensive use is made of assigned cases and problems

**Prerequisites:** COMM 3111.03 and 3113.03, or permission of the instructor

**Cross-listing:** BUSI 6109.03

**COMM 4114.03: Computer Systems Controls.** This class examines the special considerations when auditing in a computerized environment. Three major areas covered in the class are:

- 1) Special internal control techniques/requirements and standards for examination of internal control. This includes standards for



acquisition, development, implementation, conversion, testing and maintenance of systems, concentrating on the goal of ensuring that good internal control is attained. The class also covers the standards associated with computerized processing of transactions, creation and control over databases, and special planning for interruption of computer operations and re-start.

- 2) Audit procedures in a computerized environment. For each special internal control technique, there exist a number of possible audit procedures. Audit strategy is considered, including auditing around the system, reliance on and examination of computerized controls, and use of computer-assisted audit techniques.
- 3) Use of computer-assisted audit techniques, including use in the class of "Interactive Data Extraction and Analysis", a software package from the CICA, developed by the Auditor General of Canada.

Format: Lecture 2 hours, lab 1 hour  
Prerequisites: COMM 2110.03

**COMM 4120.03: Taxation.** An introduction to the taxation system in Canada, with special reference to the provisions of the Income Tax Act and their effects on business decisions. The measurement processes used to determine the tax base are examined, and the basic elements in the calculation of tax payable for individuals and corporations are discussed.

Format: Two 90-minute lecture sessions, with significant effort directed to the solving of short case problems

Prerequisites: COMM 1101.03 or 2101.03; ECON 1101.03 and 1102.03

Cross-listing: BUSI 6102.03

**COMM 4121.03: Advanced Taxation.** A more detailed examination of the corporate taxation system in Canada. Some examples of how tax awareness and planning can be a significant element in the regular business decision-making process for both individuals and corporations, and especially for private corporations.

Format: Lecture 3 hours per week for part of the term, the remainder consisting of seminar presentations of researched topics by students

Prerequisite: COMM 4120.03

Cross-listing: BUSI 6103.03

**COMM 4150.03: Research in Accounting.** This class provides the opportunity for students to undertake both directed and independent study of selected topics in accounting, and requires a major research paper. This class is available to Honours students only.

Format: Research seminar 3 hours

Prerequisites: COMM 4113.03

**COMM 4200.06: Seminar in Finance.** Special seminar restricted to Honours students in Finance. Students are exposed to aspects of financial theory not covered in other classes. Each student prepares an original Honours thesis.

Prerequisites: COMM 3201.03, either 3202.03 or 3203.03, and ECON 2200.03 or 2201.03

**COMM 4201.03: International Financial Management.** This class focuses on the financial management of the individual firm in the international market place. Topics include the financial goals of multinational enterprises (MNEs), foreign exchange management, international money markets, financing foreign trade, international capital budgeting, and managing the MNE system.

Prerequisites: COMM 1102.03 or 2102.03, 2201.03, 2502.03; ECON 2200.03 or 2201.03

Cross-listing: BUSI 6807.03

**COMM 4250.03: Theory of Finance.** This class 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 class is designed with the assumption that students have a background in financial economics. In addition to the main text, several journal articles will be reviewed in each area. Seminar style classes will feature discussion and student participation.

Format: Seminar 2 hours

Prerequisites: Concentration in Finance and permission of Instructor

Cross-listing: BUSI 6250.03

**COMM 4350.06: Strategic Management.** This is the capstone class of the Commerce programme. It is about general management - the practice of business from the perspective of the general manager. As such, it integrates the concepts and techniques developed in earlier classes. The principal tool of the general manager is strategy, so the primary concern is the formulation and implementation of strategy. Other issues addressed include: business ethics and the role of personal values in strategy, business-government relations, and managing strategic change. The class exposes students to a wide variety of organizations and contexts through cases, and includes a major field project where students, in small groups, study and advise actual businesses.

Format: Lecture 3 hours

Prerequisites: At least 12½ credits earned, including COMM 3801.03 and at least 9 other credits in the Core area (Commerce, Economics and Mathematics/Statistics/Computing Science).

**COMM 4401.03: Marketing Strategy.** This class is intended for marketing majors who wish to deepen their understanding of how marketing strategy is formulated and implemented. This involves high-level, long time-frame decisions, since the product and market strategies are at issue. The class aims to improve decision-making skills in managing product/market portfolios and implementing marketing strategies. As a capstone class, it is designed to permit the integration of learning from other marketing classes, as well as those in finance, policy and management. Instruction is mostly through case study discussions, report writing, and group presentations.

**Format:** Seminar 3 hours  
**Prerequisites:** COMM 2401.03, 3401.03, 3404.03; and one other marketing class (3410.03 - formerly 2403.03 - recommended)

**COMM 4402.03: Independent Study in Marketing.** The content of this class is negotiated with an individual instructor. The class offers the student the opportunity to explore in greater detail any particular area of interest in marketing.

**Format:** Directed readings and discussions  
**Prerequisites:** COMM 2401.03, 3404.03, and at least two other half classes in marketing

**COMM 4450.03: Honours Thesis in Marketing.** Students write an Honours thesis demonstrating their ability to gather, analyze, and synthesize data leading to new knowledge useful in understanding Marketing. Special seminar restricted to Honours students in Marketing.

**Format:** Seminar 3 hours  
**Prerequisites:** COMM 4413.03  
**Co-requisites:** COMM 4401.03 must be taken concurrently

**COMM 4501.03: Operations Research.** The goal of this class 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 dynamic programming. Cases are used to illustrate the main topics.

**Format:** Two 1.5 hour lectures  
**Prerequisites:** COMM 1501.03 and 2502.03, or permission of the instructor

**COMM 4534.03: Managing Technological Entrepreneurship.** High technology based industries face unique management problems imposed by the rapid rate of technological change and the often uncertain environmental impacts of technological innovations. This class examines some of the techniques that have recently been developed to improve management effectiveness in high technology organizations and their responsiveness to environmental concerns.

**Prerequisites:** All required core area classes, except COMM 4350.06, or consent of instructor  
**Cross-listing:** BUSI 6553.03

**COMM 4538.03: Applied Multivariate Analysis.** The convenience of packaged statistical programmes (e.g., SPSS) has opened the area of data analysis to researchers with a wide variety of backgrounds. Since it is possible to operate "canned" programmes without understanding advanced mathematics, there is a need for a class that introduces the user to the concepts underlying the techniques. Students use and interpret statistical programmes with data sets from such business areas as marketing, finance and organizational behaviour.

**Prerequisites:** Mathematics at the 1000 level; COMM 1501.03 and 2502.03, or consent of instructor  
**Cross-listing:** BUSI 6504.03

## Co-operative Education in Science

**Location** Student Union Building, 4th Floor, 6136 University Avenue, Halifax, NS, B3H 4J2  
**Telephone:** (902) 494-2044  
**Fax:** (902) 494-1984  
**email:** coopadm@ug.cs.dal.ca

### Academic Director

M.R. Lewis, BS, MS (UMd), PhD (Dal)

### Programme Manager

C.R. Cottingham, BScAgr (UBC), PAg

### Placement Officer

P.T. Shields, BSc, BEd (UPBI)

### Academic Advisors

C.A. Field, Statistics (494-3339)

J.S. Grossert, Chemistry (494-3314)

J.M. Hall, Earth Sciences (494-6510)

P. Keast, Mathematics and Computing Science (494-7036)

M.J. O'Halloran, Marine Biology (494-2136)

F.B. St. C. Palmer, Biochemistry (494-2570)

G. Stroink, Physics (494-7062)

## Co-operative Education Programmes

Co-operative Education is a programme where academic study is combined with career related work experience. Students alternate four work terms with academic study terms and graduate with a Bachelor of Science Co-op. Science Co-operative Education programmes are available in Biochemistry, Chemistry, Computing Science, Earth Science, Marine Biology, Mathematics, Physics and Statistics. Students may choose a combined Honours or Advanced double Major where only one of the disciplines is a recognized co-operative education programme. Students may also choose a Bachelor of Science, Minor in Business with a Science Co-op option.

Students who are qualified begin their first work term in January or May of Year II. The workterms are paid employment related to the field of study and are of 13 to 16 weeks duration. The programme includes four workterms and a minimum of eight academic terms comprising 20 academic credits. The Co-operative Education degree programme normally takes between four and a third and five years, depending upon the field of study chosen.

Students in co-operative education programmes must plan their academic course load carefully under the guidance of the departmental academic advisor. Co-op students have limited opportunity to take 'R' 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 the course of study.

### Eligibility

Students must be Canadian citizens or landed immigrants and demonstrate sufficient academic potential (B- average or better, consult departmental listings). Permission of the academic department is required for entry. Applications must be received by the academic department on the last business day on or before 1 August of the desired academic year of entry into the co-op programme. Some departments have earlier deadlines. With the permission of the academic department, some students may be admitted on a probationary basis pending an improvement in their grades. Co-op students whose grades drop below the academic departments co-op standards will be required to withdraw from the co-op programme. Academic departments may, at their discretion, allow a probationary period before the requirement to withdraw is enforced.

### Co-op Seminar

All co-operative education students are required to attend prior to their first work term. The purpose of the seminar is to prepare students better for their workterms. More detailed information about the class may be found under the Science, Interdisciplinary section of the calendar.

### Workterms

Although the Co-op Office has an outstanding placement record, it is ultimately the responsibility of the student to arrange their workterm. The co-operative education office serves to co-ordinate contacts between students and employers. During their workterm, the student is an employee in matters pertaining to the conditions of employment and is a student for the purpose of academic evaluation only. During the workterm the student normally receives a monitoring visit from the co-op staff or the academic advisor to ensure that the academic objectives of the workterm are being met. The university accepts no liability for the working environment of the students placement. Students are remunerated according to employer policy. Upon placement the student must sign a learning agreement which acknowledges awareness of co-op regulations, their responsibility to register for the workterm, pay a workterm fee (consult the fees section of the calendar) and complete a workterm report.

### Workterm Sequence

Workterms alternate with study terms in a fixed pattern for each programme. Any request for change of sequence must be approved by the departmental academic advisor. Requests must be received by the department 14 weeks before the next scheduled workterm i.e. before January 15, May 15, or September 15. Two consecutive workterms are possible with the permission of the academic advisor.

Sequence by Academic Discipline

Department/Term	A	B	S	A	B	S	A	B	S	A	B	S	A	B
Marine Biology	1	2	-	3	4	w	5	w	6	w	7	w	8	-
Earth Science Biochemistry	1	2	-	3	4	w	5	6	w	w	7	w	8	-
Mathematics Statistics Computing Science	1	2	-	3	w	4	w	5	w	6	7	w	8	-
Chemistry Option 1	1	2	3	4	w	5	6	7	w	w	8	w	9	-
Chemistry Option 2	1	2	3	4	w	5	w	6	w	7	8	w	9	-
Physics	1	2	-	3	w	-	w	4	w	5	6	w	7	8

Workterm Reports

At the end of each workterm, each student must submit an acceptable workterm report which is related to their area of employment or their field of study. Specific guidelines for writing this report and submission deadlines are available from the academic advisor. Satisfactory work reports are required for continuation and graduation in the co-operative education programme. Satisfactory performance in the work place is also expected and co-op employers submit an employer evaluation for students in the programme. The grade for the workterm is based upon the workterm report, consideration is also given to the employer and student evaluations of the workterm. Failure to complete the workterm requirements will result in the student being required to withdraw from the co-operative education programme.

# Comparative Religion

**Location:** 6209 University Ave., 3rd floor  
Halifax, N.S.  
**Telephone:** (902) 494-3579  
**Fax:** (902) 494-1997

## Chair

R. Ravindra (494-3578)

## Undergraduate Advisor

C.T. Sinclair-Faulkner (494-3579)

## Professor

R. Ravindra, BSc, MTech (IIT), MA (Dal), MSc, PhD (Tor), Adjunct Professor of Physics  
C.T. Sinclair-Faulkner, BA (Tor), MTh, MA, PhD (Chic)

## Introduction

The University study of religion aims at an intellectual understanding of this more than intellectual reality. Religion is a phenomenon virtually universal in human society and history; some have held that it is central to the human condition. Understanding involves grasping simultaneously both the meaning of faith in the lives of participants, and the critical analysis of outside observers. Both the student wishing enhanced understanding of religion as an historical, and social and human fact, and the student who wishes to wrestle with problems arising in academic reflection concerning the relation between the personal and the objective, can find material to engage them in the classes described below.

See "Degree Requirements" for complete details.

## Advanced Major in Comparative Religion

### Departmental Requirements:

#### Classes required in Advanced Major:

- 1000 level:** COMR 1000.06, 1300.03 or 1301.06  
**2000 level:** Select 2 classes from: COMR 2001.03, 2002.03, 2003.03  
Select 2 classes from: COMR 2011.03, 2012.03, 2013.03; Select 1 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

## Major in Comparative Religion

### Departmental Requirements

#### Classes required in Major:

- 1000 level:** COMR 1000.06, 1300.03 or 1301.06  
**2000 level:** Select 2 classes from: COMR 2001.03, 2002.03, 2003.03

Select 2 classes from: COMR 2011.03, 2012.03, 2013.03

- 3000 level:** At least one and one half credits at 3000 level or above  
**4000 level:** At least one half credit at 4000 level

This programme provides Comparative Religion majors with a broad introduction to both Eastern and Western religious life, and to the various ways in which religion may be studied. In light of their specific interests, Comparative Religion majors are encouraged to enrol in related classes offered by other Departments. Programmes should be planned in consultation with the undergraduate advisor, Dr. C.T. Sinclair-Faulkner.

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

## Classes Offered

First-year students are not admitted to classes beyond the 1000 level without the consent of the instructor. Classes at the 2000 level do not have prerequisites; in general, they are available only to students in their second year or above. Prerequisites for classes at the 3000 and 4000 levels are listed with each individual class below; in general, they are available only to students in their third year or above in the University.

\*COMR 1000.06R: Introduction to World Religion. This class will focus on a comparative study of Christianity and other major world religions. The first half of the class will be an introduction to the basic ideas and concerns of the world religions with an emphasis on fundamental general questions in comparative studies: What materials in different traditions are comparable? What psychological and intellectual attitudes are required for such a study? The second half is devoted to a comparative study of the Gospels and a scripture from another religion.

**Instructor:** R. Ravindra  
**Format:** Lecture 3 hours

COMR 1300.03A or B: 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:** C.T. Sinclair-Faulkner  
**Format:** Lecture 3 hours

\*COMR 1301.06R: Introduction to the Study of Religion. Religion is: a way of life? an encounter with God? a neurosis? the essential human trait? an epiphenomenon? The possibilities are explored by using the insights of modern social scientists, humanists and theologians to study Canadian life. This class fulfils the first-year Writing Requirement. A detailed syllabus is available from the Department of Comparative Religion.  
**Instructor:** C.T. Sinclair-Faulkner.  
**Format:** Writing Requirement, lecture 2 hours, section meeting 1 hour

\*COMR 2001.03A or B: **Judaism.** About thirty-three hundred years ago a man named Moses is said to have led the people of Israel out of slavery in Egypt, bound them in a covenant with God to live in the way that God would have them live, and brought them to the land of Canaan. They became the people of the Bible (literally, "the Book") and, when their temple at Jerusalem was destroyed two thousand years ago, they developed a dispersed community centred on the Bible as interpreted by their rabbis or teachers. Although six million Jews died in the Holocaust during the Second World War, there are fourteen million Jews in the world today, of whom roughly one-fifth live in the state of Israel (established in 1948) and over 300,000 live in Canada.

Instructor: C.T. Sinclair-Faulkner  
Format: Lecture/seminar 3 hours

\*COMR 2002.03A or B: **Christianity.** Christianity was founded two thousand years ago by Yehoshuah (Jesus), a Jew living in the Roman province of Palestine who left behind no writings of his own and who was executed for treason and blasphemy. Before his death he gathered together a diverse group which included some fishermen, a tax collector, a rich woman and a rabbinical student. They and others who joined later became the "Church" (literally, "the things which belong to the Lord"), declaring that Yehoshuah had risen from the dead and that he was both the Messiah and the Son of God. This claim scandalized many Jews and puzzled many Greeks. But Christianity went on to shape much of western civilization, and ultimately the world. Today Christianity is the religion of at least one billion people around the world, and of 90% of Canadians.

Instructor: C.T. Sinclair-Faulkner  
Format: Lecture/seminar 3 hours

\*COMR 2003.03A or B: **Islam.** Islam was founded by Muhammad less than fourteen hundred years ago, and it may be argued that it was the first "world" religion. The Arabic word "Islam" means many things at once: submission, obedience, surrender, peace. Setting his face resolutely against the worship of false gods, Muhammad accepted Jews and Christians as "People of the Book" but added the Qur'an to the TANAKH and the New Testament as the scriptures which reveal the way in which Allah (literally, "the God") would have people live. Muhammad is God's messenger, delivering the Holy Qur'an; but Muhammad himself is not divine. At present Islam is the fastest growing religion on earth. There are almost one billion Muslims in the world, of whom more than 100,000 live in Canada.

Instructor: C.T. Sinclair-Faulkner  
Format: Lecture/seminar 3 hours

\*COMR 2011.03 A or B: **Hinduism.** What has been called **Hinduism** in modern times is less a religion in the Western sense and more a whole way of life woven into the very fabric of the culture and society in India where nearly seven hundred million Hindus reside. This religion is said to be eternal, without any human founder, although continually vitalised by many remarkable sages and incarnations of God. The oldest religion in the world, Hinduism displays

an unbroken continuity of the tradition from the pre-historic times to the present, spanning at least five thousand years. Other major and minor religions have been spawned by Hinduism, such as Buddhism and Jainism; also Sikhism and Sufism in interaction with Islam. The religious and cultural life of much of the Asian continent, on which now lives more than half of humanity, has been strongly influenced by one or another aspect of Hinduism.

Instructor: R. Ravindra  
Format: Lecture 3 hours

\*COMR 2012.03 A or B: **Chinese and Japanese Religions.** China and Japan have had an enormous impact on the cultural history of the world in the past, and are also bound to have significant impact in the future. The religious ideas and practices which originated and developed in these countries influence nearly half of humanity today. These days, many Westerners are also drawn to the practical and holistic views of Taoism and Confucianism.

This class will provide an introduction to the major religious traditions in China and Japan, namely, Taoism, Confucianism, Buddhism and Shintoism.

Instructor: R. Ravindra  
Format: Lecture 3 hours

\*COMR 2013.03A or B: **Buddhism.** Buddhism originated in India in the 6th century B.C.E. with Siddhartha Gautama, the Buddha—the Enlightened and the Compassionate—and from there spread throughout South East Asia and the Far East in the following millennium. It practically disappeared from the land of its origin after nearly sixteen hundred years during which time it permanently influenced Indian thought and spirituality. Buddhism was considerably modified by the great cultures of China, Korea and Japan.

Buddhism has influenced the religious world-views and practices of more than half of humanity, largely owing to its great impact in Asia. Now, many Westerners are also drawn to the philosophy and meditational practices of different forms of Buddhism. This class will offer a basic introduction to the history, ideas and practices of Buddhism.

Instructor: R. Ravindra  
Format: Lecture 3 hours

\*COMR 3002.06R: **Religion in Story.** When religious people seek answers to ultimate questions or try to come to grips with the mystifying phenomenon of the Holy, they turn to stories. Modern novels and short stories, particularly Canadian works, are the primary reading assignments in this class. They are set in the context of related material from the broader western culture, including the Jewish scriptures. A detailed syllabus is available from the Department of Comparative Religion.

Instructor: C.T. Sinclair-Faulkner  
Format: Lecture/seminar 3 hours  
Prerequisite: at least one of COMR 2001.03, COMR 2002.03, COMR 2003.03 or permission of the instructor

\*COMR 3003.06R: **Religion in Canada.** When Canadians have built cities, gone to war, founded economic empires, fallen in love, designed school systems, and elected governments, religion has often been a decisive

factor. Sometimes religion has been the decisive factor. What is "religion" in Canada? In the course of this extensive historical study of life in Canada from the 16th century to the present, a variety of answers will be explored. A detailed syllabus is available from the Department of Comparative Religion. Approved with Canadian Studies.

Instructor: C.T. Sinclair-Faulkner  
Format: Lecture/seminar 3 hours  
Prerequisite: COMR 2001.03 or COMR 2002.03 or permission of the instructor

Cross-listing: HIST 3228.06

**COMR 3004.03A or B: Religion and International Development.** The religious traditions of First World and Third World alike affect how people respond to certain practical questions. Why should I work hard? Ought we to co-operate or compete? Is my exploitation of the natural world subject to any restrictions? Is my neighbor an enemy? What is true wealth and how should it be distributed? Do men and women have different roles to play? A detailed syllabus is available from the Department of Comparative Religion.

Instructors: R. Ravindra, C.T. Sinclair-Faulkner  
Format: Seminar 3 hours  
Prerequisites: At least one of COMR 2001.03, 2002.03, 2003.03, 2011.03, 2012.03, 2013.03

**\*COMR 3005.03A or B: Religion and War.** Religious attitudes toward war have ranged from pacifism, through vigorous efforts to enforce limits on war's destructiveness, to outright support for specific wars. The class will examine comparatively the views of major religious traditions on war; the use of war and the warrior as religious symbols; the crisis of religious views on war in the nuclear age.

Instructor: C.T. Sinclair-Faulkner  
Format: Lecture/seminar 3 hours  
Prerequisites: At least one of COMR 2001.03, 2002.03, 2003.03, 2011.03, 2012.03, 2013.03 or permission of the instructor

**\*COMR 3006.03A or B: Western Spirituality - Mystics.** Some have argued that the mystic's experience lies at the heart of all religions, while others see it as dangerous to what has traditionally been regarded as religion. Original accounts of Jewish, Christian, Muslim and Amerindian spiritualities are studied in their historical context in this class. A detailed syllabus is available from the Department of Comparative Religion.

Instructor: C.T. Sinclair-Faulkner  
Format: Lecture/seminar 3 hours  
Prerequisite: At least one of COMR 2001.03, COMR 2002.03, COMR 2003.03 or permission of the instructor

**\*COMR 3007.03A or B: Western Spirituality - Communities.** Modern persons tend to view religion as a solitary enterprise, but more often than not religious communities have taken shape around those who have had a profoundly religious experience. Original accounts of Jewish, Christian and Muslim spiritualities are studied in their historical context in this class. A detailed syllabus is available from the Department of Comparative Religion.

Instructor: C.T. Sinclair-Faulkner  
Format: Lecture/seminar 3 hours  
Prerequisite: at least one of COMR 2001.03, COMR 2002.03, COMR 2003.03 or permission of the instructor

**COMR 3008.03A or B: The Medieval Church.** This class does not attempt to provide a chronological survey of the development of the Western church, but is an advanced seminar dealing with topics which have no strict chronological limits. Subjects of study include monasticism, heresy, education and the universities, town and cathedral, lay-clerical conflict, and "popular" concepts of religion. Each year one or more topics are examined in detail, with the help of original documents in translation, and using recent periodical literature and/or monographs. Students prepare and present one or two well-researched papers, and class discussions are used to explore related materials and readings in greater depth. Some prior knowledge of medieval European history is essential.

Instructor: C.J. Neville  
Format: Lecture/discussion 2 hours  
Prerequisites: HIST 2001.03 or HIST 2002.03 or HIST 2120.03

Recommended: HIST 1001.03

Exclusions: Former HIST 3021.03 and 3022.03 students

Cross-listing: HIST 3002.03

**\*COMR 3014.03A or B: Love and Death in World Religions.** What are love and death? Why do mystics in many traditions 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 judgment after death? Is there reincarnation?

Instructor: R. Ravindra  
Format: Lecture/seminar 3 hours  
Prerequisite: A class in Comparative Religion or the permission of the instructor; students must be in third-year or above

**\*COMR 3015.03A or B: Myths, Symbols and Rites.** Myths, symbols and rites have been among the major vehicles of spiritual truths and psychological insights in all religions. After a general discussion of the nature of symbolic and mythic understanding, the focus is on some of the major myths and symbols associated with the lives and teachings of Krishna, Shiva, Gautama Buddha and Jesus Christ.

Instructor: R. Ravindra  
Format: Lecture/seminar 3 hours  
Prerequisite: A class in Comparative Religion or the permission of the instructor; students must be in third-year or above

**\*COMR 3532.03A or B: Mystical Consciousness and Modern Science.** Yoga, Zen, Prayer of the heart, Sufism and other spiritual disciplines have gathered an enormous amount of experiential and theoretical material about human consciousness and its many levels, from the ordinary to the mystical and cosmic. The first half is devoted to understanding the many levels of human consciousness based on these disciplines. The

second half is devoted to a critical examination of mystical consciousness in the light of modern scientific discoveries, and of the fundamental presuppositions of modern science in the light of the universal experience and knowledge of the many levels of consciousness.

**Instructor:** R. Ravindra  
**Format:** Lecture/seminar 3 hours  
**Prerequisite:** A class in Comparative Religion or in Science (preferably both); students must be in third-year or above  
**Exclusion:** COMR 3531.06  
**Cross-listing:** PHYC 4020.03

**\*COMR 3533.03A or B: Spirituality and Ecology.** What is the scientific and technological understanding of Nature? How does this relate with the religious views about the cosmos? Are the roots of our contemporary ecological crisis to be found in the relationship between human beings and nature as mentioned in the Bible? Can the Hindu-Buddhist-Taoist traditions and the North American native spirituality offer something of practical value for the cultivation of the right attitude to the environment and our place in the universe?

**Instructor:** R. Ravindra  
**Format:** Lecture/seminar 3 hours  
**Prerequisite:** A class in Comparative Religion or in Science (preferably both); students must be in third-year or above  
**Exclusion:** COMR 3531.06  
**Cross-listing:** PHYC 4020.03

**\*COMR 4310.03A or B Topics in Comparative Religion/\*COMR 4320.03A or B: Independent Study in Comparative Religion.** Structured as a seminar or for independent guided study depending on the interests and needs of the students and the faculty. The intention is to devote some concentrated time to a specific topic of interest (e.g., *Cults and New Religions*, *The Goddess Feminine in World Religions*, *Death, The Soul, Suffering*). Please consult the Department for the topic which may be discussed in any given term. These classes will normally only be arranged at the request of a student who is majoring in Comparative Religion, though other students may then be admitted to the class upon application to the instructor. These classes permit the student majoring in Comparative Religion to integrate the work of many previous classes and lines of study while examining some chosen topic in the academic study of religion.

**Instructor:** Staff  
**Format:** Seminar 3 hours



# Computing Science

Location: Chase Building  
 Telephone: (902) 494-2572  
 Fax: (902) 494-5130  
 e-mail: mscs@cs.dal.ca

## Chair of Department

R.P. Gupta

## Director of Division

C.S. Hartzman

## Faculty Advisors

C.S. Hartzman (Honours)

P. Keast (Co-op)

A.E. Sedgwick (Majors)

M.A. Shepherd (Graduate)

## Professors

P. Keast, PhD (St. Andrews)

K.J.M. Moriarty, MSc (Dal), PhD (London)

M.A. Shepherd, MSc, PhD (Western)

## Associate Professors

A. Farrag, PhD (Alberta)

C.S. Hartzman, MS (Purdue), PhD (Colorado)

## Assistant Professors

Q. Gao, MASC, PhD (Waterloo)

A.E. Sedgwick, MS (Wisconsin), PhD (Tor)

S. Srinivas, PhD (Ind. Inst. of Sc.)

## Computer Systems Manager

D. Trueman, MSc (Toronto)

## Adjunct Professors

P. Muir, MSc, PhD (Toronto)

L. Oliver, MSc (Acadia), PhD (McG)

C. R. Watters, MSc (Western), PhD (TUNS)

Please refer to the entry for the Department of Mathematics, Statistics and Computing Science for a full listing of the members of the Department and information on other programmes offered by the Department.

## General Interest Classes

The Division offers a number of classes that should be of interest to students whose major field of study while at Dalhousie will not be Computing Science. These classes are:

**COMP 1000.03A or B:** A class designed for the humanities and social sciences but probably of interest to students in other disciplines as well.

**COMP 3090.03A:** A class that should be of interest to students in all disciplines.

## Degree Programmes

Students who plan to pursue a programme leading to a degree in Computing Science should arrange a programme in consultation with the appropriate Faculty Advisor, listed above. Students should also consult the "Degree Requirements" section of the Calendar for specific regulations.

## Honours in Computing Science

### Departmental Requirements

#### Classes required in Honours:

- 1000 level:** COMP 1400.03 and 1410.03 and 1670.03
- 2000 level:** COMP 2350.03, 2450.03, 2610.03, 2670.03, 2700.03. Two and one-half other credits at or above the 2000 level - not including classes listed below.
- 3000 level:** COMP 3170.03, 3250.03, 3040.03, 3700.03
- 4000 level:** Two credits at the 4000 level chosen in consultation with the Honours Advisor, Computing Science Honours Thesis (see below)

#### Other required classes:

MATH 1000.03 and 1010.03, MATH/STAT 2060.03 and 2080.03, MATH 2030.03 and 2040.03.

Note that a total of 9 credits above the 1000 level are required for all Honours programmes.

## Honours Co-op in Computing Science

Departmental requirements are the same as for the Honours programmes above, with the addition of the following:

- Co-op Seminar 8700.00A, to be taken prior to the student's first work-term.
- 4 Coop Work-Terms: COMP 8891.00, 8892.00, 8893.00, 8894.00

Students in the Co-op programme should see the section below on Co-operative Education.

### Combined Honours

Students interested in taking honours in Computing Science and another subject as a combined programme should consult the honours advisor through whom a suitable course of study can be arranged.

A combined honours programme may well be an appropriate choice for many students. If a student is contemplating graduate work, it should be borne in mind that the work in either subject of a combined honours programme may be insufficient for entry to a regular graduate programme, and that a qualifying year may be necessary.

**Honours Thesis:** The Honours Thesis should comprise a body of work equivalent to a half credit, and would normally be worked on for the whole of the last year of the Honours programme. The thesis must be supervised by a faculty member, and must be read by the supervisor and one other faculty member.

Attendance at the Honours seminar is required for all Honours students during the last ten credits. Fourth-year Honours students should register for the Honours Seminar, COMP 8870.00.

## Advanced Major in Computing Science

### Departmental Requirements

#### Classes required in Advanced Major

- 1000 level:** COMP 1400.03 and 1410.03  
**2000 level:** COMP 2350.03, 2450.03, 2610.03, 2700.03 plus one other credit in Computing Science 2000 - 4000 level  
**3000 level:** COMP 3040.03, 3170.03, 3250.03, 3700.03 plus one other 3000 level or above credit in Computing Science

#### Other required classes:

MATH 1000.03 and 1010.03, MATH 2030.03

## Advanced Major Co-op in Computing Science

Departmental requirements are the same as for the Advanced Major above with the addition of the following:

- Co-op Seminar 8700.00A, to be taken prior to the student's first work-term.
- 4 Co-op Work-Terms: COMP 8891.00, 8892.00, 8893.00, 8894.00

Students in the Advanced Major Co-op should see the section below on Co-operative Education.

## Major in Computing Science

Majors in Computing Science must obtain at least four (and no more than eight) credits beyond the 1000 level in Computing Science.

### Departmental Requirements

#### Classes required in major:

- 1000 level:** COMP 1400.03 and 1410.03  
**2000 level:** COMP 2700.03, 2350.03, 2450.03, 2610.03  
**3000 level:** COMP 3170.03 and 3700.03 plus one other credit at or above the 3000 level

#### Other required classes:

MATH 1000.03 and 1010.03, MATH 2030.03

Students who wish to arrange inter-disciplinary programmes (with fields such as Mathematics, Physics, Psychology, and others) are invited to discuss their interests with the department.

## Co-operative Education Programmes

The department offers several Co-op education programmes involving Computing Science, a concentrated programme in Computing Science, a 20-credit major programme and a combined programme with Mathematics.

In addition to the required classes, Co-op students must complete the Co-op Seminar (COMP 8700.00) and four work-terms (COMP 8891.00, 8892.00, 8893.00 and 8894.00). Students with unusual backgrounds may arrange a programme with only 3 work-terms in consultation with their Co-op advisor. This arrangement should be made at the time of

admission to Co-op. In special circumstances it may be possible to arrange a fifth work-term (COMP 8895.00).

Further information about the Co-op programmes is included under the Calendar entry for Co-operative Education in Science. The scheduling of Co-op work-terms must be taken into account in planning class selection. The first work-term is in the winter of a student's second year followed by an academic term in the summer and the second work-term in the fall of the third year. Full credit classes may be scheduled for the summer term or during fourth-year.

Students who are interested in enrolling in a Co-op programme are urged to contact the Faculty Advisor for Co-op Education as early as possible in their academic career for advice on classes and other information.

## Prerequisites

If a Computing Science class is listed as a prerequisite for a Computing Science class beyond the first-year level, a grade of C or better is required in the listed class for it to count as a prerequisite.

## Other Information

The Department operates an extensive network of SUN workstations. The laboratory for introductory classes is in the Killam Library Building. Students in second-year and above use workstations in the Chase Building. In addition, the University operates an extensive range of computer systems including an Alliant FX/2816 multi-processor system running Concentrix. There are many PC and Macintosh micro-computer labs available for student use.

Students who complete the first two years of a Dalhousie programme in Computing Science may complete their programmes at Dalhousie or may be able to transfer to the Technical University of Nova Scotia (TUNS) to complete a Bachelor of Computing Science with Engineering options. Further information about the classes required for admission to a TUNS programme may be obtained from TUNS or the Department of Mathematics, Statistics and Computing Science.

## Classes Offered

Not all classes are necessarily offered every year. Please consult the current timetable on registration to determine if a class is offered.

**COMP 1000.03A or B: Microcomputer Applications.** The goal of this class is to learn how to make correct use of contemporary computer application software. Spreadsheets will be used to carefully design and implement models in mathematics, the sciences, and the social sciences. The proper design of database schemas to accurately represent data and their interrelationships will be introduced through the use of database management systems. Societal issues connected with computing will be woven into the fabric of the class. Students will write essays based on these issues using word processing software. Some sections of this class use PC microcomputers, the others use Macintosh computers. Students will also be

introduced to the resources available on the Internet and the "World Wide Web" of hypermedia hypertext.

**Format:** Lecture 3 hours, tutorial 1 hour  
**Exclusion:** Computing Science students may not take this class for credit after COMP 1400.03. Students may receive credit for only one of COMP 1000.03, COMM 1501.03 or ASSC 1000.03

**COMP 1400.03A or B: Introduction to Computing Science.** This class provides a general introduction to computing science, algorithmic concepts, and structured programming. The main focus is to teach the students programming skills in C and how to apply these skills in solving a variety of problems.

**Format:** Lecture 3 hours, tutorial 1 hour  
**Prerequisites:** Nova Scotia Math 441 or equivalent

**COMP 1410.03A or B: Algorithms and Data Structures.** This is an introductory class on data structures and algorithms. The prerequisite is COMP 1400.03 or familiarity with the programming language C. The topics include: algorithms analysis, abstract data types, elementary data structures (arrays, stacks, queues, and lists), trees, recursion, sorting and searching.

**Format:** Lecture 3 hours, tutorial 1 hour  
**Prerequisite:** COMP 1400.03 and MATH 1000.03.

**COMP 1670.03A: Discrete Structures I.** See class description for MATH 1670.03, in the Mathematics section of this calendar.

**COMP 2300.03B: Introduction to Mathematical Modelling Using Algebra.** See class description for MATH 2300.03, in the Mathematics section of this calendar.

**COMP 2350.03A: File Structures and Relational Databases.** The relational data model is introduced. Efficient retrieval and manipulation of data stored in relational databases motivates the study of file and index structures. The class examines logical file organizations (indexed sequential files, direct files, tree-structure files, etc.), file operations, and their physical implementations. The entity-relationship model, used for proper database design, is introduced. The class will make use of commercial, micro-computer based relational database software.

**Format:** Lecture 3 hours  
**Prerequisite:** COMP 1410.03

**COMP 2450.03B: Introduction to Computer Systems Organization.** An introduction to machine architecture from the perspective of an assembly language programmer. Students gain familiarity with an assembly language and the translation process needed to produce machine code. Common addressing modes, macros and file I/O are discussed, together with the internal structure of memory, control units and processing units.

**Format:** Lecture 3 hours  
**Co-requisite:** COMP 1410.03

**COMP 2610.03A: Data Structures and Algorithmic Analysis.** Data types and the operations on them are covered in this class. After a review of the data structures covered in

COMP 1410.03, the class proceeds in detail to examine trees, graphs, sets and strings. Efficient representations and algorithms for these structures are discussed. Considerable emphasis is placed on the analysis of algorithms.

**Format:** Lecture 3 hours, tutorial 1 hour  
**Prerequisite:** COMP 1410.03

**COMP 2670.03B: Discrete Structures II.** This class continues Math 1670.03. This class covers some basic concepts in discrete mathematics which are of particular relevance to students of computer science, engineering, and mathematics. The topics to be covered will include: Solution of Recurrence Relations, Generating Functions, Modular Arithmetic, Chinese remainder theorem, Trees and graphs, Finite state machines, Groups and rings, Boolean algebras.

**Format:** Lecture 3 hours  
**Prerequisite:** MATH 1670.03  
**Cross-listing:** MATH 2670.03

**COMP 2700.03B: Programming Languages.** The emphasis is on fundamental concepts such as block structure and recursion and structured control flow. Exercises are given in several languages such as Lisp, Prolog and Smalltalk. Recursion and functional programming are discussed and the ideas of object-oriented programming are introduced.

**Format:** Lecture 3 hours  
**Prerequisite:** COMP 1410.03

**SCIE 3000.06R: Science Fundamentals.** See class description in Science, Interdisciplinary section of this calendar.

**COMP 3040.03A: Computer Architecture and Design.** An introduction to logic design and detailed computer architecture. Basic logic elements such as gates and flip-flops are discussed and the design of combinational networks, registers and control mechanisms analyzed. Internal representation and arithmetic, communication between components, instruction fetch and sequencing, interrupts and I/O controllers are also discussed.

**Format:** Lecture 3 hours  
**Prerequisite:** COMP 2450.03

**COMP 3090.03A or B: Computers and Society.** The impact of computers on society is discussed in this class. Topics include the history of computing and technology, the place of the computer in modern society, legal issues such as the copywriting of software, the computer scientist as a professional, the impact of databanks on individual privacy and the public perception of computers and computer scientists.

**Format:** Lecture 3 hours

**COMP 3170.03B (formerly 2270.03): Introduction to Numerical Linear Algebra.** Floating point arithmetic. Numerical solution of linear systems of equations; Gauss elimination methods and iterative methods; condition numbers of problems and of algorithms; estimation of condition numbers. Numerical calculation of eigenvalues; QR and LR algorithms; singular value decomposition; Gram Schmidt orthogonalization. Use is made of programme libraries such as Linpack, Eispack and Matlab.

**Format:** Lecture 3 hours

**Prerequisites:** MATH 1010.03, MATH 2030.03, COMP 1410.03

**Cross-listing:** MATH 3170.03

**COMP 3210.03A or B: Introduction to Numerical Analysis.** See class description for Mathematics 3210.03, in the Mathematics section of this calendar.

**COMP 3250.03A: Data Base Management Systems Design.** The concepts and structures necessary to design and implement a data base management system are stressed. Hierarchical, network and relational models are discussed with emphasis on the necessary logical and data structures. Various normal forms and canonical schemes are discussed as well as the concepts of relational algebras and relational calculus.

**Format:** Lecture 3 hours

**Prerequisites:** COMP 2350.03

**COMP 3350.03A or B: Topics in Vector and Parallel Computing.** This class is designed to provide a wide range of concepts involved in vector and parallel supercomputing. Topics covered include pipeline and vector processing, SIMD and MIMD processing, interconnection networks, parallelization techniques, parallel algorithm design strategies. Architecture and applications of prominent supercomputing systems will be discussed.

**Format:** Lecture 3 hours

**Co-requisites:** COMP 3170.03

**COMP 3390.03A or B: Statistical Computing.** See class description for STAT 3390.03 in the Statistics section of this calendar.

**COMP 3700.03B: Operating Systems I.** This class covers the principles of modern operating system design with examples from existing systems. Specific topics include: concurrent processes, interprocess communication, synchronization, scheduling policies, multi-level storage management, and associated algorithms.

**Format:** Lecture 3 hours

**Prerequisite:** COMP 2450.03, 2610.03

**COMP 3750.03A or B: Artificial Intelligence.** An introduction to basic concepts and techniques of artificial intelligence systems with insights given into active research areas and applications. Representational issues and relational structures are emphasized and existing systems are surveyed. Students work on assignments and small projects using Lisp.

**Format:** Lecture 3 hours

**Prerequisite:** COMP 2700.03

**COMP 3810.03B: MicroComputers and the Real World.** See class description for PHYC 3810.03 in the Physics section of this calendar.

**COMP 4100.03A or B: Operating Systems II.** A further development of the material of Operating Systems I, but with the focus on distributed operating systems. Topics include the client-server model, IPC, light weight processes, RPC, distributed file systems, distributed transactions, transparency and reliability.

**Format:** Lecture 3 hours

**Prerequisites:** COMP 3700.03

**Cross-listing:** COMP 5100.03

**COMP 4130.03A or B: Analysis of Algorithms.** This class covers algorithmic solutions to a wide variety of problems and a formal analysis of

their complexity. It is a continuation of the 2610.03 class. Problems are taken from combinatorics and numerical computation including algorithms for unordered and ordered sets, graphs, fast multiplication, prime testing, factoring, polynomial arithmetic and metric operations. Other topics include the analysis of algorithms used in systems programming and artificial intelligence, such as pattern matching for text processing and algorithms in natural language processing.

**Format:** Lecture 3 hours

**Prerequisite:** COMP 2700.03

**Cross-listing:** MATH 4130.03/5130.03, COMP 5130.03

**COMP 4140.03A or B: Software Design and Development.** This class involves a formal approach to state-of-the-art techniques in software design and development. Students work in teams in the organization, development and management of a large software project. Formal models of structured programming, stepwise refinement and top-down design, strength and coupling measures, milestones and estimating, chief-programmer teams, programme libraries and documentation are included.

**Format:** Lecture 3 hours

**Prerequisite:** COMP 2700.03

**Cross-listing:** COMP 5140.03

**COMP 4150.03A or B: Theory of Programming Languages.** This is a class in the formal treatment of programming language translation and compiler design concepts. Topics include lexical analysis and parsing with emphasis on the theoretical aspects of parsing context-free languages, translation specification and machine-independent code optimization. Finite state grammars, lexical scanners, and context-free parsing techniques such as LL(k), precedence, LR(k), SLR(k) are included.

**Format:** Lecture 3 hours

**Prerequisite:** COMP 2700.03

**Cross-listing:** COMP 5150.03

**COMP 4200.03B: Topics in Artificial Intelligence.**

**Format:** Lecture 3 hours

**Prerequisite:** COMP 3750.03

**Cross-listing:** COMP 5200.03

**COMP 4250.03A or B: Information Retrieval.**

**Format:** Lecture 3 hours

**Cross-listing:** COMP 5250.03

**COMP 4270.03A or B: Numerical Software.**

The design and implementation of reliable programmes and libraries for numerical computation are the foci of this class. Available programme libraries such as NAG and software packages available on netlib are reviewed. Particular attention is paid to the choice of subroutine parameters and the tradeoffs between convenience, simplicity and generality.

**Format:** Lecture 3 hours

**Prerequisite:** COMP 3170.03 (with a grade of C- or better)

**Cross-listing:** COMP 4270.03, MATH 4270.03/5270.03

**COMP 4330.03A or B: Graph Theory.** See class description for MATH 4330.03, in the Mathematics section of this calendar.

**COMP 4350.03A or B: Object-Oriented Programming.** An introduction to

object-oriented programming (OOP) and object oriented analysis, object oriented design, and C++.

Format: Lecture 3 hours  
Prerequisites: Three 3000 level COMP classes  
Cross-listing: COMP 5350.03, MATH 4330.03/5330.03

**COMP 4400.03A or B: Programming Methodology.** Techniques for verification of computer programmes. Formal specification of software.

Format: Lecture 3 hours  
Prerequisite: B average in 3000-level Computing Science classes  
Cross-listing: COMP 5400.03/5401.03

**COMP 4450.03A or B: Introduction to Data Communications.** The elements of data communications and the structure of computer networks will be discussed. The class uses the ISO model as a reference and includes an introduction to basic data transmission techniques, computer network topologies and architectures, and a look at some specific implementations and applications. This class will concentrate on the lower layers of the ISO model.

Format: Lecture 3 hours  
Prerequisites: STATS 2070.03/2080.03  
Cross-listing: COMP 5450.03

**COMP 4550.03A or B: Topics in Computer Systems.** The syllabus of this class may change from year to year depending upon the interests of the faculty members and the students. This year the class focuses on computer network architectures. Topics covered include design and operation of computer communication networks, specifically ATM-based integrated broadband networks, switching architectures, network routing, ATM network design, fiber-optic networks. Practical aspects of software development for networks are also discussed.

Format: Lecture 3 hours  
Cross-listing: COMP 5550.03

**COMP 4650.03A or B: Selected Topics in Information Systems.** Assuming that the student has a broad understanding of the field of information retrieval, this class takes an in-depth look at selected topics at the forefront of the field. The topics will vary slightly from year to year, but may include: clustering and nearest neighbour matching, information theory, bibliometrics, and new models of information retrieval.

Format: Lecture 3 hours  
Prerequisite: COMP 4250.03  
Cross-listing: COMP 5650.03

**COMP 4660.03A or B: Automata and Computability.** This class deals with finite state, pushdown and linear bounded automata; their correspondents in the Chomsky hierarchy for formal grammars and Turing machines. Appropriate closure properties and non-determinism are discussed as well as computable and noncomputable functions and the Halting Problem.

Format: Lecture 3 hours  
Prerequisite: COMP 2670.03  
Cross-listing: MATH 4660.03/5660.03, COMP 5660.03

**COMP 4670.03A or B: Computer Graphics.** In this class, the fundamentals for the understanding, use, and design of interactive computer graphics are presented. The software and hardware components of graphics systems will be examined. The implementations of interactive handling, 2D and 3D geometric transformations, clipping, perspective projection, modelling and data structures, and some additional topics will be covered.

Format: Lecture 3 hours  
Prerequisite: COMP 1410.03  
Cross-listing: COMP 5670.03

**COMP 4700.03A or B: Advanced Topics in Data Base Design.** Topics vary from year to year depending on the interests of the students and the instructors. Past topics have included concurrency control, scheduling, query optimization and object-oriented data bases.

Format: Lecture 3 hours  
Prerequisites: COMP 3250.03  
Cross-listing: COMP 5700.03

**COMP 4800.03A: Computer Systems Modelling.** This class develops queuing network models suitable for modelling computer systems. Approximate and exact solutions to these models are developed and single and multiple classes of users are considered. Modelling multiprocessors, I/O, shared memory, swapping, paging, etc. are also considered. Finally, some of the modelling techniques are applied to other situations such as database performance. The models are developed intuitively and justified rigorously using queuing network theory.

Format: Lecture 3 hours  
Prerequisites: COMP 3700.03 and STAT 2070.03/2080.03  
Cross-listing: COMP 5801.03

**SCIB 8700.00: (non credit) Co-op Seminar.** This seminar is used to prepare Co-op students for their work-term experience. It is a prerequisite for the first work-term.

**COMP 8870.00R: Honours Seminar**

**COMP 8891.00: Co-op Work-Term I**

**COMP 8892.00: Co-op Work-Term II**

**COMP 8893.00: Co-op Work-Term III**

**COMP 8894.00: Co-op Work-Term IV**

**COMP 8895.00: Co-op Work-Term V**

# Contemporary Studies Programme

**Location:** University of King's College  
Halifax, Nova Scotia  
**Telephone:** (902) 422-1271  
**FAX:** (902) 423-3357

## Director

Elizabeth Edwards 422-1271

## Teaching Staff at the University of King's College:

E. Edwards, BA, MA (Dal)  
D. Glowacka, MA (Wroclaw), MA, PhD (SUNY)  
M. Heller, BA (LU and Dal), MA (Dal)  
K. Kierans, BA (McG), DPhil (Oxon)  
G. McOuat, BA, MA, PhD (Tor)  
N. Robertson, BA (Vind), MA (Dal), PhD (Cantab)

## Teaching Staff at Dalhousie University:

M. Bishop, BA, MEd (Manchester), MA (Manitoba), PhD (Kent, Canterbury)  
J. Brown, AB (Miami), MA (Middlebury), PhD (Penn)  
S. Burns, BA (Acadia), MA (Alta), PhD (Lond)  
V. Li, BA, MA (UBC), PhD (Cantab)

## The Contemporary Studies Programme

Our assumptions about the contemporary world are not only changing but becoming increasingly diverse and complex. One way in which we can reasonably try to make sense of our period as a whole is to combine into a single course of study several different disciplines and traditions of enquiry. To this end, Dalhousie University and the University of King's College jointly offer an interdisciplinary programme in Contemporary Studies (CSP). This combined-honours BA programme brings together departmental offerings in arts and the social sciences at Dalhousie and joins them with Contemporary Studies classes—including a required 'core' class for each upper year of study—at King's. The King's portion of this intercampus degree programme consists of integrated and interdisciplinary classes. These classes are taught by specialists from a number of disciplines. 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 CSP at King's count as one of two honours subjects. Contemporary Studies classes are designed so that important writers and artists of the 20th century may be considered both on their own terms and in relation to some of the fundamental themes of our time. This naturally very often involves a consideration of the difference between these writers and artists and those of the 19th century. The three 'core' classes give students a framework for understanding political, scientific, and aesthetic

phenomena in the 20th century. The non-required classes focus on diverse aspects of and explanations for these often contradictory contemporary phenomena.

Aside from preparing undergraduates for future more specialized training at the graduate or professional level, the CSP is intended to provide them with a broad overview of 20th-century culture, especially the European and North American relation to 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 CSP students will take an active role in organizing certain events each year, including lectures, debates, and exhibitions.

## Degree Programmes

The departmental offerings within the CSP at Dalhousie include the other honours subject and a number of possible electives. The other honours subject must be selected from the following list of Dalhousie departments and programmes: Classics, English, French, German, History, International Development Studies, Music, Philosophy, Political Science, Russian, Sociology and Social Anthropology, Spanish, and Theatre. Electives may be taken in any of the above-mentioned departments and programmes as well as in the following: Comparative Religion, Music, and Women's Studies. 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 CSP. Because it is an honours programme, the quality of work required in it is higher than that required in a major or an advanced major programme.

Applications for admission must be made to the Dalhousie department concerned and to the Contemporary Studies Office at King's on forms available from the Registrar at either Dalhousie or King's. Students 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 degree programme, including elective classes, is subject to supervision and approval by the Dalhousie department concerned and by a member of the Contemporary Studies teaching staff.

All CSP students are encouraged to acquire competence in languages through appropriate classes which are relevant to their degree, interests, and future plans.

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

- 1) Completion of either the King's Foundation Year programme (either the three- or the four-class version) or at

least two appropriate first-year full classes at Dalhousie:

Classics, CLAS 1000.06, CLAS 1010.06, CLAS 1021.03 and CLAS 1022.03, CLAS 1100.06;

Comparative Religion, COMR 1000.06/2000.06;

English, ENGL 1000.06;

History, HIST 1001.03, HIST 1002.03, HIST 1050.06, HIST 1100.06, HIST 1200.06, HIST 1300.06, HIST 1400.06;

Music, MUSC 1000.06, MUSC 1350.03 and MUSC 1351.03;

Philosophy, PHIL 1000.06, PHIL 1010.06;

Political Science, POLI 1100.06, POLI 1103.06, POLI 1501.06;

Sociology and Social Anthropology, SOSA 1000.06, SOSA 1050.06, SOSA 1100.06, SOSA 1200.06;

Spanish, SPAN 1100.03;

Mathematics, MATH 1001.03 and MATH 1002.03.

- 2) A normal requirement of eleven full classes beyond the 1000-level in the two honours subjects, but not more than seven full classes being in either of them. Students may, with the approval of both the Dalhousie department concerned and the Contemporary Studies teaching staff, elect a maximum of thirteen full classes in the two principal subjects, not more than nine full classes being in either of them. In this case, the requirement in (3) below is reduced to two or three full classes.
- 3) Four full elective classes in subjects other than the two offered to satisfy the general requirement that students complete fifteen full classes beyond the first year of study.
- 4) The three 'core' classes in Contemporary Studies: CTMP 2000.06, CTMP 3000.06, CTMP 4000.06.
- 5) An honours qualifying examination. At the conclusion of an honours programme a student's record must show a grade which is additional to the grades taken to complete the required 20 full classes. 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 Dalhousie department concerned and/or the Contemporary Studies teaching staff. CSP students may choose to acquire this additional grade in either honours subject or in both. Completion of CTMP 4500.06, as a twenty-first credit, is sufficient to satisfy the requirement for an honours qualifying examination.

Students may take an 'Independent Reading' class only when they reach their third or fourth year. There are six options for this class, but only one full class or the equivalent may be taken in a year. No more than two full classes of this type may be taken during the

course of study. The permission of a member of the teaching staff is necessary in order to take these classes, and their availability is strictly limited.

## Classes offered at the University of King's College

**CTMP 2000.06R: Social and Political Thought in the 20th Century.** This class will examine some of the major figures in contemporary social and political thought. The 19th-century background to these figures will be explored, but the class will concentrate on developments in the 20th 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, Post-Structuralism, and Critical Theory.

Instructor: K. Kierans

Format: Lecture/tutorial

**CTMP 2010.06R/CTMP 3010.06R/CTMP 4010.06R: The Lecture Series.** Each year a lecture series class is offered. Student are allowed to take up to three such classes, one for each year of upper-level study. Each class will consist of thirteen bi-weekly evening lectures given by specialists from Atlantic Canada and beyond. The lecturers will offer students reflections on a number of contemporary issues and themes. Each year a different theme will be explored. In 1995-96 the subject will be modern technology and its often contradictory implications for nature, family life, women, minorities, political structures, literature, drama, and the arts. Small-group tutorials will help students prepare for and react to the lectures.

Instructor: G. McOuat

Format: Bi-weekly evening lectures (two hours) and weekly tutorials (two hours)

**CTMP 2110.03A: The Thought of Simone Weil.** Simone Weil (1909-1943) is one of the rare people of real genius in the first half of our century. She was born in Paris, and was a fellow student with Jean-Paul Sartre and Simone de Beauvoir. Their philosophy professor, Alain, described Weil as "far superior to the rest of her generation". For some time she was a teacher of philosophy, then in order to understand industrial working conditions she worked for a year on an assembly-line. Albert Camus was responsible for having several of her essays published. She fled the Nazi occupation of France, but died in London aged 34.

This seminar class will read and discuss a selection of her essays on a variety of topics, from the critique of Descartes in her *Lectures on Philosophy* to her assessment of Pythagorean metaphysics and contemporary Marxist political theory, and from writings on the history of mathematics and physics, to ones about human nature and political legitimacy in medieval France. In writings published posthumously there is rich testimony to her

profound religious understanding, which we shall also consider.

Instructor: S. Burns  
Format: Seminar/tutorial

**CTMP 2111.03B: The Thought of Ludwig Wittgenstein.** Ludwig Wittgenstein (1889-1951) is, perhaps with Heidegger, the most influential philosopher of our century. He was a founding genius of two distinct philosophical movements (sometimes called Ideal Language Philosophy and Ordinary Language Philosophy). Although born and raised in Vienna, he studied philosophy with Bertrand Russell at Cambridge, and returned there in 1929 to work. His extraordinary influence on philosophy is the result of his teaching small groups of dedicated students. Published for the most part posthumously, his writings, too, have made of him a philosopher's philosopher.

Nevertheless, his fame has been sufficient that his influence has extended well beyond the questions about the foundations of logic and language which preoccupied him. This class will explore some of the broader implications of his work, touching on music, art and architecture, on anthropology and psychology, and on ethics and religion, as well as on his central contributions to the philosophy of language and mind.

Instructor: S. Burns  
Format: Seminar/tutorial

**CTMP 2200.06R: 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.

Instructor: G. McQuat  
Format: Lecture/tutorial

**CTMP 2310.06R: From Symbolism and Surrealism to the New Novel and Beyond.** Questions of Perception, Image and Presence: Analysis of the interlocking perceptions of self and world, word and image, in the literature and art of our modernity, from Rimbaud and Mallarmé, Gauguin and VanGogh, through Surrealism and Cubism, to Camus and Sartre and beyond: the new novel and new wave film, Barthes, Bonnefoy, and contemporary French women writers.

Instructor(s): J. Brown and M. Bishop  
Format: Seminar/lecture/tutorial  
Exclusion: Former CTMP 4310.06

**CTMP 9000.06R: Science and Culture.** In the Twentieth Century, "Science" and "Culture" are often presented as a dichotomy. In this class we shall be examining that dichotomy, attempting to explode it by showing that science itself has a "culture" and that science is very much embedded in culture. We shall investigate disputes within sociology and philosophies of scientific method, debates around the public role of science, and the recent criticism of science and its place in society by the powerful critiques of feminism and post-modernism. A strong emphasis will be placed on case studies and seminar presentation.

Instructor: G. McQuat  
Format: Lecture/tutorial  
Prerequisite: Joint Honours students require CTMP 2000.06 or permission of instructor

**CTMP 3310.06R: Culture, Politics and the Post-Colonial Condition.** The term "post-colonial" marks not only the historical passage of Western colonial expansion and domination, of subaltern resistance and national independence, but also describes a renewal of the cycle of domination and resistance, dependence and struggle in the new nations that have emerged since the end of World War Two and in Western metropolitan centres with their changed conditions and new populations. This class will examine the complex relations and changing configurations of dominations and struggle that continue to exist in our contemporary post-colonial world.

Instructor: V. Li  
Format: Seminar/tutorials  
Exclusion: Former CTMP 2040.06

**CTMP 3320.09A: Between Story and Memory: Representations of the Holocaust.** This class focuses on various, often disparate, modes of talking about the Holocaust in literature, film and philosophy and examines the ethical implications of the effect to represent the unspeakable.

Instructor: D. Glowacka  
Format: Seminar

**CTMP 3510.03A or B: 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 or permission of the instructor.

**CTMP 3511.03A or B: Independent Readings in Contemporary Studies.** See class description above.

Format: Individual instruction  
Prerequisite: Honours registration in Contemporary Studies or permission of the instructor

**CTMP 3515.06R: Independent Readings in Contemporary Studies.** See class description above.

Format: Individual instruction  
Prerequisite: Honours registration in Contemporary Studies or permission of the instructor

**CTMP 4000.06R: The Deconstruction of the Tradition in the 20th Century.** Through the analysis of selected philosophical and literary works, the class traces the unravelling of the Western tradition and its fundamental concepts, in order to explore the possibility of a new paradigm arising at the limits of ethics and aesthetics.

Instructor: D. Glowacka  
Format: Lecture/tutorial  
Prerequisite: CTMP 2000.06 and CTMP 3000.06 or permission of an instructor



## 170 Contemporary Studies

**CTMP 4115.06R: Language and Politics: The Linguistic Turn in Contemporary Political Thought.** The dominance of an individualistic liberalism in Anglo-American political thought has recently come to be challenged by a number of communitarian political thinkers (e.g. Charles Taylor, Alisdair MacIntyre and Michael Sandel). This class seeks to elucidate the sources and development of communitarian political thought by considering its grounding in twentieth century philosophy of language and its relation to developments in continental political philosophy.

Instructor: N. Robertson  
Format: Seminar

**CTMP 4120.06R: The Critique of Culture and the Fate of Modernity in 20th-century French Thought.** This class explores some of the key figures and movements in French intellectual life in this century. The class traces the evolution of French thought from the revolutionary humanism of the 1930s to the nihilism and scepticism dominant since the 1960s. The class deals in turn with the philosophy of the early French Hegelians, Sartre, Merleau-Ponty, the structuralists, Foucault, Derrida, Deleuze and Lyotard. Certain literary and artistic works are also considered. The effort throughout is to relate the philosophical history of the period to political and cultural developments which have helped to shape French intellectual life.

Instructor: K. Kierans  
Format: Lecture/tutorial

**CTMP 4300.06R: The Place of Women in Contemporary French Critical Theory.** This class will concentrate on some of feminism's most challenging voices, those that have emerged from France in this century: Beauvoir, Kristeva, Cixous and Irigaray. The class will attempt to illuminate the intellectual background against which these women write, particularly in the areas of linguistic and anthropological structuralism, and in psychoanalytic theory. The class will be organized in part by the historical evolution of feminist thought, in part by the consideration of central feminist concerns.

Instructor: E. Edwards  
Format: Lecture/tutorial  
Exclusion: Former CTMP 2030.06  
Cross-listing: WOST 4400.06

**CTMP 4500.06R: Honours Seminar in Contemporary Studies.** This seminar is specifically intended for students in the combined-honours degree programme in Contemporary Studies. Students must write a substantial essay on a topic to be chosen in consultation with the appropriate member of the Contemporary Studies teaching staff.

Instructor: Staff  
Format: Seminar (two or three hours)  
Prerequisite: Honours registration in Contemporary Studies or permission of the instructor

**CTMP 4510.03A or B: Independent Reading 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 or permission of the instructor

First offered 1995-96.

**CTMP 4511.03A or B: Independent Reading Class in Contemporary Studies.** See class description above.

Format: Individual instruction  
Prerequisite: Honours registration in Contemporary Studies or permission of the instructor

First offered 1995-96.

**CTMP 4515.06R: Independent Reading Class in Contemporary Studies.** See class description above.

Format: Individual instruction  
Prerequisite: Honours registration in Contemporary Studies or permission of the instructor

First offered 1995-96.

# Dalhousie Integrated Science Programme

**SCIE 1500.30R: The Dalhousie Integrated Science Programme (DISP):** This programme is an integrated 5-credit programme that covers material from each of the disciplines in the Faculty of Science. DISP uses a thematic approach to teach the basis concepts in an interdisciplinary fashion. A number of pedagogical approaches to learning are used, including cooperative learning methods. Mathematical principles and techniques are developed and applied in the context of the material being covered. Stress is placed on learning scientific methodology and how different disciplines interrelate to explain various phenomena.

The emphasis of DISP is on "learning by doing". As a result, there are numerous labs and field trips. In addition, the students are expected to write a research paper over the course of the year.

DISP is an alternative way of doing a first-year course of studies. Rather than five separate classes, it is a single programme. It fulfils the student's writing, mathematics, science, and social science requirements. It does not, however, fulfil the humanities requirement. Students therefore need to take a humanities class in their second year. In second-year, students may do a major or honors degree in any of the science disciplines, including engineering. They may also switch to a BA programme or apply to programmes in the Health Professions.

Students wishing to enter this programme normally must have a minimum Grade 12 or OAC average of 80%, with a minimum of 75% in Math and English, and at least one Grade 12 or OAC Science class.

Students are assessed continuously throughout the year through quizzes, laboratory reports, assignments, and so forth. Students receive a single letter grade for the entire 5-credit programme.

For further information, contact:  
Dr. Leigh Mazany  
Department of Economics  
6214 University Avenue

Telephone: (902) 494-6992  
Fax: (902) 494-6917  
email: DISP@Dal.Ca

## Earth Sciences

Location: Life Sciences Centre, Room 3006  
Telephone: (902) 494-2358  
Fax: (902) 494-6889

### Chairperson of Department

P.J.C. Ryall

### Undergraduate Advisor

G.K. Muecke (494-6569)

### Co-op Co-ordinator

J.M. Hall (494-6510)

### Graduate Co-ordinator

P.H. Reynolds (494-2325)

### Professors Emeriti

H.B.S. Cooke, MSc, DSc (Witwatersrand)  
G.C. Milligan, MSc (Dal), PhD (Harv)

### Professors

D.B. Clarke, BSc, MA (Tor), PhD (Edin)  
J.M. Hall, BSc (Wales), PhD, DIC (Lond)  
R.A. Jamieson, BSc (Dal), PhD, (MUN)  
P.H. Reynolds, BSc (Tor), PhD (UBC), (jointly with Physica)  
P.T. Robinson, BSc (Mich), PhD (Calif)  
P.E. Schenk, BSc (Western), MSc, PhD (Wisc)  
D.B. Scott, BSc (Washington), PhD (Dal)  
M. Zentilli, BSc (Chile), PhD (Queen's)

### Associate Professors

N. Culshaw, BA (Keele), PhD (Ottawa)  
M.R. Gibling, BA (Oxon), PhD (Ottawa)  
G.K. Muecke, BSc, MSc (Alta.), DPhil (Oxon)  
P.J.C. Ryall, BSc (Dal), MSc (Alta), PhD (Dal)

### Assistant Professors

D.I. Godfrey-Smith, BA (Calgary), MA (SFU), PhD (SFU)  
A.T. Martel, PhD (Dal)

### Senior Instructor

P. Wallace, BSc, MSc (McM)

### Research Associate

C. Beaumont, PhD (major appointment in Oceanography Department)

### Honorary Adjunct Professors

S. Barr, BSc (UNB), PhD (UBC), Acadia University  
R. Boyd, BSc, PhD (Sydney), University of Newcastle  
J. Dostal, BSc (Charles), PhD (McM), St. Mary's University  
F.M. Gradstein, BA, MSc, PhD (Utrecht), Saga Petroleum a.s.  
P.A. Hacquebard, BSc, MSc (Leiden), PhD (Groningen), LLD (Dal)  
W. Kalkreuth, Dip (Berlin), Institute of Sedimentary and Petroleum Geology  
F.S. Medidi, PhD (Parma)  
M. Melchin, MSc (Waterloo), PhD (Western), St. Francis Xavier University

F.J. Mudie, BSc (Cape Town), BSc (Leicester), PhD (Dal), GSC Atlantic

D.J.W. Piper, BA (Hons) (St Catharine's Col, Cantab), MA (Cantab), PhD (Darwin Col, Cantab), GSC Atlantic

M.H. Salisbury, BSc (MIT), MSc, PhD (Wash), GSC Atlantic

H. Williams, PhD (Exeter), Ontario Geological Survey

## Introduction

Earth Science studies the Earth and deals with many questions, such as: How was the Earth formed? What is its composition? Where do we look for oil? Or nickel? Or reliable water supplies? What changes the Earth now? What moves continents? Why are the ages of all the ocean basins less than one-twentieth the age of the Earth itself? Geology is an intellectually exciting discipline, and its study is of enormous economic and environmental importance to Canada.

Classes in earth sciences are offered for different types of students. Some will want to make a career in some aspect of the study of the Earth - as geologists, geochemists, geophysicists, oceanographers, or teachers - and work for private industry or government agencies. Some may need instruction in earth sciences as an aid to other disciplines: for example, a mining engineer, an environmental scientist interested in groundwater problems, a marine engineer interested in coastal processes, or a biologist interested in protozoa. Other students may be interested in an earth sciences degree before they take a professional qualification such as law or business administration. Those whose prime interest is the humanities or social sciences will find that introductory classes in earth sciences stimulate their awareness of their surroundings, their understanding of the environment and develop their appreciation of science.

## High School Preparation

Students in high school who plan a career in sciences involving the Earth, such as geology or geophysics, should have Nova Scotia Mathematics 441 (or equivalent), plus Chemistry and Physics. Note that only Mathematics is a prerequisite, but the others are strongly recommended. The student should aim to make up deficiencies in high school preparation in the first year at Dalhousie.

## Undergraduate Programmes

Students should consult the "Degree Requirements" section of this calendar for specific regulations.

Programmes 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; an economics student, concerned with resources; a history student, interested in the role played by Canada's geological framework in the

development of transportation; a biology student interested in faunal environments on the seafloor. These classes are:

- EARTH 1040.03/1050.03: The Earth and Society, a class especially designed for students not intending to major in geology
- EARTH 2400.03: Marine Geology, an evening class open to all with good grades in 1000.06 or 1040.03/1050.03
- EARTH 2410.03: Environmental Geology, an evening class, open to all with good grades in 1000.06 or 1040.03/1050.03
- EARTH 2420.03: The Dinosaurs, open to all with good grades in 1000.06 or 1040.03/1050.03.

For engineering students and science students in other disciplines

Biology:	1000.06, 2410.03/3410.03, 2201.03/2202.03, 2420.03;
Chemistry:	1000.06, 2101.0.03/2102.03, 3010.03, 3020.03, 4380.03;
Engineering:	1000.06, 2050.03, 2102.03/2102.03, 2110.03, 3130.03;
Math:	1000.06, 2050.03, 3130.03, 4270.03, 4280.03, 4290.03;
Physics:	1000.06, 2050.03, 3130.03, 4270.03, 4280.03, and 4290.03.

## Field Work

Field excursions are part of several classes and are conducted at appropriate times during the session. In addition, some optional field excursions may be held each year.

Students are charged a contribution towards the cost of all field excursions. Charges for those trips that are held during the session, as part of a class, are payable to the department. As a result of increased costs and uncertainty of external funding, fees for individual field excursions are fixed yearly. (Please consult Department.) The charges for optional field trips are notified, and payable, several months in advance.

## Professional Registration

Professional Registration of Geoscientists (geologists & geophysicists), usually in a joint Association with Engineers, is spreading across Canada. Registration is necessary to practice as a professional in Alberta, British Columbia, Newfoundland, Quebec and Northwest Territories. Negotiations are well under way in four other provinces. You should be aware that a programme which meets our degree requirements does not necessarily meet criteria for registration. Consult the Academic Advisor. Students should note that, in addition to Earth Science classes, most Registration boards require students to have taken first-year Chemistry, Calculus and Physics. The appropriate Dalhousie classes are: CHEM 1010.06, MATH 1000.03 and 1010.03, and PHYC 1100.06.

## Honours Degree Programmes

An honours degree is almost essential for any professional work in earth sciences, and for graduate study. Students must take the second- and third-year classes of the Earth Sciences core programme listed below. See "Degree Requirements" section for complete details.

Dalhousie Integrated Science Programme (see separate entry in this calendar) is an appropriate preparation for entry into the second year of an Earth Sciences programme.

### Departmental Requirements

#### Classes required in Honours:

- 1000 level: EARTH 1000.06 or 1040.03 and 1001.03  
 2000 level: EARTH 0010.00, 2050.03, 2101.03, 2102.03, 2110.03, 2203.03, 2204.03  
 3000 level: EARTH 0020.03, 3010.03, 3020.03, 3140.03, 3302.03, 3303.03  
 4000 level: EARTH 0030.00, 4200.06, 4351.03 plus other advanced Earth Science credits for a total of nine credits beyond the 1000 level.

#### Honours Qualifying examination.

#### Other required classes:

MATH 1000.03 and 1010.03 or MATH 1500.06, COMP 1000.03 (PC section), two of PHYC 1100.06, CHEM 1010.06, BIOL 1000.06 or 2001.03 and 2002.03

#### Other departmental requirements:

Two credits in a minor subject.

**Note:** PHYC 1100.06 and a Mathematics class are prerequisites for EARTH 2050.03, which fits best into Year II of the programme.

In second-year, students should take one class in two of Physics, Chemistry, Biology, Mathematics. Recommended classes are: BIOL 2001.03 and 2002.03, 3321.03; CHEM 2110.03, 2200.03, 2310.03, 2320.03; PHYC 2000.03, 2005.03, 2010.03, 2015.03, or 2220.03/2230.03; MATH 2000.06, 1060.03/1070.03, 2270.03.

Students in the geophysics stream will take EARTH 3130.03. This class has a field school, which is an integral part of the class. It is normally held in late April or early May.

To satisfy Regulation 11.5 concerning the Honours Qualifying Examination, a student will complete a thesis as EARTH 4200.06, followed by an oral examination, based on the general subject area of the thesis. This oral examination combines with EARTH 0030.00 then counts as the honours qualifying examination.

Theses must be completed by the second Monday in March of fourth-year. Students who complete after this date must re-register for the following academic year in EARTH 4200.06, pay the fees, and graduate at the spring convocation of the next academic year.

Each advanced class in the second, third and fourth year, except electives, must be passed with a grade of C or better.

In five of the advanced classes, a grade of B or better must be achieved, and in three additional advanced classes, a grade of B- or better is required.

A grade of B- or better must be achieved on the Honours Qualifying Examination.

For First-Class Honours, students must achieve either:

- Grades of A or better in four advanced classes and of A- or better in four additional advanced classes, or
- Grades of A or better in six advanced classes and of B or better in all advanced classes.

A grade of A- or better must be achieved on the Honours Qualifying Examination.

### Co-op Programme

A co-op programme is offered by the department, providing students with an opportunity to gain practical work experience concurrently with their academic training. The student is expected to fulfil the normal twenty-credit requirement of an honours degree or advanced major, over eight academic terms that are interspersed with four work-terms. A minimum average of B is required for entrance to the programme. The programme commences in the spring term of the second year. Interested students should consult with the department prior to that time.

### Departmental Requirements

Same as for the regular Honours programme above in addition to the work described directly above.

### Hydrogeology/Environmental Geology

In addition to the above programme, the Department offers special programmes emphasizing hydrogeology/environmental geology in the third and fourth year. Students interested in specializing in these areas should consult with the Undergraduate Advisor.

### Honours Marine Geology Stream Programme

Students wishing to obtain an honours BSc degree in the marine geology stream should discuss their programme with the undergraduate advisor and classes will normally include:

- Year I: EARTH 1000.06, MATH 1000.03/1010.03, PHYC 1100.06, CHEM 1010.06, and WRITING Requirement elective  
 Year II: OCEA 2850.06, EARTH 0010.00, EARTH 2101.03, EARTH 2102.03, EARTH 2203.03, EARTH 2204.03, EARTH 2110.03, Social Science Elective, COMP 1000.03  
 Year III: EARTH 0020.03, EARTH 3010.03, EARTH 3301.03, EARTH 3140.03, EARTH 3400.03, EARTH 3410.03, EARTH 3303.03, EARTH 3020.03, EARTH 2050.03, Elective  
 Year IV: EARTH 4200.06, EARTH 0030.00, EARTH 4501.03, EARTH 4351.03, plus 1½ credit from EARTH 4000-level classes (EARTH 4270.03/4280.03, 4290.03, 4350.03, 4501.03, 4502.03, 4503.03, 4510.03) (and 1-credit from Oceanography, OCEA 4110.03, 4120.03, 4130.03, 4150.03, 4280.03)

### Combined Honours Programme

Students wishing to take combined honours in earth sciences and another subject, should discuss their programme in detail with the undergraduate advisor. Students must attend the field school normally taken at the beginning of second-year (ERTH 0010.00).

### Combined Honours with Biology

Earth Sciences Honours Programme should be followed during Years I-III and students should take either a Biology class or EARTH 4501.03 or 4502.03 or 4503.03 in place of EARTH 3010.03/3020.03. Suggested Biology classes are 1000.06 or 2001.03 and 2002.03 in Year I; 2030.03 and 3030.03 and 2060.03 in Year II; 2001.03 and 2002.03 or 3321.03 or 3323.03 in Year III.

### Combined Honours with Physics

Students should follow the Earth Sciences Honours Programme in years I to III, including EARTH 2050.03 and EARTH 3130.03, but should take a Physics class in place of EARTH 3010.03/3020.03. Suggested Physics classes are 1100.06 in Year I, 2000.03, 2005.03, 2010.03, 2015.03 in Year II, two of 3090.03, 3140.03 or 3000.03/3010.03 or 3200.03/3210.03 and 3160.03/3170.03 in Year III. MATH 2000.06 should also be taken in either Year II or III, and MATH 3110.03/3120.03 in Year III or IV.

### Combined Honours with Chemistry

Students should follow the Earth Sciences Honours Programme in Years I-III, but should take 3000 level Chemistry classes in place of EARTH 3302.03/3303.03 and 2050.03/3130.03. Suggested Chemistry classes are 1010.06 in Year I, 2201.03/2101.03 and 2301.03/2302.03 or 2400.06 in Year II; any 3000 level in Year III.

### BSc (Major) with Diploma in Engineering

**Year I** MATH 1000.03/1010.03; PHYC 1100.06; EARTH 1000.06; ENGI 1100.03/1120.03; Writing Class  
**Year II** EARTH 0010.00, 2110.03, 2203.03, 2204.03; ENGI 2240.03, 2230.03, 2121.03, 2222.03; MATH 2480.03/2490.03; Humanity/Soc. Sci. B-term elective  
**Year III** CHEM 1020.06; EARTH 2101.03, 2102.03 plus year 3 credit; ENGI 2340.03, 2341.03, 2331.03, 2101.03; Humanities/Soc. Sci., 1/2 credit overload

### Earth System Science

Students wishing to follow an interdisciplinary study of the Earth should consult the Earth System Science section of this calendar.

### Advanced Major (20-credits)

#### Departmental Requirements

Classes required in Advanced Major:

1000 level: EARTH 1000.06 or 1040.03 and 1001.03

2000 level: EARTH 0010.00, 2101.03 and 2102.03, 2110.03, 2203.03 and 2204.03

3000 level: EARTH 0020.03, plus three (3) additional credits in Earth Sciences beyond the 2000 level.

#### Other required classes:

MATH 1000.03 and 1010.03/1060.03 or MATH 1500.06, two of PHYC 1100.06, CHEM 1100.06, BIOL 1000.06 or BIOL 2001.03 and 2002.03

A grade of D in an Earth Sciences class precludes admission to classes for which the class is a prerequisite. Where several classes are listed as prerequisites, and a grade of C- or better was not obtained in all, the instructor's consent maybe the basis for admission. Students must satisfy the Faculty of Science Writing Requirement and Mathematics Requirement.

### Advanced Major Co-op (20 credit)

#### Departmental Requirements

Same as for the Advanced Major above plus the work described in the Co-op programme section previously stated.

### Major in Earth Sciences (15 credit)

Three-year programmes with a major 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.

#### Departmental Requirements

Classes required in major:

1000 level: EARTH 1000.06 or 1040.03 and 1001.03

2000 level: EARTH 0010.00, 2101.03 and 2102.03, 2110.03, 2203.03 and 2204.03

3000 level: EARTH 0020.03, plus two (2) additional Earth Sciences credits beyond the 2000 level.

EARTH 1000.06 or 1040.03/1001.03 must be passed with a grade of B- or better to continue in the programme.

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.

### Classes Offered

**ERTH 1000.06E: Introduction to Geology.** An introductory class for students who plan to take a degree in earth sciences, or in another science, or in engineering. The lecture material covers the whole field of geology including the origin of the solar system, earth history, geological time, ocean basin formation, mountain formation, volcanoes, continental drift, natural resources such as metals and petroleum, and environmental pollution. The laboratory component involves work with minerals, rocks, fossils, and geological maps as well as a number

of field excursions to observe local geological features. Students who wish to major in Earth Sciences but have unresolvable scheduling conflicts with EARTH 1000.06 should consult the undergraduate advisor.

**Instructors:** J. Hall  
**Format:** Lecture/field trip / lab  
**Exclusion:** Credit will be given for only one of EARTH 1000.06, 1040.03/1050.03, or 1040.03/1001.03.

**ERTH 1001.03B: Beginning Geology.** This class is intended primarily for students intending to major in earth sciences. Lectures will cover the classification of Earth materials (minerals, rocks, fossils) and the operation of Earth processes (erosion, deposition, volcanism, metamorphism, earthquakes). They will also deal with the internal structure of the Earth (core, mantle, crust), and the many expressions of plate tectonics (mountain ranges, rift valleys, fracture zones, ocean basins, mid-ocean ridges). Laboratories involve work with minerals, rocks, fossils, and geological maps.

**Instructors:** J. Hall  
**Format:** Lecture/lab  
**Prerequisite:** EARTH 1040.03  
**Exclusion:** Credit will be given for only one of EARTH 1000.06, 1040.03/1050.03, or 1040.03/1001.03.

**ERTH 1040.03A or B/1050.03A or B: The Earth and Society.** These classes are designed for non-Earth Sciences majors. Previous Mathematics, Physics, or Chemistry are not required. These classes do not include formal labs, but 1040.03 includes three field trips, and some assignments are done in a laboratory environment. EARTH 1040.03 provides an introduction to some basic concepts about the Earth, including the Earth as a planet, geological time, evolution and extinctions, plate tectonics, and the evolution of the Earth's crust. EARTH 1050.03 applies the concepts learned in 1040.03 to understanding how geology affects society. Topics covered include mineral and energy resources, geological catastrophes, geology and landscape of Nova Scotia, and global climate change. EARTH 1040.03 is a prerequisite for EARTH 1050.03. Students with good grades in EARTH 1040.0 may enter EARTH 1001.03.

**Instructors:** P.J.C. Ryall, D.I. Godfrey-Smith, M. Zentilli  
**Format:** Lecture/field trip  
**Exclusion:** Credit will be given for only one of EARTH 1000.06, 1040.03/1050.03, or 1040.03/1001.03.

**ERTH 0010.00: Field School.** The class provides seven days of concentrated instruction off campus in geological field methods. A wide variety of rock types are examined in the field using traverses, measured sections and outcrop maps. The class is held the week before classes begin in the fall term and should normally be taken by those enrolling in second-year level Earth Sciences classes EARTH 2101.03, 2102.03, 2110.03, 2203.03 or 2204.03. Although EARTH 0010.00 by itself is non-credit, it appears on transcripts and EARTH 0010.00 plus EARTH 0020.03 is a half credit. The prerequisite for this class is EARTH 1000.06 or EARTH 1040.03/1001.03.

**ERTH 2050.03B: Principles of Geophysics.** Geophysical methods are increasingly important in land- and sea-based geological studies. Understanding the principles of the various techniques (seismics, gravity, magnetics) their powers, and limitations, provides a foundation for later work.  
**Instructor:** P.J.C. Ryall  
**Format:** Lecture 3 hours/ tutorial 2 hours  
**Prerequisites:** First-year class in Mathematics and PHYC 1100.06

**ERTH 2101.03A: Mineralogy and Crystallography.** This class deals with the way in which the chemical components of rocks are organized into specific crystalline compounds (minerals). The lectures cover the crystallographic principles which determine the regular internal and external structure of minerals (crystallography), the relationship between mineral composition and structure (crystal chemistry) and the interaction of polarized light with crystals (optics). The labs involve hand specimen identification of minerals based on their physical properties and associations with other minerals in rocks.

**Instructor:** P. Robinson  
**Format:** Lecture 3 hours/ lab 3 hours  
**Prerequisites:** EARTH 1000.06 or EARTH 1040.03/ERTH 1001.03

**ERTH 2102.03B: Introduction to Petrography and Petrology.** In this class we deal with the ways in which minerals interact with melts, solutions and each other to form rocks. Such topics as phase equilibria, solution chemistry and solid-solid reactions will be covered in the lectures as will the basic principles of rock classification based on textures and mineralogical compositions. The labs will emphasize optical identification of minerals and rocks using the petrographic microscope.

**Instructor:** P. Robinson  
**Format:** Lecture 3 hours/ lab 3 hours  
**Prerequisite:** EARTH 2101.03

**ERTH 2110.03A: Field Methods.** This is intended as an introduction to field techniques useful to the practising geologist, particularly those concepts essential for the accurate field description and identification of rocks and the use and construction of geological maps. Geophysical field techniques and elementary structural geology are also considered.

**Instructor:** N. Culshaw  
**Format:** Lecture 3 hours/ lab 3 hours/ field trips  
**Prerequisites:** EARTH 1000.06 or EARTH 1040.03/ERTH 1001.03

**ERTH 2203.03A: 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:** T. Martel  
**Format:** Lecture 3 hours/ lab 3 hours  
**Prerequisites:** EARTH 1000.06 or EARTH 1040.03/ERTH 1001.03

**ERTH 2204.03B: Life Through Time.** The core of the class will cover in systematic sequence the macroscopic invertebrates, a few important vertebrates and plants (microfossils and dinosaurs are covered in other classes). The class will also deal with many of the important events that have affected the development of life on Earth, including the beginning of life, evolution, fossilization, mass extinction and the great biological crises of the Permo-Triassic and Cretaceous. Laboratory work will cover identification of fossils, concept of paleontological species and paleoecology.

Instructor: D. Scott  
 Format: Lecture 3 hours/lab 3 hours  
 Prerequisites: EARTH 2203.03 or EARTH 1040.03/BIOL 1000.06

**ERTH 2400.03A: Marine Geology.** The ocean basins make up nearly three quarters of the Earth's surface and are the loci of many active geologic processes. This class deals with the morphology and tectonic history of the ocean basins, the lithology and geophysical characteristics of oceanic lithosphere and the nature and distribution of marine sediments. Important processes such as oceanic volcanism, hydrothermal circulation, sea floor spreading and marine sedimentation will be discussed, as will environmental, legal and economic aspects of the marine environment. The class is designed to provide an introduction to marine geology for non-earth sciences majors wishing to learn more about geology and for those who plan to take a degree in earth sciences. This class is not recommended for earth sciences honours students.

Instructor: P. Robinson  
 Format: Lecture/lab 3 hours, one evening per week  
 Prerequisite: Any first-year class in earth sciences

**ERTH 2410.03B: Environmental and Resource Geology.** Geology lies behind many of the environmental problems facing humanity today. In this class we consider topics such as energy and mineral resources, geological hazards such as earthquakes, landslides, and volcanic eruptions, the relevance of geology in the fields of foundation engineering, pollution and waste disposal, and the role that geology has to play in planning urban areas, especially in Nova Scotia. This class is not recommended for earth sciences honours students who should take EARTH 3410.03.

Instructor: G.K. Muecke  
 Format: Lecture/ lab 3 hours, one evening per week  
 Prerequisites: EARTH 1000.06 or EARTH 1040.03/1050.03 or 1001.03

**ERTH 2420.03B: The Dinosaurs.** This class will consider the origin, evolution and extinction of the dinosaurs as a case-study of evolutionary processes. It will address such questions as: what were the dinosaurs? Cold-blooded reptiles, or warm-blooded, mammal-like parents? Why did some of them grow so large and heavy? Are the birds their descendants? In attempting to answer these apparently simple questions we will also investigate the sophisticated methods for gathering sufficient evidence from bones to reconstruct not only the

physiology of these surprisingly modern organisms but also rather intangible characteristics such as behaviour.

Instructor: Staff  
 Format: Lecture 3 hours  
 Prerequisites: EARTH 1040.03/1050.03 or 1040.03/1001.03 or 1000.06

**ERTH 2430.03B: Rocks as Clocks.** A review of a range of dating methods, including those that rely on interval counting, chemical changes, and radioactive decay. Applications across all disciplines, including geology, archaeology, paleo-anthropology, biology and the environmental sciences, will be highlighted. Methods pertaining to the last two million years will be emphasized, but those relevant to earlier periods will also be reviewed. Case studies relating to human evolution and cultural development, as well as the study of Quaternary sedimentary geology and past climate change will be highlighted.

Instructor: D.I. Godfrey-Smith  
 Prerequisites: EARTH 1040.03/1050.03 or 1001.03 or 1000.06, or permission of the instructor

**ERTH 0020.03: Computing Camp.** This class is required for major, advanced major, and honours programmes and it is designed to provide the computing skills necessary to meet today's challenges. These skills will be learned through a field-mapping project using computers to manipulate data and prepare geologic maps. The class will be held the week before classes begin in the third year of a programme. Successful completion of this class and EARTH 0010.00 will result in a 1/2 credit award.

**ERTH 3010.03A: Igneous Petrology.** The study of the field relations, mineralogy, texture, and geochemistry of volcanic and plutonic rocks. Lectures discuss the classification, graphical representation, means of production, differentiation, and emplacement of igneous rocks, and their grouping into co-magmatic provinces. Labs involve using the petrographic microscope to determine the crystallization history of igneous rocks through their mineralogy and texture.

Instructor: G. Muecke  
 Format: Lecture 3 hours/ lab 3 hours  
 Prerequisite: EARTH 2101.03/2102.03 and CHEM 1010.06

**ERTH 3020.03B: Metamorphic Petrology.** Metamorphic petrology is the study of the way in which pre-existing igneous, sedimentary, and metamorphic rocks respond to changes in pressure, temperature, and geochemical environment. Metamorphic reactions, deformation and recrystallization, the stability relations of minerals and mineral assemblages under various physical and chemical conditions, and the concept of metamorphic facies are discussed. In the labs, microscopic mineralogy and texture are used to decipher the metamorphic history of rocks.

Instructor: R.A. Jamieson  
 Format: Lecture 3 hours/ lab 3 hours  
 Prerequisites: EARTH 2101.03/2102.03, EARTH 3010.03

**ERTH 3140.03A: 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 exploration geologist, and their interpretation. The laboratory exercises in the construction and interpretation of geological maps develop skill in the interpretation and graphical representation of structures in three dimensions.

Instructor: N. Culshaw  
 Format: Lecture 3 hours/ lab 3 hours  
 Prerequisites: EARTH 2101.03/2102.03, EARTH 2110.03, EARTH 2203.03/2204.03

**ERTH 3302.03A: Quaternary Sedimentary Environments.** The class deals with facies models for Quaternary glacial, coastal, deep sea and alluvial sediment. Emphasis is placed on sedimentation processes typical of each depositional setting and the geometry of the resulting deposits. Ancient deposits, including those resulting from glacial events, are examined, and their association with hydrocarbons, coal and sedimentary ores discussed. The labs provide practical experience of techniques used in facies analysis.

Instructor: P. Schenk  
 Format: Lecture 3 hours/lab 3 hours  
 Prerequisites: EARTH 2203.03/ERTH 2204.03

**ERTH 3303.03A: Stratigraphy.** Stratigraphy is the backbone of the geological sciences; it is the integration of sedimentology, paleontology, petrology, and structural geology to reconstruct Earth history. Subtopics include litho-, bio-, and chronostratigraphy as well as event, seismic, and sequent stratigraphy. We shall survey the fields of eustasy, isostasy and the geologic framework of sediment accumulation. The class concludes with a summary of geologic history. Laboratories include exercises, some of which involve the computer, and seminars.

Instructor: T. Martel  
 Format: Lecture 3 hours/lab 3 hours  
 Prerequisites: EARTH 3302.03

**ERTH 3400.03A: 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: G.K. Muecke/P.J.C. Ryall  
 Format: Lecture 3 hours/ lab 3 hours  
 Prerequisites: EARTH 2203.03, 2101.03, 2102.03

**ERTH 3402.03B: Practical Hydrogeology.** This class is designed to build on Geology 3400A 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: Staff  
 Format: Lecture 3 hours

Prerequisites: EARTH 3400.03

**ERTH 3410.03B: Enhanced Environmental Geology.** The topics treated in this class are similar to EARTH 2410.03, but they will be discussed at considerably greater depth during an additional 3 hours lab / tutorial per week. Credit will be given for only one of EARTH 2410.03 or 3410.03.

Instructor: G.K. Muecke  
 Format: Lecture 3 hours/ lab 3 hours  
 Prerequisites: EARTH 3400.03, 2101.03/2102.03

**ERTH 3420.03A: Geochemistry of Aquatic Environments.** Given the abundance of water at the earth's surface and the wide use both humans and other organisms make of aqueous environments, it becomes imperative for environmentally-oriented scientists to understand the chemistry of natural bodies of water. In particular, we need to comprehend the processes that lead to the observed composition of groundwaters, lakes, rivers and oceans. We also need to be aware of how man's activities can alter these natural systems. Water is also an agent for geologic and environmental change, both on short and long time-scales. Earth and environmental scientists should have an appreciation of these processes (sources, sinks and transport mechanisms) and the resulting geological cycles. This class is an introduction to the governing principles and processes of aquatic geochemistry. Specific topics will include physical chemistry of natural waters, kinetics (mechanisms & rates) of geochemical reactions, the hydrologic cycle, the dissolved carbonate system and pH controls, redox reactions and the influence of life, rainwater and acid rain, weathering and the formation of soils, mineral-solution equilibria, controls on the composition of rivers, lakes and oceans, sediments and their after-burial changes, and the global cycles of carbon, nitrogen, and sulfur. Students will be taught to approach problems quantitatively through the principles of mass action (K<sub>h</sub>-pH and activity-activity diagrams) and of mass balance (box models and conservation equations).

Instructor: B.P. Boudreau  
 Format: Lecture 3 hours/lab 3 hours  
 Cross-listing: OCEA 3420.03A

**ERTH 3500.03A: Geoscience Information Management.** Advances in microcomputer technology continue to dramatically change the working environment of earth science professionals. In this class we will be investigating digital methods of data acquisition, storage, processing, evaluation, and presentation. The types of information considered will include: numerical, text-based, spatially referenced (cartographic), and image-based (aerial photos, satellite imagery) data sets. The theory and use of spreadsheets, relational databases, global positioning systems (GPS), and geographic information systems (GIS) in the geosciences will be considered. The integration of systems (ex. GIS with GPS and databases) will also be discussed. Laboratory projects based on geological and environmental problems and data sets form an integral part of the class. Participants are expected to have a basic familiarity with the MS\_DOS and



WINDOWS operating systems and the fundamentals of structured programming languages.

Instructor: G. K. Muecke  
 Format: Lecture 3 hours/lab 3 hours  
 Prerequisites: EARTH 1000.06 or  
 1040.03/1050.03, 2110.03,  
 2101.03, 2102.03, 2203.03

**ERTH 3510.03B: GIS Applications to Environmental and Geological Sciences.** Geographic information systems (GIS) provide a rich set of new tools to the geologist and environmental scientist, not only to solve conventional problems, but also to explore questions not readily answered by other means. This class builds on the fundamentals of GIS taught in EARTH 3500.03 to explore analytical tools that aid in decision-making processes encountered in mineral exploration, hydrogeology, site selection, environmental assessment, and global change analysis. The class concentrates on case studies and problem solving, including those requiring multi-criteria and multi-objective decision making processes.

Instructor: G.K. Muecke  
 Prerequisite: EARTH 3500.03, STAT 1060.03

**ERTH 0030.00A: Advanced Field School.** The class is a field excursion of 7 to 14 days duration which is designed to give the student a regional perspective of Appalachian geology, including metamorphic terrains, igneous intrusions and sedimentary basins of Precambrian to Mesozoic age. Classic field localities in eastern North America will be visited. Exceptionally, a more distant location may be selected. It appears on transcripts and is compulsory for all Honours students. Attendance and completion of this class will be part of the 21st credit required for the honours degree.

**ERTH 4100.06R: Research Project.** See class description for EARTH 4200.06.  
 Instructor: Staff  
 Format: Lecture 3 hours

**ERTH 4151.03A or B: Mineral Deposits.** This class is an introduction to the geology of metallic ore deposits (e.g. gold, copper, zinc, lead, platinum-group elements, the rare earths, uranium, etc.) and some industrial mineral concentrations (e.g. asbestos, barite). Emphasis is given to the diverse geological processes of ore formation within different geological environments, such as the ocean floors, sedimentary basins, continental rifts, island arcs and Andean type continental margins. It also acquaints the student with principles of mineral exploration, assessment, exploitation, and environmental problems related to mining. The class integrates many Earth Science disciplines, and requires extensive reading, writing, and oral presentations.

Instructors: M. Zentilli  
 Format: Lecture 3 hours/ lab 3 hours  
 Prerequisite: EARTH 3302.03/3303.03

**ERTH 4152.03B: Fossil Fuels.** The class provides an introduction to the principal fossil fuels: peat and coal, oil shale, oil and natural gas, and uranium. We will discuss the chemical nature of each type of fuel, as well as biological and physicochemical factors involved in its genesis and concentration within the earth. The class will also consider practical methods used

in resource evaluation and geological and geopolitical factors that make extraction of raw fuel feasible. Economically important deposits in Canada and worldwide will be discussed.

Instructors: M. Gibling  
 Format: Lecture 3 hours  
 Prerequisites: EARTH 3302.03/3303.03

**ERTH 4200.06R: Honours Thesis.** This class deals with many aspects of written and oral communication of scientific and technical material. In particular, it covers the elements of scientific style (clarity, precision, conciseness, and objectivity), the logical organization and development of ideas and arguments, and the acceptable formats for scientific writing. Some attention will also be given to techniques of oral presentation. This is a compulsory class for students writing an Honours thesis in Earth Sciences, but it is open to students from other disciplines. Text: H.M. Weisman, Basic Technical Writing.

Instructor: Staff  
 Format: Lecture 3 hours

**ERTH 4270.03A: Applied Geophysics.** The application of geophysical methods to petroleum and mineral exploration as introduced in 2050.03 and 3130.03 is here treated at a more advanced level with an emphasis on seismic techniques. Assignments attempt to involve the student in interpretation of realistic geophysical data and modelling on workstations. This class is not offered every year.

Instructor: P. Ryall  
 Format: Lecture 3 hours/ lab  
 Prerequisites: EARTH 2050.03, EARTH 3130.03 or instructor's consent

Cross-listing: EARTH 5270.03

**ERTH 4280.03B: Marine Geophysics.** The application of the various geophysical techniques to the study of the sea floor and the principal results obtained are examined. The processes involved in the creation, evolution and destruction of ocean basins and the implications of the experimental observations are also considered. This class is not offered every year.

Instructor: K. Loudon  
 Format: Lecture 3 hours/ lab  
 Prerequisites: EARTH 2050.03, EARTH 3130.03, EARTH 4270.03 or instructor's consent

Cross-listing: EARTH 5280.03, OCEA 4350.03/5350.03

**ERTH 4290.03A: Geodynamics.** Essential for earth sciences or physics students who intend to be geophysicists, the class covers the physical state and behaviour of the Earth as a whole. This class is not offered every year.

Instructor: C. Beaumont  
 Format: Lecture 3 hours  
 Prerequisites: EARTH 2050.03, EARTH 3130.03, EARTH 4270.03 or instructor's consent

Cross-listing: EARTH 5290.03, OCEA 5450.03

**ERTH 4350.03A: Tectonics.** This class is intended to introduce students to current research areas in large scale processes in geology. Study of these processes draws on all fields of geology and geophysics. The process studies change as research interests change

internationally. Currently three processes are considered. There are, firstly, recent advances in understanding of the Alpine-Himalayan compressional belt, involving such features as lateral extrusion and secondary extension. Secondly, new models for sedimentary basin formation as described, using the North Sea and the margins of the North Atlantic as examples. Lastly, new results on the continental crust, particularly those derived from deep reflection seismics, are described. May not be offered every year.

**Instructor:** J.M. Hall  
**Format:** Lecture 3 hours  
**Prerequisites:** All third-year Geology core classes  
**Cross-listing:** EARTH 5350.03

**ERTH 4951.03B: Canadian Regional Tectonics.** This class is a required class for Earth Sciences Honours students. It is intended to synthesize the various aspects of geology treated in more specialized classes through an analysis of those processes which have shaped some of the major Canadian geological regions. We will examine the structure, stratigraphy and petrology of mountain belts (Cordillera, Appalachians), Precambrian shield (Grenville, Churchill, Superior), and sedimentary basins (East Coast shelf, Western Canada, Sverdrup) in order to determine what processes, including plate tectonic processes, created them.

**Instructor:** N. Culshaw/M. Gibling  
**Format:** Lecture 3 hours  
**Cross-listing:** EARTH 5351.03

**ERTH 4980.03A: Advanced Geochemistry.** Principles of crystal chemistry, isotope fractionation, thermodynamics and solution chemistry are applied to the investigation of hydrothermal solutions, as well as ground- and surface waters. Geochemical aspects of ore formation, the exploration for economic mineral deposits, and environmental pollution are covered. Geochemical surveys, element dispersion in the near-surface environment, and the origin and evaluation of geochemical anomalies are also discussed. In the laboratory statistical methods of geochemical data processing are introduced using micro-computers.

**Instructor:** D.B. Clarke  
**Prerequisites:** EARTH 3010.03, 3020.03  
**Cross-listing:** EARTH 5380.03

**ERTH 4400.03B: Advanced Metamorphic Petrology.** Metamorphic rocks are considered as equilibrium systems. The role of fluids in metamorphism, metasomatism and mass transport, kinetics of metamorphic processes, microstructure, and textural development of metamorphic rocks are discussed. Laboratory projects and special topics are chosen to suit the students' interests. This class is offered in alternate years.

**Instructor:** R.A. Jamieson  
**Format:** Lecture 3 hours  
**Prerequisites:** EARTH 3010.03, EARTH 3020.03  
**Cross-listing:** EARTH 5400.03

**ERTH 4501.03A or B: Basin Analysis.** The class is designed to present advanced topics of current interest concerning regional and global patterns of sediment accumulation. Topics may include: sequence stratigraphy and continental margin evolution; stratigraphic and

geochemical methods used in analysis of burial history; paleo flow patterns; and basinal geology in the context of plate-tectonic theory. This class is not offered every year—consult department.

**Instructor:** Staff  
**Format:** Lecture 3 hours  
**Prerequisites:** EARTH 3302.03/3303.03

**ERTH 4502.03A: Micropaleontology and Global Change.** This class provides a systematic study of major groups of microfossils (principally foraminifera, ostracoda and calcareous nanoplankton). Particular emphasis is placed on the distribution and ecology of recent microfossils, and on laboratory techniques for sampling and studying them. Quaternary paleo-oceanography and faunal distribution is examined based on knowledge of the tolerances of the living organisms.

**Instructor:** D.B. Scott  
**Format:** Lecture 3 hours/ lab 3 hours  
**Prerequisites:** EARTH 3302.03/3303.03

**ERTH 4503.03B: Carbonate and Evaporite Petrology.** This class deals with carbonate and evaporite depositional and diagenetic environments. Modern environments are surveyed from the deep sea to tidal flat and playa settings. Changes to these records and especially the development of porosity are considered in the second half. This class is not offered every year; consult timetable.

**Instructor:** P.E. Schenk  
**Format:** Lecture 3 hours/ lab/seminar 3 hours  
**Prerequisites:** EARTH 3302.03

**ERTH 4510.03A/4511.03B: Directed Reading.** This class is intended to permit further study of a specific topic of interest, or to correct a deficiency in a student's programme.

**Instructors:** Staff  
**Format:** As required  
**Prerequisite:** Permission of Department

**SCIE 8700.00A or B: Co-op Seminar**

**ERTH 8891.00R: Co-op Work-Term I**

**ERTH 8892.00R: Co-op Work-Term II**

**ERTH 8893.00R: Co-op Work-Term III**

**ERTH 8894.00R: Co-op Work-Term IV**

## Seminars

Department seminars are arranged during the term. Other specialized seminars are arranged on an ad hoc basis.

## Graduate Classes

Some graduate classes may be suitable. Please consult the Graduate Calendar and seek advice from the Department.

# Earth System Science

The Earth is the only body in the universe known to support life. It has evolved over the past five billion years. The major components are the lithosphere, hydrosphere, atmosphere and biosphere. A change in one component of the Earth Systems affects the others.

Because of the complexity of the Earth system, the major components have been studied separately: the lithosphere by geologists, the hydrosphere by oceanographers, the atmosphere by meteorologists and the biosphere by biologists. These disciplines have been underpinned by the fundamental sciences of chemistry and physics as well as mathematics. This separation has enabled the development of knowledge, but sometimes at cost to the integration of that knowledge in understanding the Earth system as a whole. It is now time to integrate these separated packages of knowledge into Earth System Science. The goal of Earth System Science, according to the NASA Advisory Council is "To obtain a scientific understanding of the entire Earth System on a global scale by describing how its component parts and their interactions have evolved, how they function, and how they may be expected to evolve on all timescales".

Recent realization of the impact of human activities on the Earth system has spawned a new science, environmental science, which requires an understanding of the Earth system and the factors affecting human behaviour. Environmental scientists must understand the functioning of the Earth system as well as the functioning of human societies in order that change brought about by human activities can be predicted, and if necessary avoided or ameliorated. This understanding will become the cornerstone of the development of an environmentally sustainable society. The challenge, again according to NASA, is "To develop the capability to predict those changes that will occur in the next decade to century, both naturally and in response to human activity.

This programme will meet a variety of career interests including those related to the environment.

## Degree Programmes

The programme in Earth System Science is taken as an area of emphasis in two subjects (chosen from, biology, chemistry, earth sciences, oceanography and physics) towards an Advanced Double Major, Combined Honours or Unconcentrated Honours. Each student's programme will be devised within the following general requirements in consultation with a faculty advisor. The Earth System Science classes will be selected from a recommended list (available from Dean's Office - Faculty of Science) of classes from Biology, Chemistry, Earth Sciences, Oceanography, and Physics. When a student completes this programme it will be noted on the transcript, e.g. Advanced Double Major in Biology and Chemistry: (Earth System Science).

Departmental Advisors are: B. Freedman - Biology, R.D. Guy - Chemistry, G. Muecke - Earth Sciences.

### Year I:

Dalhousie Integrated Science Programme (formerly Science Foundation Year) or equivalent background in Biology, Chemistry, Earth Sciences, Mathematics, and Physics.

### Year II:

- a) Arts/Humanities elective;
- b) Maths/Stats or Computing Science at second-year level;
- c) One credit in Earth Sciences and one each in two of Biology, Chemistry and Physics.

### Year III:

- a) Two credits each in two of the three subjects chosen in IIc or four from the relevant science disciplines;
- b) An interdisciplinary Earth Systems class (OCEA 3000.03: The Atmosphere; OCEA 3170.03: The Oceans).

### Year IV:

- a) Two credits in one of the subjects taken in IIIa plus two other credits from Biology, Chemistry, Earth Sciences and Physics (one of these would be the honours thesis), or four from the relevant science disciplines;
- b) An interdisciplinary Earth Systems class (consult department).

# Economics

**Location:** 6206, 6214 and 6220 University Ave.

**Administrative**

**Offices:** 6214 University Ave.  
**Telephone:** (902) 494-2026

## Chairperson of Department

B. Lesser

## Faculty Advisors

M. Bradfield, Undergraduate Coordinator (494-6989)  
S. DasGupta, Graduate Coordinator (494-6868)  
I. McAllister, MDE Coordinator (494-6993)

## Professor Emeriti

J.L. Cornwall, BA (Iowa), MSc (Lond), PhD (Harvard), FRSC  
Z.A. Konczacki, BSc (Lond), BEconHons (Natal), PhD (Lond)

## Professors

F.M. Bradfield, BCom (McM), PhD (Brown)  
S. DasGupta, BA (Calcutta), MA (Delhi), MA, PhD (Rochester)  
E. Klein, LL.M. (Buenos Aires), MSc (Dal), Dr.Rer.Pol. (Hamburg)  
B. Lesser, BCom (Dal), MA, PhD (Corn)  
C.T. Marfels, Dr.Rer.Pol. (Berlin)  
R.I. McAllister, MA (Oxon), MA (Cantab)  
L. Osberg, BA Hons (Queen's), MPhil, PhD (Yale)  
U.L.G. Rao, MA, MSc (Andhra), PhD (Western)

## Associate Professors

F. Burton, BSc (Saskatchewan), MA, PhD (UBC)  
M.L. Cross, AA (Dawson College), BA (Montana), MA (SFU), PhD (Texas A&M)  
P.B. Huber, BA, MA, PhD (Yale)  
R.L. Mazany, BSFS (Georgetown), PhD (UBC)  
S.A. Phipps, BA Hons (Victoria), MA, PhD (UBC)

## Assistant Professors

T. Inan, BA (Middle East Tech.), MA, PhD (Cornell)  
N. Sharif, BA (Punjab), MA (Dacca), MA, PhD (McM)  
K. Xu, Dip. (Beijing's Teachers' Univ.), MBA, PhD (Concordia)

## Special Lecturer

T.A. Pinfold, BA, MA (Western), PhD (Minn)

## Honorary Adjunct Professors

A. Akbari, BSc Hons, MBA (Karachi), MA, PhD (SFU)  
S. Amirikhalkhali, BAHons (Shiraz), MA, PhD (Dal), Saint Mary's University  
J. Badawi, BCom (Ain Shams, Cairo), MBA, PhD (Indiana), Saint Mary's University  
P. Bowles, BSc (Southampton), MA (Sussex), PhD (London), UNBC  
R.L. Comeau, BA, MA (StFX), PhD (Brown)

J.L. Cornwall, BA (Iowa), MSc (London), PhD (Harvard) Professor Emeritus  
W. Cornwall, BA (MSVU), PhD (Dal), MSVU  
R. George, BSc (London), MSc (Bristol), PhD (London), (retired)  
A. Mansoorian, BSc (LSE), MA (McM), PhD (Queen's), York  
T. Ogwang, BStat (Makerere), MA (Leeds), PhD (Dal), UNBC  
T. Pinfold, BA, MA (Western), PhD (Minn)  
W. Rankaduwa, BA, MSc (Sri Lanka), MA, PhD (Dal), MSVU  
A.M. Sinclair, BA (Dal), MA, BPhil (Oxon), PhD (Harvard), Dal (retired)

## 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.

Economic man is rational man consuming, organizing and producing within a framework of laws and customs in an effort to use the limited resources of our world efficiently for the greatest satisfaction. It is not an easy science; indeed it is one of the most complex, difficult (and fascinating) areas of study you could choose in the university 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.

## Degree Programmes

The department offers both BA and BSc degree programmes which are described below. A student may graduate with either a BA or a BSc degree but not both. In all programmes the student must ensure that the classes selected satisfy the overall faculty requirements for the relevant general degree (BA or BSc). See "Degree Requirements" section of this calendar.

## General Principles

The following programme arrangements are provided to the students as guidelines to facilitate the selection of classes appropriate to particular areas of interest. They should not, however, be construed as straitjackets nor as a reason for not seeking individual guidance from faculty members. In suggesting such programme frameworks, two principles have particular weight: (a) students taking economics as a major, or in an honours programme, should strike a balance between breadth of coverage among disciplines and depth of specialization in economics; (b) students taking economics as

a minor or as a component of another specialization, such as commerce, should be allowed a reasonable degree of flexibility in their choice of economics classes.

### BA Honours Degree Programme (Four Years)

Undergraduate Coordinator: M. Bradfield (Tel: 494-6989)

#### Departmental Requirements

Classes required in Honours, Bachelor of Arts:

1000 level:	ECON 1101.03 and 1102.03
2000 level:	ECON 2200.03, 2201.03; MATH 1060.03 or 2260.03 or ECON 2260.03; MATH 2080.03 or ECON 2280.03; and ECON 2232.06 (or 2238.03 and 2239.03)
3000 level:	ECON 3338.03, 3347.03, and 3348.03
4000 level:	ECON 4100.03, 4420.03, and 4421.03 plus 3 other Economics credits at or above the 2000 level for a total of nine Economics credits

Other required classes:

MATH 1000.03, 1010.03 and 2030.03, Honours Thesis

### BSc Honours Degree Programme (Four Years)

Undergraduate Coordinator: M. Bradfield (Tel: 494-6989)

#### Departmental Requirements

Classes required in Honours, Bachelor of Science:

1000 level:	ECON 1101.03 and 1102.03
2000 level:	ECON 2200.03, 2201.03; MATH 1060.03 or 2060.03 or ECON 2260.03; MATH 2080.03 or ECON 2280.03; and ECON 2232.06 (or 2238.03 and 2239.03)
3000 level:	ECON 3338.03, 3347.03, and 3348.03
4000 level:	ECON 4100.03, 4420.03, 4421.03 plus 3 other Economic credits at or above the 2000 level

Other required classes:

MATH 1000.03, 1010.03, and 2030.03, Honours Thesis

Notes:

1. Classes selected (outside of economics) in the third and fourth year must include at least two classes above the 1000 level.
2. The student's programme is chosen in consultation with the department and must have approval of the department.
3. Students must arrange their classes to ensure that they satisfy the overall requirements for the 15-credit BSc degree.
4. Since mathematics is required for graduate work in most good graduate schools, the value of econometrics and of additional mathematics is stressed. In some instances, the department may permit students to take

classes in other subjects in lieu of classes in Economics and may permit minor variations in the required classes.

### Combined Honours

Combined honours programmes, BA or BSc, may be arranged with other departments such as Biology, Geology, History, Mathematics, Political Science, Sociology, etc. For combined honours programmes with Economics, students also should consult the other departments concerned.

### BSc Advanced Major Programme (Four Years)

#### Departmental Requirements

Classes required in Advanced Major, Bachelor of Science:

1000 level:	ECON 1101.03 and 1102.03
2000 level:	ECON 2200.03, 2201.03; MATH 1060.03 or 2060.03 or ECON 2260.03; and MATH 2080.03 or ECON 2280.03, plus 1 other economics credit at or above the 2000 level
3000 level:	ECON 3338.03 plus 2.5 other economics credits at or above the 3000 level

Other required classes:

MATH 1000.03, 1010.03 and 2030.03

A student who wants to have the option of later converting an advanced major to an honours degree should select classes in accordance with the list of core classes given above and should consult regulations 11.4 and 22. Besides additional core classes, the honours programme requires an honours essay and a higher academic standing than the advanced major. An honours programme can be converted to an advanced major at the student's discretion. The advanced major does, however, allow a maximum of only nine credits in economics while the honours programme allows a maximum of eleven.

### BA Advanced Major Programme (Four Years)

#### Departmental Requirements

Classes required in Advanced Major, Bachelor of Arts:

1000 level:	ECON 1101.03 and 1102.03
2000 level:	ECON 2200.03 and 2201.03 plus two other credits in Economics at or above the 2000 level
3000 level:	Three credits in Economics at or above the 3000 level

While the total number of credits required for the advanced major is the same as for an honours degree, the honours programme in economics requires an honours essay and must include a core of classes in economics as given above. In addition, the honours programme requires a higher academic standing than does the advanced major. However, the advanced major programme does offer students the opportunity to enrol in a comprehensive programme not available with the three-year programme. Four-year major students are

strongly encouraged to consult with members of the department to ensure an integrated and coherent programme.

A student who wants to have the option of later converting an advanced major to an honours degree should select classes in accordance with the list of core classes above and should consult regulations 11.4 and 22. An honours programme can be converted to an advanced major at the student's discretion. The advanced major does, however, allow a maximum of only nine credits in economics while the honours programme allows a maximum of eleven.

### BA Major in Economics (Three Years)

Undergraduate Coordinator: M. Bradfield  
(494-6989)

#### Departmental Requirements

Classes required in Major, Bachelor of Arts:

- 1000 level: ECON 1101.03 and 1102.03  
 2000 level: ECON 2200.03 and 2201.03 plus 1 other credit in Economics at or above the 2000 level  
 3000 level: Two credits at or above the 3000 level

Students who wish to keep open the option of transferring into the honours or advanced majors programmes should select classes consistent with the requirements of these programmes.

### BSc Degree Programme (Three Years)

Undergraduate Coordinator: M. Bradfield (Tel. 494-6989)

For the general description of the programme see the description of the BA degree programme. The specific requirements are set out below.

Classes required in major, Bachelor of Science:

- 1000 level: ECON 1101.03 and 1102.03  
 2000 level: ECON 2200.03, 2201.03; MATH 1060.03 or 2060.03 or ECON 2260.03; and MATH 2080.03 or ECON 2280.03  
 3000 level: ECON 3338.03 plus 1.5 other Economic credits at or above the 3000 level

Other required Classes:

MATH 1000.03, 1010.03 and 2030.03

Combined programmes may also be arranged with economics as the major or minor subject in association with such other fields as political science, sociology, history, geology, biology, mathematics - and possibly others.

Final programme approval for all majors' students must be obtained from the appropriate coordinator.

### Classes Offered

Classes marked with an \* are normally offered on a two year rotational basis. Please consult the department for details regarding rotational scheme. Classes marked with a \*\* are of a special nature and not necessarily offered

on a regular basis. Please consult the department for details regarding such class offering.

**ECON 1101.03A or B: 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).

Instructor: Staff  
 Format: Lecture 3 hours

**ECON 1102.03A or B: 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

Instructor: Staff  
 Format: Lecture 3 hours

ECON 1101.03 and 1102.03 (together) satisfy the principles of Economics requirement for Economics majors and for Bachelor of Commerce students.

**ECON 2200.03A or B: Intermediate Microeconomics.** An extension of microeconomic theory and its applications which satisfies the minimum microeconomic theory requirements for majors in economics. Also of interest to Commerce students or others not majoring in economics, it pays particular attention to applications of theory in a practical context. Serves as the microeconomic prerequisite for higher-level classes in economics.

Instructor: Staff  
 Format: Lecture 3 hours  
 Prerequisite: ECON 1101.03 or equivalent

**ECON 2201.03A or B: 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 which satisfies the minimum macroeconomic theory requirements for majors and honours in economics. Of interest to commerce students or others not majoring in economics, it serves as the macroeconomic prerequisite for higher-level classes in economics.

Instructor: Staff  
 Format: Lecture 3 hours  
 Prerequisite: ECON 1102.03 or equivalent

**\*ECON 2232.06R: Canadian Economic History.** The development of Canada from the age of discovery to now, presented in relation to the larger system of the relationships between the Old World and the New. As the class proceeds, the focus shifts more and more towards Canada, and more formal theory is introduced in discussing Canadian problems and policies, especially in the twentieth century.

Instructor: B. Lesser  
 Format: Lecture 3 hours

**Prerequisite:** A class in economics principles and some knowledge of history is recommended.

**\*ECON 2238.03A: The Industrial Revolution in Europe.** Transitions from preindustrial to industrial economies in England, France, Germany and Russia form a broad background for understanding the roots of contemporary society; of particular relevance for those interested in the economic history of Canada, the United States and other countries formerly part of a colonial system. Emphasis is on the economic, social, and technical changes of these industrial "revolutions" to disclose common elements in the experience of industrialization.  
**Instructor:** P.B. Huber  
**Format:** Lecture 2 hours  
**Prerequisite:** Introductory Economics

**\*ECON 2239.03B: The European Economy in Historical Perspective - After the Industrial Revolution.** A self-contained class (may be taken separately from ECON 2238.03) examining the contrasting development patterns of various industrialized European countries after their respective industrial revolutions and up to about 1960. Focus is on the development of hypotheses regarding the causes and effects of differences in the experience of growth of mature economies.  
**Instructor:** P.B. Huber  
**Format:** Lecture 2 hours  
**Prerequisite:** Introductory Economics

**\*ECON 2250.06R: An Applied class in Economic Development and the Environment: Concepts, Policies and Projects.** This class is designed around concepts of sustainable development, with emphasis on key issues facing developing countries and less prosperous regions of some industrial nations. There are three main elements: (1) conceptual underpinnings and tensions behind sustainable development; (2) international, national and regional level policies and planning approaches for sustainable development - including lessons from the Rio Summit, the World Bank, CIDA, Canada's Green Plan and the European Regional Development Fund; and (3) projects for sustainable development - drawing on case experience and first-hand field work undertaken as a part of the class programme.  
**Instructor:** R.I. McAllister  
**Format:** Lecture, case work with group presentations, tutorials, 3 hours  
**Prerequisite:** Introductory Economics

**ECON 2260.03A: Statistics I.** See class description for MATH 2060.03, in Mathematics section of this calendar.

**ECON 2280.03B: Statistics II.** See class description for MATH 2080.03, in Mathematics section of this calendar.

**SCIE 3000.06R: Science Fundamentals.** See Class description in Science, Interdisciplinary section of this calendar.

**\*ECON 3241.03A: Comparative Economic Systems: National Economies.** A detailed background of institutional material on the structure and performance of several economies is featured. Reading on specific countries provides the basis for several short papers. A

student taking this class must understand the interrelated character of economic activity and grasp the nature of the price system.  
**Instructor:** P.B. Huber  
**Format:** Seminar 2 hours  
**Prerequisite:** ECON 2200.03

**\*ECON 3242.03B: Comparative Economic Systems. Economic Organization and Planning:** The economic behaviour of organizations and the ways in which this can be controlled provide the basis for consideration of the theory and practice of economic planning at micro-economic and macro-economic levels in various institutional contexts.  
**Instructor:** P.B. Huber  
**Format:** Seminar 2 hours  
**Prerequisite:** ECON 2200.03, plus an additional half-class in Economics

**\*ECON 3315.03A: Labour Economics.** The theory of labour markets is emphasized, in particular the implications of alternative viewpoints which seek to explain relative wages and unemployment.  
**Instructor:** L. Osberg or S.A. Phipps  
**Format:** Lecture 3 hours  
**Prerequisites:** ECON 1101.03, 1102.03, 2200.03 and 2201.03 (or equivalents)

**\*ECON 3317.03B: Poverty and Inequality.** 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.  
**Instructor:** L. Osberg  
**Format:** Lecture/seminar  
**Prerequisites:** ECON 1101.03, 1102.03, 2200.03 (or equivalent); ECON 3315.03 is highly recommended

**\*ECON 3326.03A: Money and Banking.** The class concerns the nature and operation of the financial system, with particular reference to Canadian experience. It treats financial instruments (including money) and institutions and the social control of the supply of money and credit. This class is complemented by ECON 4426.03.  
**Instructor:** Staff  
**Format:** Lecture 3 hours  
**Prerequisite:** ECON 1101.03, 1102.03 and 2201.03 (or equivalent)

**\*ECON 3328.06R: Industrial Organization.** The application of the models of price theory to economic reality. In any industry, the problems of a firm competing with its rivals in order to survive and acquire a higher market share are far more complex than those in price theory where we have to deal with more or less simplified assumptions. The three main parts are: market structure, market conduct and market performance.  
**Instructor:** C. Marfels  
**Format:** Lecture 2 hours  
**Prerequisite:** ECON 1101.03, 1102.03 and 2200.03 (or equivalent)

**\*ECON 3330.03A or B: International Trade.** The causes of international exchange of goods and services are considered and the effects of international integration on the incomes and

growth rates of national economies are analyzed. The theory and practice of commercial policy and other restrictions on trade are considered after the pure theory of international trade and its implications have been explored. Depending upon class interest and availability of time, the subjects of economic integration and of Canadian commercial policy may be discussed in some detail.

**Instructor:** R.L. Mazany  
**Format:** Lecture 3 hours  
**Prerequisites:** Introductory Economics and ECON 2200.03 (or equivalent)

**\*ECON 3332.03A or B: 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.

**Instructor:** M. Cross  
**Format:** Lecture 3 hours  
**Prerequisite:** Introductory Economics and ECON 2200.03 (or equivalent)

**—ECON 3333.03A or B: Theories of Economic Development.** A theoretical framework for the understanding of the process of economic development in the more and the less developed countries is provided with a view to its eventual application to the solution of practical problems. The concluding seminars are devoted to the problem of the foundations of the theory of economic development, and the distinction between the concepts of unilinear and multilinear evolution is discussed.

**Instructor:** B. Lesser  
**Format:** Lecture 2 hours  
**Prerequisite:** Introductory Economics. ECON 2201.03 (or equivalent). ECON 3347.03 and 3348.03 are desirable

**—ECON 3334.03A or B: Economic Development - Recent Debates, Controversies and Conflicts.** Whereas ECON 3333.03 deals with the more rigorously defined theories and models and their appraisal, this class focuses on the development policies and related controversies. Important examples of such controversies and conflicts, with far reaching developmental consequences, are provided. Attention is paid to the much debated environmental aspects of growth and development.

**Instructor:** Staff  
**Format:** Lecture 2 hours  
**Prerequisite:** ECON 1101.03, 1102.03 and 2201.03 (or equivalent). ECON 3333.03 is desirable

**ECON 3335.03A or B: 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.

**Instructors:** P. Burton, M. Cross, L. Mazany  
**Format:** Lecture 3 hours  
**Prerequisites:** ECON 1101.03, 1102.03, 2200.03

**\*ECON 3336.03B: Regional Development.** Most countries have richer and poorer regions. The energy crisis has raised additional complications. 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.

**Instructor:** R.I. McAllister  
**Format:** Seminar 2 hours, tutorials  
**Prerequisite:** Introductory Economics, and at least one class in both Political Science and Canadian History are desirable

**ECON 3338.03A: Introductory Econometrics I.** The theory of some quantitative methods commonly used by economists is discussed in the context of the classical linear model. Estimation problems caused by violations of the assumptions of the classical model are studied including heteroscedasticity, autocorrelation and simultaneous equations bias. Emphasis is placed on practical econometric problems by requiring students to conduct their own research projects.

**Instructor:** Staff  
**Format:** Lecture 3 hours  
**Prerequisites:** MATH 1000.03 (or equivalent) and ECON 2280.03 or Math 2080.03

**\*\*ECON 3339.03B: Introductory Econometrics II.** Further practical problems associated with economic data and with model specification and estimation are discussed. This class is an extension of ECON 3338.03.

**Instructor:** Staff  
**Format:** Lecture 3 hours  
**Prerequisite:** ECON 3338.03

**\*ECON 3344.03A or B: Public Finance I.** This class studies the economics of public expenditure programmes. One major theme is that markets do not always lead to economic efficiency. A second major theme is that equity concerns are central to public policy formation.

**Instructor:** Staff  
**Format:** Lecture 3 hours  
**Prerequisites:** Introductory Economics and ECON 2200.03 (or equivalent); ECON 2201.03 is recommended

**\*ECON 3345.03A or B: Public Finance II.** This class studies the economics of taxes and transfers. Equity and efficiency effects of both are considered.

**Instructor:** Staff  
**Format:** Lecture 3 hours  
**Prerequisite:** Introductory Economics, ECON 2200.03 and 2201.03 (or equivalents)

**\*ECON 3347.03A or B: Classical Political Economy.** The theories of production, value, distribution, and economic growth developed in classical political economy will be discussed in this class. Reactions to classical political economy and links between this body of thought and macroeconomics will be included as time permits.

**Instructor:** Staff  
**Format:** Lecture 3 hours



**Prerequisites:** ECON 1101.03, 1102.03 and 2200.03 (or equivalent). ECON 2201.03 (or equivalent) is recommended

**\*ECON 3348.03A or B: Modern Economic Thought.** Theories of production, value, and distribution developed since the marginal revolution, which dates from roughly 1870, will be examined in this class. Contributions to this body of thought developed before 1870, while classical political economy was dominant, will also be considered. Theories of equilibrium, stability, and economic growth will be discussed as time permits, but coverage of all topics must be selective because of the vastness of modern economic literature.

**Instructor:** Staff

**Format:** Lecture 3 hours

**Prerequisites:** ECON 1101.03, 1102.03 and 2200.03 (or equivalent). ECON 2201.03 (or equivalent) is advised

**\*ECON 3350.03A or B: Social Cost Benefit Analysis.** The methodological base of social cost benefit analysis is developed, demonstrating some practical applications. Social cost benefit analysis and capital budgeting are two approaches to investment decision making. The former is used by public sector agencies; the latter is employed by private sector firms. Similarities and differences in the two approaches are highlighted. Solving problems which illustrate basic concepts and a paper reporting on an actual application of the methods taught are important requisites.

**Instructor:** Staff

**Format:** Seminar 3 hours

**Prerequisite:** ECON 1101.03, 1102.03 and 2200.03. Introductory Statistics is desirable

**ECON 4100.03R: Honours Seminar.** This is a required class for honours students, optional for others. The class is devoted to: a) preparation and presentation of honours papers; b) discussion of policy issues; and c) lectures and discussion by faculty members and occasional invited guests.

**Instructor:** Staff

**Format:** Seminar 3 hours

**Prerequisites:** ECON 2200.03 (or equivalent) and 2201.03 (or equivalent) and MATH 2060.03 and 2080.03

**\*ECON 4418.03A: Foundations of Public Policy Towards Business.** In this class the reasoning for government interference of the free and, at times, not-so-free competitive environment in the corporate economy will be examined. This will include (i) an overview of the concepts of competition and monopoly with main emphasis on workable competition, (ii) the scope and objectives of public policy towards business, and (iii) a comparison of the competitive approach, the regulatory approach, and the ownership approach.

**Instructor:** C. Marfels

**Format:** Lecture 2 hours

**Prerequisite:** ECON 3328.06

**\*ECON 4419.03B: Canadian Competition Policy.** The discussion begins with a historical account of Canada's past experience with the Combines Investigation Act and the attempts to

amend it. Main emphasis is on the New Competition Act of 1986 and on the rules for mergers and for abuse of dominant positions. Various case studies will exemplify the new powers vested in the Director of Investigation and Research and the role of the Competition Tribunal.

**Instructor:** C. Marfels

**Format:** Lecture 2 hours

**Prerequisites:** ECON 4418.03

**ECON 4420.03A or B: Microeconomic Theory.** A basic but rigorous introduction to modern 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.

**Instructor:** S. DasGupta or E. Klein

**Format:** Lecture 3 hours

**Prerequisite:** ECON 2200.03 (or equivalent) and MATH 1000.03 and 1010.03

**ECON 4421.03A or B: Macroeconomic Theory.** For those who wish to do relatively advanced work in economic theory, possibly with the thought of going on to do graduate work in economics. The class assumes some knowledge of calculus. Topics covered include: classical models of income and employment; Keynesian models of income and employment; the theory of economic growth (including two-sector models); and trade cycle models.

**Instructor:** J. Cornwall

**Format:** Lecture 3 hours

**Prerequisite:** ECON 2201.03 (or equivalent) and MATH 1000.03 and 1010.03 (or equivalent)

**\*\*ECON 4422.03B: Inflation, Stagflation and Macroeconomic Policy.** A consideration of different theories of inflation that have been developed to explain the acceleration of inflation in the past decade. Alternative policy solutions are appraised. Forms of incomes policy are taken up in some detail.

**Instructor:** J. Cornwall

**Format:** Lecture 3 hours

**Prerequisite:** ECON 2201.03 (or equivalent)

**\*ECON 4425.03B: Monetary Policy.** Assuming a basic knowledge of monetary institutions and macro-economics, a critical analysis of the objectives and effectiveness of monetary policy is developed. Particular attention is given to the Canadian experience and the effectiveness of Canadian policy.

**Instructor:** Staff

**Format:** Lecture 3 hours

**Prerequisite:** ECON 2201.03 (or equivalent); It is advantageous for students to have completed ECON 3326.03 as well

**\*ECON 4431.03A or B: International Payments.** Selected topics in recent international monetary history are examined, the causes of, and remedies for, external imbalance in national economies are considered, and the reorganization of the international monetary system is discussed. Depending upon class

interest, certain issues of international development finance and problems of instability and growth in the international economy may be discussed in detail.

Instructor: R.L. Mazany

Format: Lecture 3 hours

Prerequisite: ECON 2201.03 (or equivalent)

\*\*ECON 4446.03A or B: Classical Liberalism, and Democracy. See class description for PHIL 4470.03, in the Philosophy section of this calendar.

\*\*ECON 4447.03B: The Theory of Games as an Approach to the Foundations of Ethics and Politics. See class description for PHIL 4430.03, in the Philosophy section of this calendar.

\*\*ECON 4448.03A: Social Choice Theory. See class description for PHIL 4480.03, in the Philosophy section of this calendar.

### Graduate Studies

The Department offers a graduate programme leading to the MA, MDE and PhD degrees. Details of these programmes, including a list of graduate classes, are given in the Calendar of the Faculty of Graduate Studies. Senior undergraduates may be admitted to some graduate classes at the discretion of the instructors concerned.

# Engineering

Location: Sir James Dunn Building Room 326  
 Telephone: (902) 494-2344  
 FAX: (902) 494-5191

## Chairperson of Department

D.M. Lewis

## Professors

J.C. MacKinnon, BEng (TUNS), MScEng (Lond), PhD (Dal), PEng  
 M.H. Mansour, BEng (Cairo), BSc (AIN Shams) MEng (McM), PhD (TUNS), PEng  
 S.T. Nugent, BSc (Mem), BEng (TUNS), MASc (Tor), PhD (UNB), PEng

## Associate Professors

D.M. Lewis, BEng, MEng (NSTC), PEng  
 D.G. Retallack, BSc (Dal), BEng (NSTC), MSc, PhD (Manchester), PEng

## Assistant Professor

C.K.K. Lun, BEng, MEng, PhD (McG), PEng

## Introduction

Professional engineers are concerned with making the properties of matter and the sources of energy in nature beneficial to mankind. The curriculum develops "an individual's ability to use the basic sciences, mathematics, engineering sciences, economics and social sciences to convert, use and/or manage resources optimally through effective analysis, interpretation, and decision making to meet objectives". University studies in engineering are concerned with the design of engineering systems, but the skills learned are widely applicable. Many engineers combine their profession with other activities, most notably management.

The professional degree in Engineering is the Bachelor of Engineering degree which is conferred by the Technical University of Nova Scotia in association with Dalhousie University. The first two years of study are taken at Dalhousie and comprise a programme of 11 credits which lead to the Diploma in Engineering. Upon successful completion of this programme, students will be admitted to the Technical University of Nova Scotia for a further three years of study leading to the degree of Bachelor of Engineering in Civil, Electrical, Mechanical, Mining, Chemical, Industrial, or Agricultural Engineering. These programmes have been accredited by the Canadian Engineering Accreditation Board.

TUNS offers a combined BEng/MEng programme in Metallurgical Engineering. The admission requirement is the Diploma of Engineering, but admission is limited on a competitive basis. The programme is accredited by the Canadian Engineering Accreditation Board.

Most TUNS programmes are co-operative, in which industrial experience is alternated with the academic programme.

## Degree Programmes

Dalhousie offers various programmes for students wishing to pursue studies jointly in Engineering and in Arts or Science. Students may arrange programmes leading to a Bachelor of Science degree, with a major in Biology, Chemistry, Computing Science, Earth Sciences, Mathematics or Physics in addition to the Diploma in Engineering. Programmes leading to a Bachelor of Arts Degree in addition to the Diploma in Engineering can be arranged with a major in a language, social science, or humanities subject. These combined programmes require three years of study at Dalhousie. Three years are still required at TUNS in order to receive the Bachelor of Engineering degree.

Students wishing to enroll jointly in the Diploma in Engineering and Bachelor of Science or Bachelor of Arts programmes should consult the Department of Engineering for advice on programme planning.

Students who graduate from TUNS fulfil the academic requirements for registration as a Professional Engineer in all provinces in Canada. In addition to the academic requirements, the Profession requires that applicants for registration have practical experience relevant to the discipline of engineering. The minimum requirement is four years of experience subsequent to completion of the BEng. It is recommended that, in addition to this, students obtain engineering experience in the summer periods prior to graduation.

## Diploma in Engineering

### Admission Requirements

Students wishing to enroll in the Diploma in Engineering Programme in the Department of Engineering must satisfy the requirements for admission to the Faculty of Science at Dalhousie and must also satisfy the additional requirements of the Department of Engineering. Students are normally expected to have completed Nova Scotia Grade XII senior matriculation classes, or equivalent, in Mathematics, Physics and Chemistry and should rank well in their class. Students may be admitted with advanced standing.

### Admission with Advanced Standing

Students wishing admission with advanced standing in the Diploma in Engineering Programme are advised that normally a minimum of six full credit classes of those described for the programme must be taken at Dalhousie. Transfer credit will not be granted for any class in which the final grade was less than C, or equivalent, or for any class in which a final grade was granted conditionally.

## Diploma in Engineering Programme

- Total credits required - 11
- Year 1: ENGI 1100.03, 1120.03; MATH 1000.03, 1010.03; CHEM 1020.06; PHYC 1100.06; one full credit writing class
- Year 2: ENGI 2231.03, 2331.03, 2240.03, 2340.03, 2222.03, 2101.03, 2230.03, 2341.03; MATH 2480.03, 2490.03; one full credit elective from Social Sciences or Humanities
- Required GPA for graduation - 1.70

## BSc/Diploma in Engineering

Students may arrange programmes leading to a BSc with a major in one of the sciences in combination with the Diploma in Engineering. Upon completion of the joint programme, graduates receive both the Diploma in Engineering and a BSc degree.

The programme for the BSc plus Diploma in Engineering consists of fifteen classes. Eleven of the classes are the classes for the Diploma in Engineering. The remaining classes must be chosen to meet the requirements for the BSc. One of these requirements is that there must be four classes beyond the first year in the science major. If the science major is mathematics, physics, or chemistry, then the recommended first year programme is the first year of the Diploma in Engineering. The second and third years each consist of approximately half of the remaining requirements for the Diploma and half of the requirements for the BSc. If the science major is computing science, biology, or earth sciences, then students should seek the advice of the Department of Engineering, prior to registration in first year.

## BA/Diploma in Engineering

Students may arrange programmes leading to a BA with a major in one of the arts (humanities, languages, social sciences) in combination with a Diploma in Engineering. Upon completion of the joint programme, graduates receive both the Diploma in Engineering and the BA degree.

This joint programme consists of fifteen classes. Eleven of the classes are required for the Diploma in Engineering; two of these are electives which must be in the humanities or social sciences. The remaining four classes must be chosen to meet the requirements for the BA.

Students interested in this type of programme should contact both the Department of Engineering and the department for the BA major subject.

## Classes Offered

Instructors shown are for the previous year.

**ENGI 1100.03A: Graphics.** In this class the basic problem of representing three-dimensional solid objects on a two-dimensional sheet of paper is solved by a variety of methods. Problems involving points, lines, planes, and objects are tackled using the techniques of multiview drawing, pictorials (oblique, isometric, and perspective), and descriptive geometry. Problems are solved using pencil and paper and also using Computer Assisted Drafting.

**Instructor:** D.M. Lewis  
**Format:** Lecture 4 hours, lab 3 hours

**ENGI 1120.03B: Statics.** Statics is the first in a sequence of two classes in Engineering Mechanics. The work in Statics is designed to instruct the student in concepts of force and equilibrium. Topics include a review of the laws of motion, elements of vector algebra, such quantities as position and force vectors, moments of a force about an axis, couple

moments, equivalent force systems, and equilibrium of two and three-dimensional structures. Structural applications such as two-dimensional trusses, frames and simple machines, as well as shear forces and bending moments in beams are discussed. Laws of Coulomb friction, centroids and centre of mass, and area moments and products of inertia are also presented. Problems are solved by hand, and by computer using MathCAD.

**Instructor:** D.M. Lewis  
**Format:** Lecture 4 hours, lab/tutorial 2 hours  
**Prerequisite:** ENGI 1100.03, MATH 1000.03

**ENGI 2101.03B: Engineering Design.** The work of ENGI 1100.03 (Graphics) is extended to include technical drawings and computer graphics, a design project with working drawings and a technical report, as well as the construction and testing of a physical model.

**Instructors:** J.C. MacKinnon  
**Format:** Lecture 3 hours, lab/tutorial 3 hours  
**Prerequisite:** ENGI 2231.03, 2331.03, 2240.03, 2340.03

**ENGI 2231.03A: Digital Logic.** This class includes the following topics: Logic functions, gate types, Boolean algebra, Karnaugh maps, encoders, decoders, number representations, latches, flip-flops, counters, shifters, and finite state machine design.

**Instructor:** S.T. Nugent  
**Format:** Lecture 3 hours, lab/tutorial 3 hours  
**Prerequisite:** ENGI 1120.03, MATH 1010.03

**ENGI 2222.03B: Dynamics.** 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 1120.03 (Statics). Both vector and scalar methods are used. Topics include kinematics of a particle, kinetics of a particle, kinematics of a rigid body in plane motion, and planar kinetics of a rigid body.

**Instructor:** C.K. Liu  
**Format:** Lecture 3 hours, lab/tutorial 3 hours  
**Prerequisite:** ENGI 2240.03; MATH 2480.03

**ENGI 2230.03B: Electric Circuits.** An introduction to the fundamental laws of electric circuits and circuit parameters, the concept of time-constants, impedances, admittances, general network theorems, three-phase circuits and transformers. The laboratory periods illustrate the use of electrical measuring devices.

**Instructor:** S.T. Nugent  
**Format:** Lecture 3 hours, lab/tutorial 3 hours  
**Prerequisite:** PHYC 1100.06; MATH 1010.03

**ENGI 2240.03A: Computer Methods in Engineering.** This class first introduces the student to computers in general and to our machines in particular, to the uses of an editor, a word processor, and MathCAD for programming, word processing, and engineering problem solving. The class then focuses on an algorithm-design process which uses structured programming techniques and is independent of the language chosen for coding. PASCAL is used as the implementation language, and it is taught to an intermediate

level. Typical assignments involve computer solutions of engineering and mathematical problems.

Instructor: C.K.K. Lun

Format: Lecture 3 hours, lab/tutorial 3 hours

Prerequisite: ENGI 1120.03B, MATH 1010.03

**ENGI 2331.03A: Strength of Materials.** This class is an introduction to the study of the stresses, strains, and deformation of a solid body which results when static forces are applied to the body. Topics discussed include: the definition and transformation relations of stresses and strains, axial loading applications, torsion of circular sections, stresses and deflection of beams, combined static loading and column action.

Instructor: J.C. MacKinnon

Format: Lecture 3 hours, lab/tutorial 3 hours

Prerequisite: ENGI 1120.03, MATH 1010.03

**ENGI 2340.03A: Classical Thermodynamics.** An introduction to the fundamental concepts and principles of thermodynamics as applied to engineering design problems. Topics in this class include: properties and processes of ideal gases and simple compressible substances, work and heat interactions, energy and the first law of thermodynamics — analysis of control masses and control volumes, entropy and analysis based upon the second law of thermodynamics, performance of selected components (e.g. turbines, compressors, pumps, heat exchangers) and systems (power and refrigeration cycles).

Instructor: D.G. Retallack

Format: Lecture 3 hours, lab/tutorial 3 hours

Prerequisite: MATH 1010.03, CHEM 1020.06

**ENGI 2341.03B: An Introduction to Fluid Mechanics.** This class extends the basic concepts of mechanics from solids to fluids. It 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.

Instructor: C.K.K. Lun

Format: Lecture 3 hours, lab/tutorial 3 hours

Prerequisite: ENGI 1120.03, 2340.03; MATH 2480.03

# English

Location: 1434 Henry Street, Halifax, N.S.  
 Telephone: (902) 494-3384  
 Fax: (902) 494-2176

## Chair

J. Baxter (494-3411)

## Undergraduate Advisor

Consult Department

## Professors Emeriti

J. Fraser, MA (Oxon), PhD (Minn), FRSC

J. Gray, MA (Aberd), MA (Oxon), PhD (Montreal), FRSC, FRSA

M.M. Ross, OC, BA (UNB), MA (Tor), PhD (Corn), DLitt (UNB), LLD (St Thom), LLD (Dal), LLD (Queen's), DLitt (Trent), DLitt (Edinburgh), DLitt (Windsor), DSL (Trinity College), DLitt (Acadia) FRSC

S.B. Sprott, MA, BD (Melb), PhD (Col)

## Professors

J.R. Baxter, BA, BEd, MA, PhD (Alta)

R. Huebert, BA (Sask), MA, PhD (Pitt)

F. Monk, BA (Reading), MA (Carleton), PhD (Queen's)

R.R. Tetreault, BA (UBC), MA, PhD (Corn)

J.A. Wainwright, BA (Tor), MA, PhD (Dal)

## Associate Professors

L.P. Diepeveen, BA (Calvin Col), MA, PhD (Ill)

M.M. Furrow, BA (Dal), MA, MPhil, PhD (Yale)

B. Greenfield, BA (York), MA (McG), PhD (Columbia)

A. Higgins, BA (Conn), MA (McG), MA (Mass), MA, PhD (Yale)

V. Li, BA, MA (UBC), PhD (Cantab)

C. Luckyj, BA, MA, PhD (Tor)

D. McNeil, BA (Concordia), MA (UNB), PhD (McM)

M.I. Stone, BA (Guelph), MA, MPhil (Wat), PhD (Tor)

## Assistant Professors

M. Bruhn, BA (S.Maine), MA, PhD (Dal)

C. Cornell, BA (WLU), MA (Wat), PhD (Dal)

R. Maitzen, BA (UBC), MA, PhD (Corn)

H.E. Morgan, BA (UBC), MA (Wash), BLitt (Oxon), PhD (Wash)

T. Eoss, BA, MA (Carleton), PhD (Tor)

J.A. Thompson, BA (Western), MA, PhD (Tor)

## Adjunct Professor

A.R. Andrews, BA, DipEd, MA (Leeds), PhD (Ill), FRSA

## Senior Instructor

L. Choyce, BA (Rutgers), MA (Montclair), MA (CUNY)

## Introduction

The study of English includes both analysis of texts and awareness of contexts. The texts proposed for analysis in various English classes will range from the traditional to the

contemporary; English is a discipline which can and does adjust to include writings by Tomson Highway, Toni Morrison, and Chinua Achebe alongside words by Chaucer, Shakespeare, Milton, Austen, and the rest. The wide range of human experience represented in these texts can provide the student with what Kenneth Burke has called "equipment for living." In more practical terms, the discipline of English fosters the development of various human skills: it requires the student to think, and to use language with clarity, judgement, and imagination.

But individual works of literature are also related in various ways to their social, cultural, and political contexts. For this reason, curiosity about a particular text often leads to enquiries that touch upon history, philosophy, politics, religion, biography, and the fine arts as well. The written text turns out to be a link between an individual sensibility and the rest of the world. The value of English studies therefore, though difficult to measure, can be discovered both in the large semiologies of the cultures to which we belong, and in the smallest nuances of the language we use.

In the first year, ENGL 1000.06 is required of all students who wish to take further English classes. There are about twenty different sections ranging from historical surveys to more eclectic studies. To enable students to choose the one most suited to their inclinations and needs, the English Department and the Registrar's Office have an ENGL 1000.06 supplement which specifies the aims and reading lists of each section. Classes numbered from 2000 to 4099 are especially suited for those concentrating in English, studying it as a complement to their main area, or taking an elective, and classes beyond 4250 are designed as studies of specialized areas for Honours students. Honours classes are open to General students with permission of the Chair and the professor concerned. A supplement describing Upper-year General and Honours classes in detail is available from the English Department.

## Degree Programmes

Students should consult the "Degree Requirements" section of this calendar for specific regulations.

## BA with Honours in English

This degree is a preparation for students going on to advanced study and for other highly-motivated students. It is designed to provide knowledge of the historical development of literature in English and to introduce students to the critical and theoretical paradigms of the discipline. It requires students to take:

- at least nine and no more than eleven credits in English beyond the 1000 level, of which
  - a) classes will be selected from the 2000, 3000 and 4000 level;
  - b) at least five credits must be selected from Groups A, B and C in the 4000 level; and
  - c) at least one credit must be taken in each of Groups A, B, and C in the 4000 level.
- an additional grade (the "21st grade" - currently met by 0451.00)

- Honours students may not take 2000- and 3000-level classes that substantially repeat the material of a 4000-level class in Group A, B, or C which they have already taken.

**NOTE:** For purposes of the honours programme and its requirements, classes in the 4000 series are divided into the following groups:

**Group A (early period):** 4251.06, 4252.06, 4253.06, 4351.06, 4352.06, 4360.03

**Group B (middle period):** 4255.06, 4256.06, 4354.06, 4355.06, 4356.06, 4457.06

**Group C (later period):** 4357.06, 4453.06, 4455.06

**Group D (Special topics):** 4001.03, 4002.03, 4003.03, 4004.03, 4005.03, 4006.03, 4007.03, 4008.03, 4009.03, 4010.03

### BA with Combined Honours

There are several Combined Honours programmes: English and French, English and German, English and History, English and Philosophy, English and Spanish, English and Theatre. Students interested in any of these combinations or any other that involves English and another subject should consult with the Departments concerned.

### BA with Advanced Major in English

This degree is a wide-ranging preparation for a variety of careers, including the teaching of English at elementary and high-school level. It is organized to develop skills in reading, interpreting, and writing about a variety of literary forms. It requires students to take:

- at least six and no more than nine credits in English beyond the 1000 level of which:
  - a) full- and half-credit classes will be selected from the 2000- and 3000-level, and half-credit classes from the 4000-level.
  - b) at least three credits must be taken from beyond the 2000-level;
  - c) at least one half-credit must be taken in the 4000-level;
  - d) one credit must be taken in poetry, one credit in drama, and one credit in prose or prose fiction; and
  - e) at least one credit must be taken in literature before 1900.

### BA with Major in English

This degree is a general liberal arts degree with a concentration in English. It permits a wide range of choice in class selection. It requires students to take:

- at least four and no more than eight credits in English beyond the 1000 level, or which:
  - a) classes will be selected from both the 2000- and 3000-level; and
  - b) at least two credits must be beyond the 2000 level.

### Classes Offered

**Note:** Classes marked \* may not be offered every year. Please consult the current timetable on registration to determine if these classes are offered.

**ENGL 1000.06R: Introduction to Literature.** Since ENGL 1000.06 consists of sections taught

by many different instructors, statements about its objectives and approach must be confined to generalizations. All instructors of ENGL 1000.06 have these two broad objectives in common: (a) to involve students in the serious study of literature; (b) to involve them in the discipline of words so that they will be more critical and responsive readers and more exact and imaginative writers. The subject matter varies from section to section. Detailed syllabi of all sections are available. Practice in writing is carried on throughout the year in regular essays. Each section attends three lectures per week. In addition, the tutors attached to each session conduct small discussion groups and personal interviews with students.

**Format:** Writing Requirement, lecture /discussion 3 hours

### Upper-year Classes

Successful completion of ENGL 1000.06 is the prerequisite for entry into Upper-Year classes. For a more complete description of classes and of texts, students should consult the Departmental Supplement for Upper-Year classes.

#### Classes in the 2000 Series

The 2000 series includes classes that emphasize genre or literary form, and those that offer broad surveys of literature. Classes in the 2000 series are open to students in their second or third year of studies who have completed ENGL 1000.06.

**\*ENGL 2028.03A or B: Short Poems in English.** Forms and themes in the short poem are studied by means of critical reading of poems written in English. Topics may include the following: the self in the short poem, other persons, public events, love, nature, the city, the machine, wit, myth, traditional forms, free verse, the hokku, lyric as song, spoken poetry, poetry in print, concrete poetry, and possibly other topics to suit the class.

**Format:** Lecture/discussion 2 hours

**Prerequisite:** ENGL 1000.06

**Exclusion:** ENGL 2228.06R

**\*ENGL 2034.03A or B: The Short Story.** This class attempts to combine detailed consideration of a wide range of the best short stories of the last 150 years with discussion of general questions about the nature of the genre itself. As much as anything else it is a class in 'reading and writing' intended to improve reading ability and to develop the capacity to understand and interpret literature.

**Format:** Lecture/discussion 2 hours

**Prerequisite:** ENGL 1000.06

**Exclusion:** ENGL 2234.06R

**\*ENGL 2200.06R: Advanced Composition.** An advanced class in the theory and practice of writing English prose, designed for people who already have some competence and interest in writing. The class is not a "remedial" class and not a "creative writing" class.

**Format:** Lecture/discussion 3 hours

**Prerequisite:** ENGL 1000.06

**\*ENGL 2203.06R: Masterpieces of Western Literature.** Intensive reading of selected major works from Western literature, designed to broaden students' outlook on literature and also to increase their familiarity with works that are

not only stimulating in themselves but also comprise the basis for the development of English and other literatures.

Format: Lecture/discussion 3 hours

Prerequisite: ENGL 1000.06

**\*ENGL 2204.06R: The European Novel.** An intensive study of about ten representative European novels of the last two hundred years. A considerable amount of attention is paid to the philosophical ideas which are an important feature in many of the novels studied.

Format: Lecture/discussion 2 hours

Prerequisite: ENGL 1000.06

**\*ENGL 2205.06R: Landmarks of English Literature.** This class studies works by many of the most influential British authors from Chaucer to the present century. These landmarks provide some orientation in the literary landscape, and help to make students aware of the diversity available in literary studies. The class is aimed at, but not limited to, English majors.

Format: Lecture/discussion 3 hours

Prerequisite: ENGL 1000.06

**\*ENGL 2207.06R: 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.*

Format: Lecture/discussion 2 hours

Prerequisite: ENGL 1000.06

**\*ENGL 2208.06: The English Novel to 1900.** Based on a selection of titles by representative authors, this class is a survey of the early English novel. Attention is given to the rise of the genre as well as to the variety of forms and functions which the novel assumed or served.

Format: Lecture/discussion 2 hours

Prerequisite: ENGL 1000.06

**\*ENGL 2211.06R: Commonwealth Literature.** An introduction to the literature of the British Commonwealth, emphasizing writing from Africa, Australia, the Caribbean and India. The bulk of the literature studied will be modern.

Format: Lecture/discussion 2 hours

Prerequisite: ENGL 1000.06

**\*ENGL 2220.06R: English Drama.** An introduction to some of the major plays and playwrights in the history of English drama. The ability to interpret a dramatic text is of principal concern; some attention may be paid to changes in staging practices from the medieval beginnings of English drama to the recent experimental theatre. The objective of the class as a whole is to sample the richness and diversity of the English dramatic tradition.

Format: Lecture/discussion 2 hours

Prerequisite: ENGL 1000.06

**\*ENGL 2221.06R: Fictions of Development.** A study of a variety of literary works (chiefly novels) which portray the crises and conflicts involved in growing up, finding a vocation, and finding oneself. Works from the nineteenth century to the present by Canadian, English and American authors are included, and special attention is given to the connections between art and autobiography, and between literature and

psychology, as well as to the influence of gender differences in patterns of human development, and ways of writing about them.

Format: Lecture/discussion 2 hours

Prerequisite: ENGL 1000.06

Cross-listing: WOST 2200.06

**\*ENGL 2225.06R: Epic, Romance, and Fantasy.** This class offers a consideration of epic, romance, and fantasy. Starting with a consideration of primary epics, it will then go on to take a look at manifestations of the epic spirit in modern works.

Format: Lecture 2 hours

Prerequisite: ENGL 1000.06

**\*ENGL 2226.06R: Tragedy.** A study of the nature and method of tragedy in literature. Examples are taken from Greek, Shakespearean, and modern drama, as well as from poetry, and from novels.

Format: Lecture/discussion 2 hours

Prerequisite: ENGL 1000.06

**\*ENGL 2227.06R: Comedy and Satire.** The comedian and the satirist are interested in both the laughable and the deplorable antics and eccentricities of human nature. This class concerns itself with their points of view, as expressed in such varied forms as stage comedy, graphic satire, the comic novel, and the humorous essay. It also considers theories of comedy and laughter in their application to a wide variety of literary types. Lectures and class discussions are augmented with play readings, films and other illustrative materials.

Format: Lecture/discussion 3 hours

Prerequisite: ENGL 1000.06

**\*ENGL 2231.06R: Modern American and Canadian Novels.** Six Canadian and six American novels are treated as related "pairs", with a view to discovering what qualities are distinctive to each group, and what qualities are shared.

Format: Lecture/discussion 2 hours

Prerequisite: ENGL 1000.06

**\*ENGL 2233.06R: Science Fiction and Fantasy.** Selected works of speculative fiction are read for pleasure and studied for understanding. The study emphasizes analysis and evaluation of the works as literature. Non-majors are welcome.

Format: Lecture/discussion 2 hours

Prerequisite: ENGL 1000.06

#### Classes in the 3000 Series

The 3000 series includes classes that focus on periods in national literatures, that take up the descriptive and historical study of the English language itself, and that deal with the theory and history of literary study. Classes in the 3000 series are open to any student who has completed ENGL 1000.06.

**\*ENGL 3018.03A or B: Arthur, The Age and Legend.** The forms and import of diverse Arthurian works will be the subject of this class, which will investigate the sixth-century origins of Arthur's legend and its transformations to the present day. Central stories concerning the kings, knights, queens and ladies of Logres and the stewards and seekers of the grail will be studied using texts from *The Mabinogion* and *Lanzelet* to the *Mists of Avalon*, authors from Geoffrey of Monmouth, Chrétien de Troyes,



Wolfram von Eschenbach and Sir Thomas Malory to Tennyson, Browning, Stewart and Percy.

Format: Lecture/discussion 2 hours  
Prerequisite: ENGL 1000.06

**\*ENGL 3050.03A or B: 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, class, sexual orientation and national identity.

Format: Lecture/discussion 2 hours  
Prerequisite: ENGL 1000.06

**ENGL 3061.03A or B: 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 and the detective story, Hawthorne and Poe; radically inventive poets, Whitman and Dickinson; perhaps the greatest "nature writer" of all time, Thoreau; one of the most popular and most politically influential novels of all time, *Uncle Tom's Cabin*; *Moby Dick*, the greatest sea novel; great testaments to the strength and dignity of the human spirit in the "escaped-slave" narratives of Frederick Douglass and Harriet Jacobs.

Format: Lecture/discussion 2 hours  
Prerequisites: ENGL 1000.06

**ENGL 3062.03A or B: 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. During this period Mark Twain achieved international fame, while others, such as Henry James and Stephen Crane, though less popularly celebrated, were widely read and highly influential. Women writers achieved notable distinction both in poetry and fiction, as the examples of Emily Dickinson and Edith Wharton would suggest. Having preserved itself as a nation, the United States was now entering into competition with European cultures, not only in political and economic terms, but also in matters of literature and art.

Format: Lecture/discussion 2 hours  
Prerequisite: ENGL 1000.06

**ENGL 3070.03A or B: African American Writing.** 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 2 hours  
Prerequisite: ENGL 1000.06

**\*ENGL 3075.03A or B: Multicultural Fictions.** A study of the fiction of postcolonial cultures by writers from such apparently different places as North, Central and South America, Africa, Asia and Australasia. These writers explore the interface of race, ethnicity, gender, and politics of personal and communal power and so re/shape our reading of the past and present. Their work is often grounded in local place and

time, but inevitably transcends regional borders in a voicing of issues that eradicate the safety of distance between so-called first- and third-world concerns.

Format: Lecture/discussion 2 hours  
Prerequisite: ENGL 1000.06

**\*ENGL 3095.03A or B: Narrative in the Cinema.** This class will provide a brief introduction to the study of film narrative. Through an examination of select films from throughout the history of the medium, this class will consider various forms and conventions of cinematic fiction-making. Although social, political, psychological and other non-formal aspects of film will be discussed, the class will be primarily concerned with the aesthetics and visual styles at work in the films under consideration.

Format: Lecture/discussion/screening 4 hours

Prerequisite: ENGL 1000.06

**\*ENGL 3201.06R: 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.

Format: Lecture/discussion 2 hours  
Prerequisite: ENGL 1000.06

**\*ENGL 3202.06R: History of the English Language.** An introduction to the historical development of the English language. The growth of our "word-hoard", the evolution of word meanings, the changing patterns of speech sounds, of word forms and of syntactic structures, the distinction of dialects and literary styles are studied through analysis of selected literary texts. ENGL 3201.06 and ENGL 3202.06 are complementary classes.

Format: Lecture/discussion 2 hours  
Prerequisite: ENGL 1000.06

**\*ENGL 3206.06R: American Literature of the Nineteenth Century.** An introduction to American literature through representative works by major writers from 1800 to 1900. Among those studied are Cooper, Hawthorne, Poe, Emerson, Melville, Whitman, Dickinson, and Twain. Both fiction and poetry are studied. Students are encouraged to discuss the works, and classes usually proceed by a combination of discussion and lecture.

Format: Lecture/discussion 2 hours  
Prerequisite: ENGL 1000.06

**\*ENGL 3209.06R: Twentieth-Century Fiction.** An introduction to the main thematic and technical trends in the modern novel.

Format: Lecture/discussion 2 hours  
Prerequisite: ENGL 1000.06

**\*ENGL 3210.06R: Modern Poetry in English.** A study of modern poetry in English focussing on the seminal poets Yeats, Stevens, Pound, Eliot, and Williams. Developments and trends in poetry from the 1930's to the present are also considered. For readers, beginning and more experienced, who wish to get their bearings in modern poetry.

Format: Lecture/discussion 2 hours  
Prerequisite: ENGL 1000.06

**\*ENGL 3212.06R: British Literature of the Twentieth Century.** A survey introduction to the past seventy-five years of British fiction, drama, and poetry.

Format: Lecture/discussion 2 hours  
Prerequisite: ENGL 1000.06

**\*ENGL 3213.06R: American Literature of the Twentieth Century.** An introduction to poetry, fiction and drama by American writers of the twentieth century.

Format: Lecture/discussion 2 hours  
Prerequisite: ENGL 1000.06

**\*ENGL 3214.06R: Shakespeare.** An introduction to Shakespeare's career as a playwright, through discussion and interpretation of a dozen or more of his plays.

Format: Lecture/discussion 2 hours  
Prerequisite: ENGL 1000.06

**\*ENGL 3215.06R: Poetry of the Romantic Period.** An introduction to the spirit of an age and its manifestations in literary art. Examples of shorter and longer lyrics and excerpts from longer narrative and dramatic poems are drawn from the works of Blake, Wordsworth, Coleridge, Byron, Shelley, and Keats.

Format: Lecture/discussion 2 hours  
Prerequisite: ENGL 1000.06R

**\*ENGL 3216.06R: The Gothic Novel.** A survey of the origins and development of *The Tale of Terror* and the Supernatural during the latter half of the eighteenth century and its various manifestations and influences in succeeding fiction. Students will not only chart the chief landmarks of gothic fiction but also explore the various chambers of horror-literature.

Format: Lecture/discussion 2 hours  
Prerequisite: ENGL 1000.06

**\*ENGL 3218.06R: Medieval Literature.** A study of selected medieval works of Northern Europe, with major emphasis upon the Arthurian legend as found in Malory. Beginning with a look at Nordic, Celtic and Frankish background materials (in translation), one goes on to focus upon late-medieval developments in saga and romance, concluding with a look at some post-medieval uses of the inherited matter in Tennyson, Morris, Lewis and Tolkien. An enriched ENGL 3218.06 is available for Honours credit to students who have previously taken ENGL 4351.06.

Format: Lecture/discussion 2 hours  
Prerequisite: ENGL 1000.06

**\*ENGL 3219.06R: Chaucer and his Contemporaries.** A selection from the genres of late medieval literature in English: romances, fabliaux, plays, lyrics, and legends. Some works are studied in translation; others (including Chaucer's) are read in the original Middle English.

Format: Lecture/discussion 2 hours  
Prerequisite: ENGL 1000.06

**\*ENGL 3224.06R: Renaissance Poetry.** An introduction to English poetry from the early sixteenth to the mid-seventeenth century, concentrating on authors whose works have exercised a continuing influence: Sidney, Shakespeare, Donne, Jonson, and Milton.

Format: Lecture/discussion 2 hours  
Prerequisite: ENGL 1000.06

**\*ENGL 3225.06R: Restoration and Eighteenth-Century Literature.** This class will survey literary works in drama, poetry and prose from 1660-1800. Topics to be considered might include the risky business of irony, the rise of the novel, the rise and fall of the heroic couplet, the professionalization of English letters and the changing functions of the poet, the obstacles faced by early women writers, and the relation of literature to politics in an age of emerging democratic capitalism.

Format: Lecture/discussion 2 hours  
Prerequisites: ENGL 1000.06

**\*ENGL 3229.06R: The Victorian Age.** A survey of selected Victorian texts designed to deconstruct modern myths about the Victorians and to introduce students to the diversity of the Victorian Age. Works by Mill, Tennyson, Arnold, the Brownings, the Pre-Raphaelites, and Wilde demonstrate that Victorian Literature is animated by a spirit of rebellion and a zest for controversy, marked by innovation and experimentation in literary forms and subjects, and notable for both its passionate defences of individual liberty and its surprisingly modern affirmations of women's rights.

Format: Lecture/discussion 2 hours  
Prerequisite: ENGL 1000.06

**\*ENGL 3232.06R: Modern Drama.** An introduction to the major developments in drama from Ibsen to the present. Special attention is given to changes in dramatic style and to the growth of modern theatrical movements. The playwrights represented include Strindberg, Shaw, Pirandello, Brecht, Genet, Ionesco, Pinter, Albee, and Stoppard. A few recent Canadian plays provide a focus for discussion of contemporary trends.

Format: Lecture/discussion 2 hours  
Prerequisite: ENGL 1000.06

**\*ENGL 3244.06R: Literary Criticism.** A survey of Classical Greek and Latin theory, English critics and some pertinent European writers and trends.

Format: Lecture/discussion 2 hours  
Prerequisite: ENGL 1000.06

#### Classes in the 4000 Series

Classes in the 4000 series focus on more specialized topics than other classes in the major programme. They are designed for more experienced students in the Honours and Advanced Major programmes. You must have permission of the Department to take classes in the 4000 series.

**\*ENGL 4001.03A or B: Studies in an Individual Author I**

**\*ENGL 4002.03A or B: Studies in an Individual Author II**

**\*ENGL 4003.03A or B: Studies in Genres I**

**\*ENGL 4004.03A or B: Studies in Genres II**

**\*ENGL 4005.03A or B: Studies in National Literatures in English I**

**\*ENGL 4006.03A or B: Studies in National Literatures in English II**

**\*ENGL 4007.03A or B: Studies in Literary History I**

\*ENGL 4008.03A or B: Studies in Literary History II

\*ENGL 4009.03A or B: Studies in Literary Theory I

\*ENGL 4010.03A or B: Studies in Literary Theory II

**ENGL 0451.00A: Introduction to Literary Research.** A departmental (i.e., non-university and non-credit) technical class for honours and graduate students. It is planned to acquaint the student with certain research tools in the library that are most frequently used by students of English (bibliographies, catalogues, indices, digests, journals, dictionaries, microfilms), many of which the student is unlikely to stumble upon in his/her own research.

There will be a brief introduction to the history of printing and papermaking. Students will be taken on a tour of the printing shop (Dawson Room) and occasionally guest speakers will lecture on relevant topics. Successful completion of exercises and attendance at lectures one hour a week for the first term will constitute fulfilment of requirements for the class.

Format: Lecture 1 hour, first term only

\*ENGL 4251.06R: Sixteenth-Century Prose and Poetry. This is a class in the prose and poetry of the English Renaissance from its beginnings to the 1590s. The major writers to be studied are More, Sidney, Spenser, and Shakespeare; brief selections from Wyatt, Surrey, Elyot, Ascham, Hooker, Marlowe and a few others will also be read.

Format: Seminar 2 hours

\*ENGL 4252.06R: Shakespeare and the Drama of His Time. A selection of plays by Shakespeare is placed in the context of representative plays by his earlier and later contemporaries, especially Marlowe and Jonson. Students may consult the professor for a list of plays and suggested preliminary reading.

Format: Seminar 2 hours

\*ENGL 4253.06R: Old English. An introduction to the Old English language (700-1100 AD), followed by a study of some of the prose and minor poems, and, in the second term, of Beowulf. Students are also introduced to some aspects of Old English art and archaeology. Some knowledge of a classical or modern European language (preferably German) is desirable, though not essential, and an understanding of traditional grammatical terminology will be helpful. This class is not recommended, except in unusual circumstances, to those who are not thoroughly fluent in modern English.

Format: Seminar 2 hours

\*ENGL 4254.06R: Restoration and Eighteenth-Century Literature. The emphasis is on three great satirical authors (Dryden, Pope, and Swift), on a study of Restoration drama and on major works of Samuel Johnson. Since the literature of the period is related closely to the culture of the age, some time is spent on the contemporary climate of opinion revealed in the works of a number of writers representative of literary, political, social, and

philosophical points of view: Hobbes, Halifax, Pepys, Rochester, Butler, Addison and Steele, Mandeville and Shaftesbury.

Format: Seminar 2 hours

\*ENGL 4255.06R: Poetry and Prose 1660-1800. This seminar will examine a selection of poetry and non-fictional prose from the Restoration and Eighteenth Century. Although the works of Dryden, Pope, Swift and Johnson will be emphasized, attention will also be paid to a number of works in representative genres (E.G., biography, letters, essays). Time will be spent on some lesser known poets of period, such as the women poets and the poets of sensibility.

Format: Seminar 2 hours

\*ENGL 4256.06R: The Novel from Behn to Austen. This seminar will examine the development of narrative fiction during the Restoration and the eighteenth century. Selected works will include a number of novels, well-known and not so well-known. Topics might include the constructions of gender, the rise of individualism, changing concepts of realism, and the relation between history and fiction.

Format: Seminar 2 hours

\*ENGL 4351.06R: Middle English. An introduction to the language and literature of feudal and chivalric England, with the principal emphases being upon Chaucer's poetry and upon the Arthurian story. Through readings and study, the student should gain some historical sense of the language, of the late-medieval social milieu and of the especial flourishing of literature in the late-fourteenth century.

Format: Seminar 2 hours

\*ENGL 4352.06R: Seventeenth-Century Poetry and Prose. A study of selected poetry and prose of the later Renaissance. Of the poets, Donne and Milton are given special emphasis; Milton's poetry, especially *Paradise Lost*, occupies a major part of the second term.

Format: Seminar 2 hours

\*ENGL 4354.06R: Nineteenth Century Novel. The novels of the period from Scott and Austen to Hardy are studied.

Format: Seminar 2 hours

\*ENGL 4355.06R: American Literature to 1900. This class deals with major writers of the 19th century, as well as works from the colonial period which raise important cultural questions.

Format: Seminar 2 hours

\*ENGL 4356.06R: The Romantic Period. A close reading of the major poetry of Blake, Coleridge, Wordsworth, Byron, Shelley, and Keats. Attention is also given to their critical writings in prose, and to the intellectual, cultural, and historical milieu in which they worked.

Format: Seminar 2 hours

\*ENGL 4357.06R: Modern Canadian Literature. A study of Canadian fiction and poetry since the 1920's with emphasis on the changing form and content of Canadian writing. Approved with Canadian Studies.

Format: Seminar 2 hours

\*ENGL 4360.03R: Old Norse. A broad survey of major Old Norse prose and poetic works in

translation and an introduction to the comparative study of the very close relation of the early Norse and English languages and literature.

**Format:** Lecture 1 hour

**Prerequisite:** One of ENGL 3218.06, 4253.06, 4351.06 or instructor's consent

**\*ENGL 4453.06R: Twentieth-Century English Literature.** A series of explorations designed to interpret some of the literary texts written in our century and the (British) culture which produced them.

**Format:** Seminar 2 hours

**\*ENGL 4455.06R: Modern American Literature.** In the first term, this class studies 20th-century American fiction. In the second term, modern American poetry is assessed. Classes are a combination of lectures and discussion.

**Format:** Seminar 2 hours

**\*ENGL 4457.06R: Victorian Poetry.** Poems by Tennyson, Robert Browning, Elizabeth Barrett Browning, Arnold and selected Pre-Raphaelites are studied in the context of the social and political, the religious and scientific ideas current in Victorian England.

**Format:** Seminar 2 hours

# Environmental Science

## Introduction

Environmental Science applies the findings and principles from all disciplines of science to questions and problems involving the environment of our planet, its oceans, atmosphere, and biosphere. Environmental science is therefore extremely broad and interdisciplinary. Most environmental scientists have primary 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; many work in federal or provincial government laboratories that are engaged in basic research or applied problem-solving. Many more work in private consulting or engineering firms to minimize humankind's impact on the environment.

## Degree Programmes

Dalhousie believes that the importance of environmental science in the undergraduate curriculum requires it to be taught in the relevant classes of all disciplines (i.e. "across the curriculum"). For this reason rather than offer environmental science as a separate degree programme, we offer it as an integral part of the existing basic disciplines. Those interested in environmental science as a career are strongly advised to obtain a good grounding in the basic sciences by concentrating their field of study in one subject in order to obtain a major or honours BSc in that discipline. Current programs that provide streams emphasizing environmental subjects are Earth Sciences (particularly Environmental Geology and Hydrogeology) Biology and Marine Biology. Of particular relevance is the programme specializing in Earth System Science (see Earth System Science section of this calendar).

Most major or honours programmes allow some freedom in selection of classes, especially with respect to elective classes. In order to assist students in locating classes with particular applications or relevance to environmental issues, we have listed those classes offered within the Faculty of Science, and noted those aspects of each class which relate to the environment. We emphasize that these classes are offered by individual departments, and do not of themselves form part of a general environmental degree program. Consult the individual departments for prerequisites and admission requirements. Above all, be sure that the selection of classes you choose will be sufficient to qualify for a major or honours Bachelor of Science degree in the subject you have chosen for specialization (Note College of Arts and Science section of "Degree Requirements" in this calendar).

After the BSc degree, career options you may wish to consider include:

- Diploma in Meteorology (Consult the Physics or Oceanography departments)
- Graduate study in Oceanography

- Masters degree programme with the School for Resource and Environmental Studies

## Classes Offered Within the Faculty of Science with Particular Relevance to Environmental Science

### 1000-level classes

**CHEM 1000.06R: The Chemical World.** This class is mainly for BA students. It emphasizes descriptive chemistry, i.e. properties of chemical compounds, over quantitative aspects. Many examples and assignments are relevant to environmental science. Principles demonstrated include chemical structure - function relations; quantity/quality considerations for chemicals in the environment; toxicity. Students will be taught to recognize chemical structure and function.  
Instructors: T.S. Cameron

**CHEM 1010.06R/1500.06R: General Chemistry.** These classes are standard first-year University chemistry. Both quantitative and qualitative aspects of chemistry are emphasized, and many examples used in class are taken from environmental science. All material covered in these classes is relevant to an understanding in particular of chemicals, cycles, pollution, etc.  
Instructors: A. Chatt, T.B. Grindley, R.D. Guy, N. Schepp, R. Stephens, C.H. Warren

**CHEM 1040.06R: General Chemistry for the Life and Health Sciences.** The basic content and rigour of this class is the same as that of CHEM 1010.06. However, more emphasis is given to organic (as opposed to inorganic) structures, and topics that are of interest to the life and health sciences are favoured over those of the inanimate variety. Thus, chemical principles are illustrated primarily by examples from living systems. Additional areas such as enzyme kinetics, isotopes in medicine, and several types of bio-analyses are introduced in short and simple form. Some chapters take note of the material covered in other prominent first-year classes, particularly in biology and psychology. Requisite high school chemistry (N.S. grade XI/XII) may be reviewed in tutorial but is not retaught in lecture. CHEM 1040.06 uses the same textbook and laboratory experiments as CHEM 1010.06 and serves as a regular prerequisite for all second-year Chemistry classes.

Instructor: W.A. Aue  
Prerequisite: N.S. Grade XII Chemistry (441) or equivalent

**CHEM 1410.03A: Introductory Chemistry.** A descriptive introduction to chemistry with emphasis on materials related to the life and health sciences. The class requires a background of high school chemistry and mathematics. Topics covered include units, matter, the Periodic Table, stoichiometry of reactions, gases, liquids, solids, solutions, simple concepts of equilibria, acids, bases, radioactivity hydrocarbons, alcohols, ethers, amines, amides, esters and simple carbohydrates and proteins. The organic chemistry deals primarily with structures and introduces molecules of medicinal interest.

Instructor: D.L. Hooper, P.D. Pacey

**Note:** This class does not serve as a prerequisite for any other chemistry class.

**ERTH 1000.06R/1001.03B:** Introduction to Geology. Covers principles of Earth Science including those directly applicable to environmental science - e.g. nature and coupling of lithosphere-hydrosphere-atmosphere-biosphere, rock cycle, geological time, stratigraphy, geological processes and surficial geology, extinctions, scientific method. Applies principles of Earth Science to problems in environmental and resource geology - e.g., mineral and petroleum resources (including environmental problems associated with their recovery and use), groundwater, waste disposal, soils, deserts and desertification, the carbon cycle, glaciation, history and causes of climate change, rivers and floods, slope failure, coastal subsidence, volcanic and earthquake hazards. Lectures cover points noted above, with special class reading and discussion of several topical environmental issues. Field trips illustrate different aspects of geology, including environmental aspects as appropriate for each locality (e.g., shoreline erosion). Labs include the analysis and identification of sediments and rocks, and coverage of the physical basis of the Earth's surface. Students are taught geological time and the time scale; how to read the history of past environmental change from the geological record; specific geological principles (e.g., groundwater flow, the carbon cycle, slope stability) relevant to environmental science, map reading. For more course content information refer to the Earth Sciences section of this calendar.

Instructor: J. Hall

**ERTH 1040.03A/1050.03B:** The Earth and Society. 1040.03 covers principles of Earth Science including those directly applicable to environmental science (applications mainly covered in 1050.03) - e.g., nature and coupling of lithosphere- hydrosphere- atmosphere- biosphere, geological time, rock cycle, stratigraphy, geological processes and surficial geology, extinctions, scientific method. Lectures cover points noted above. Field trips illustrate different aspects of geology, including environmental aspects as appropriate for each locality (e.g., shoreline erosion). Students are taught understanding of geological time and the time scale; how to read the history of past environmental change from the geological record.

1050.03 applies principles of Earth Science learned in 1040.03 to problems in environmental and resource geology - e.g., mineral and petroleum resources (including environmental problems associated with their recovery and use), groundwater, waste disposal, soils, deserts and desertification, the carbon cycle, glaciation, history and causes of climate change, rivers and floods, slope failure, coastal subsidence, volcanic and earthquake hazards. A large proportion of class time is spent on environmental applications of Earth Science, with some special reading and discussion on topical environmental problems; three out of four assignments involve problems or reports on environmental/resource geology. Students are taught specific geological principles (e.g.,

groundwater flow, the carbon cycle, slope stability) relevant to environmental science, map reading. For more course content information refer to the Earth Sciences section of this calendar.

Instructors: D. Godfrey-Smith, J. Hall, P.J.C. Ryall, M. Zentilli

**SCIE 1000.06R:** Introduction to Environmental Studies. The intention of this full-credit course is to provide students with an entry-level introduction to the scope and importance of environmental issues that affect us at the local, regional, national and global levels. The course content will consist of introductory material on basic sciences (biology, earth sciences, atmospheric science and oceanography) and will follow with three groups of environmental issues; (i) the human population and sociocultural patterns. (ii) sustainability and use of renewable and non-renewable natural resources, and (iii) environmental degradation caused by pollution and disturbance. The course will be multi-disciplinary in nature, with specialists dealing with issues that reflect their particular expertise. However, this course will also build upon the connections among specific disciplines. The instructional format will involve two lectures per week. Grading will be by examination at the end of each module (about 4-6 exams each term).

Instructors: O. Hertzman

### 2000-level classes

**BIOL 2001.03A:** Marine Diversity. (Area II) The sea was the cradle of life and the origin of most phyla. This class explores the enormous variety of living and fossil organisms from the sea and looks at the special problems and adaptations of benthic, planktonic and nektonic species. It examines functional and taxonomic relationships using lectures, laboratories with living organisms, and a field trip.

Instructors: A.R.O. Chapman, C. Corkett, R. Scheibling

Prerequisite: BIOL 1000.06R or 1001.06R or SCIE 1500.30 (Grade B- or better)

**BIOL 2002.03B:** Terrestrial Diversity. A survey of the terrestrial organisms. The class emphasizes the restrictions imposed on terrestrial adaptations by the aquatic origins of the colonizers, discusses the physiology of living in a terrestrial environment, looks at the domestication of plants and animals by man, and speculates on the future diversification of the earth environment and its inhabitants.

Instructors: M. Johnston, M. Leonard, A.H. Mills

Prerequisite: BIOL 1000.06 or 1001.06 or SCIE 1500.30 (Grade B- or better)

**BIOL 2060.03A or B:** Introductory Ecology. Ecology is the study of the interrelationships of organisms and their environments. The broad subject of ecology focuses upon the interactions of plants and animals, including humans, with each other and with their non-living world. Three levels of ecology are studied: (1) Individuals, (2) Populations, (3) Communities and Ecosystems. Assignments and tutorials enlarge upon concepts presented in lecture. Students are instructed in elementary computer techniques and use the computer for most assignments. This class provides an overview

## 200 Environmental Science

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: C. Beauchamp, J. Hutchings, R. Scheibling

Prerequisite: BIOL 1000.06 or 1001.06 or SCIE 1500.30 (Grade B- or better)

Exclusions: BIOL 2066.03, BIOL 2046.06

**ECON 2250.06R: An Applied Course in Economic Development and the Environment: Concepts, Policies and Projects.** The class is designed around concepts of sustainable development, with emphasis on key issues facing developing countries and less prosperous regions of some industrial nations. There are three main elements: (1) conceptual underpinnings and tensions behind sustainable development; (2) international, national and regional level policies and planning approaches for sustainable development - including lessons from the Rio Summit, the World Bank, CIDA, Canada's Green Plan and the European Regional Development Fund; (3) projects for sustainable development - drawing on case experiences and first-hand field work undertaken as a part of the class programme.

Instructor: I. McAllister

Prerequisite: Introductory economics or permission of instructor.

**ERTH 2203.03A: 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: T. Martel

Prerequisites: ESCI 1000.06 or ESCI 1040.03/ESCI 1001.03

**ERTH 2204.03B: Life Through Time.** The core of the class will cover in systematic sequence the macroscopic invertebrates, a few important vertebrates and plants (microfossils and dinosaurs are covered in other classes). The class will also deal with many of the important events that have affected the development of life on Earth, including the beginning of life; evolution, fossilization, mass extinction and the great biological crises of the Permo-Triassic and Cretaceous. Laboratory work will cover identification of fossils, concept of paleontological species and paleoecology.

Instructor: D. Scott

Prerequisites: EARTH 2203.03 or EARTH 1040.03 / BIOL 1000.06

**ERTH 2410.03B: Environmental and Resource Geology.** Today, and into the foreseeable future, humanity is faced with numerous environmental problems created by natural and human-made causes. In many cases, an understanding of one or more geologic processes is essential in finding an appropriate solution. Environmental geology is geology as it relates to human activities. This course examines how geologic processes and hazards impose constraints on human activities, the

geologic aspects of pollution and waste-disposal problems, the issues associated with the utilization and management of mineral and energy resources, and several other topics. Principles and applications addressed in the course include metallic mineral resources, energy resources (coal, hydrocarbons, nuclear), environmental problems of resource extraction and processing, groundwater as a resource, geologic hazards (flooding, landslides, subsidence, earthquakes, volcanos) and their mitigation or prevention, role of geology in land use planning, coastal processes and human intervention, geological aspects of solid and liquid waste disposal. Many environmental issues involve a variety of geologic processes. This course provides participants with a broader foundation for the discussion and evaluation of specific environmental issues that involve geologic aspects. Emphasis is placed on the multi-disciplinary nature of environmental sciences and the holistic approach necessary to provide acceptable solutions. For more course content information refer to the Earth Sciences section of this calendar.

Instructors: G.K. Muecke

Prerequisites: EARTH 1000.06 or EARTH 1040.03 and 1050.03/1001.03

**STAT 2080.03A or B: Statistical Methods for Data Analysis and Inference.** This class introduces a number of techniques for data analysis and inference commonly used in the experimental sciences. The class begins with an introduction to model building in linear models and develops the techniques required for multiple regression. From here we consider analysis of variance, factorial designs, analysis of covariance using the general techniques for linear models. The last part of the class will include techniques for two and three way tables along with logistic regression. The use of a computer package for carrying out the computations will be an integral part of the course. Students will design and carry out a simple experiment as part of this class. A natural sequel for this class is STAT 3340.03.

Prerequisite: STAT 1060.03 or STAT 2060.03

Cross-listing: MATH 2080.03, ECON 2280.03

**OCEA 2850.06R: Introduction to Oceanography.** A general survey of Oceanography showing how the oceans, which account for more than 70% of the earth's surface, function as a dominant environmental force. Consideration also is given to man's impact on this ecological system. Designed to give a background or feeling for the ocean, what oceanography is, and what oceanographers do. It is not a good "background to science" class, since little feeling will be obtained for scientific techniques which would otherwise be acquired in a laboratory class. Most of the material covered is descriptive rather than basic, inasmuch as it is impossible in the time allowed and the material covered to also teach the basic required sciences.

Instructors: R.O. Fourrier

Prerequisites: Restricted to second year, or more advanced students

**3000-level classes**

**BIOL 3060.03A: Environmental Ecology.** This class covers the ecological effects of pollution and disturbance, plus some resource ecology and human population biology. Ecological effects of pollution and disturbance are emphasized. Skills taught include interpretation, some calculation/budget skills.

Instructors: B. Freedman  
 Cross-listings: ENVI 5120.03, BIOL 5060.03

**BIOL 3061.03A: Communities and Ecosystems.**

This class is divided into three sections: (A) Introduction, History and Concepts to Community Structure and Stability; (B) Environmental Assessment and Management at the Ecosystem level; and (C) Case Studies and Global Problems.

Instructor: P.A. Lane  
 Prerequisite: BIOL 2060.03

**BIOL 3063.03B: Resource Ecology.** This course is concerned with fisheries, wildlife and forest management. Principles demonstrated include geoeconomics, geological control strategies, and genetic conservation strategies. Students are taught familiarisation with the technical literature in several fields.

Instructors: R. Doyle, B. Freedman, S. Walde

**BIOL 3066.03A: Plant Ecology.** Ecology refers both to the interactions between organism and environment as well as to the formal scientific study of these interactions. In plants these interactions can involve other plants, as in competition, or animals, as in pollination, herbivory, seed predation and seed dispersal. Plants stand still after they have passed the seed stage. Standing still means that plants must survive and make offspring in an environment that is imposed upon them. This class examines the causes and consequences of being a plant from an evolutionary perspective. Ecological interactions both cause natural selection and are themselves the consequences of evolution. The overriding theme of the class, therefore, is that of the ecological theatre and the evolutionary play (in the words of G.E. Hutchinson). This class concentrates on individual interactions, adaptations and processes. Processes, such as nutrient cycling, that occur at the level of communities or ecosystems will receive little attention.

Instructor: M. Johnston  
 Prerequisite: BIOL 2060.03  
 Cross-listing: BIOL 5066.03

**BIOL 3069.03B: Population Ecology.** An examination of selected topics in population ecology. Topics include the effect of species interactions (predation, competition, mutualism) on population fluctuations, cycles and extinction. The relevance of theory to particular case studies such as lynx-hare cycles and biological control of winter moth will be discussed. Recent literature will be emphasized. Written assignments and exams will contribute to the final grades.

Instructor: S. Walde  
 Prerequisites: BIOL 2060.03, MATH 1010.03 or 1060.03, or equivalent

**BIOL 3601.03B: Nature Conservation.** The course traces the development of human economy and the resultant impact on the wild

environment. Particular attention is paid to human population dynamics, biotic extinctions and land-use patterns. Having identified the causes of impoverishment of biodiversity, the course examines possible cures, including: sustainable development, conservation science and environmental ethics. Special attention is paid to the establishment and management of protected areas.

Instructor: M. Willison  
 Prerequisites: BIOL 1000.06 or BIOL 1001.06 or SCIE 1200.06 or permission of instructor.

**BIOL 3614.03R: Field Ecology.** This class provides practical experience in techniques of quantitative field ecology, including design of field sampling programmes and manipulative experiments. Students examine specific ecological questions by collecting, analyzing, and interpreting field data and by writing scientific reports. Projects include a variety of experimental and descriptive studies on plant and animal populations or communities in intertidal, lacustrine, and forest ecosystems. Lectures and field trips will involve other biology professors. Specific topics include spatial distributions of organisms, animal orientation and movement, disturbance and succession, lake trophic status, and function of behaviour. Instruction includes use of PC and Macintosh computer analysis packages (e.g. Systat, Excel, Cricketgraph) and techniques of scientific writing. Evaluation is based on written assignments and participation in field, lab, and data analysis. No exams are given. Prospective students must apply to the instructor prior to registration; fourth year Biology students have priority. A special fee is charged to cover costs of transportation (consult department regarding fees or to obtain an application).

Instructor: C. Staicer  
 Prerequisites: BIOL 2060.03 and MATH 1060.03, and 2080.03 or equivalent

**CHEM 3402.03A: Identification of Organic Compounds.** This is a class designed to teach skills in the identification of organic compounds. The Earth has been composed of chemicals since its beginning, and as both nature and man evolve, the range of these continues to increase. The state of the environment around us directly corresponds to its chemical composition and understanding this state therefore requires a knowledge of chemistry. Many substances encountered in the environment are organic molecules and the study of their chemistry is thus important.

The approach used in this class is two-pronged, one using older, classical methods and the other using modern spectroscopic methods. The purpose of studying the older techniques is that they will give valuable experience in the very subjective ability of handling comfortably a wide variety of chemicals. Chemicals have discrete and measurable physical properties. However, the reaction of human beings to many chemicals is a subjective and variable phenomenon - one person may find a certain smell unimportant where someone else may find it repulsive, for example, a pair of well-worn socks. Most



people are only comfortable in situations with which they are familiar, and the same is true of handling chemicals - familiarity is crucial in learning how to handle these with confidence (but not with contempt!). This is particularly important in this age of chemophobia since the world needs competent, qualified chemists who can handle molecules with confidence and skill. Students need to acquire the skill of being able to recognize molecules from their appearance, from their smell and from their reactivity, also the skill of knowing how to handle them safely and efficiently. In addition, students need to become comfortable with the powers and limitations of modern analytical procedures. Most substances in real life are mixtures and hence skills at analysis and understanding interactions between compounds in mixtures is fundamentally important to the practice of chemistry. Of course, this also requires modern instrumental methods, the study of which will form the culmination of the skills taught earlier in the class.

**Prerequisite:** A good understanding of the principles taught in CHEM 2400.06, as evidenced by a grade of at least C.

**ECON 3332.03A or B: Resource Economics.**

This class covers resource management decisions - fisheries, forestry, etc. and pollution control regulations - standards versus taxes, etc. Principles demonstrated include optimal sustainable yield - fisheries; and forestry rotation periods. Students are taught applications of economic decision making to resource management and pollution regulation.

**Instructor:** M. Cross

**Prerequisite:** ECON 1101.03, 1102.03 and 2200.03

**ECON 3335.03A or B: 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.

**Instructors:** P. Burton, M. Cross, L. Mazany

**Format:** Lecture 3 hours

**Prerequisites:** ECON 1101.03, 1102.03, 2200.03

**ECON 3350.03A or B: Social Cost Benefit Analysis.** This class covers valuation of costs and benefits that are not priced in markets and methods for including such costs and benefits in economic decisions. These costs and benefits may be important in evaluating environmental issues. Principles demonstrated include implications of costs and benefits that do not have market values for various projects and differences between private and social perspectives in assessing projects. Students are taught methods of incorporating environmental concerns in economic analysis and implications of ignoring such concerns.

**Instructors:** N. Sharif

**Prerequisite:** ECON 1101.03, 1102.03, 2200.03; MATH 1060.03

**ERTH 3400.03A: Fundamentals of Hydrogeology.** The availability and preservation of sources of potable, fresh water is a major environmental concern. As surface waters have increasingly become polluted,

exploration and exploitation of groundwater resources have gained in importance. This course deals with subsurface waters and related geologic aspects of surface waters. The student is introduced to the factors which influence the availability of groundwater, such as the presence of suitable aquifers, water quality, and rate of recharge relative to rate of water use.

The geology, geophysics, and geochemistry of groundwater systems can be protected from contamination and, in the case of already polluted aquifers, how they can be restored for future use. Principles discussed in the course include: the hydrologic cycle, principles of groundwater flow, groundwater flow to wells, regional groundwater flow, methods of groundwater exploration, geology of groundwater occurrences, geochemistry of subsurface waters, chemical and physical transport mechanisms in groundwater, water quality, groundwater contamination by point and nonpoint sources, groundwater restoration. Atmospheric and aquatic transport of contaminants are the two major pathways through which harmful pollutants become dispersed. An understanding of groundwater systems and their interaction with surface waters is essential in the study and evaluation of most environmental issues. For students specializing in hydrogeology/environmental geology the course is a pre-requisite for advanced level studies. For more course content information see Earth Sciences section of this calendar.

**Instructors:** G.K. Muecke, P.J.C. Ryall

**Prerequisites:** EARTH 2201.03, 2101.03, 2102.03

**ERTH 3410.03B: Enhanced Environmental Geology.** The topics and principles treated in this course are similar to those of ESCI 2410.03. The course is designed specifically for students with a strong background in geology; equivalent to that of a third year Geology major. Selected topics are explored at greater depth using the accumulated geologic knowledge of the participants. The written and oral presentation of a substantial research project forms an essential part of the course. For example, participants have researched the environmental concerns associated with the various geologic options for the permanent storage of high-level nuclear wastes. For more course content information see Earth Sciences section of this calendar.

**Instructors:** G.K. Muecke

**Prerequisites:** EARTH 2101.03, 2102.03, 2203.03, 2204.03, 3400.03

**OCEA 3000.03B: The Atmosphere.** The purpose of this class is to provide understanding of the basic physical and chemical processes determining the evolution, behaviour and anthropogenic modification of the atmosphere. Topics include: (a) formation and evolution of the atmosphere, chemical composition, recent anthropogenic changes, greenhouse gases, stratospheric ozone; (b) atmospheric motions, mesoscale and large scale dynamics, general circulation, numerical weather prediction and general circulation models; (c) solar radiation as a source of atmospheric motions, terrestrial radiation, energy balance, scattering and absorption of radiation in the atmosphere, elements of radiative transfer; (d) hydrological cycle, thermodynamics of water vapor, phase

transitions, role of aerosols and clouds, precipitation; and (e) climate models, past climate, global change, anthropogenic effects.

Instructor: I. Folkins

Prerequisites: MATH 1000.03/1010.03 or equivalent and PHYC 1000.06 or 1100.06 or equivalent

Cross-listing: PHYC 2700.03

**OCEA 3170.03A: Physics and Chemistry of the Ocean.** This class outlines concepts in physical and chemical oceanography with special emphasis on the ocean's role in the global biogeochemical and physical/climate systems. This class is in two parts. In the first part, topics include: the oceans as a physical system, water properties, basic dynamical concepts, the forces creating oceanic motion, ocean circulation, shelf and coastal processes. In the second part topics include: the oceans as a chemical system, composition of sea water, control of pH and redox potential, nutrient chemistry, trace elements, organic materials, distributions and geochemical cycles.

Instructors: D. Kelley, W. Miller

Prerequisites: MATH 1000.03/1010.03, plus first-year chemistry, or equivalent or permission of the instructor.

Restriction: Restricted to third and fourth-year students.

**SCIE 3050.06R: Waste Management and the Environment.** This is an Experimental Class intended for third year students. It examines the topic of waste management from several perspectives: Resource Economics; Pollution Cycles; Public Health Issues; Technological Controls; International Waste Management Practices; Regulation; and Waste Management Planning. It will include 1½ hours per week of lecturing and 3 hours of lab work. In the lab, the students will learn the practical skills involved in conducting a waste audit and developing a waste reduction and recycling plan on the Dalhousie Campus.

Instructors: Staff

Prerequisite: CHEM 1010.06 or 1500.06 or equivalent; ESCI 1000.06 or 1060.03/1050.03

#### 4000-level classes

**BIOL 4060.03A: Marine Mammalogy.** The class will examine the characteristics that mammals, brought with them when they returned to the ocean, the evolution of the difference 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. Finally we will consider the factors that regulate marine mammal populations and how these influence attempts to manage and conserve them. Assignments will include dissections of a seal and/or porpoise, a review essay on some marine mammal adaptation, exploring a computer model of a marine mammal population, and an examination.

Instructors: I.A. McLaren (plus others)

Prerequisites: BIOL 2060.03 and 3069.03 or see instructors

**CHEM 4203.03A or B: Environmental Chemistry.** The basic principles of kinetics and chemical equilibria are used to describe the

behaviour of metal ions and organic compounds in the aquatic and terrestrial environment. The material covered in this class can be used to better understand the fate of chemicals in the environment and their impact on living organisms. The complexity of the chemical interactions is used to evaluate possible analytical methods for the determination of chemicals in the environment. Topics covered include polyprotic acid base equilibria, distribution of active compounds between gas and solution, Eh - pH diagrams, solubility of oxides, carbonates, and sulphides, complexation equilibria, adsorption onto solids, enzyme kinetics, and the kinetics of distribution of compounds between compartments. A computer programme (Mathcad) is used to derive simple mathematical models suitable for the description of chemical interactions in the environment. The programming environment is such that the chemistry can be illustrated quickly without writing complex programs in traditional computer languages.

Instructor: R.D. Guy

**OCEA 4120.03A: Introductory Physical Oceanography.** An understanding of the role of ocean physics in climate and pollution abatement is applied. Flushing of Halifax Harbour is studied by field trip and term project. Appreciation of ocean's role in global climate control and methods of measuring the exchange rate of estuaries are emphasized. 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. Those desiring a more qualitative approach are urged to consider OCEA 3170.03.

Instructor: B. Ruddick

Prerequisite: MATH 1000.03/1010.03 (Basic calculus, or equivalent)

**OCEA 4130.03A: Introductory Chemical Oceanography.** An understanding of the role of ocean chemistry in the global carbon cycle, and the links between ocean chemistry and global climate is emphasized. The use of ocean tracers in inferring ocean circulation processes is demonstrated. Students are taught an understanding of the links between ocean chemistry and global climate and the use of tracers in ocean circulation studies.

Instructor: R. Moore

Prerequisite: Instructor's consent

**OCEA 4311.03A/4312.03B: Fluid Dynamics I and II.** Several applications of the physics of fluid flow to environmental contexts: channel flows, waves, convection in the ocean and atmosphere, turbulence. Lecture examples all throughout. Laboratory demonstrations and experiments: effects of density stratification and rotation. Students are taught the mathematical modelling and physical understanding of several oceanic and atmospheric flow and mixing phenomena.

Instructor: D. Kelley

Cross-listing: PHYC 4311.03/4312.03

**\*OCEA 4411.03A/4412.03B: Dynamic Meteorology I and II.** By understanding how and why the atmosphere flows, the student will learn the dynamical basis of weather and climate. The interaction of many time and

space scales of atmospheric phenomena in determining Earth's climate is an important lesson to be applied to environmental studies. Students will obtain an understanding of how the physical laws of fluid motion determine the atmosphere environment.

Instructor: Staff

Cross-listing: PHYC 4411.03/4412.03

**\*OCRA 4530.03B: Introduction to Radiation and Climate.** Introduction to the basic processes responsible for climate; low radiation provides the fundamental forcing for climate; applications include climate change. Knowing how climate works is needed to tackle issues of global change.

Instructor: P. Chylek

Cross-listing: PHYC 4530.03

# French

**Location:** 1315 LeMarchant Street Halifax,  
N.S.  
**Telephone:** (902) 494-2430  
**Fax:** (902) 494-1626

## Chair

P. DeMéo (494-2425)

## Undergraduate Advisors

P. DeMéo (494-2425)

I. Oore (494-2430), Honours

T. Gordon (494-2430), Majors

## Professors Emeriti

P. Chavy, Agrégé des Lettres (Paris), Chevalier  
de la Légion d'Honneur

E. Kocourek, State Examination, PhD, CSc  
(Charles U., Prague), Knight of the Order of  
Academic Palms

## Professors

B. Bednarski, BA (London), MA (Dal), PhD  
(Laval)

M. Bishop, BA, BEd (Manchester), MA  
(Manitoba), PhD (Kent, Canterbury),  
McCulloch Professor in French

J.W. Brown, AB (Miami), MA (Middlebury),  
PhD (Penn)

P. De Méo, BA, MA, PhD (UCLA)

B.E. Geaner, BA (Kings), BEd, MA (Dal), Dr. de  
3<sup>e</sup> cycle (Toulouse, II)

W.T. Gordon, BA, MA, PhD (Tor)

I.Z. Oore, BA (Tel-Aviv), MA (Waterloo), PhD  
(Western)

H.R. Runte, MA, MPh, PhD (Kansas)

M. Sandhu, Licence ès Lettres (Montpellier),  
PhD (Yale), Chevalier dans l'ordre des Palmes  
Académiques

K. Waterson, BA (Long Island), MA (NYU),  
PhD (CUNY)

## Associate Professors

R.G. Bonnel, Licence (Paris), MA (Essex), Dr. de  
3<sup>e</sup> cycle (Paris)

T.P. Carter, BA (Princeton), MA, PhD (Brown)

N. Trèves, BSc (American U., Cairo), PhD (Rice)

## Lecturer

F.A. Mitchell, AKC (King's College, London),  
BA (London), MA (Dal)

## Introduction

The Department of French offers students not only the opportunity to develop fluency in classes backed up by laboratory and ancillary facilities, but also the possibility of studying the literature and culture of France, French Canada and the other nations of the French-speaking world, and the linguistic structure and development of French.

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

The role of French in Canada and in the Maritimes is stressed in classes in Acadian and Québécois literature and civilization. The literature of France and French-speaking nations is brought to life in classes organized around a theme, a genre, or an historical period.

The Department of French urges students to practise the language as much as possible. The Maison Française is a house on campus in which students may live with native speakers in a francophone environment. The French Club organizes activities including films, French meals, parties and plays in which all students may participate. Exchanges with Québec and individual student travel and study are encouraged. Please consult the Department for information and see below: Aix-en-Provence.

A BA degree in French with Honours or with Honours in French and another subject combined may lead the student to a career in education, written or oral translation, or may provide the background for careers in many fields, including radio, television, law, social work, public relations, business, diplomacy, journalism and library science. Students considering French as an area of concentration in a BA degree course are invited to discuss the matter at any time (the earlier the better) with a member of the Department. The accent is on the particular needs and aspirations of the individual. An Honours degree is normally required for access to graduate studies: MA and PhD degrees may be pursued in the Department (see the Calendar for Faculty of Graduate Studies).

Major, Advanced Major or Honours students may, with the approval of the Department of French, take up to one year of work at a University in a francophone environment and receive certain credit at Dalhousie. Scholarships are available for students selected to participate in the Dalhousie/ Aix-en-Provence Year-Abroad Programme, for Honours or Advanced Major students.

The language requirement exemption test in French will be given in the April examination period. Students who would like to write this test should inform the Registrar's Office by mid January. It is to be noted that passing this language requirement exemption test does not give a credit.

Students considering a career in teaching French are encouraged to discuss their goals and programme as early as possible with Professor DeMéo.

## Degree Programmes

Requirements for the three degree programmes are set out in the following sections. Electives from other departments, when chosen with care, can enrich and enhance the major classes. Departmental Advisors can provide a list of recommended electives. Please plan your programme with an Advisor from the French Department.

Students particularly interested in linguistics should consult the list of classes in the Linguistics section of this calendar.

## BA with Honours in French

This programme offers systematic, comprehensive and individualized study of French language, literature, linguistics and other programme elements both within and without 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 living in the *Maison Française* and by spending at least one summer in a French-speaking area. Majors or Honours students may, with the approval of the Department, take up to one year of work at a university in a francophone environment and receive certain credit at Dalhousie. Please consult the department for information on programmes available. Please consult the Chair of the Department.

Combined Honours students should consult the Chair before proceeding to see the Honours Advisor. Following is a description of the three different kinds of Honours programmes in French and the requirement for each:

### I. Concentrated Honours:

#### Classes required in Honours:

- 2000 level: FREN 2045.06, 2201.03 and 2202.03  
 3000 level: FREN 3020.06, 3045.06, plus one credit in literature and/or culture  
 4000 level: Two 4000 level credits

At least two other French credits 2000 to 4000 level for a total of nine French credits.

"first-year" does not necessarily mean FREN 1000-level classes; it refers to any class taken in the first year of study.

An additional grade is required: either an Honours Essay or an Oral Presentation (see document entitled "French Honours Qualifying Examination" obtainable from the Honours Co-ordinator or the Departmental secretary).

### II. Combined Honours:

From 11-13 credits in French and another subject; not fewer than 4 nor more than 9 may be chosen in either subject. Minimum requirements for the Combined Honours programme are as follows: 2045.06, 2201.03, 2202.03, 3045.06 plus a minimum of one full credit in language, literature and/or culture at the 3000-level. An additional credit is required: either an Honours Essay or an Oral Presentation (see document entitled "French Honours Qualifying Examination" obtainable from the Honours Co-ordinator or the Departmental secretary).

### III. Honours Certificate:

The Honours Certificate is an option for continued study open to anyone who has previously completed a BA major programme in French. Normally, it consists of five full credits of course 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 certificate are similar to those for the concentrated honours programme, but will vary according to individual circumstances.

## BA with Advanced Major in French

Students who may not be eligible for the Honours Programme are encouraged to enter the Advanced Major degree programme in French

### Departmental requirements:

#### Classes required in Advanced Major:

- 2000 level: FREN 2045.06, 2201.03 and 2202.03  
 3000 level: FREN 3045.06 plus two other 3000 level French credits  
 4000 level: One 4000 level French credit

Please note: students wishing to change to an Honours Programme may do so, if the quality of their work justifies it. Those who might wish to do so should also take FREN 3020.06 (required for Honours), and consult the Chair or the Honours Advisor.

Students wishing to do an Advanced Double Major must take, at the minimum, FREN 2045.06, 2201.03, 2202.03, 3045.06 plus one full credit at the 3000-level.

## BA with Major in French

Students should consult the Chair or a Department Advisor about the choice of classes.

Students are urged to take more than the minimum number of classes required, and, indeed, to do a 4-year degree (Advanced Major or Honours) if a high level of proficiency in French is sought.

### Departmental Requirements

#### Classes required in Major:

- 2000 level: FREN 2045.06, 2201.03 and 2202.03  
 3000 level: FREN 3045.06 plus one other 3000 level French credit

Classes other than those required may be chosen freely in consultation with the Major Advisor, according to the students' 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 Programme 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 BA Major in French, should consult the Chair or the Honours Advisor.

## Classes Offered

**PLACEMENT TEST:** please select your class with care, since placement is subject to change according to the results of a placement test to be administered during the week before classes begin in September.

## French Department - Language Class Progression Table

Level on Entry	1st year	2nd year	3rd year	4th year
1	1000.06 (3 + 2 hours, + lab)	1010.06 (3+1 hours, + lab)	2045.06* or any other 2nd year class	3045.06* or any other 3rd year class
2a	1005.06 (3 hours + lab)	1010.06 (3+1 hours, + lab)	2045.06* or any other 2nd year class	3045.06* or any other 3rd year class
2b	1006.06/1011.06 (6 hours, + lab)	2045.06* or any other 2nd year class	3045.06* or any other 3rd year class	4045.06 or any other 3rd or 4th year class
3a	1010.06 (3+1 hours, + lab)	2045.06* or any other 2nd year class	3045.06* or any other 3rd year class	4045.06 or any other 3rd or 4th year class
3b	1006.06/1011.06 (6 hours + lab)	2045.06* or any other 2nd year class	3045.06* or any other 3rd year class	4045.06 or any other 3rd or 4th year class
4	1045.06 (3 hours + lab)	2045.06* or any other 2nd year class	3045.06* or any other 3rd year class	4045.06 or any other 3rd or 4th year class
5	2045.06* or any other 2nd year class	3045.06* or any other 3rd year class	4045.06 or any other 3rd or 4th year class	

\* Required for major, advanced major and honours students

### Definition of Levels:

- 1) If you have NEVER studied French before, take FREN 1000.06. If you wish to continue after completing FREN 1000.06, you may take FREN 1010.06 during the summer or the following year.
- 2a) If you studied French for a few years, some time ago (for example, up to Grade 9), take FREN 1005.06. If you wish to continue after completing FREN 1005.06, you may take FREN 1010.06 during the summer or the following year.
- 2b) A fast-track option, FREN 1006.06/1011.06 offers students the opportunity of completing the work of both FREN 1005.06 and FREN 1010.06 (normally a two-year programme) in one academic year and to enrol in second-year level classes the following year.
- 3a) If you studied French during part of your high school years, you may take either FREN 1005.06 (if you feel you need a complete review), or FREN 1010.06 if you remember your high school French reasonably well. Successful completion of FREN 1010.0 allows access to second-year level classes.
- 3b) Fast track option: see 2b above.
- 4) If you studied Core French throughout high school and are familiar with the basic structures of French (even if you are not in full control of them), take FREN 1045.06.
- 5) If you took French immersion during your high school years, you may be able to take second-year level classes in your first year. You may choose freely among second-year classes, all of which assume the same ability level. If, however, you believe that you need to go back over the basics of French, take FREN 1045.06.

Note: Classes marked \* may not be offered every year. Please consult the current timetable on registration to determine if these classes are offered.

**FREN 1000.06R: Français pour débutants/Beginners' French.** For students with no previous background in French or whose placement test results (see above) indicate this as the most appropriate class. Introduction to the basic structures of the language combined with practical vocabulary for oral and written communication. This class aims to develop all 4 skills (listening, speaking, reading, writing) by integrating grammar study, oral and written exercises/activities, and situational contexts. Teaching methods and texts will vary from year to year and instructor to instructor. All classes are interactive and a high degree of participation is expected. Many self-study learning materials are used to complement class instruction. This class is normally followed by FREN 1010.06.

Instructor: Staff  
Format: Lecture 3 hours, tutorial 2 hours, language lab 3 hours  
Exclusions: FREN 1005.06, 1006.06

**FREN 1005.06R: Français fondamental niveau I/Basic French level I.** This is the same class as FREN 1000.06, but designed for students having studied French up through grade 8-9, or whose placement test results (see above) indicate this as the most appropriate class. For a more complete description of this class, see FREN 1000.06 above. While texts and methods may vary from section to section, all classes are interactive and a high degree of participation is expected. Many self-study learning materials are used to complement classroom instruction. FREN 1005.06 is normally followed by FREN 1010.06.

Instructor: Staff  
Format: Lecture 3 hours, language lab 3 hours  
Exclusions: FREN 1000.06, 1001.06, 1006.06

**FREN 1010.06R: Français fondamental niveau II/Basic French level II.** For students with up to Grade 10-11 French, Grade 12 French more than two years ago, or whose placement test results (see above) indicate this as the most appropriate class. Brief review of structures and vocabulary presented in FREN 1000.06/1005.06 followed by introduction to more advanced structures (compound tenses, moods, etc.). All 4 skills are further developed, with reading and writing assignments focusing particularly on correct expression. A tutorial supplements classroom work. Successful completion of this class leads to all second-year classes.

Instructor: Staff  
Format: Lecture 3 hours, tutorial 1 hour, language lab 3 hours  
Exclusion: FREN 1045.06, 2000.06

**FREN 1006.06A/FREN 1011.06B: Français fondamental niveaux I & II/Basic French levels I & II.** These classes complete the work of FREN 1000.06/1005.06 plus FREN 1010.06 in one academic year, thus allowing students to enrol in second-year classes the following year. For a more complete description of these classes, see listings for FREN 1000.06/1005.06 and FREN 1010.06 above. Two full university

credits are awarded, though neither will be counted towards a major in French. This class is not normally suitable for true beginners.

Instructor: Staff  
Format: Lecture 6 hours, language lab 6 hours  
Exclusion: FREN 1000.06, 1005.06, 1010.06, 1045.06

**FREN 1045.06R: Introduction au français à l'université/Introduction to university French.** This class is designed for students having studied French through Grade 12 (academic core) or whose placement test results (see above) indicate this as the most appropriate class. It reviews all basic grammar and further develops all 4 skills (listening, speaking, reading, writing), with a somewhat greater emphasis on reading and writing. Readings of several types of texts and writing assignments focus on correct expression. Regular listening comprehension assignments are done in the learning laboratory outside of class time. Successful completion of this class leads to all second-year classes.

Instructor: Staff  
Format: Lecture 3 hours, language lab 2-3 hours  
Exclusions: FREN 1010.06, 1011.06, 1020.06, 1040.06

**FREN 1060.06R: Pratique de la lecture/French for Reading.** Development of the ability to read contemporary French prose with ease and accuracy. Emphasis is on the acquisition of skills that facilitate reading. Students are encouraged to become familiar with the best French-English dictionaries and to use them judiciously, to learn large blocks of vocabulary by recognizing word families, and to grasp the meaning of unknown words from context wherever possible. Classroom work involves a grammar review, study and discussion of a wide variety of readings as well as correction of prepared translations and sight translations (from French to English only). FREN 1060.06 is given in English and is not, by itself, suitable for students who plan to major in French. It may, however, be taken by those with no prior training in French or as an additional first-year option for those taking FREN 1010.06 or FREN 1045.06. This class satisfies the Bachelor of Arts Language Requirement.

Instructors: W.T. Gordon and K. Waterson  
Format: Lecture 3 hours

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

**FREN 2021.03A or B/FREN 2022.03A or B: Études pratiques/Practice in Language Skills.** Follows FREN 1010.06 1011.06 or 1045.06. It is normally taken in the second year of study and provides the opportunity to practice and improve language skills already acquired. Each year eight sections are chosen from among the options listed below. Each section focusses upon a broad cultural topic via which language skills are developed. No prior knowledge of the topic is supposed. Various readings lead to discussions and oral presentations. Descriptions for sections offered in a specific year may be obtained in April from the Department. All classes and assignments are entirely in French. A maximum of two sections may be taken

under the class designation of FREN 2021.03 and 2022.03. Approved with Canadian Studies, in part.

Topic 01: Le Journalisme: I. Oore

Topic 02: La Société française à travers la littérature: R. Bonnel

Topic 03: La Civilisation francophone de l'Afrique occidentale et des Antilles: M. Bishop

Topic 04: Etudes acadiennes I: H. Runte

Topic 05: Monuments culturels de Paris: Staff

Topic 06: Aspects visuels de la culture française: J. Brown

Topic 07: La Guerre des ondes: W.T. Gordon

Topic 08: La France et ses photographes: K. Waterson

Topic 09: Québécois et Québécoises célèbres: B. Bednarski

Topic 10: Aspects du Canada contemporain: E. Gesner

Topic 11: Ecritures féminines I: N. Trèves

Topic 12: L'Art en France depuis la Révolution: M. Bishop

Topic 13: Voyages culturels à travers la France: Staff

Topic 14: Etudes acadiennes II: H. Runte

Topic 15: Publicités télévisées: J. Brown

Topic 16: Aspects de la France contemporaine: E. Gesner

Topic 17: Pour comprendre les médias: W.T. Gordon

Topic 18: Le Québec à travers les textes: I. Oore

Topic 19: Ecritures féminines II: N. Trèves

Topic 20: Le roman policier: P. De Méo

Instructor: As above

Format: Lecture 3 hours

\*FREN 2032.03A or B: La phonologie /Phonology I. Using widely varied texts and recordings, this class studies the basic sounds (phonemes) of French, and the essential non-phonemic features of the language (rhythm, stress, intonation, etc.) It helps students master French phonemes, understand the role of non-phonemic features in oral communication and use the latter to develop self-expression and audio-comprehension. Recommended for non-francophone French majors and honours students.

Instructor: K. Waterson

Format: Varied participatory activities, short lectures, language lab

Prerequisite: FREN 1010.06, 1045.06 or instructor's consent

\*FREN 2033.03A or B: La phonologie /Phonology II. This class continues, with an increased emphasis on self-expression and communicative ability, the work of French 2032.03. Recommended for non-francophone French majors and honours students.

Instructor: K. Waterson

Format: Varied participatory activities, short lectures, language lab

Prerequisite: FREN 2032.03 or instructor's consent

FREN 2045.06R: Grammaire intensive/Intensive grammar. A detailed study of grammar through an analysis of the components of the sentence leading to paragraph and text analysis. Emphasis is placed on the correspondence between

grammatical content and meaning. Numerous exercises will aim at developing the ability to communicate in clear, accurate written French.

Instructor: Staff

Format: Lecture 3 hours

Prerequisite: FREN 1010.06, 1045.06, or equivalent

Exclusion: FREN 1040.06

\*FREN 2050.03A or B: La Structure des dictionnaires français/Structure of French Dictionaries. This class is an introduction to the use of French and French-English dictionaries. Emphasis is on linguistic problems that are essential for dictionary users in comprehending texts and expressing ideas. Introductions to two first-rate French dictionaries will be studied. A reader of cultural or literary texts will serve as a source of questions to be raised in exercises, discussions, assignments, and tests.

Instructor: Staff

Format: Lecture 3 hours

FREN 2201.03A/FREN 2202.03B: 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, Quebec, Acadia and other francophone areas. Introduction to general notions of literary history and to the basic concepts involved in reading literary texts. Attention is paid to the development of both oral and written expression of ideas. FREN 2201.03 and FREN 2202.03 may be taken consecutively. Classes involve, principally, group discussion, and lecture.

Instructors: Staff

Format: Lecture 3 hours

\*FREN 2203.03A or B: Approches du texte littéraire/Approaches to Literary Texts. An introduction to the critical reading of a selection of literary texts (various genres and periods) with an emphasis on Québec literature. The close analysis of short texts will lead to discussions of the broader nature of recurring images and myths as well as central themes. Recommended for French majors and honours students. Approved with Canadian Studies.

Instructor: I. Oore

Format: Lecture/discussion 3 hours

Prerequisite: FREN 1010.06, 1011.06 or 1045.06

\*FREN 3000.03A or B: Cours supérieur de français oral/Advanced Oral French Workshop. Class discussions and oral presentations based on themes of contemporary concern. This class may be offered on or off campus 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. This class is offered during the Spring or Summer session.

Instructor: Staff

Format: Lecture/discussion 3 hours

Prerequisite: 2000-level French class

FREN 3020.06R: Linguistique/Linguistics. This class will interest future linguists, literary specialists and language teachers, as well as translators and public servants concerned with bilingualism. Its main objective is to improve and refine the students' understanding of the French language and to explain the major areas



of its study. Culturally interesting literary excerpts will be used to observe and to analyse linguistic problems in texts. Each student will prepare two reports on linguistic topics. Assignments based on practical problems of pronunciation, spelling, grammar, vocabulary and meaning will complement the syllabus.

Instructor: Staff  
Format: Lecture 3 hours  
Prerequisite: 2000-level French class

\*FREN 3025.03A or B: *Les Parlers acadiens: Introduction linguistique/Linguistic Introduction to Acadian Dialectology*. An examination of the phonetic, morphosyntactic and lexical systems of various Acadian speech communities, with emphasis on the Acadian dialects of Nova Scotia. Frequent comparisons will be made between these dialects and both standard French and Québécois. Recorded and written materials are used. Approved with Canadian Studies.

Instructor: E. Gesner  
Format: Lecture 3 hours  
Prerequisite: Corequisite or permission of instructor  
Corequisite: FREN 3020.06

FREN 3045.06R: *Stylistique I/Written expression I*. Practice in style and manner of expression based on the study of texts. Various exercises - including dictations, translations, compositions - are used to develop further vocabulary acquisition, grammatical accuracy, sentence construction and variety of expression.

Instructor: M. Sandhu, staff  
Format: Lecture 3 hours  
Prerequisite: FREN 2045.06 or equivalent  
Exclusion: FREN 2040.06

FREN 3100.06R: *Civilisation de la France/Civilization of France*. An attempt, through talks, reading, discussion 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.

Instructors: Staff  
Format: Lecture/discussion 3 hours  
Prerequisite: 2000-level French class

\*FREN 3200.03A or B: *Appréciation de la littérature/Literary Appreciation*. An approach to the critical reading of various periods of French literature. The class offers discussion of representative works of major writers, centering either on genre, theme, or period and involving close textual analysis. It also includes some discussion of past and current theories of literature. See department for specific details in any given year.

Instructor: M. Bishop et al  
Format: Lecture/discussion 3 hours  
Prerequisite: FREN 2201.03/2202.03

\*FREN 3250.03A or B: *Les femmes écrivains: du temps des cathédrales à celui des Editions des femmes/French Women Writers through the centuries*. A chronological survey based on the study of literary texts by French Women Writers, this class will attempt to analyze the society of the time, the way it portrayed women and their role, and the overall condition of women. Emphasis will be given each time to a special period/authors within the context of the

survey. Students taking the class as a Women's Studies class may write their essays and exams in English.

Instructor: N. Trèves  
Format: Lecture/discussion 3 hours  
Recommended: FREN 2201.03/2202.03  
Cross-listing: WOST 3250.03

\*FREN 3300.03A or B: *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: H. Runte  
Format: Lecture/discussion 3 hours  
Prerequisite: FREN 2201.03/2202.03

\*FREN 3400.03A or B: *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.

Instructor: N. Trèves  
Format: Lecture/discussion 3 hours  
Prerequisite: FREN 2201.03/2202.03

\*FREN 3500.03A or B: *La littérature du dix-septième siècle/17th-Century French Literature*. This class examines representative works by three major seventeenth-century French 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: K. Waterson  
Format: Lecture/discussion 3 hours  
Prerequisite: FREN 2201.03/2202.03

\*FREN 3600.03A or B: *La littérature du dix-huitième siècle/18th Century French Literature*. An introduction to the literature of the 18th century which includes works by such authors as Voltaire, Rousseau, Diderot and Marivaux. Each year the readings and class discussions will be centered on a different theme (for example: the hero, women, love, wealth and power).

Instructor: R. Bonnel  
Format: Lecture/discussion 3 hours  
Prerequisite: FREN 2201.03/2202.03

\*FREN 3700.03A or B: *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: J. Brown  
Format: Lecture/discussion 3 hours  
Prerequisite: FREN 2201.03/2202.03

\*FREN 3800.03A or B: *Théâtre et poésie du vingtième siècle/French Theatre and Poetry of the 20th Century*. Poetry and Theatre, 1900-1990. Study of modern poetry from Dada and Surrealism to the work of contemporary

poets such as Yves Bonnefoy, Jacques Dupin and Michel Deguy; and of modern theatre from Jarry to Beckett, Ionesco and beyond.

Instructor: M. Bishop  
Format: Lecture/discussion 3 hours  
Prerequisite: FREN 2201.03/2202.03

\*FREN 3810.03A or B: *Prose et théorie littéraire du 20e siècle/20th Century Prose and Literary Theory*. Analysis of a broad selection of short prose by major novelists of the 20th century from Gide, Proust and Aragon but with emphasis upon the more recent work of Beckett, Sarraute, Simon, Duras, Le Clézio and Cixous. Parallel discussion will be centred upon the literary theory of critics such as Bachelard, Poulet, Starobinski, Barthes and Derrida.

Instructor: M. Bishop  
Format: Lecture/discussion 3 hours  
Prerequisite: FREN 2201.03/2202.03

FREN 3900.03A/FREN 3901.03B: *La littérature canadienne française/French-Canadian Literature*. In-depth study of a few major works of French-Canadian literature with emphasis on the period from 1945 to the present day. Each class deals with a specific genre (e.g. FREN 3900.03: Poetry, FREN 3901.03: Novel) and choice of genre may differ from year to year. Approved with Canadian Studies.

Instructors: B. Bednarski, I. Oore  
Format: Lecture/discussion 3 hours  
Prerequisite: FREN 2201.03/2202.03

\*FREN 3910.03A or B: *Études acadiennes/Acadian Studies*. Critical investigation into the historical, socio-cultural, linguistic and literary significance of past and present Acadian writing. May follow Acadian Studies (FREN 2021.03/2022.03). Approved with Canadian Studies.

Instructor: H. Runte  
Format: Lecture/discussion 3 hours  
Prerequisite: FREN 2201.03/2202.03

\*FREN 4001.03A: *Histoire du français - Moyen Âge/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.

Instructor: H. Runte  
Format: Seminar 3 hours  
Prerequisite: 3000-level French class

\*FREN 4002.03B: *Histoire du français - époque moderne/History of French - The Modern Period*. Advanced research into selected topics - the emergence of a national language, the problem of orthography, usage and the development of normative grammars, the evolution of vocabulary, epochal phenomena (Rhétoriqueurs, the Baroque, Préciosité, the Revolution, scientific French, argot), etc.

Instructor: H. Runte  
Format: Seminar 3 hours  
Prerequisite: 3000-level French class

\*FREN 4010.03A or B: *Grands linguistes du vingtième siècle/Great Linguists of the 20th Century*. How did French-speaking linguists of the 20th century contribute to the understanding of the language? Interpretation of passages by six linguists (such as Saussure, Bolty, Tesnière, Guillaume, Gougenheim, Martnet) will show how interesting questions

were asked, and how new answers and methods enriched the field of language study. Class reports, discussions, assignments.

Instructor: Staff  
Format: Seminar 3 hours  
Prerequisite: 3000-level French class

\*FREN 4011.03A or B: *La Lexicologie/Lexicology*. How can French vocabulary be studied and structured? What is its formation (derivation, composition, metaphor, borrowing, abbreviation, etc.), its meaning, its development? Class reports, discussions and lexical assignments are important components of this class.

Instructor: Staff  
Format: Seminar 3 hours  
Prerequisite: FREN 3020.06

\*FREN 4012.03A or B: *Aspects de la structure du français/Aspects of French Structure*. Students will help select, from the many problems of French phonology, graphonomy, grammar, lexical formation and semantics, the ten subjects to be examined in detail. Lectures and readings will be complemented by students' reports. Culturally relevant excerpts from literary masterpieces will be used for discussion and assignments.

Instructor: Staff  
Format: Seminar 3 hours  
Prerequisite: FREN 3020.06

\*FREN 4015.06R: *Cours supérieur de version/Advanced Translation into English*.

Development of awareness of the expressive resources of French by dealing with problems and techniques of translation into English. The texts of weekly translation assignments, which account for 50% of the final grade, progress from expository and descriptive prose to poetry. Topics introduced through lectures and oral class reports include categories of translation, style, context and choice, context and meaning, ambiguity, verb systems of French and English, textual redundancy, simultaneous interpretation, and translation of metaphors. Occasionally, alternate English translations of a French text are studied for revealing contrasts.

Instructor: W.T. Gordon  
Format: Seminar 3 hours  
Prerequisite: At least on full credit in French language or literature at the 2000 level or above

\*FREN 4045.06R: *Stylistique II/Written expression II*. This class develops further the skills acquired in FREN 3045.06. The study of several types of texts develops an awareness of various forms of written expression. Exercises develop the ability to perform a number of tasks: writing summaries, reports, letters, literary analysis etc.

Instructor: M. Sandhu and staff  
Format: Lecture 3 hours  
Prerequisite: FREN 3045.06 or equivalent  
Exclusion: FREN 3040.06

\*FREN 4900.03A or B: *Le roman courtois/Courtly Novels*. A close literary analysis of mediaeval French Arthurian romances. Texts in bilingual (Old French/French) editions.

Instructor: H. Runte  
Format: Seminar 3 hours

Prerequisite: 3000-level French literature class

**\*FREN 4301.03A or B: La Poésie courtoise/Courtly Poetry.** A stylistic and socio-cultural study of French courtly love poetry from the 9th to the 15th centuries. Early texts in modern French translations.

Instructor: H. Runte

Format: Seminar 3 hours

Prerequisite: 3000-level French literature class

**\*FREN 4400.03A or B: Poésie de la renaissance: théorie et pratique/Renaissance Poetry: Theory and Practice.** A seminar-style study of poetic theories and practices from the Rhétoriciens to the Pléiade and to Malherbe.

Instructor: N. Trèves

Format: Seminar 3 hours

Prerequisite: 3000-level French literature class

Recommended: FREN 3400.03

**\*FREN 4401.03A or B: La pensée philosophique, politique et morale de la renaissance/Philosophical, Political and Moral Thought of the Renaissance.** An in-depth study of major currents of Renaissance thought: humanism, scientific awakening, the beginning of littérature engagée, and the emergence of the moralistes and philosophes.

Instructor: N. Trèves

Format: Seminar 3 hours

Prerequisite: 3000-level French literature class

**\*FREN 4500.03A or B: L'aventure intellectuelle du grand siècle/The Intellectual Adventure of 17th-Century France.** This class examines, at an advanced level, a major writer, movement, genre or theme in 17th-century French literature. As the focus may vary frequently please consult the professor for detailed information on the topic and format.

Instructor: K. Waterson

Format: Seminar 3 hours

Prerequisite: 3000-level French literature class

**\*FREN 4600.03A or B: Le siècle des lumières: forme et philosophie/The Enlightenment: Form and Philosophy.** An in-depth study of the French Enlightenment which treats some of the longer works by major authors and introduces the student to secondary authors whose works are also of significant literary, philosophical or historical value. The study is unified by an examination of recurring philosophical ideas and literary themes important to understanding the development of new genres and styles. Please consult the professor for information on the theme treated and the works to be studied in any given semester.

Instructor: R. Bonnel

Format: Seminar 3 hours

Prerequisite: 3000-level French literature class

**\*FREN 4700.03A: 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: J. Brown

Format: Seminar 3 hours

Prerequisite: 3000-level French literature class

**\*FREN 4701.03B: 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; a study of his place in the development of the novel and of his contribution to the genre. The class involves a considerable amount of reading, regular reports, and exposés.

Instructor: J. Brown

Format: Seminar 3 hours

Prerequisite: 3000-level French literature class

**\*FREN 4710.03A or B: 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, Éluard, Aragon and Desnos.

Instructor: M. Bishop

Format: Seminar 3 hours

Prerequisite: 3000-level French literature class

**\*FREN 4800.03A: Le théâtre moderne de Claudel à Chérid/Modern Theatre from Claudel to Chérid.** In all, eight plays are studied, four from each author. The works offer a contrast in philosophical content and reveal technical problems involved in their stage presentation.

Instructor: M. Bishop

Format: Seminar 2 hours

Prerequisite: 3000-level French literature class

**\*FREN 4801.03B: 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: M. Bishop

Format: Seminar 3 hours

Prerequisite: 3000-level French literature class

**\*FREN 4811.03A or B: 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, Reverd, Claudel, Char, Frénaud, Senghor, Tchicaya, Césaire, Glissant, Miron and others.

Instructor: M. Bishop

Format: Seminar 3 hours

Prerequisite: 3000-level French literature class

**FREN 4900.06A or B: Field Experience.** See class description for EDUC 4999.09, in the Education section of this calendar.

**\*FREN 4902.03A/FREN 4903.03B: Écrivains québécois contemporains/Contemporary Québec Writers.** In depth study of one or more contemporary Québec writers. Approved with Canadian Studies.

**Instructors:** B. Bednarski/I. Oore  
**Format:** Seminar 3 hours  
**Prerequisite:** 3000-level French literature class

**FREN 4904.03A or B: Écrivaines québécoises/ Quebec Women Writers.** This class will explore the condition of women as revealed in texts by Québec women writers. In any given year different writers and time periods will be covered, and a variety of genres may be included. Approved with Canadian Studies.

**Instructors:** B. Bednarski/I. Oore  
**Format:** Lectures/discussion 2 hours  
**Recommended:** FREN 2201.03/2202.03 and at least one third-year literature class, preferably French Canadian

**Cross-listing:** WOST 4250.03

**FREN 4994.03A/FREN 4995.03B, FREN 4996.03A/FREN 4997.03B, FREN 4998.03A/FREN 4999.03B: Recherches Indépendantes/ Independent Research.** May only be taken with the approval of the Chair.

**Instructor:** Staff  
**Format:** Independent study/seminar  
**Prerequisite:** 3000-level French literature class

# German

**Location:** 1355 LeMarchant St., Halifax  
N.S.  
**Telephone:** (902) 494-2161  
**Fax:** (902) 494-2719

## Chair

H.-G. Schwarz (494-1092/2161)  
(on sabbatical leave 1995/96)

## Acting Chair (1995/96)

J.V. Curran (494-1091/2161)

## Undergraduate Advisor

J.V. Curran (494-1091/2161)

## Professors

F.W. Gaede, PhD (Freib) (McCulloch Professor  
in German), FRSC

H.G. Schwarz, MA (Munich), PhD (McG)

## Associate Professor

D.H. Steffen, PhD (Gott)

## Assistant Professor

J.V. Curran, BA (Hons), MA (Dal), PhD  
(Newcastle upon Tyne)

## Introduction

German, the most widely used language in Central Europe, is spoken by approximately 100 million people as their native tongue in Austria, Germany, Switzerland 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 departmental programme "German Studies" is the investigation of German culture and its place in the formation of the modern world. The programme concentrates on significant aspects of the cultural tradition of the German-speaking countries. From Luther to Nietzsche, Freud, and Marx, German writers have moved men 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 in their literary works, problems and questions of a universal nature. They became the first historians of literature and created the discipline of aesthetics. The universality of the authors of German classicism explains their present day relevance and makes the study of German important and attractive.

Major or honours students may, with the approval of the Department of German, take up to one year (5 full credits) of work at a University in a German-speaking country and receive credit at Dalhousie. The Department has exchange arrangements with the universities of Heidelberg and Munich. In

addition there is a "visiting scholars" programme which brings distinguished scholars from Germany to Dalhousie.

## Degree Programmes

The following programmes are normally followed, other possibilities do exist. Students considering a degree in German are advised to consult with the undergraduate advisor of the Department.

### BA with Honours in German

**1000 level:** German 1000.06 or 1010.06  
**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

### Combined Honours

It is possible for a student to take an honours degree combining German with another subject. Any student intending to take such a combined honours degree should consult with the two respective departments to arrange the details of such a programme.

### BA with Advanced Major in German

**1000 level:** German 1000.06 or 1010.06  
**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

### BA with Major in German

**1000 level:** German 1000.06 or 1010.06  
**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

## Classes Offered

**Note:** Classes marked \* are not offered every year. Please consult the timetable on registration to determine if this class is offered.

## German Language Studies

### Introductory Classes Offered

#### Please Note:

- GERM 1000.06 is to be taken by students with no previous knowledge of German.
- GERM 1050.06 is to be taken by students with no previous knowledge of German.
- Students who have completed high school German will normally take GERM 2000.06.

All students with previous knowledge of German should see the Undergraduate Advisor.

**GERM 1000.06R: German for Beginners.** GERM 1000.06 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. Language laboratory work and attendance of small conversation groups are required as are writing

tutorials five or six times during each term.  
**Fulfilling this class fulfils the first-year writing requirement.**

Instructors: Staff

Format: Writing Requirement, seminar 3 hours

**GERM 1010.06R: German for Beginners.** An introductory language class, using the same methods and goals as GERM 1000.06. This class does not fulfil the writing requirement for beginning students.

Instructors: Staff

Format: Seminar 3 hours

**GERM 1050.06R: German Reading course 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. Attendance at writing tutorials is required five or six times during each term. For purposes of admission to advanced classes in German it is equivalent to GERM 1000.06. **This class fulfils the writing requirement for first-year students.**

Instructor: H.-G. Schwarz

Format: Writing Requirement, seminar 3 hours

**GERM 1060.06R: German Reading Course for Beginners.** An introductory reading class using the same methods and goals as GERM 1050.06. This class does not fulfil the writing requirement for beginning students.

Instructor: H.-G. Schwarz

Format: Seminar 3 hours

**GERM 1000.06R/1050.06R or GERM 1010.06R/1060.06R: Intensified German.** lecture 6 hours, lab 2 hours. Either of these combinations is recommended for students who desire rapid progress in the German language.

#### Intermediate Classes

Intermediate classes are based on GERM 1000.06, 1010.06, 1050.06, 1060.06, high school German Grade 10, 11, 12 or an equivalent basic knowledge. A combination of GERM 2000.06 and GERM 2020.06 serves as an accelerated intermediate German class and is designed for students who want to make rapid progress in the language.

**GERM 2000.06R: Intermediate German.** The main aim is to develop a certain degree of speaking fluency as well as reading and writing skills. Language Laboratory work is required. Small conversation classes once a week as an aid to speaking fluency are compulsory.

Instructor: J. Curran

Format: Seminar 3 hours

Prerequisite: Any of GERM 1000.06, 1010.06, 1050.06, 1060.06

**\*GERM 2020.06R: Exercises in Translation and Composition.** English and German texts from various periods of different types will be translated. These translations lead to the discussion of specific difficulties of grammar and construction. Students must prepare translations or compositions for each class.

Instructor: J. Curran

Format: Seminar 2 hours

Prerequisite: GERM 1000.06, GERM 1010.06 or equivalent

**GERM 2050.03A or B: German Reading I.** This is a seminar specifically intended for students who do not fit into our normal programme offerings. Please consult departmental advisor.

**GERM 2051.03A or B: German Reading II.** This is a seminar specifically intended for students who do not fit into our normal programme offerings. Please consult departmental advisor.

**GERM 2060.03A: 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 3 hours

Prerequisite: Any of GERM 1000.06, 1010.06, 1050.06, 1060.06

**GERM 2061.03B: 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 3 hours

Prerequisite: Any of GERM 1000.06, 1010.06, 1050.06 or 1060.06

**GERM 3000.06R: Advanced German.** Translations, readings, essays and discussions will promote fluency in the language on the advanced level.

Instructor: J. Curran

Format: Seminar 2 hours

Prerequisite: GERM 2000.06 or equivalent

**GERM 3010.03A: Advanced Translation I: German - English.** German texts of various kinds are used to deal with techniques and problems of translating from German into English. The class includes discussion of such things as translation theories, elements of style and questions of ambiguity and textual redundancy.

Instructor: J. Curran

Format: Seminar 3 hours

Prerequisite: GERM 2000.06 or equivalent

**GERM 3011.03B: Advanced Translation II: English - German.** English texts of various kinds are used to deal with the techniques and problems of translating from English into German. The class includes discussion of such things as translation theories, elements of style and questions of ambiguity and textual redundancy.

Instructor: J. Curran

Format: Seminar 3 hours

Prerequisite: GERM 2000.06 or equivalent

#### Study of German Literature and Culture

**GERM 2010.03A or B: 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: J. Curran  
Format: Seminar 2 hours  
Prerequisite: Any of GERM 1000.06, 1050.06, 1010.06, 1060.06 or equivalent

**GERM 2011.03A or B: Germanic Myths and Tales II.** In this class, we will read the famous collection of fairy tales compiled by the Grimm Brothers in the first quarter of the nineteenth century. The class asks why they were so popular at the time and looks at the reason for their seemingly endless appeal since. We will consult and evaluate a wide variety of critical approaches to the material. The reworkings of the tales in other genres will also be discussed. The texts will be read in German but the language of instruction will be English.

Instructor: J. Curran  
Format: Seminar 2 hours  
Prerequisite: Any of GERM 1000.06, 1050.06, 1010.06, 1060.06 or equivalent

**\*GERM 2150.06R: Goethe's *Faust*.** A close reading of Goethe's *Faust*, comparing the German original and an English translation, will give rise to questions about translation techniques, the theory of drama and the reshaping of a legend. While Goethe's masterpiece stands at the centre, other German versions of the Faust legend will also be discussed in detail. Assignments will involve research into later echoes of the Faust legend as well. The language of instruction is English but the texts are in German.

Instructor: J. Curran  
Format: Lecture/discussion 2 hours  
Prerequisite: GERM 1000.06, 1010.06 or a reading knowledge of German

**GERM 2200.06R: Introduction to German Literature.** A study of texts representing major periods of German Literature. 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 English; the texts are in German.

Instructor: H.-G. Schwarz  
Format: Seminar 2 hours, tutorial 1 hour  
Prerequisite: GERM 2000.06 or equivalent or a reading knowledge of German

**\*GERM 2300.06R: In Pursuit of Freedom from Luther to Nietzsche.** A study of major modern writers with special emphasis on Hegel's *Philosophy of Right*. This class is taught in English and uses English translations.

Instructor: D. Steffen  
Format: Seminar 2 hours  
Prerequisite: A general introduction to literature, culture or philosophy

**\*GERM 2400.06R: German Art and Literature.** This class gives an introduction to modern German Art and Literature. Special emphasis is on the interaction between art and literature, particularly the themes and styles shared by visual and literary expression during the various epochs of modernity. The language of instruction is German and English, as needed. The texts are in German.

Instructor: H.-G. Schwarz  
Format: Seminar 2 hours

Prerequisite: GERM 2000.06 or equivalent

**\*GERM 2450.06R: Kant and the History of German Idealism.** A study of Kant's relation to modern Rationalism and Empiricism, and an inquiry into the principles of Idealism. This class is taught in English and uses English translations.

Instructor: D. Steffen  
Format: Seminar 2 hours  
Prerequisite: GERM 2000.06 or GERM 2200.06 or King's Foundation Year

**GERM 3051.03A or B: Advanced Reading I.** This is a seminar at the advanced level specifically intended for students who do not fit into our normal programme offerings. Please consult departmental advisor.

Instructor: H.G. Schwarz  
Format: Seminar 2 hours  
Prerequisite: Any 2000-level class

**GERM 3052.03A or B: Advanced Reading II.** This is a seminar at the advanced level specifically intended for students who do not fit into our normal programme offerings. Please consult departmental advisor.

Instructor: H.G. Schwarz  
Format: Seminar 2 hours  
Prerequisite: Any 2000-level class

**\*GERM 3100.06R: German Literature and Thought from Reformation to Enlightenment.** A study of German literature between the 16th and 18th centuries as a direct reflection of the important religious, social and philosophical developments after the Reformation and during Absolutism.

Instructor: F. Gaede  
Format: Seminar 2 hours  
Prerequisite: GERM 2200.06, GERM 2400.06 or other German literature class at the 2000-level

**\*GERM 3150.06R: Goethe and the Enlightenment.** A study of German literature and thought of the time which preceded and witnessed the great revolutions of the 18th century.

Instructor: D. Steffen  
Format: Seminar 2 hours  
Prerequisite: GERM 2200.06, GERM 2400.06 or other German literature class at the 2000-level

**\*GERM 3200.06R: Goethe and Romanticism.** A study of Goethe, Hölderlin, Kleist, and Novalis.

Instructor: D. Steffen  
Format: Seminar 2 hours  
Prerequisite: GERM 2200.06, GERM 2400.06 or other German literature class at the 2000-level

**\*GERM 3240.06R: Literature of the 19th Century.** A discussion of essential literary texts which throw a critical light on the growing forces of materialism and positivism.

Instructor: F. Gaede  
Format: Seminar 2 hours  
Prerequisite: GERM 2200.06, GERM 2400.06 or other German literature class at the 2000-level

**\*GERM 3250.06R: Modern German Literature.** Modern authors as witnesses of the political

catastrophes and social changes of our century: a study of the plays of B. Brecht and of selected prose texts of Fr. Kafka, Th. Mann and G. Grass.

Instructor: F. Gaede

Format: Seminar 2 hours

Prerequisite: GERM 2200.06, GERM 2400.06 or other German literature class at the 2000-level

\*GERM 3650.06R: 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.

Instructor: S. Gaede

Format: Seminar 2 hours

Prerequisite: GERM 2200.06 or GERM 2400.06 and another literature class

Exclusion: GERM 3050.06

\*GERM 4100.06R: Aesthetic Theory. An historical study of the development of literary theory.

Instructor: F. Gaede

Format: Seminar 2 hours

Prerequisite: GERM 2200.06 or GERM 2400.06 and another literature class

\*GERM 4200.06R: 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.

Instructor: D. Steffen

Format: Seminar 2 hours

Prerequisite: GERM 2200.06, GERM 2400.06 or other German literature class at the 2000-level

\*GERM 4250.06R: Studies in German Idealism. This seminar is specifically intended for students in the advanced major and honours degree programmes. The specific content of the seminar varies from year to year, but is always related to some aspect of Idealism.

\*GERM 4500.03A or B: Special Topics Class I.

This is an intensive research seminar dealing with selected topics to be announced.

\*GERM 4501.03A or B: Special Topics Class II.

This is an intensive research seminar dealing with selected topics to be announced.

\*GERM 4600.06R: Special Topics Class. This is an intensive research seminar dealing with selected topics to be announced.



## Health Professions, Interdisciplinary

The following classes are offered as electives for students in the Faculty of Health Professions. For details on elective requirements refer to the calendar entry for the appropriate school or college. These classes may not be offered every year; Consult the current timetable.

**HLTH 3000.03A: An Interdisciplinary Approach to Health Promotion.** This class will offer an opportunity for students to interact with their peers and practitioners in the health field who are pursuing studies in similar and different disciplines and share an interest in health promotion. The concepts and theories that frame the current understanding of Health Promotion will be used to guide the class.

The class will have a one and a half hour large group lecture each week followed by a one and a half hour small group tutorial session. The lectures will be offered by representatives of different disciplines and different aspects of community practice.

**Format:** Lecture 3 hours  
**Prerequisite:** Students must have completed one full year in a health discipline  
**Restriction:** Restricted to Health Profession students or by permission of instructor

**HLTH 3001.03 Drug Issues: An Interdisciplinary Perspective.** Drug use issues of interest to health professionals will be explored. Topics covered will assist students in considering methods of identifying and preventing or diagnosing and treating drug-related problems and will include information on promoting appropriate drug use attitudes and behaviours. Students will have the opportunity to study these topics from an interdisciplinary perspective.

**Format:** Lecture 2 hours, tutorial 1 hour  
**Prerequisite:** Students must have completed one full year in a health discipline  
**Restriction:** Restricted to Health Professions students or by permission of instructor

**HLTH 4900.03A: An Interdisciplinary Approach to Gerontology (Social Perspectives).** This is a multidisciplinary class in Gerontology with a focus on the presentation of historical and current research studies in the field of social gerontology, primarily from a Canadian perspective. This class represents the wide range of study which is reflected in most of the sciences and humanities.

**Format:** Lecture 3 hours  
**Prerequisite:** SOSA 1000.06, 1050.06; 1100.06; or 1200.06  
**Cross-listing:** SOSA 2060.03

**HLTH 4910.03B: An Interdisciplinary Approach to Gerontology (Health Perspectives).** This multidisciplinary class in Gerontology focuses on the presentation of health issues and relevant research studies in the field of aging. Various health professionals working with this age group participate to

emphasize the interdisciplinary nature of gerontology, the importance of teamwork effectiveness and to help the learners develop an awareness of the need for the development of a comprehensive and appropriate health care system that meets the needs of older persons.

**Format:** Lecture 3 hours  
**Prerequisite:** Students must have completed one full year in a health discipline  
**Restriction:** Restricted to Health Professions students who have completed one full year in a health discipline

# School of Health Services Administration

**Location** 5599 Fenwick Street, Halifax, N.S. B3H 1R2  
**Telephone:** (902) 494-7097  
**Fax:** (902) 494-6849

## Director

T. Rathwell, BA (Hons) (York), MA, PhD (Dunelm)

## Professor Emeritus

A. Peter Ruderman, BS, MA, PhD (Harvard), MBA (Chicago)

## Professor

L.J. Nestman, BCom (Sask), CA, MHSA (Alta)

## Associate Professor

L. McIntyre, MD, MHSc (Tor), FRCPC

## Assistant Professors

G. Johnston, BSc(Hons) (McG), MHSA (Alta), PhD (Western)

K. Rondeau, BSc(Hons), BLT (Regina), DIA, MA, MBA (Concordia), PhD (Tor)

## Lecturers

W. Cochrane, BA(Hons), LLB (Dal)

M. Davies, BSc (MSVU), BEd (UPEI), MHSA (Dal), CHB

W.S. Keizer, BA (UPEI), MA (Queen's), MDiv (McG), MHSA (Dal)

E. Langille, BA, MA (Dal)

A. McGuire, BN (McG), MHSA (Dal)

C. McDonald, BN, MHSA (Dal)

K. Menzies, CPA, MHSA (Dal)

B. Montgomery, RN, SRN, BScN, MHSA (Dal)

P. O'Brien, RN, BN, MHSA (Dal)

## Introduction

The School of Health Services Administration offers a diploma in Health Services Administration (DHSA) programme which is designed to prepare students for a career in health care at the managerial level. It meets the needs of those currently employed in the health care sector in a managerial capacity, particularly, middle managers in medium and large institutions, administrators in small facilities, and employees in community health, long-term care, primary care, multi-service centres, and community health boards.

The programme provides a conceptual background for the increasingly complex managerial tasks performed in health institutions, agencies, and health-related government departments. Every effort is made to balance political, social, economic, cultural, medical, and ethical approaches to understanding the health care delivery system with those of the management sciences.

All students must observe the University and Academic Regulations described in the calendar.

## Modes of Study

Students may complete the DHSA programme through full-time study, part-time study or distance education.

### Distance Education Study

Students may complete the DHSA programme from a variety of sites throughout Nova Scotia. Further information regarding site locations and class offerings can be obtained from the School.

## Application Procedure

Applicants must meet the Dalhousie University undergraduate admission requirements to warrant consideration into this programme. In addition, students are required to submit a current resume and at least one letter of reference with their application to the Diploma programme.

Application forms are available from the Office of the Registrar, Dalhousie University. Applications should be submitted as early as possible, and not later than June 1 in the academic year in which studies are to commence.

Students may be considered for advanced standing if they have completed classes equivalent to the required or elective classes. Application for advanced standing must be made in writing after an applicant has been accepted to the programme.

Further information on the Diploma in Health Services Administration programme may be obtained from: School Administrator, School of Health Services Administration, Dalhousie University, 5599 Fenwick Street, Halifax, Nova Scotia, B3H 1R2, (902) 494-7097.

## Curriculum

The one-year programme features both an academic and results-oriented curriculum. Students accepted into the DHSA programme take the following half-credit classes:

- HEAS 2000.03A: Canadian Health Care Delivery System
- HEAS 2200.03A: Epidemiology and Health Law
- HEAS 2400.03B: Health Care Economics
- HEAS 4001.03A: Management Process in Health Services
- HEAS 4002.03B: Human and Financial Resource Management
- HEAS 4003.03B: Quality Management
- HEAS 4004.03B: Health Care Planning
- ECON 1101.03A: Principles of Microeconomics
- one credit or two half credit electives as approved by the School

## Classes Offered

HEAS 2000.03A: Canadian Health Care Delivery System. The class is designed to provide an overview of the health care industry

## 220 Health Services Administration

in Canada, and more specifically in Nova Scotia. Aimed specifically at supervisors, middle management, and administrators, the existing trends in health care from a provincial perspective will be reviewed. 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.

Instructor: A. McGuire

Format: Lecture, seminar 2 hours

**HEAS 2200.03A: Epidemiology and Health Law.** The first half of this class is a general, introductory class in the principles of epidemiology. In this class discussion will concentrate on 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. The object of the second half of this class is to give students an overview of law as it relates to health care management. It is designed to make students aware of actual or potential legal problems that they may face at the managerial level.

Instructor: W. Cochrane, W.S. Keizer

Format: Lecture, seminar 2 hours

Prerequisite: HEAS 2000.03 or equivalent

**HEAS 2400.03B: Health Care Economics.** This class is designed to introduce students to an economics perspective of the health care system, and, to encourage them to use economic analysis when evaluating health care issues. This class builds upon the introductory microeconomics class; therefore, but its primary objective is to specifically examine resource allocation decisions in health care markets.

Instructor: E. Langille

Format: Lecture, seminar 2 hours

Prerequisite: ECON 1101.03, HEAS 2000.03

**HEAS 4001.03A: Management Process in Health Services.** This class is aimed at providing a general overview of the structure, process, and environment of health care organizations for supervisors and middle managers. The goal of this class is to facilitate the development of students' administrative insights, problem solving skills, and managerial judgment. Further to this objective, this class seeks to inform students about some of the roles, functions, and values of key actors in contemporary health service organizations.

Instructor: C. McDonald

Format: Lecture, seminar 2 hours

**HEAS 4002.03B: Human and Financial Resource Management:** This class will provide the student with a working knowledge of the day to day operational management of resources. The first half of the class will focus on the human resource component examining issues of labour relations, employment legislation, human rights legislation, team building and performance evaluation. The second half of the class will introduce the student to financial management concepts. Topics covered include preparing, managing, and evaluating department budgets, and fiscal accountability.

Instructors: K. Menzies, B. Montgomery

Format: Lecture, seminar 2 hours

Prerequisite: HEAS 4001.03

**HEAS 4003.03B: Quality Management.** This class will provide an introduction to the concept of quality management in health care. Class content will include the traditional models of quality assurance, risk management and utilization management as they are currently practised in Canadian health care facilities. The concept of Total Quality Management will be utilized to demonstrate how it compares/contrasts with the traditional models.

Instructors: P. O'Brien

Format: Lecture, seminar 2 hours

Prerequisite: HEAS 2000.03

**HEAS 4004.03B: Health Care Planning.** This class will use lectures, readings and case discussions to explore national, provincial, regional and institutional health planning initiatives. How these initiatives influence planning and service delivery at the programme level will also be examined.

Instructor: M. Davies

Format: Lecture, seminar 2 hours

Prerequisite: HEAS 2000.03

# History

**Location:** 1411 Seymour Street, Halifax  
N.S.  
**Telephone:** (902) 494-2011  
**Fax:** (902) 494-3349

## Chair

J.T. O'Brien (494-3698)

## Undergraduate Coordinator

M.S. Cross (494-3643)

## Professors Emeriti

J.E. Flint, MA (Cantab), PhD (Lond), FR HistS,  
FRSC

P.B. Waite, MA (UBC), PhD (Tor), FRSC

## Professors

M.S. Cross, BA, MA, PhD (Tor)

J.E. Crowley, AB (Princ), MA (Mich), PhD  
(Johns Hopkins)

J. Fingard, BA (Dal), MPhil, PhD (Lond), FRSC

J.L. Parpart, BA (Brown), MA, PhD (Boston)

N.G.O. Pereira, BA (Williams), MA, PhD (UC  
Berkeley)

L.D. Stokes, BA (Tor), MA, PhD (Johns Hopkins)

G.D. Taylor, BA, PhD (Penn), Dean, Faculty of  
Arts and Social Sciences

T. Traves, BA (Manitoba), MA, PhD (York),  
President and Vice-Chancellor, Dalhousie  
University

D.R. Woolf, BA (Queens), DPhil (Oxon), FR  
HistS

## Associate Professors

S.J. Brooke, BA (Dal), MA (McG), DPhil (Oxon)

G. Hanlon, MA (Tor.), Dr.de 3e cycle (Bordeaux)

C.J. Neville, BA, MA (Carleton), PhD (Aberdeen)

J.T. O'Brien, BA (Wisconsin), MA, PhD  
(Rochester)

D.A. Sutherland, BA (MtA), MA (Dal), PhD  
(Tor)

## Assistant Professors

R. Bleasdale, BA, MA, PhD (Western)

C. Danyek, BA (Concordia), MA, PhD (McG)

S.M. Tillotson, BSc (Waterloo), MA, PhD  
(Queen's)

J. Vander Meulen, BA (UBC), MA, PhD (Tor)

P. Zachernuk, BA, MA (Dal), PhD (Tor)

## Introduction

A sense of history is a primitive need felt by individuals and by groups. Just as people need to know who they are and how they arrived where they are, groups, races, 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.

## Degree Programmes

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.

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.

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.

## General and Honours BA

There are no prerequisites for entry into the programme at the 1000- and 2000-levels; however, some 2000-level classes may exclude first-year freshman students. A first year history class is recommended for prospective majors or honours students but is not mandatory.

Students who wish to major in history in the three-year (15 credits) programme are urged to choose one or two 1000- or 2000-level history classes in their first year. They must take a minimum of four and preferably five, but no

more than eight additional credits above the 1000-level, of which at least two must be beyond the 2000-level.

Students who wish to pursue the Advanced Major (four years, 20 credits) programme must complete all the requirements for the three-year degree. In addition, they must take a minimum of two credits (one at the 3000-level and preferably HIST 4500.03 or HIST 4985.03, when offered), for a total of at least six but not more than nine credits in history, above the 1000-level.

Students who wish to pursue an Honours Degree in history must also complete all the requirements for the three-year degree. In addition, they must take two required classes (HIST 4990.06 and, when offered, HIST 4985.03) and a further number of classes, preferably at the 3000- and 4000-levels, for a total of at least nine but not more than eleven credits above the 1000-level in history. It is also possible to complete a combined Honours Degree in history and another subject, in which case the student should consult the Undergraduate or Honours Coordinators in both Departments.

The following outline presents the minimum departmental requirements for each programme and should be read in conjunction with the general requirements of the Faculty. Students who intend to major or honour in history might wish to consult the department's undergraduate coordinator to have their plan of study approved, preferably before entering the second year.

### Honours in History (4 year)

Please note that 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.

#### Departmental requirements:

##### Classes required in Honours:

2500 level:	Seven credits at or above the 2000 level
3000 level:	Two credits at 3000 level or higher
4000 level:	HIST 4990.06, HIST 4985.03 (if offered)

### Advanced Major in History (4 year)

#### Departmental requirements:

2500 level:	Two to three credits at or above the 2000 level
3000 level:	Three credits at or above the 3000 level

in their fourth year of study Advanced Major students are required to take two credits in history, one of them at the 3000- or 4000- level.

### Major in History (3 year)

#### Departmental Requirements

##### Classes required in Major:

2000 level:	Two to three credits at or above the 2000 level
3000 level:	Two credits at or above the 3000 level

### Types of Classes

There are several different types of classes offered by the History Department. At the 1000- and 2000-level, classes are lecture format, three hours per week, with tutorials featured in some classes. 1000-level classes are intended for students taking a History class as an isolated elective. 2000-level classes begin more specialized study of an area of History as a major or minor.

3000- and 4000-level classes provide opportunities to follow up on interests developed in previous classes. There are two types of classes at the 3000- and 4000-levels: 'lecture/discussion' and 'seminar'. 'Lecture/discussion' classes combine lectures at an advanced level with class discussion. These classes are usually limited to 35 in enrolment. 'Seminar' classes are smaller in size, usually limited to 15, and involve individual presentations by students in class. These classes are particularly recommended for Honours students and prospective Honours students.

### Classes Offered

**NOTE:** Not every class is offered every year. Please consult the current timetable on registration to determine if these classes are offered.

**HIST 1001.03A: Medieval Europe.** An introduction to the thousand years between the Barbarian invasions of the fourth, fifth and sixth centuries and the beginnings of modern Europe. Original sources in translation are used to illustrate the medieval world view. Students are acquainted briefly with a wide range of topics, political, cultural and social. Particular attention is paid to developing a basic appreciation of the richness of an age often characterised as "dark" and unknowable.

Instructor: C.J. Neville  
Format: Lecture/tutorial 3 hours  
Exclusion: HIST 1000.06

**HIST 1002.03A or B: Renaissance to Revolution, 1500-1789.** This class is designed to serve as an introduction to the major themes and events in European history. Students will become acquainted with the importance of regional geography, and with the basic concepts and processes in social, religious, economic, political and cultural history.

Instructor: G. Hanlon  
Format: Lecture 3 hours  
Exclusion: HIST 1000.06

**HIST 1003.03A or B: Modern Europe: From 1789 through the 1950's.** An introductory survey of the history of Europe from 1789 to approximately 1956. Emphasis will be upon the major political and intellectual developments in France, Germany and Russia, but other national areas as well as social and economic issues will also receive some attention.

Instructor: N.G.O. Pereira  
Format: Lecture 3 hours  
Exclusion: HIST 1000.06

**HIST 1050.06R: The Modern World.** Open the morning newspaper or tune in the evening news. Crises, conflicts and controversies parade before us in a seemingly random and

inexplicable fashion. Where did the problems that confront us today originate? Can an understanding of the past provide guidelines for dealing with the complex issues of the present? Historians cannot foretell the future, but they can provide perspectives that relate the events of our own time to broader trends of political, economic and social development in the modern world. This class seeks to introduce students to history as an on-going process, linking the present to the past.

Instructor: G.D. Taylor  
Format: Lecture 3 hours

**HIST 1100.06R: The British Isles from Prehistory to 1688.** The British heritage is one very important element in our history. This class is intended as an introduction to British history, with focus not simply on Britain as a nation, but on the growth of a distinctive British culture and civilization over 2000 years. England, Scotland, Wales, and Ireland will each be examined, separately and in relationship, as will connections between the British Isles and foreign or colonial territories in Europe and ultimately in North America. The first term will trace British history from the Druidic era through the successive invasions of Romans, Anglo-Saxons and Danes, the Norman Conquest and the reintegration of the island into Europe, and the formation of national languages and cultures in the late Middle Ages. In the second term the focus will be on social, economic, and cultural developments of the period from 1399 to 1688, including colonial expansion, religious reform and dissent, and the growth of representative institutions. Instruction will be by lecture, supplemented by audio-visual presentation, and class discussion where possible.

Instructors: D.R. Woolf/C.J. Neville  
Format: Lecture 3 hours

**HIST 1200.06R: Canada: An Introductory Survey.** An overview of the Canadian experience, from initial contact between natives and newcomers, to contemporary debate over such issues as immigration policy and evolving federalism. Emphasis is placed on the themes of change and conflict in terms of the economy, society and politics. Approved with Canadian Studies

Instructors: D. Sutherland/S.M. Tillotson  
Format: Lecture/tutorial 3 hours

**HIST 1300.06R: History of the United States.** This class surveys the broad contours of the American experience from the Jamestown settlement to the Reagan revolution. It examines the historical development in the United States of republican government, democratic society, and the constitutional conflicts decided by the Civil War. In addition to such political concerns, the class pays particular attention to the economic development of the United States, her unusual racial and ethnic patterns, and her propensity for generating and absorbing reform movements. Students attracted to third and fourth year classes in the history of the United States should consider History 1300 early in their university career.

Instructors: J.T. O'Brien/J. VanderMeulen  
Format: Lecture 3 hours

**HIST 1400.06R: Europe and the Third World.** Passing this class fulfills the first year writing requirement; this class is therefore an introduction to university level work and provides training in study habits, analysis of problems and essay writing by examining six "units of study" in turn. Each unit is concerned with a major phenomenon in the history of European expansion overseas and its impact on non-European peoples, ranging from 16th century America to twentieth century nationalism and decolonization. For each unit there are lectures and tutorials and students write six essays, one per month in each unit.

Instructors: Staff  
Format: Writing Requirement, lecture/tutorial 3 hours

**HIST 1500.06R: Global History Since 1300 A.D.** The contemporary practice of describing the world as either "Western" or "non-Western" needs to be carefully re-examined. The struggle to survive in diverse conditions has inspired many patterns of civilization. Long before the 14th century, societies in different regions of the globe developed diverse forms of government, religion and economy, while also exchanging goods and ideas. As Western European states extended their connections with the world they first sought to join these exchanges, and later tried - with mixed success - to impose new patterns. This class will look at selected regions of the world before and during the era of Western European imperialism, to assess the ways in which they entered and experienced the modern era.

Instructor: P.S. Zachernuk  
Format: Lecture 3 hours

**HIST 2001.03A or B: 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 feudal states of Europe following the disintegration of the Carolingian Empire, the development of monasticism, church-state relations, the Gregorian Reform and the Investiture Contest, the rise of papal government, the twelfth-century Renaissance, peasant life and popular culture. Original sources in translation are used to familiarize students with the medieval world view.

Instructor: C.J. Neville  
Format: Lecture/tutorial 3 hours  
Recommended: HIST 1001.03

**HIST 2002.03A or B: Later Medieval Europe.** A study of the period beginning with the pontificate of the greatest of the medieval popes, Innocent III, 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 the Crusades, church-state relations, heresy, peasant life and peasant rebellions, political thought, varieties of medieval law, architecture and literature, and the concept of decline, or the "autumn" of the Middle Ages. Students make use of original sources in translation.

**Instructor:** C.J. Neville  
**Format:** Lecture/tutorial 3 hours  
**Recommended:** HIST 1001.03 and/or 2001.03

**HIST 2006.03A or B: After Columbus: The Old World and the New, 1450-1650.** The commercial and colonial expansion of Europe into the Americas. Topics of particular interest are the relations of Europeans and indigenous peoples, the ecological consequences of colonization, the use of unfree labour, the role of technology, the establishment of settler colonies, the effect of overseas communication on European culture, and the role of colonial expansion in the development of the world economy.

**Instructor:** J.E. Crowley  
**Format:** Lecture/discussion 3 hours  
**Recommended:** HIST 1002.03  
**Exclusion:** HIST 2010.03  
**Restriction:** Restricted to students in their second year or higher

**HIST 2007.03A or B: The Atlantic World: European Empires in the Americas, 1650-1800.** 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.

**Instructor:** J.E. Crowley  
**Format:** Lecture/discussion 3 hours  
**Recommended:** HIST 1002.03, 2006.03  
**Exclusions:** HIST 2013.03  
**Restriction:** Restricted to students in their second year or higher

**HIST 2014.06R: State and Society in Early Modern Europe, 1550-1750.** This class deepens some of the topics treated in HIST 1002.03 and examines the development of the modern state in the context of the pre-industrial societies.

The states to be studied are the Spanish Empire, the Dutch republic; the Ottoman Empire in Turkey and the Balkans, the French monarchy, the Austrian Empire, and a few smaller states such as Tuscany, Prussia, Sweden, and Poland.  
**Instructor:** Staff  
**Format:** Lecture/tutorial 3 hours  
**Recommended:** HIST 1001.03 or 1002.03  
**Exclusion:** HIST 2008.03

**HIST 2015.03A or B: War and Society in Early Modern Europe 1550-1750.** The class deals with the presence of war in European societies, and how states and societies adapted and transformed under the impetus of the desire to achieve victory against an adversary. Among specific topics the class will deal with the transformation of tactics and technology on land and sea; the creation of modern tax systems; problems of supply and recruitment; ideologies of the military function; the creation of standing armies; the impact of hostilities on society.

**Instructor:** G. Hanlon  
**Format:** Lecture 2 hours, tutorial 1 hour  
**Prerequisite:** HIST 1002.03 or some equivalent Early Modern Europe

**HIST 2020.06R: 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.

**Instructor:** N.G.O. Pereira  
**Format:** Lecture/tutorial 3 hours  
**Recommended:** HIST 1001.03 or 1002.03 or 1050.06 or 1400.06

**Restriction:** Restricted to students in their second year or higher (first year students, with permission of instructor)

**HIST 2021.03A or B: 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.

**Instructor:** N.G.O. Pereira  
**Format:** Lecture/tutorial 3 hours  
**Exclusion:** HIST 2020.06  
**Cross-listing:** RUSS 2023.03

**HIST 2030.06R: Germany in the Nineteenth and Twentieth Centuries.** Selected topics in the history of Germany during the past two centuries, including the growth of nationalism and liberalism, the role of Prussia, industrialization, Bismarck and the political parties, civil-military relations, the rise, rule and destruction of Nazism, and the post-war development of the Federal and German Democratic Republics up to national reunification in 1990.

**Instructor:** L.D. Stokes  
**Format:** Lecture/tutorial 3 hours  
**Recommended:** HIST 1001.03, or 1002.03, or 1003.03

**Restriction:** Restricted to students in their second year or higher

**HIST 2040.06R: Modern France, 1700-1992.**

The class covers the last two centuries of political, social, economic and cultural history in Europe's pre-eminent nation. More specifically we examine the transition from a traditional rural society with a precocious state, through the French Revolution and its political and social repercussions. Throughout the 19th and 20th centuries France, perhaps more than any other single nation, mirrors developments in all aspects of the contemporary Western world.

**Instructor:** G. Hanlon  
**Format:** Lecture/tutorial 3 hours  
**Recommended:** HIST 1001.03, or 1002.03, or 1003.03

**HIST 2060.06R: Italy after the Renaissance.** Why does the Western world's most advanced economy and culture enter into prolonged decline after 1620? Here we deal with the theme of "decadence" from which Italy has emerged only in the last half of the 20th century. The class explores how advantages became handicaps, how governments tried to stem a decline of which they were acutely aware, of how society reacted to crisis, and the roles of

ideology in fashioning responses. The class will also focus on those aspects in which there was no decline.

Instructor: G. Hanlon  
 Format: Lecture 3 hours  
 Recommended: HIST 1001.03 or 1002.03  
 Exclusion: HIST 2061.03

**HIST 2061.03A or B: Civilization of Baroque Italy 1550-1700.** The class will deal with Italy at the period of its greatest influence on Western Civilization, in its various aspects. The class will survey the political, social, economic, and cultural history of the peninsula and how it fits into the European context.

Instructor: G. Hanlon  
 Format: Lecture/tutorial  
 Co-requisite: HIST 1002.03  
 Exclusion: HIST 2060.06

**HIST 2062.03A or B: Italy from the Risorgimento to Fascism, 1848-1945.** Selected topics in the history of nineteenth and twentieth century Italy, including the role of Piedmont in the creation of the national state, regionalism and modernization, the political weaknesses of liberal Italy, and the origins, rule and fall of the Fascist regime.

Instructor: L.D. Stokes  
 Format: Lecture/tutorial 3 hours  
 Recommended: HIST 1001.03, or 1002.03, or 1003.03

Restriction: Restricted to students in their second year or higher

**HIST 2081.06R: 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.

Instructor: L.D. Stokes  
 Format: Lecture/tutorial 3 hours (audio-visual facilities as needed)

Recommended: HIST 1001.03, or 1002.03, or 1003.03

Restriction: Restricted to students in their second year or higher

**HIST 2101.03A or B: Medieval England.** This class examines some of the major social, political, economic and cultural themes in English history from the reign of Alfred the Great to the Wars of the Roses. Major topics of study include the development and maturation of the English church, the impact of the Norman Conquest on Anglo-Saxon government and society, the development of the common law system, English monasticism, constitutional struggles in the later medieval period, 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.

Instructor: C.J. Neville  
 Format: Lecture/tutorial 3 hours  
 Recommended: HIST 1001.03, or 2001.03, or 2002.03

**HIST 2104.03A or B: England under the Tudors, 1485-1603.** An introduction to the major events, personalities and developments in the political, social and economic history of sixteenth-century England. Issues to be studied include: the formation of a national state; the beginnings of inflation; the Reformation and dissolution of the monasteries; the mid-Tudor "crisis"; and the achievements of the Elizabethan age.

Instructor: D.R. Woolf  
 Format: Lecture/tutorial 3 hours  
 Recommended: HIST 1001.03, or 1002.03  
 Exclusion: HIST 2102.03, 2103.06  
 Restriction: Restricted to students in their second year or higher

**HIST 2105.03A or B: England under the Stuarts, 1603-1688.** This sequel to HIST 2104.03 studies the principal events of seventeenth-century English history, with reference to developments in Scotland and Ireland. Among the topics to be discussed: the character of Stuart kingship; the crisis of the aristocracy; the fear of catholicism at home and abroad; the causes and course of the civil war 1642-49; the importance of Parliament; the Cromwellian Regime; the Restoration; and the Revolution of 1688.

Instructor: D.R. Woolf  
 Format: Lecture/tutorial 3 hours  
 Recommended: HIST 1001.03, or 1002.03  
 Exclusion: HIST 2102.03, 2103.06  
 Restriction: Restricted to students in their second year or higher

**HIST 2111.03A or B: Modern Britain to 1884.** A survey of the development of British society from the reign of George III to the late Victorian era. This class will examine the emergence of class society, movements of popular protests, political reform, the growth of empire, and cultural change.

Instructor: S. Brooke  
 Format: Lecture/tutorial 3 hours

**HIST 2112.03A or B: Modern Britain from 1884 to the Present.** This class will examine the development of British society from 1884 to the present day, touching upon the experience of Britain in two world wars, the growth of the welfare state, the decline of Britain's empire and economy, the upheavals of the 1960's and 1970's and the emergence of Thatcher.

Instructor: S. Brooke  
 Format: Lecture/tutorial 3 hours  
 Recommended: HIST 2111.03

**HIST 2151.03A or B: Scotland from the Late Middle Ages to Culloden.** A survey of major themes in Scottish history from the fifteenth century to the Jacobean era. After a general introduction to Scotland's geographical and cultural inheritance, students will proceed to a review of such topics as crown-magnate relations in the late Middle Ages, religious life in pre-Reformation Scotland, the coming of the Reformation, the evolution of the Reformed Kirk, Highlanders vs. Lowlanders, the problem of the Borders, the unions of 1603 and 1707, education and poor law in early modern Scotland, the Scottish Revolution, and the Jacobite rebellions. Tutorial discussions will be based on prepared readings. Throughout the class emphasis will be placed on recent



re-interpretations of traditionally held views with respect to these so-called "dark ages" in Scottish history.

Instructor: C.J. Neville  
Format: Lecture/tutorial 3 hours

**HIST 2152.03A or B: Scotland since 1745. A survey of major themes in the history of "North Britain" from the last Jacobite rebellion of 1745 to the present. Topics to be dealt with include the Scottish Enlightenment, the Age of Improvement, radicalism and repression, the Clearances and emigration to North America, agitation for parliamentary reform, Scottish Chartism, Walter Scott and Scottish Romanticism, Scottish cities in the Victorian era, Scottish socialism, Scotland in the Depression, the Second World War, the ascendancy of Labour, Scottish nationalism, North Sea oil, and the legacy of underdevelopment.**

Instructor: D.A. Sutherland  
Format: Lecture/tutorial 3 hours

**HIST 2202.03A or B: Canada's Industrial Revolutions, 1850-1950. A study of Canada's transition from a pre-industrial society to a leading industrial nation. Principal themes for discussion include urbanization, the rise of the factory and mass production, the impact on home and family, the revolution in transportation and communications, weapons development, and patterns of consumption. Special attention is given to the role of technology. Approved with Canadian Studies.**

Instructor: Staff  
Format: Lecture/tutorial 3 hours  
Recommended: HIST 1200.06 or equivalent introductory class in Canadian history

**HIST 2211.03A or B: Social History of Canada before 1870. This class examines the social history of pre-Confederation Canada through such topics as social control, violence and protest, women and domestic life, regionalism and marginal peoples, and the transformation of the economy. Approved with Canadian Studies.**

Instructor: C. Danyak  
Format: Lecture/tutorial 2 hours (evening)  
Exclusion: HIST 2210.06

**HIST 2212.03A or B: Social History of Canada Since 1870. This class examines the social history of Canada since Confederation through such topics as the impact of industrialization, social classes, conflict, the role of women, the state and social development, and relationships among the wide variety of social groups in Canada. Approved with Canadian Studies.**

Instructor: C. Danyak  
Format: Lecture/tutorial 2 hours (evening)  
Exclusion: HIST 2210.06

**HIST 2221.03A or B: 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.**

Instructors: R. Bleasdale/M. Cross  
Format: Lecture/tutorial 3 hours  
Exclusions: HIST 3241.03, 3242.03, 3280.03, 3281.03

**HIST 2222.03B: 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.**

Instructors: R. Bleasdale/M. Cross  
Format: Lecture/tutorial 3 hours  
Exclusions: HIST 3241.03, 3242.03, 3280.03, 3281.03

**HIST 2230.06R: Canada in the Twentieth Century. A survey of the roots of contemporary Canada, which studies the origins of our current issues and problems by focusing on Canadian political developments, as well as on economic and social structures, in particular, against the backdrop of socio-economic change. French-English relations, federal-provincial relations, and regional disparities are key to this presentation of the development of contemporary Canada. Approved with Canadian Studies.**

Instructors: R. Bleasdale/C. Danyak  
Format: Lecture/tutorial 3 hours  
Recommended: HIST 1200.06 or an equivalent introductory class in Canadian history

**HIST 2260.03A or B: True Believers 1800-1914: The Left and 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 risen and declined, and what significance they have had for Canadian politics and society. Topics will include: the Tory ruling groups of the early 19th century and their Reform opponents; the Rebellions of 1837-8; religious and ethnic extremism; labour and farmer movements; imperialism.**

Instructor: M. Cross  
Format: Lecture/tutorial 3 hours

**HIST 2261.03A or B: True Believers 1914 to Present: The Left and the Right in Canadian Politics. The class will study the ideas and practices of Canadian political movements of the Left and the Right. We will attempt to understand why such movements have arisen and declined, and what significance they have had for Canadian politics and society. Topics will include: the Progressive movement; the CCF and NDP; Communism and Fascism; Social Credit; the radical right and the New Left; the Reform Party.**

Instructor: M. Cross  
Format: Lecture/tutorial 3 hours

**HIST 2270.06R: The Atlantic Provinces. Survey of Maritime and Newfoundland history from the beginnings of European penetration to the "triumph of Canadianization." Attention is given to the interaction of environment and culture which has given rise to a durable but nevertheless vulnerable regional character. The class seeks to define internal patterns of social**

change and social conflict while simultaneously placing regional development within a broader national and international context. Approved with Canadian Studies.

Instructor: D. Sutherland

Recommended: HIST 1200.06 or an equivalent introductory class in Canadian history

**HIST 2331.03A or B: Colonial North America, 1600-1760.** A comparison of French and British colonies in North America before the American Revolution, the class studies the interaction of indigenous peoples and Europeans, the establishment of settler societies, the development of domestic and state economics, and the conflicts of imperial interests.

Instructor: J. Crowley

Format: Lecture 3 hours

Recommended: HIST 1300.06 or 1200.06

**HIST 2332.03A or B: Nineteenth Century America.** In 1800 slightly more than 5 million persons lived in the United States, farmed for a living, and owned land, but by 1900 a majority of the country's 76 million inhabitants neither owned nor farmed their own lands. Clearly much changed in nineteenth century America: the nation's western boundary shifted from the Mississippi to the Pacific; cities and factories altered her landscape; her slave system, the world's largest, was destroyed in the first great industrial war of our time; and by 1900 she was the most powerful industrial producer on the globe. The nature and consequences of these and other major developments are the subjects considered in this class.

Instructor: J.T. O'Brien

Format: Lecture/tutorial 3 hours

Recommended: HIST 1300.06

Exclusion: HIST 2330.06

Restriction: Restricted to students in their second year or higher

**HIST 2333.03A or B: Twentieth Century America.** This class traces the political and economic history of the United States from the turn of the century to the Reagan era. Particular emphasis is placed on broad trends of change in those years: the growth of large private and public bureaucracies and their impact on traditional values; the continuing influence of racial and ethnic divisions on American politics; the role of the media on political organizations and practices; and the growing interconnections of foreign policy, military commitments and economic resources in the years since the Second World War.

Instructor: J. Vander Meulen

Format: Lecture 3 hours

Recommended: HIST 1300.06 or a similar survey class in U.S. history

Exclusion: HIST 2330.06

**HIST 2335.03A or B: Modern American Culture.** American mass culture has become familiar to billions throughout the world in this century. One would be hard pressed to discover in Germany, Japan, Brazil or Canada, college students unfamiliar with Elvis, Hollywood, adolescence, IQ, McDonald's, the Blues, Superbowl, or the Pill. In this class the concern is with the historical development of these cultural phenomena rather than with their export to the rest of the world. Lectures and readings focus on such matters as changing

moral standards for young Americans, fashion and gender roles, food and film. Recordings and movies supplement the lectures.

Instructor: J.T. O'Brien

Format: Lecture/tutorial 3 hours

Recommended: HIST 1300.06

Restriction: Restricted to students in their second year or higher

**HIST 2370.03A or B: Age of Imperialism 1870-1970.** Deals with the last hundred years of the activities of the imperial powers, their impact on the world, their rivalries among themselves and the resistance they provoked on every continent. Different forms of conquest are discussed and illustrated, the shifting power balance among the imperial powers is traced, and the growth of national resistance movements and their ideologies investigated. The class gives particular emphasis to the United States as the most important imperial power of the period, to its role in Latin America and to the ideologies which inform resistance movements.

Instructor: Staff

Format: Lecture/discussion 3 hours

**HIST 2381.03A or B: Latin America: Underdevelopment and Revolution.** Outlines key developments in Latin America from the independence wars to the present - the growth of nationalism, the impact of British and American capital and the development of the anti-imperialist struggle - in relation to Argentina, Brazil, Chile, Peru, Central America and Cuba.

Instructor: Staff

Format: Lecture/discussion 3 hours

Exclusion: HIST 2380.03, 2382.03

**HIST 2382.03A or B: Central America to 1979.** See class description for SPAN 2069.03 in the Spanish section of this calendar.

**HIST 2383.03A or B: Area Studies on Mexico and Central America:** See class description for SPAN 2070.03 in the Spanish section of this calendar.

**HIST 2410.03A or B: Tropical Africa Before 1800.** A study of some of the major themes of African pre-colonial history through an examination of the politics and development of cities, empires and societies in tropical Africa. It will focus on the impact of migration, trade, slavery and Islamic penetration on African society.

Instructor: P. Zachernuk

Format: Lecture/tutorial 3 hours

**HIST 2421.03A or B: Colonial Africa.** Examines the history of Africa from the period of European colonial rule (1884) to the emergence of independent African states in the 1960s. The class will analyze the material basis of colonial society; culture, class and social change during the colonial period; issues around changing gender roles; and the nationalist struggle and decolonization.

Instructor: J.L. Parpart/P.S. Zachernuk

Format: Lecture/tutorial 3 hours

**HIST 2422.03A or B: Independent Africa.** A study of Africa from the early 1960s to the present. The class will examine neo-colonial myths and realities, class, party and state in Africa, economic development and underdevelopment, and the quest for national

stability during the current crisis. The class will look at the impact of structural adjustment on women's and men's lives and the current struggles in Southern Africa.

Instructor: J.L. Parpart  
Format: Lecture/tutorial 3 hours

**HIST 2614.03A: Making Gender: Male and Female from Antiquity to Mary Wollstonecraft:** This class examines the diverse and fascinating ways western cultures have shaped the meanings of gender. The history of women informs us about the once little-known history of femininity. And, as a result, historical changes in definitions of masculinity become visible. The meanings of gender are exposed in this class through topics such as: the origins myths of western civilization, the Galenic one-sex model of physiology, patristic theology, the cult of courtly love, eighteenth century salons, and the rights of man.

Instructor: S.M. Tillotson  
Format: Lecture/tutorial 3 hours  
Cross-listing: WOST 2300.03

**HIST 2615.03B: 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: republican motherhood, respectability, the family wage, the homosexual, imperialism, citizenship, welfare dependency, and infertility.

Instructor: S.M. Tillotson  
Format: Lecture/tutorial 3 hours  
Cross-listing: WOST 2301.03

**HIST 2995.03A or B: History of Modern Medicine, 1800-1950.** This class examines the state of medicine in 1800, 1850, 1900 and 1950, and the transition of American and Canadian medicine from a low status, ineffective, poorly trained group of competing sects to what it is today. For each of the four periods the emphasis is on medical training, the diagnostic and therapeutic capabilities of physicians, their views on disease etiology, their attempts to control the size and quality of the profession and to prohibit the entry of women, and the scientific background to their views.

Instructor: J. Farley  
Format: Lecture/discussion 3 hours  
Exclusion: HIST 2295.03  
Cross-listing: BIOL 3404.03

**PLEASE NOTE:** Students are advised to check the format of the 3000-level classes, whether 'lecture/discussion' or 'seminar'. Consult department timetable.

**HIST 3001.03A or B: Medieval Civilization.** Each year one or more particular topics are chosen, broad enough to be used as central themes in the context of which medieval civilization may be closely examined; for instance, monasticism, universities, peasants and popular culture. Such topics are studied in some depth, where possible using original sources in translation, and recent periodical literature and/or monographs. Students master the basic work in certain areas, but are also

encouraged to develop particular topics more thoroughly. Class discussions are used to unravel contentious or difficult aspects. Students are expected to contribute to such discussions and to write one or two well argued and documented papers. Some prior knowledge of medieval European history is essential.

Instructor: C.J. Neville  
Format: Seminar 2 hours  
Prerequisite: HIST 2001.03 or 2002.03 or 2101.03

Recommended: HIST 1001.03  
Exclusions: HIST 3000.06  
Cross-listing: HIST 5701.03

**HIST 3002.03A or B: The Medieval Church.** This class does not attempt to provide a chronological survey of the development of the Western church, but is an advanced seminar dealing with topics which have no strict chronological limits. Subjects of study include monasticism, heresy, education and the universities, town and cathedral, lay-clerical conflict, and "popular" concepts of religion. Each year one or more topics are examined in detail, with the help of original documents in translation, and using recent periodical literature and/or monographs. Students prepare 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: C.J. Neville  
Format: Lecture/discussion 3 hours  
Prerequisites: HIST 2001.03 or 2002.03 or 2101.03

Recommended: HIST 1001.03  
Exclusions: HIST 3021.03 and 3022.03  
Cross-listing: COMR 3008.03

**HIST 3003.03A or B: England in the Later Middle Ages.** Beginning around the reign of Edward I (1272-1307), attention is given to political, institutional, religious and social aspects of English history prior to the Tudors. This period includes the deposition of two reigning monarchs, the Scottish Wars of Independence, the Hundred Years' War, the Black Death, Wycliffite heresy and the Lollards, and the so-called "Wars of the Roses". It is therefore of exceptional interest and variety. Each year one or more topics of study are chosen for detailed consideration, where possible making use of original sources (in translation), and with the help of recent periodical literature. Class discussions are used to explore particularly difficult or controversial questions, and all students write one or two well argued and documented papers. Some knowledge of English medieval history is essential.

Instructor: C.J. Neville  
Format: Lecture/discussion 3 hours  
Prerequisite: HIST 2101.03  
Recommended: HIST 1001.03 or 2001.03 or 2002.03  
Exclusions: HIST 3009.03, 3007.03 and 3010.06

**HIST 3004.03A or B: Crime and Society in Post-Conquest England.** This class explores the development of the criminal law in England between 1066 and 1500. After some

introductory lectures by the instructor on the legacy of Anglo-Saxon legal notions and the creation of the royal system of justice known as the "eyre", attention is given to a study of the development of a more sophisticated hierarchy of courts: the local tribunals presided over by justices of the peace and sheriffs, itinerant sessions headed by the justices of assize, and the central court of King's Bench. The origins and elaboration of particular offenses, 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:** C.J. Neville  
**Format:** Seminar 2 hours  
**Prerequisite:** HIST 2101.03 or 2001.03 or 2002.03  
**Recommended:** HIST 1100.03, 2104.03  
**Exclusions:** HIST 3009.03, 3007.03, and 3010.06  
**Cross-listing:** HIST 5704.03

**HIST 3005.03A or B: The Early Modern Mind: European Thought and Culture, 1450-1700.**

The purpose of this class is to provide students who have an interest and some background in early modern European history with more advanced study of the major issues and themes in European cultural history from the advent of printing to the dawn of the Enlightenment. Students will discuss writings by seminal authors such as Bacon, Montaigne, Bayle and Descartes, in addition to secondary works. The emphasis throughout will be not only on "high culture" but also on its relationship to society as a whole and to popular customs and rituals.

Topics to be discussed include the impact of print, utopian thought, the witch craze, urbanization and civic consciousness, the writing of history, aspects of the scientific revolution, and the growth of religious toleration and scepticism.

**Instructor:** D.R. Woolf  
**Format:** Seminar 2 hours  
**Prerequisite:** One 2000- or 3000-level class in medieval or early modern European history, or instructor's consent  
**Recommended:** HIST 2005.03, 2006.03, 2008.03  
**Exclusion:** HIST 3011.03  
**Cross-listing:** HIST 5705.03

**HIST 3006.03A or B: Renaissance and Reformation Europe, 1348-1559.** A survey of the major themes, subjects, and personalities in western European history from the Italian Renaissance to the beginnings of the Protestant Reformation in the sixteenth century. Topics to be covered include the rise of Italian city-states, Italian humanism, the arts, the emergence of centralized monarchies in northern Europe, religious sentiment, and the reform movement. Although most areas of western Europe will be dealt with, the focus will be on Italy, France, and Germany.

**Instructor:** D.R. Woolf  
**Format:** Lecture/discussion 2 hours  
**Prerequisite:** Any first- or second-year European history class  
**Exclusion:** HIST 2005.03

**HIST 3040.06R: Culture and Behaviours in Early Modern France, 1550-1750.** This class explores the characteristics and complexities of elite and popular culture between the wars of religion and the Enlightenment. We study the traditional universe of Early Modern civilization and the process it underwent in a variety of domains: religion, education, sociability, deviance, social organization, etc. Emphasis is placed on sources, methods and critical analysis.

**Instructor:** G. Hanlon  
**Format:** Lecture/discussion 2 hours  
**Prerequisite:** Any European Medieval or Early Modern history or literature

**HIST 3051.06R: Fascist and National Socialist Movements in Europe, 1900-1945.** The origins, ideologies, social composition, leadership, rise to power and rule of the two principal fascist and national socialist movements, those of Mussolini's Italy and Hitler's Germany, as well as similar phenomena in other European countries between the world wars, are studied comparatively to distinguish them from Soviet communism and other varieties of authoritarianism and totalitarianism.

**Instructor:** L.D. Stokes  
**Format:** Seminar/lecture/discussion 2 hours  
**Prerequisite:** One 2000-level class in European or modern British history  
**Recommended:** HIST 2030.06, 2062.03, 2081.06, 2021.03, 2040.06, 2112.03  
**Exclusion:** HIST 3051.06

**HIST 3052.06R: Europe and World War Two.** Selected topics on the origins, course and aftermath of the Second World War as this involved Europe, including Nazi foreign and occupation policies, strategic and political decision-making by the Allied and Axis powers, national resistance movements, and the wartime origins of the Cold War.

**Instructor:** L.D. Stokes  
**Format:** Seminar/lecture/discussion 2 hours  
**Prerequisite:** One 2000-level class in European or modern British history  
**Recommended:** HIST 2030.06, 2062.03, 2081.06, 2021.03, 2040.06, 2112.03  
**Exclusion:** HIST 2052.03 and 3052.06

**HIST 3055.06R: The Holocaust: The Destruction of the Jews of Europe, 1933-1945.** The destruction of most of European Jewry by Nazism and its helpers during the Second World War is studied in the context of centuries-old religious anti-Semitism, nineteenth century Jewish emancipation and the emergence of racist ideology, the political and social situation of Jews in eastern and western Europe after World War I, "legal" and bureaucratic persecution of German Jews culminating in mass killing at Auschwitz and other death camps, the response of bystander nations to the perpetration of genocide, and finally the creation of the state of Israel in relation to the Holocaust.

**Instructor:** L.D. Stokes  
**Format:** Seminar 2 hours

## 230 History

**Prerequisite:** One 2000-level class in European or modern British history

**Recommended:** HIST 2030.06, 2062.03, 2081.06, 2021.03, 2040.06, 2112.03

**Exclusion:** HIST 1990.06 (section 07)

**HIST 3072.03A: The History of Modern Science.** Science became separated from general knowledge between about 1500 and the early 19th century. It has proved to be a remarkably powerful cultural force from the time of the first Scientific Revolution of the 17th century until our own times. This class examines the ways that science and scientists have given us knowledge of the natural world from the time of Copernicus to the development of evolutionary theory and relativistic physics in the 19th and 20th centuries. It is intended for students interested in interdisciplinary knowledge who are prepared for extensive reading.

**Instructor:** E.L. Mills

**Format:** Lecture 3 hours

**Cross-listing:** BIOL 3402.03, SCIE 4000.03

**HIST 3090.03A or B: Russian Society.** Basic institutions of 20th century Russian society are considered in their historical context, with special attention to the former role of the Party, official culture and literature, the workings of the economy, and social stratification.

**Instructor:** N.G.O. Pereira

**Format:** Seminar 2 hours

**Prerequisite:** Reading knowledge of Russian (at least two years of language study) and some Russian history

**Recommended:** RUSS 1000.06, 2000.06

**Cross-listing:** HIST 5090.03, RUSS 3090.03

**HIST 3092.03A or B: Russian Topics.** Topics to be studied and researched will vary from year to year. They may include the sources of Bolshevism/Leninism, the doctrine of peaceful coexistence, the position of national minorities, the role of literature (official and samizdat) and the press, the Cult of Personality, Khrushchev's "Thaw", Brezhnev, Gorbachev, and Yeltsin.

**Instructor:** N.G.O. Pereira

**Format:** Lecture/discussion

**Recommended:** HIST 2020.06 or RUSS 2022.03/2023.03

**Cross-listing:** RUSS 3092.03

**HIST 3096.03A or B: 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, Mardam, Leninism, Socialist Realism, anti-Stalinism, Glasnost, neo-Westernism (Sakharov), and neo-Slavophilism (Solzhenitsyn).

**Instructor:** N.G.O. Pereira

**Format:** Lecture/discussion

**Recommended:** HIST 2020.03

**Cross-listing:** RUSS 3096.03

**HIST 3105.03A or B: The English Civil War Society, Religion and Politics, 1603-1660.** An advanced class on one of the most tumultuous and eventful periods in British history, that leading up to and including civil war and

revolution 1642 to 1660. Select primary sources will be used in addition to secondary works. Topics to be studied include the social structure of early Stuart England; the Church and its critics; foreign policy; radical politics; the military course of the war; religious sectarianism; and the impact of the war and its aftermath on the populace.

**Instructor:** D.R. Woolf

**Format:** Seminar 2 hours

**Prerequisite:** Any second year class in British history

**Recommended:** HIST 2105.03, 2106.03, 2005.03, 2008.03

**Exclusion:** HIST 3104.06

**Cross-listing:** HIST 5105.03

**HIST 3106.03A or B: England in the Age of Industrial Revolution.** This class examines in some depth major themes in English history from the reign of George III through the Victorian era, including the British response to revolutions in America and France, the Napoleonic wars, the movement for Parliamentary reform, and the growth of industrialization.

**Instructor:** Staff

**Format:** Seminar 2 hours

**Prerequisite:** One 2000-level class in English history

**Recommended:** HIST 2111.03, 2112.03, 2131.03, 2132.03

**HIST 3112.03A or B: 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.

**Instructor:** S. Brooke

**Format:** Lecture/discussion 2 hours

**Prerequisite:** One of the following: HIST 2111.03; 2112.03; 3113.03; 3114.03; 3116.03; 2030.06; 2331.03; 2332.03; or instructor's consent.

**HIST 3113.03A: Britain in the Age of the First World War, 1914-39.** This class examines in depth major themes in modern British history from the first World War to the outbreak of the second, including the experience and impact of war, the problem of Ireland, the rise of labour, women's struggles, the great depression and the appeasement of the dictators in the 1930s.

**Instructor:** S. Brooke

**Format:** Lecture/discussion 2 hours

**Prerequisite:** One of the following: HIST 2111.03; 2112.03; 3112.03; 3314.03; 3116.03; 2030; 2081.06.

**HIST 3114.03B: Britain from the Second World War to Thatcher, 1939-1990.** This class examines in depth major themes in British history from the outbreak of the Second World War to the emergence of the 'Thatcher Phenomenon', including the war experience, the post-war labour governments and the welfare state, the affluence of the 1950s and 1960s, Suez, the immigrant experience, and social and economic decline in the 1970s, ending with the election of Margaret Thatcher in 1979.

**Instructor:** S. Brooke

**Format:** Lecture/discussion 2 hours

**Prerequisite:** One of the following: HIST 2111.03; 2112.03; 3112.03; 3113.03; 3116.03; 2030.06; 2081.06

**HIST 3115.03A: Socialism and Working-Class Politics in Britain, 1880's-1980's.** The last century in Britain has witnessed two intertwined developments: the full participation of the working-class in politics and the rise to power of a socialist party, the Labour party. This class will cover three aspects of that history: the development of working-class culture and politics (in particular through the union movement); the shaping of socialist ideology in Britain; and the emergence and development of the Labour party. It will embrace social, economic, and intellectual history, covering such topics as the "New Unionism" of the 1880's, working-class culture in Britain; the General Strike; the Labour governments of 1945-51, and, throughout, the arguments over ideology.

**Instructor:** S.J. Brooke  
**Format:** Seminar 2 hours  
**Prerequisite:** As this is an advanced seminar in British history, the instructor's permission is required for registration.

**HIST 3116.03A or B: Advanced Seminar in British History: Culture, Class, and Society in Twentieth-century Britain.** How does culture reflect social and political change? This class sets out to explore this question in the context of modern British society. Using a variety of texts, such as films like *My Beautiful Laundrette*, the photographs of Bill Brandt and Humphrey Spender, the plays of John Osborne, Howard Brenton, and Caryl Churchill, art, architecture, and popular forms of culture, this seminar will examine how issues such as class tension, social change, the decline of empire and the beginning of a multi-racial society, changes in women's status, and other political and social developments were represented in twentieth-century Britain, from the First World War to the present day.

**Instructor:** S.J. Brooke  
**Format:** Seminar 2 hours  
**Prerequisite:** As this is an advanced seminar in British history, the instructor's permission is required for registration.

**Cross-listing:** HIST 5116.03

**HIST 3220.03A or B: Youth Culture in Canada, 1950's to 1970's.** The 1950's and 1960's were decades of often startling social change throughout North America in general and Canada in particular. This class will attempt to understand these changes and their impact on our society. The primary focus of the investigation is the popular youth culture of the time, the culture of "sex, drugs and rock n' roll." The class will look at economic and social factors underlying youth culture, at some of the major thinkers who influenced it (such as Marshall McLuhan and Herbert Marcuse), and the responses of authority to youth culture. Approved with Canadian Studies.

**Instructor:** M.S. Cross  
**Format:** Lecture/tutorial 3 hours  
**Prerequisite:** One previous history class  
**Recommended:** HIST 2222.03

**HIST 3222.03A or B: Topics in Canadian Social History, 19th and 20th Centuries.** This seminar will explore major themes in Canadian social development. The topics discussed will vary from year to year but will emphasize such themes as: changing values in Canadian society; the nature of popular cultures; the relationship of order and disorder; the family; gender relations; and social classes. Approved with Canadian Studies.

**Instructor:** R. Bleasdale/M.S. Cross  
**Format:** Seminar 2 hours  
**Prerequisite:** A class in Canadian History  
**Cross-listing:** HIST 5222.03

**HIST 3223.03A or B: 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 fundraising; promoters and opponents of government social programmes; financing the welfare state; gender, race, constitutional, and class issues in welfare. Approved with Canadian Studies.

**Instructor:** S. Tillotson  
**Format:** Lecture/tutorial or seminar 2 hours  
**Prerequisite:** HIST 1200.06 or HIST 2212.03 or HIST 2230.06

**HIST 3225.03A or B: Crime, Punishment and the Criminal Law in Canadian Society.** This class examines crime and the criminal law as they relate to broader changes within society and the economy of New France, British North America, and Canada. Moving from the nineteenth century through to the 1980's, it analyses the shifting patterns of crime; the changing definitions of crime and punishment; the social, economic, political, and ideological significance of the criminal law; and the influence of Britain, the United States, and France on legal developments. Approved with Canadian Studies.

**Instructor:** R. Bleasdale  
**Format:** Seminar or lecture/discussion 2 hours  
**Prerequisite:** One previous history class  
**Recommended:** HIST 2221.03, and HIST 2222.03

**HIST 3226.03A or B: Law and Justice in Canadian Society, to 1890.** Discussion begins with an exploration of concepts of law and justice among Native Peoples prior to and during the occupation of the continent by the French and British. The class pursues crime and the criminal law as they relate to broader changes within the society and economy of New France, British North America, and Canada. We analyse shifting patterns and perceptions of crime and punishment; the social, economic, political, and ideological significance of the criminal law; the influence of

Britain, France and the United States on legal developments. Approved with Canadian Studies.

Instructor: R. Bleasdale  
 Format: Lecture/discussion  
 Recommended: One previous history class  
 Exclusion: HIST 3225.03

**HIST 3227.03A or B: Criminal Law, Crime and Punishment in Canadian Society, 1890 to the present.** Continuing the approach and themes of HIST 3226.03, this class studies crime, punishment, and the criminal law as they reflect social, economic, political, and ideological developments. As appropriate these are placed within their international context, and in particular linked to the American system of law and justice. We pay attention to the impact of technological change on crime, detection of crime, enforcement mechanisms, and alternative means and methods of punishment. Approved with Canadian Studies:

Instructor: R. Bleasdale  
 Format: Lecture/discussion  
 Recommended: One previous history class  
 Exclusion: HIST 3225.03

**HIST 3228.06R: Religion in Canada.** When Canadians have built cities, gone to war, founded economic empires, fallen in love, designed school systems, and elected governments, religion has often been a decisive factor. Sometimes religion has been the decisive factor. What is "religion" in Canada? In the course of this extensive historical study of life in Canada from the 16th century to the present, a variety of answers will be explored. A detailed syllabus is available from the Department of Comparative Religion.

Instructor: C.T. Sinclair-Faulkner  
 Format: Lecture/seminar 3 hours  
 Prerequisite: COMR 2001.03 or COMR 2002.03 or permission of the instructor

Cross-listing: COMR 3003.06

**HIST 3232.03A or B: Labour and Community in Nineteenth-Century Canada.** The experience of Canadian workers during the transition to an industrial capitalist society. Topics include pre-industrial work patterns, new forms of discipline and the employment relationship, varieties of collective protest and organization, and changes in the structure of the family and community. Approved with Canadian Studies.

Instructor: R. Bleasdale  
 Format: Seminar or lecture/discussion 2 hours  
 Prerequisite: One previous history class

**HIST 3233.03A or B: The Canadian Working Class: The Twentieth Century Experience.** The development of the Canadian working-class movement from 1896 to the present. Topics include the degradation of work, the question of international unions, labour in politics, women and trade unions, the role of the state in industrial relations, and working-class culture in mass society. Approved with Canadian Studies.

Instructor: R. Bleasdale  
 Format: Seminar or lecture/discussion 2 hours  
 Prerequisite: One previous history class

**HIST 3245.03A or B: French Canada.** Given in English for English-speaking students, this class studies the development of French-Canadian nationalist politics in their social, cultural, philosophic and economic contexts. While the emphasis is on Quebec-Canada relations, French-Canadians in the Maritime, Ontario and the West will also be studied. Approved with Canadian Studies.

Instructor: S.M. Tillotson  
 Format: Lecture/discussion 2 hours  
 Prerequisite: One class in Canadian history, or instructor's consent  
 Exclusion: HIST 2240.03

**HIST 3255.03A or B: The Age of Macdonald and Laurier.** A seminar comprehending the society and politics of Canada from Confederation to the First World War. Themes of particular importance are imperialism, nationalism, and racism; the clash of nationalisms; the opening of new frontiers; politics and ideology. Approved with Canadian Studies.

Instructor: Staff  
 Format: Lecture/discussion 2 hours  
 Prerequisite: A survey of Canadian history

**HIST 3260.03A or B: 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.

Instructor: C. Danyak  
 Format: Seminar or lecture/discussion 2 hours  
 Prerequisite: A class in Canadian history  
 Exclusion: HIST 2250.03

**HIST 3261.03A or B: The Rural Experience in Canada.** The rural experience has dominated Canada's past and continues to exert a strong influence in the present. This class explores the contours of Canadian rural life, examining the impact of rural politics, economics, social relations and ideologies upon Canadian development. Specific themes will vary from year to year. Approved with Canadian Studies.

Instructor: C. Danyak  
 Format: Seminar 2 hours  
 Prerequisites: A survey of Canadian history

**HIST 3272.03A or B: Themes in the History of Atlantic Canada.** This class provides students an opportunity to broaden their knowledge of historical trends in the region through archival research based on specific selected themes, which vary from year to year. Approved with Canadian Studies.

Instructor: Staff  
 Format: Seminar 2 hours  
 Prerequisite: One class in Canadian history

**HIST 3273.03A or B: Nova Scotia: Pre-Confederation.** An exploration of character and circumstances in the history of provincial society, from the era of European "invasion" to the debate over entry into British American union. Approved with Canadian Studies.

Instructors: D. Sutherland/J. Fingard  
 Format: Seminar 2 hours

**Prerequisite:** One Canadian History class or instructor's consent

**Exclusion:** HIST 3270.06

**HIST 3274.03A or B: Nova Scotia: Post-Confederation.** An exploration of the transformation of provincial society in response to the onset of Canadianization and industrialization. Approved with Canadian Studies.

**Instructors:** D. Sutherland/J. Fingard

**Format:** Seminar 2 hours

**Prerequisite:** One Canadian History class or instructor's consent

**Recommended:** HIST 3273.03

**Exclusion:** HIST 3270.06

**HIST 3286.03A or B: The Urban Experience in Canada.** The rise of the city stands as one of the most crucial changes to have taken place in our collective past. This class explores the reasons for and the impact of urbanization within Canada. Emphasis is on developments from the mid nineteenth century to the present.

Approved with Canadian Studies.

**Instructor:** D. Sutherland

**Format:** Seminar 2 hours

**Prerequisite:** One class in history

**HIST 3292.03A or B: 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.

**Instructor:** G.D. Taylor

**Format:** Lecture/discussion 2 hours

**Prerequisite:** One class in Canadian or U.S. history, or an appropriate class in a related discipline.

**Recommended:** A survey class in U.S. or Canadian history

**Exclusion:** HIST 3291.03

**HIST 3302.03A or B: Technology and History in North America.** The effects of technology on our lives are ever-present, from debates over acid rain and nuclear reactors to promises of a glowing future for Canada through "high-tech" enterprises and supercomputers. The continuing impact of technical innovation has been a central feature of the history of Canada and the United States, going back even to the period before the Industrial Revolution of the nineteenth century. The harnessing of science and technology to industrial and military uses in our own time has fueled both rapid economic growth and controversies over the benefits and costs of technological changes for the household, the work place, the environment, politics and society in North America.

Approved with Canadian Studies.

**Instructor:** G.D. Taylor

**Format:** Lecture/discussion 2 hours

**Prerequisite:** One class in Canadian or U.S. history, or an appropriate class in a related discipline.

**Recommended:** A survey class in U.S. or Canadian history

**HIST 3331.03A or B: The United States, Canada and the World.** During the nineteenth century both nations of North America evolved from sparsely settled agricultural societies to complex industrial nations with increasing influence on, and dependence upon, developments throughout the rest of the world. This class traces the rise of the United States in global, political, and economic affairs, and reviews the role of the United States in the transformation of Canada since the early 19th century. The class focuses on diplomatic affairs, military conflict and cooperation, the rise of multinational enterprise, and the impact of technology in shaping America's relations with Canada and the world.

**Instructor:** G.D. Taylor

**Format:** Seminar 2 hours

**HIST 3334.03A or B: U.S. Foreign Policy in the 20th Century.** As neighbours, interlinked by geography, economic patterns and (to some extent) common political and cultural traditions, Canada and the United States have had a close though not always smooth relationship over the past two hundred years. But that relationship has often been shaped by broader changes in international political, military and economic affairs, and - particularly in the twentieth century - U.S. foreign policies that affect Canada are determined by events and concerns far removed from North American shores. This class traces the history of Canadian-American relations in the context of these broader trends in United States foreign policy, and global political and economic developments. Approved with Canadian Studies.

**Instructor:** G.D. Taylor

**Format:** Lecture/discussion 3 hours

**Recommended:** A survey class in U.S. or Canadian History

**Exclusions:** HIST 3330.06 and HIST 3331.03

**HIST 3341.03A or B: Revolutionary America, 1760-1820.** Topics of particular interest are the popularization of politics, the social conflicts related to neutralism and Loyalism, the development of a national political economy and constitutional tradition, and the cultural changes associated with republican government and egalitarian ideology.

**Instructor:** J.E. Crowley

**Format:** Lecture/discussion 2 hours

**Prerequisite:** One 2000-level class in U.S. history

**HIST 3350.03A or B: Family and Community in North America, 1600-1900.** The family in North American society, from when the family was a model for social relations to the time when it was idealized as a private refuge. Among the topics considered are the role of the family in rural and urban communities, the demographic transition from high fertility and mortality, the reduction of the family's economic and educational autonomy, the role of ideology in shaping sex roles and childbearing;



## 234 History

and the relations of family and community according to ethnic group, class and economic setting.

Instructor: J.E. Crowley

Format: Lecture/discussion 2 hours

Prerequisite: One second-year class in American or Canadian history

Recommended: A class in the sociology or social anthropology of the family

Cross-listing: WOST 3300.03

**HIST 3360.03A or B: Enslavement and Emancipation: African-Americans in the U.S. South to 1900.** This class examines slavery as a system of racial subordination and economic exploitation. Attention is given to the social, familial, and cultural life of the slaves, the role of slavery in shaping southern nationalism and national racial beliefs, and to reconstruction after the Civil War.

Instructor: J.T. O'Brien

Format: Seminar 2 hours

Prerequisite: HIST 1300.06 or one second-year U.S. history class

Recommended: HIST 2332.03

**HIST 3361.03A or B: The American Civil War and Reconstruction.** The Civil War, occasioned by the formation of the Southern Confederacy and the Union government's refusal to recognize the existence of a separate southern nation, was a pivotal moment in the history of the United States. This class will examine the causes of the war, the forces behind slave emancipation, the military fortunes of the two combatants, and the efforts undertaken by the victorious society, to alter the polity of the defeated South.

Instructor: J.T. O'Brien

Format: Seminar 2 hours

Prerequisite: HIST 1300.06 or second-year U.S. history class

Recommended: HIST 2332.03

**HIST 3366.03A or B: Industry, Unionism, and Working people in the United States, 1873-1990.** America's rise to industrial pre-eminence shot forward after the Civil War. By 1900 it had the most productive industrial economy in the world, as well as one of the world's bloodiest labour histories. The growth of unions, however, proceeded much more slowly. Indeed, unionization of mass production industries was not achieved until late in the 1930's with the spread of the CIO and the revitalization of the AFL. This class examines the fitful history of American unions from the beginning of the depression of the 1870's to 1990.

Instructor: J. Vander Meulen

Format: Seminar 2 hours

Prerequisite: HIST 1300.06 or one second-year U.S. history class

Recommended: HIST 2332.03, HIST 2333.03, HIST 2334.03

**HIST 3368.03A or B: From Hoover to Eisenhower.** This class traces United States politics, economy, foreign policy and the development of the state during the period from 1929 to 1961. The goal is to develop a fairly advanced sense of the main events of the period, including the Great Depression, the New Deal political order, America and World War II, the Cold War, relations with the Third World, the Korean War, McCarthyism, and the

civil rights movement. This class is also intended to expose students to the main literature, historiography and theory on American history in the contemporary period. Students taking this class are strongly encouraged to take its complement, HIST 3369.03.

Instructor: J. Vander Meulen

Format: Lecture/discussion

Prerequisite: HIST 2333.03 or instructor's permission

**HIST 3369.03B: From Kennedy to Clinton.** This class traces United States politics, economy, foreign policy and the development of the state during the period from 1961 to 1994. It follows through on HIST 3368.03 which is a prerequisite. The idea is to build on the historiographical and theoretical background developed in HIST 3368.03 by testing it against the main events of recent American history which include the Great Society reforms, the crisis of liberalism, the Vietnam War, Watergate, the rise of the new right, the Reagan Revolution, and the Clinton years.

Instructor: J. Vander Meulen

Format: Lecture/discussion

Prerequisite: HIST 3368.03

**HIST 3430.03A or B: The Making of Colonial Africa, c. 1850 - 1930.** European colonial rulers and business interests laid out the framework of the sub-Saharan African colonial order from about 1850 to the 1920s, seeking ways to exploit African labour and natural resources. But imperial plans were limited and sometimes frustrated by African interests, and by historical dynamics within Africa, such as the rise of new merchants and Islamic revolution. This class assesses how the realities of Africa intersected with European imperial ambitions to profoundly change African society during this early colonial period.

Instructor: P. Zachernuk

Format: Lecture/discussion 2 hours

**HIST 3435.03A or B: The Rise and Fall of African Slavery.** Many African societies, like pre-industrial societies elsewhere, used slaves as well as other forms of labour for a variety of purposes. The rise of external slave trades after 1700 - notably across the Atlantic and Sahara - transformed many African societies into specialized slave exporters. As external slave trades declined in the 19th century, many African economies used extensive internal slave labour to produce exports, a pattern colonial governments were slow to change in the 20th century. This class examines these changes in African slavery, and how they affected such issues as gender relations and class structure.

Instructor: P. Zachernuk

Format: Lecture/discussion 2 hours

**HIST 3440.03A or B: African History from Oral Tradition.** For students who have a keen interest in African history, the class concentrates upon a restricted geographic area and considers myths of origin, allegory and symbolism in oral traditions, how political leaders become national deities through ancestor worship and how feminist movements of the past have been handled by male chroniclers.

Instructor: Staff

Format: Seminar 2 hours

**Prerequisite:** Any 2000-level class on African history

**Recommended:** HIST 2410.03

**HIST 3451.03A or B: South Africa to 1860.**

Examines the history of South Africa before the coming of the mineral revolution. Themes include the nature of Khoi and San societies, the expansion of Bantu-speakers, Dutch settlement and administration of the Cape area, the rise of the Zulu, Shaka's empire and the mfecane, the British takeover from the Dutch, the impact of the humanitarian movement and the Great Trek, African states and kingdoms in the nineteenth century and the formation of the Boer Republics.

**Instructor:** J. Parpart

**Format:** Lecture/discussion 2 hours

**Prerequisite:** HIST 2131.03, 2132.03, 2421.03, 2422.03 or permission of instructor.

**Exclusion:** HIST 3450.06

**HIST 3452.03A or B: 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 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.

**Instructor:** J. Parpart

**Format:** Lecture/discussion 2 hours

**Prerequisite:** HIST 2421.03 or 2422.03 or 3451.03 or 3461.03 or 3462.03

**Recommended:** HIST 3451.03, 2131.03, 2132.03

**Exclusion:** HIST 3450.06

**HIST 3461.03A or B: Gender and Development in Africa.**

This class examines the economic, political and social roles of women and men in Africa from precolonial to modern times. It analyzes the way women and men construct their lives, participate in political and economic processes and contest and reinforce the definitions of womanhood and manliness in various African societies. The class will examine development and feminist/gender theory in the light of recent debates over gender and development issues.

**Instructor:** J.L. Parpart

**Format:** Seminar 2 hours

**Prerequisite:** HIST 2422.03

**Cross-listing:** WOST 3310.03, HIST 5461.03

**HIST 3462.03A or B: Distortion or**

**Development: African Economic History.** An examination of economic change in tropical Africa, with particular attention to the question of economic development and underdevelopment. From the premercantilist period to the current conjuncture.

**Instructor:** J. Parpart

**Format:** Seminar 2 hours

**Prerequisite:** HIST 2422.03 or 1400.06

**Cross-listing:** HIST 5462.03

**HIST 3470.03A or B: Wars and Revolutions in**

**Nineteenth Century Africa.** Africa in the nineteenth century was profoundly reshaped by a complex set of events. Muhammed Ali undertook to modernize Egypt. New Islamic states founded in the west developed plantation economies of unrivaled size. On the Atlantic

coast, merchant princes made their fortunes supplying tropical goods for Europe's Industrial Revolution. In Central Africa the search for slaves and ivory both wreaked havoc and stimulated new states. In the south, the rise of Zulu power generated waves of conquest and consolidation. This class assesses the extent to which Africa was reshaped in the revolutionary century before colonial partition.

**Instructor:** P.S. Zachernuk

**Format:** Lecture/discussion

**Prerequisite:** Any 2000-level African history class or permission of the instructor

**HIST 3475.03A or B: African Intellectuals and**

**the Modern Experience.** African thinkers have long pondered the challenges of the modern era, and have established lines of thought with which African intellectuals now address Africa's profound problems. But this engagement with the modern world has moved through different phases, just as the social location of the African intelligentsia has changed over time. This class will explore this intellectual history by setting specific writers in context, and then examining their original writings to ponder such questions as: What were the roots of "African Christianity"? How did African intellectuals respond to "scientific racism"? What was the appeal of Pan-Africanism? What was Negritude? How socialist was African socialism? How do postmodern insights about the invention of identity affect the idea of being "African"?

**Instructor:** P.S. Zachernuk

**Format:** Lecture/discussion

**Prerequisite:** Any 2000-level African History class or permission of the instructor

**HIST 3750.03A or B: History of Seafaring.**

An examination of our maritime heritage with the cooperation of the staff of the Maritime Museum of the Atlantic. Within the context of these overlapping periods - the age of discovery, the age of sail, and the age of steam - the focus is on the development of merchant and naval fleets; the roles of the state, capital, and labour; and the features of seafaring culture. Special emphasis is given to the shipping industries and maritime traditions of this region. Approved with Canadian Studies.

**Instructor:** J. Fingard

**Format:** Lecture/discussion 2 hours

**Prerequisite:** One class in history or permission of the instructor

**HIST 4001.03A or B: Directed Readings.**

**Format:** This is a class of individual instruction. Students may only register for this class with the written permission of a Faculty member and the Undergraduate Coordinator.

**HIST 4320.03A: Feminism, Postmodernism**

**and Development.** In the last decade poststructural and postmodern critiques have increasingly dominated the world of scholarship. The grand theories of the past have been called into question; universals have been overtaken by particularities and difference(s). Feminist scholars 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 issues have for the most part rejected both feminism and postmodernism. This class will explore the debates between the two perspectives and the possibility that they may have important insights to offer to both the theory and practice of development, especially the development of women.

Instructor: J. Parpart  
 Format: Seminar 2 hours  
 Restriction: Restricted to honours and graduate students  
 Cross-listing: HIST 5320.03

**HIST 4350.03A or B: People and Things: Material Culture in History.** A seminar for advanced undergraduates on Material Culture Studies in social and cultural History. The class discusses the theoretical, cross-cultural, and historical considerations involved in the interdisciplinary study of material culture -- economic technology, household comforts, architecture, clothing, even the landscape itself. The chief interpretative issues deal with the relation between consumption patterns and economic, social and cultural change. Northwestern Europe and North America, 1600-1850, provide the context for examples of empirical research.

Instructor: J. Crowley  
 Format: Seminar 2 hours  
 Prerequisite: HIST 3350.03, WOST 3300.03 or instructor's permission

**HIST 4500.03A or B: Topics in Modern History.** This seminar is specifically intended for students in the Advanced Major and Honours degree programmes in History. The specific content of the seminar varies from year to year, but generally involves examination of a subject in history in some depth, and may include an historiographical, comparative or interdisciplinary dimension.

Instructor: Staff  
 Format: Seminar 2 hours  
 Prerequisite: Enquire at Department  
 Cross-listing: HIST 5500.03

**HIST 4600.03A or B: Topics in Late 19th and Twentieth-Century American and British History.** This class will, depending upon the staffing in any particular year, examine a selection of themes in late 19th and 20th century British and American history, including, for instance, labour/labour history, political history (including state formation), cultural history, and history of race and national identity. Depending upon staffing, this class may concentrate upon the history of one country or may offer a comparative aspect. It will be intended for graduate or senior undergraduate students with some background in either British, American or Canadian history. Evaluation will be through research papers and, possibly, a final exam.

Instructors: S.J. Brooke/J.T. O'Brien  
 Format: Seminar 2 hours  
 Prerequisite: 3000-level class in modern British, American or Canadian history  
 Cross-listing: HIST 5600.03

**HIST 4985.03A or B: The Varieties of History: Historiography in the Twentieth Century.** This class, intended for Honours and Advanced

Major students in History, will begin with a brief survey of the writing of history from the Middle Ages to the nineteenth century, and then proceed to an examination of the major schools, approaches, and sub-disciplines within the historical profession in the twentieth century. Topics to be covered include the following: the nature of historical knowledge, historical "relativism", Marxism, the "Annales" school, oral history, psychohistory, quantitative history, Feminism and others. No background in statistics is required. Classes will meet weekly to discuss assigned readings and each student will investigate an historian or historical school of his/her choice for a term paper.

Instructor: D.R. Woolf  
 Format: Seminar 2 hours  
 Prerequisite: Concurrent enrolment in HIST 4990.06 or instructor's consent  
 Recommended: A class in modern intellectual history or PHIL 2540.06  
 Cross-listing: HIST 5985.03

**HIST 4990.06R: Honours Essay in History.** All history Honours students and those in combined Honours programmes in which history is their principal subject must write a substantial essay on a topic to be chosen in consultation with the undergraduate coordinator and an individual faculty supervisor.

Instructor: Staff  
 Format: Honours Essay  
 Prerequisite: Admission to History Honours Programme

## 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.

Classes marked \* are not offered every year. Please consult the timetable on registration to determine if these classes are offered.

### History of the Sciences

\*BIOL 3402.03/HIST 3072.03/SCIE 4000.03: The History of Modern Science. E.L. Mills (may not be offered in 1995-96)

\*HIST 2995.03: The History of Modern Medicine. J. Farley

\*History 3075.03: History of Tropical Medicine. J. Farley

BIOL 4664.03/OCEA 5331.03/SCIE 4001.03: History of Marine Sciences. E.L. Mills (may not be offered in 1995-96)

PSYO 4580.06: History of Psychology. J.W. Clark

### Philosophy of the Sciences

\*FHIL 2410.03: Philosophy of Psychology. T. Tomkow

\*PHIL 2420.03: Philosophy of Biology. R. Campbell

BIOL 3410.03: Man in Nature. K.E. von Maltzahn

\*COMR 3532.03: Mystical Consciousness and Modern Science: R. Ravindra

\*COMR 3533.03: Spirituality and Ecology. R. Ravindra

\*COMR 3503.03: Nuclear Bombs Survival and Morality. R. Ravindra

## Interdisciplinary Studies

During the last two decades, numerous areas of interdisciplinary study have developed in the Arts and Social Sciences, as well as in the Sciences. Research at the graduate and faculty level now increasingly crosses disciplinary boundaries, and is published in interdisciplinary journals. In response to this research, a variety of new interdisciplinary programmes have been established at universities across North America. Asian Studies, Black Studies, Cultural Studies, Women's Studies, Gender Studies, Canadian Studies, Environmental Studies, International Development Studies: these are some of the new interdisciplinary programmes of study that have emerged.

At Dalhousie University, students can currently choose among interdisciplinary programmes in Canadian Studies, Contemporary Studies, International Development Studies, and Women's Studies. (Interdisciplinary classes are also available in Health Studies and in Science.) Students can concentrate on a particular interdisciplinary area of study in their undergraduate programme; they can combine an interdisciplinary programme with study in a traditional discipline; or they can combine two interdisciplinary areas of study. In some cases, students can construct programmes that bring together classes in the Arts and Social Sciences with classes in the Sciences.

For more information regarding these programmes, students should consult the entries in this calendar for:

### Women's Studies

### International Development Studies

### Canadian Studies

### Contemporary Studies

## International Development Studies

Location: Multidisciplinary Centre, 1444 Seymour Street, Halifax, Nova Scotia  
 Telephone: (902) 494-3814  
 FAX: (902) 494-2105

### Coordinator & Undergraduate Advisor

Jane Parpart (494-3814/3667/2011)

### Administrative Assistant

Marian MacKinnon (494-3814)

### Faculty

J.H. Barkow (Sociology and Social Anthropology)  
 J. Benoit (Henson College)  
 M.E. Binkley (Sociology & Social Anthropology)  
 M. Bishop (French)  
 D. Black (Political Science)  
 J. Campbell (Resource and Environmental Studies)  
 A. Chatt (Chemistry)  
 D.C. Cherry (Business Administration)  
 R. Clarke (Resource & Environmental Studies)  
 J. Chute (Resource and Environmental Studies)  
 L. Dubois (Sociology & Social Anthropology)  
 A. Dwire (Resource and Environmental Studies)  
 H.D. Fraser-Davey (Nursing)  
 P. Gardiner Barber (Sociology & Social Anthropology)  
 O.P. Kamra (Biology)  
 J. Kirk (Spanish)  
 B. Lesser (Economics)  
 E. Mann Borgese (International Oceans Institute)  
 R.L. McAllister (Economics)  
 L. McIntyre (Health Services Administration)  
 G. Newkirk (Biology)  
 J.L. Parpart (History & Women's Studies)  
 D. Patton (Business Administration)  
 N.G.O. Pereira (History & Russian Studies)  
 R. Ravindra (Comparative Religion)  
 J. Segeblen (Business Administration)  
 T.M. Shaw (Political Science)  
 C.T. Sinclair-Faulkner (Comparative Religion)  
 K. Sullivan (Education)  
 V. Thiessen (Sociology & Social Anthropology)  
 D. Vander Zwagg (Law)  
 J.A. Wainwright (English)  
 D. Williams (Maritime School of Social Work)  
 M. Willison (Biology)  
 S. Wood (Resource and Environmental Studies)  
 P. Zacheruk (History)

### Adjunct Professors

S. Kamra  
 B. Pachai  
 S. Zurbrig

## Introduction

"The right to development must be fulfilled so as equitably to meet developmental and

environmental needs of present and future generations." (extract from Agenda 21 of the UN Conference on Environment and Development in Rio de Janeiro, June 1992).

Dalhousie University and Saint Mary's University are coordinating resources to offer an undergraduate degree in international development studies. This reflects a commitment by both universities to the concept of sustainable development, not only for those privileged to live in Canada and other wealthy nations - but also for those in the Third World.

To foster greater understanding through study, teaching, research and shared field experiences of North-South partnerships and development, distinctive BA major and honours degree programmes enable students to work within interdisciplinary frameworks on both university campuses, as well as to draw upon the international development experiences from over twenty overseas linkage programmes currently engaged in by Dalhousie and Saint Mary's Universities.

Normally students are eligible to join the IDS programme at the start of their second year of university studies, once appropriate classes in at least two of the major participating social science/humanities' disciplines have been completed at the 1000 level.

Students with a background in science are also welcomed in this programme and every effort will be made to design study frameworks to explore how science can contribute to sustainable development and to encourage their interest in science within an international context.

All IDS students are encouraged to acquire competence in basic statistics and research design, e.g. Political Science 2249.06, as well as in one relevant language in addition to English, e.g. French, Spanish, Russian, through appropriate classes and supporting activities.

Students are encouraged to enter the combined honours or double advanced major programmes, which provide opportunity further to integrate their IDS studies with those of an approved arts or science field e.g. IDS and History, IDS and Biology. Students should bear these two options in mind, particularly if they plan to pursue graduate students.

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 will be available in the Dalhousie IDS Office. IDS core and other classes are usually available each summer through the "Halifax Summer School in International Development". Halifax is the Maritime regional centre for official and non-governmental organizations active in international development and the IDS programme encourages links with them, especially in terms of development education, international exchanges and data resources. In addition to the Dalhousie and Saint Mary's Universities library collections (general, law, environmental, medical and science libraries) and computer facilities, resource and reading materials on international development can be found in the following units:

#### Dalhousie University

Centre for African Studies  
International Ocean Institute  
International Student Centre  
Lester Pearson International Institute  
Oceans Institute of Canada  
School of Resource and Environmental Studies (Asian Studies Collection)

#### Saint Mary's University

Asian Studies Programme  
Gorsebrook Research Institute  
International Centre  
Centre for Latin American and Caribbean Development

## Degree Programmes

Students should consult the "Degree Requirements" section of this calendar for specific requirements.

## Honours in International Development Studies

### Departmental requirements:

**1000 level:** Completion of appropriate first-year classes in at least two of the major participating social science or humanities disciplines (that is, COMR 1000.06, 2000.06; BCOR 1101.03/1102.03; HIST 1050.06, 1400.06, 1500.06; POLI 1100.06, 1103.06, 1501.06; SOSA 1000.06, 1050.06, 1100.06; or SPAN 1100.03, 1110.03).

### Advanced Classes Required

- INTD 2001.03/2002.03
- INTD 3001.03/3002.03
- INTD 4010.06 (with honours essay requirement)
- The equivalent of four full credit classes at or above the 2000-level in two or three established IDS disciplines, with at least one full credit per discipline. See below for the listing of International Development Studies classes.

**NOTE:** a minimum of the equivalent of four full-credit classes must be at the 3000-level or above. These can be chosen from the IDS approved list.

**Minor:** Two full credits in a minor subject (that are not from the IDS established discipline list).

## Combined Honours in International Development Studies and another subject

Please read the degree requirements for the Combined Honours Programme in the Degree Requirements section of this calendar (page 98). After meeting the first-year requirements, students have two options from which to choose. The First Option, is a maximum of seven (7) full credits in the major subject with a

minimum of four (4) full credits in the allied subject. In addition, 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 (2) full elective credits which are not from the major or allied subject group.

Several of the more common combined honours programmes with International Development Studies are: Biology, Economics, Earth Sciences, History, Philosophy, Political Science, Sociology, Social Anthropology, Spanish, Theatre and Women's Studies. Students interested in taking any of these combined honours programmes or in discussing other possible programmes should consult initially with the department.

To obtain a Combined Honours, with an emphasis upon International Development Studies, students must have:

- i) the two core IDS classes: INTD 2001.03/2002.03 and INTD 3001.03/3002.03
- ii) four full credits at the 2000-level or above from two or three established disciplines with at least one full credit per discipline
- iii) four full credits at the 3000-level or above from the IDS list of classes. Students may count INTD 3001.03/3002.03 as well as INTD 4010.06 within this group.
- iv) INTD 4010.06: Honours Essay Practicum

To obtain admittance into the Combined Honours programme, with an emphasis upon International Development Studies, students must have a B average or better in a group of three (3) IDS classes comprised of the two core classes and an additional advanced class from one of the established disciplines within the IDS programme.

Students who take a combined honours, with an emphasis on a subject other than International Development Studies, must take a minimum of:

- i) INTD 2001.03/2002.03
- ii) INTD 3001.03/3002.03
- iii) One full credit at the 2000-level or above from one of the established disciplines within the IDS programme
- iv) an additional credit at an advanced level from one of the established disciplines listed within the IDS programme

### Advanced Major in International Development Studies

#### Departmental requirements:

**1000 level:** Completion of appropriate first-year classes in at least two of the major participating social

science or humanities disciplines (that is, COMR 1000.06, 2000.06; ECON 1101.03/1102.03; HIST 1050.06, 1400.06, 1500.06; POLI 1100.06, 1103.06, 1501.06; SOSA 1000.06, 1050.06, 1100.06; or SPAN 1100.03, 1110.03).

#### Advanced Classes Required

- INTD 2001.03/2002.03
- INTD 3001.03/3002.03
- Plus the equivalent of one full-credit class at or above the 3000-level from the IDS list below.
- The equivalent of four full-credit classes at or above the 2000-level in two or three established IDS disciplines, with at least one full credit per discipline. See below for the listing of International Development Studies classes.

**NOTE:** a minimum of the equivalent of four full-credit classes must be at the 3000-level or above.

### Major in International Development Studies

#### Degree Requirements

##### Classes required in Major:

**1000 level:** Completion of appropriate first-year classes in at least two of the major participating social science or humanities disciplines (that is, COMR 1000.06, 2000.06; ECON 1101.03/1102.03; HIST 1050.06, 1400.06, 1500.06; POLI 1100.06, 1103.06, 1501.06; SOSA 1000.06, 1050.06, 1100.06; or SPAN 1100.03, 1110.03).

#### Advanced Classes Required

- INTD 2001.03/2002.03
- INTD 3001.03/3002.03
- Plus the equivalent of one full-credit class at or above the 3000-level from the IDS list below.
- The equivalent of one full-credit class at or above the 2000-level in each of two established IDS disciplines. See below for the listing of International Development Studies classes.

### Classes Offered at Dalhousie University

#### Core Required Classes

**INTD 2001.03A/INTD 2002.03B:** Introduction to Development I and II. This is the entry level class for IDS majors and others wishing a broad overview of the themes and issues which define the study of international development. By means of lectures and discussion groups, students will be encouraged to gain a critical understanding of, for example, economic development, participatory development, development planning and policy, sustainable development, and how these contribute to, or impede social justice at the national and international levels.

**Format:** Lectures/seminar  
**Prerequisite:** Two first-year classes as indicated above under (1)

**INTD 3001.03A/3002.03B: Seminar in Development III and IV.** This class is a sequel to 2001.03/2002.03 and will focus on theoretical perspectives and development strategies regarding global, regional and national policies. The class will examine development issues in greater depth, paying particular attention to the link between theory, policy and practice.

**Format:** Seminar  
**Prerequisite:** INTD 2001.03/2002.03

**IDS Special Classes**

**INTD 3100.03A: Indian Society: Change and Continuity.** The objective of this half-credit class offered by faculty from Dalhousie is to introduce students to the society and culture of India from an interdisciplinary perspective. India presents a society of enormous complexity and an unbroken living civilization of great antiquity. The focus of the class will be on selected, significant aspects of Indian society with particular emphasis on issues of current relevance. Topics discussed include a historical background, social structure, political and social constraints to economic development, health issues, major religions and philosophy, development and foreign policy since independence, science and technology, disaster relief and development, and literature.

**Format:** Lecture/discussion 2½ hours  
**Prerequisite:** 2nd year Arts and/or science class

**Cross-listing:** SOSA 3310.03

**INTD 3101.03A or B: Special Topics in International Development Studies.** A half-year reading class on a particular aspect of international Development taught only by special arrangement between individual IDS major or honours students and individual instructors associated with the programme. Available in summers as well as regular sessions.

**Format:** Individual tutorial  
**Prerequisite:** INTD 2001.03/2002.03

**INTD 3201.06R: International Development Studies Through Canada World Youth.** Structured tutorials before and after Canadian World Youth (CWY) assignments. This class is intended for CWY participants who wish to earn academic credit related to their work in the Third World. CWY registrants will receive supervised readings in development studies, and directions for field observations. They will be required to keep a journal of their observations and to prepare a research proposal for which they will collect materials while in the Third World. On returning to Canada they will communicate regularly with their advisor as they prepare a brief report on their field experience and an original research paper for evaluation.

**Format:** Consult M. MacKinnon in the Department for more information

**Recommended:** High school/university global studies

**INTD 3202.06R/4001.03A/4002.03B/4003.06R/4100.06R: Special Topics in International Development Studies.** See class description for INTD 3101.03, above.

**Prerequisite:** INTD 3001.03/3002.03

**INTD 3300.06R: International Development Studies through the SHASTRI Summer Institute in India.** The placement would be for nine to ten weeks offered during the summer. Two weeks of briefing and debriefing students both within Canada and India, with remaining weeks spent in the actual placement in India. This class is for students who wish to earn academic credit related to their work in India. Students will be chosen for their academic standing as well as their strong interest in South Asia. Students will be accompanied overseas by a faculty member.

**Format:** Consult department for further details

**Prerequisite:** INTD 3100.03 or SOSA 3310.03 and permission of class coordinator

**Co-requisite:** Placement through nationwide competition

**Cross-listing:** SOSA 5530.06R

**INTD 4010.06R: Honours Essay Practicum in International Development Studies.** Advanced seminar in theory and methodology leading to preparation and defence of honours essay.

**Format:** Seminar  
**Prerequisites:** INTD 2001.03/2002.03 and INTD 3001.03/3002.03

**INTD 4211.03A: Gender and Development I.** The first semester will discuss the interrelationship of various development and feminist theories. It will provide a conceptual overview and practical tools for understanding the problems faced by women in developing countries and Canada. Students taking this class at a graduate level will be expected to attain a higher level of achievement and may be required to do additional assignments.

**Format:** Seminar  
**Prerequisite:** INTD 3001.03/3002.03 or equivalent (SMU-IDS equivalent 400.0)

**Exclusion:** INTD 4210.06  
**Cross-listing:** SMU-IDS 422.1/622.1; SOC 422.1; WMS 422.1

**INTD 4212.03B: Gender and Development II.** The second semester will provide an analysis of the gender dimensions of programmes and policies that affect women. Case studies will focus on issues such as education, work, health, the role of the state, and empowerment. Students taking this class at a graduate level will be expected to attain a higher level of achievement and may be required to do additional assignments.

**Format:** Seminar  
**Prerequisite:** INTD 3001.03/3002.03 or equivalent (SMU-IDS equivalent 400.0)

**Exclusion:** INTD 4210.06  
**Cross-listing:** SMU-IDS 423.2/623.2; SOC 423.2; WMS 423.2

Listing of Classes routinely accepted within International Development Studies at Dalhousie



University. It is possible to take a number of other classes, but only after approval by the coordinator. Some of these other classes are taught at Dalhousie, some at Saint Mary's. Students are thus encouraged also to review the current Saint Mary's calendar offerings.

Note: Classes marked \* are not offered every year so please consult the current timetable, in addition to the calendars, when registering.

## Biology

The importance of an understanding of biology for informed contribution to sustainable development cannot be over-emphasized. While the class specifically identified as part of the IDS programme is Biology 4650.03: Resource Systems and Economic Development, students are also encouraged to explore additional, appropriate biology classes with officials of the Biology Department.

\*BIOL 4650.03: Resource Systems and Economic Development

## Comparative Religion

Understanding religion and its influences on human behaviour involves grasping both the meaning of faith in the lives of participants and the critical analysis of outside observers. It has important implications for international cultures and development questions.

\*COMR 2001.03: Judaism

\*COMR 2002.03: Christianity

\*COMR 2003.03: Islam

\*COMR 2011.03: Hinduism

\*COMR 2012.03: Chinese and Japanese Religions

\*COMR 2013.03: Buddhism

\*COMR 3004.03: Religion and International Development

\*COMR 3014.03: Love and Death in World Religions

\*COMR 3015.03: Myths, Symbols and Rites

\*COMR 3532.03: Mystical Consciousness and Modern Science

\*COMR 3533.03: Spirituality and Ecology

## 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.

ESCI 2410.03: Environmental and Resource Geology

## Economics

A grasp of economic frameworks whereby societies allocate resources (human resources and capital) is a prerequisite for understanding development plans and national prospects, development projects and foreign aid, the constraints and the possibilities for sustainable development.

\*ECON 2238.03: The Industrial Revolution in Europe

\*ECON 2239.03: The European Economy in Historical Perspective - After the Industrial Revolution

\*ECON 2250.06: Applied Class in Economic Development and the Environment: Concepts, Policies and Projects

\*ECON 3241.03: Comparative Economic Systems: National Economies

\*ECON 3242.03: Comparative Economic Systems: Economic Organization and Planning

\*ECON 3317.03: Poverty and Inequality

\*ECON 3330.03: International Trade

\*ECON 3333.03: Theories of Economic Development

\*ECON 3334.03: Economic Development - Recent Debates, Controversies and Conflicts

\*ECON 3336.03: Regional Development

\*ECON 3350.03: Social Cost Benefit Analysis

\*ECON 3432.06: Regional Economies

\*ECON 4431.03: International Payments

## English and Spanish

Language skills are obviously important for effective communication for those wishing to pursue international development studies; but through the study of languages important insights about culture and development experience are also to be gleaned. The IDS programme encourages students minimally to study one additional (relevant) language to English.

### English

\*ENGL 2211.06: Commonwealth Literature

\*ENGL 3075.03: Multicultural Fictions

### Spanish

\*SPAN 2069.03: Central America to 1979

\*SPAN 2070.03: Area Studies on Mexico and Central America

\*SPAN 2109.03: Cuba from Colonial Times to 1961

\*SPAN 2110.03: The Cuban Cultural Revolution

\*SPAN 2130.03: Latin American Dictators in the Novel

\*SPAN 2210.03: The Novel of the Mexican Revolution

\*SPAN 2230.03: Contemporary Latin American Prose, Part I

\*SPAN 2240.03: Contemporary Latin American Prose, Part II

\*SPAN 3050.06: Culture and Society of the Dominican Republic

\*SPAN 3070.03: Contemporary Latin American History

## 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 does not offer a BSc major in environmental science-however, current

programmes that provide streams emphasizing environmental subjects include Earth Sciences (particularly Environmental Studies) geology and hydrogeology, ECON 2250.06, marine biology and POL 3585.03.

ESCI 2410.03: Environmental and Resource Geology

POLI 3537.06: Management and Conservation of Marine Resources

POLI 3585.03: Politics of the Environment

POLI 3589.03: Politics of the Sea

### Health Services Administration

Should resources be allocated to urban hospitals or rural clinics, advanced systems for surgical procedures for heart disease or basic primary health care programmes. Often, in a developing nation, the choices are difficult and resources extremely limited. Appropriate health services are an essential underpinning for sustainable development.

\*HRAS 5200.03: Principles of International Health

### 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: After Columbus: Early European Imperialism in the Americas 1450-1650

HIST 2007.03: B The Atlantic World: The Expansion of Europe, 1650-1800

HIST 2020.06: Imperial and Soviet Russia

HIST 2021.03: Soviet Russia

\*HIST 2132.03: The Fall of the British Empire

HIST 2270.06: The Atlantic Provinces

\*HIST 2334.03: The United States, Canada and the World

HIST 2370.03: The Age of Imperialism 1870-1970

\*HIST 2381.03: Latin America: Underdevelopment and Revolution

\*HIST 2410.03: Tropical Africa Before 1800

\*HIST 2421.03: Colonial Africa

\*HIST 2422.03: Independent Africa

HIST 3090.03: Russian Society

\*HIST 3092.03: Russian Topics

\*HIST 3390.03: The Caribbean: Underdevelopment and Revolution

\*HIST 3430.03: The Making of Colonial Africa, c. 1850-1930

\*HIST 3435.03: The Rise and Fall of African Slavery

\*HIST 3440.03: African History from Oral Tradition

\*HIST 3451.03: B South Africa to 1860

\*HIST 3452.03: South Africa since 1860

\*HIST 3461.03: Gender and Development in Africa

\*HIST 3462.03: Distortion or Development: African Economic History

HIST 3475.03: African Intellectuals in the Modern Experience

\*HIST 3612.03: Women in Socialist Countries

\*HIST 3910.06: Health, Hunger, and Population in History

\*HIST 4320.03: Feminism, Postmodernism and Development

### Political Science

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 systems of government and those in other countries.

\*POLI 2300.06: Comparative Politics

POLI 2500.06: World Politics

\*POLI 3302.03: Comparative Development Administration

POLI 3303.03: Human Rights and Politics

POLI 3315.03: African Politics

POLI 3340.03: Approaches to Development

\*POLI 3360.03: Politics in Latin America

\*POLI 3525.03: Comparative Foreign Policy Simulation

POLI 3531.03: The UN in World Politics

POLI 3535.03: The New International Division of Labour

\*POLI 3537.06R: Management and Conservation of Marine Resources

POLI 3540.03: Foreign Policies of Third World States

POLI 3544.03: Political Economy of Southern Africa

\*POLI 3550.03: Japanese Foreign Policy

\*POLI 3585.03: Politics of the Environment

\*POLI 3589.03: The Politics of the Sea

### Sociology and Social Anthropology

Sociology provides a context within which students learn to think critically about their social environment. Social Anthropology aims at generalizations by comparing structures and processes in major institutions within societies (kinship, political, economic and religious) as well as between societies.

SOSA 2001.06: Ethnography in a Global Context

\*SOSA 2100.06: Environment and Culture

\*SOSA 2190.06: Comparative Perspectives on Gender

\*SOSA 2400.06: Health and Illness Across Cultures

SOSA 3060.03: Social Change and Development

\*SOSA 3206.03: Ethnicity, Nationalism, and Race

\*SOSA 3211.03: Continuity and Change in Rural Societies

\*SOSA 3232.03: Psychological Anthropology

SOSA 3310.03: Indian Society: Change and Continuity

### 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 advised to participate in at least one of the following WOST classes.

INTD 4211.03 Gender and Development I

INTD 4212.03: Gender and Development II

WOST 2800.06: Comparative Perspectives on Gender

WOST 3310.03: Gender and Development in Africa

WOST 3330.03: Women in Socialist Societies

WOST 4320.03: Feminism, Postmodernism, and Development

### The IDS -Earth Summit- Prize on Sustainable Development:

A special prize is being awarded to the best essay paper submitted by an IDS student on a theme of direct relevance to the Rio Earth Summit. The prize is only open to Dalhousie and Saint Mary's IDS students at the undergraduate level. Essays should be submitted to the Dalhousie University Coordinator (typed) by 15 March. An interdisciplinary panel will adjudicate. The essay may be written as part of a regular class or specifically for the competition. Additional details can be obtained from the Coordinator's Office at Dalhousie University.

### Seminars and Conferences

All IDS students are encouraged to attend the Killam Lecture Series, as well as the seminar series that are regularly sponsored through the Lester Pearson International Institute, the African Studies Lecture Series, the School of Resource and Environmental Studies, and the Centre for Foreign Policy Studies. Students are encouraged to incorporate, in their programmes, classes which enable them to take advantage of Dalhousie's commitment to ocean studies, health and sustainable development.

## Linguistics

Various departments offer classes in linguistics or in some aspect of linguistic study in the broad sense:

- Classics (several classes in Greek and Latin)
- English (\*ENGL 3201.06: The English Language, \*ENGL 3202.06: History of the English Language, ENGL \*4253.06: Old English, \*ENGL 4351.06: Middle English)
- French (\*FREN 2050.03: Structure of French Dictionaries, \*FREN 3020.06: Linguistics, \*FREN 3025.03: Linguistics, FREN 4001.03: History of French - The Middle Ages, FREN 4002.03: History of French - The Modern Period, \*FREN 4010.03: Great Linguists of the 20th Century, \*FREN 4011.03: Lexicology, \*FREN 4012.03: Aspects of French Structure, \*FREN 4015.06: Advanced Translation into English)
- German (various classes)
- Philosophy (PHIL 3300.03: Philosophy of Language, \*PHIL 4510.03: Topics in the Philosophy of Language, and other relevant classes in logic and on the work of Frege, Russell or Wittgenstein, for example.)
- Psychology (PSYO 2190.03: Language and the Brain, PSYO 3150.03: Introduction to Hearing and Speech Mechanisms, PSYO 3197.03: Human Communication)
- Russian (RUSS 4000.06: The Structure of Contemporary Standard Russian, RUSS 4950.03/RUSS 4960.03/RUSS 4990.06: Russian Special Topics)
- Sociology and Social Anthropology (SOSA 3081.03: Sociolinguistics)

**Note:** Classes marked \* may not be offered every year. Please consult the current timetable on registration to determine if these classes are offered.

Further information about these classes will be found under the departmental listings. It should be noted that some of the classes listed may not be offered in the current year.

# Mathematics, Statistics & Computing Science

Location: Chase Building  
Telephone: (902) 494-2572  
Fax: (902) 494-5130

## Chairperson of Department

R.P. Gupta

## Professors Emeriti

M. Edelstein, MSc (Jerusalem), DSc  
(Technion-Haifa)  
S. Swaminathan, MA, MSc, PhD (Madras)  
A.J. Tingley, PhD (Minnesota)

## Professors

J.C. Clements, MA (UBC), PhD (Tor)  
A.A. Coley, PhD (Lond)  
K.A. Dunn, MSc, PhD (Tor)  
C.A. Field, MSc, PhD (Northwestern)  
P.A. Fillmore, MSc, PhD (Minnesota), FRSC  
G. Gabor, MSc, PhD (Eotvos)  
L.A. Grünfelder, PhD (ETH Zurich)  
R.F. Gupta, MSc (Agra), PhD (Delhi)  
P. Keast, PhD (St. Andrews) (Co-op Director)  
K.J.M. Moriarty, MSc (Dal), PhD (Lond)  
R.J. Nowakowski, MSc, PhD (Calg)  
R. Paré, MSc, PhD (McG)  
H. Radjavi, MA, PhD (Minnesota)  
M.A. Shepherd, MSc, PhD (Western)  
P.N. Stewart, MA (Berkeley), PhD (UBC)  
W.R.S. Sutherland, MSc, PhD (Brown)  
K.K. Tan, PhD (UBC)  
A.C. Thompson, PhD (Newcastle upon Tyne)  
R.J. Wood, MSc (McM), PhD (Dal) (Director of  
Mathematics)

## Associate Professors

K. Dilcher, MSc, PhD (Queen's)  
A. Farrag, MSc (SFU), PhD (Alta)  
D. Hamilton, MA, PhD (Queen's) (Director of  
Statistics)  
C.S. Hartzman, MS (Purdue), PhD (Colorado)  
(Director of Computing Science)  
K.P. Johnson, MSc (Tor), PhD (Brandeis)  
C.C.A. Sastri, MSc (Andhra), PhD (New York)  
K. Thompson, PhD (Liverpool) (NSERC  
University Research Fellow) (jointly with  
Oceanography)

## Assistant Professors

K. Bowen, PhD (California)  
J. Brown, MSc, PhD (Tor)  
Q. Cao, PhD (Waterloo)  
S. Liu, MSc (Lakehead), PhD (Calgary)  
K.E. Manchester, MSc, PhD (Tor)  
S. Ruan, PhD (Alta)  
A. Sedgwick, PhD (Tor)  
B. Smith, MA (Calgary), PhD (Berkeley)  
S. Srinivas, PhD (Ind. Inst. of Sc.)

## Lecturers

E. Cameron, MA (Oxon)  
D. Trueman, MSc (Tor)

## Computer Systems Manager

D. Trueman, MSc (Tor)

## Learning Centre Director

P. Stevens, MSc (Delft)

## Statistical Consultant

W. Blanchard, BSc (Dal)

## Postdoctoral Fellows

A. Almudevar, PhD (Tor)  
P. Dunsby, PhD (Queen Mary and Westfield  
College)  
D. Pronk, PhD (Utrecht)  
N. Thandi, PhD (Wisconsin)

## Adjunct Professors

M. Beattie (MtA)  
F. Bennett (MSVU)  
P. Cabillio (Acadia)  
R. Dawson (SMU)  
B. Hartnell (SMU)  
P. Muir (SMU)  
L. Oliver (Acadia)  
M. Rahman (TUNS)  
R. Rosebrugh (MtA)  
C. Waters (Acadia)  
D. Zhuang (MSVU)

## Cross Appointments

M. Crowley (Education)

Information concerning programmes and classes in Mathematics follows immediately below. For Computing Science or Statistics, please refer to the corresponding section of this Calendar.

# Mathematics

Location: Chase Building  
 Telephone: (902) 494-2572  
 Fax: (902) 494-5130

## Director of Division

R.J. Wood

## Faculty Advisors

R.J. Wood (Undergraduate)

R.Paré (Honours)

P. Keast (Co-op)

W.R.S. Sutherland (Graduate)

## General Interest Classes

The Division offers several classes for non-majors who would like to know something about Mathematics.

- **MATH 1000.03/1010.03:** This core calculus class is the starting point for any degree programme in the sciences.
- **MATH 1001.03/1002.03:** A class designed especially for B.A. students and others who wish to know something about the historical and cultural aspects of mathematics.
- **MATH 1060.03:** An introduction, through examples drawn from a wide variety of disciplines, to the basic ideas of statistics.
- **MATH 1110.03/1120.03:** 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.

## Degree Programmes

One full credit in Mathematics is required for a BSc degree but none of the following classes may be used to satisfy this requirement:

MATH 1001.03, 1002.03, 1110.03, 1120.03.

Students should consult the "Degree Requirements" section of this calendar for specific regulations.

## Honours in Mathematics

### Departmental Requirements

#### Classes required in Honours:

**2000 level:** MATH 2001.03/2002.03 (or 2480.03/2490.03);  
 2030.03/2135.03 and 2505.03.  
 Two and one-half other credits at or above the 2000 level - not including classes listed below.

**3000 level:** MATH 3030.06 and 3500.06

**4000 level:** Two credits at or above the 4000 level. Honours Qualifying Result.

Students may choose programmes with a concentration in Applied Mathematics, Computing Science, Pure Mathematics or Statistics. Students wishing to concentrate in Computing Science should consider Combined Honours in Mathematics and Computing Science, and examine the separate Calendar entry for Computing Science. Students

wishing to concentrate in Statistics should consider Honours in Statistics or Combined Honours in Mathematics and Statistics, and examine the separate Calendar entry for Statistics. All honours programmes must be approved by the Chairperson. Students wishing to take an Honours degree concentrating in Applied Mathematics are advised to consider a programme similar to the following:

**Year 2:** MATH 2001.03; 2002.03; 2030.03; 2135.03; 2505.03; 2060.03; 2080.03; 2300.03;  
 Co-op Seminar and one elective class

**Year 3:** MATH 3500.06; 3030.06; 3110.03; two of 3210.03, 3300.03, 3260.03, an appropriate statistics class; 1 1/2 elective classes

**Year 4:** MATH 4400.03; the remaining two of 3210.03, 3300.03, 3260.03, an appropriate statistics class; 1 1/2 other classes at the 4000 level; 2 elective classes.

Students wishing to take an Honours degree concentrating in Pure Mathematics are advised to consider a programme similar to the following:

**Year 2:** MATH 2001.03; 2002.03; 2030.03; 2135.03; 2505.03; another half mathematics class; 2 elective classes

**Year 3:** MATH 3500.06; 3030.06; another full mathematics class; 2 elective classes

**Year 4:** MATH 4010.03; 4140.03; three other full mathematics classes, at least one of which is at the 4000 level; 1 elective class.

It is recommended that the additional mathematics classes include a statistics class, an applied class and a class in algebra, topology or complex variables.

**Honours Comprehensive Examination:** The Honours Comprehensive Examination in mathematics consists of a written paper of about 20-30 pages researched and prepared by the student during the spring term. The topic is decided on in conjunction with the supervisor of the Honours seminar. The paper is also presented to the seminar. The Honours Comprehensive Examination in statistics requires successful completion of STAT 8880.00.

## Combined Honours

Students interested in taking honours in mathematics or statistics and another subject as a combined programme should consult the chairman of the department through whom a suitable course of study can be arranged.

A combined honours programme may be appropriate for many. Students contemplating a combined honours course in mathematics or statistics and another subject should, however, bear in mind that the work in either subject would probably be insufficient for admission to a regular graduate programme. A qualifying year would usually be necessary.

## Advanced Major and Major in Mathematics

### Departmental Requirements

#### Classes required in Advanced Major:

2000 level: MATH 2001.03/2002.03 (or 2480.03/2490.03), MATH 2030.03 and 2040.03 (or 2135.03).

One other credit at or above 2000 level - not including classes listed below.

3000 level: Three credits at or above the 3000 level

#### Classes required in Major:

2000 level: MATH 2001.03/2002.03 (or 2480.03/2490.03), MATH 2030.03 and 2040.03 (or 2135.03)

3000 level: Two credits at or above the 3000 level

Majors in Mathematics are strongly urged to include COMP 1400.03, 1410.03 as part of their programme.

Students wishing to concentrate in Applied Mathematics, Pure Mathematics or Statistics are advised to consider modelling their programmes on the first three years of the Mathematics or Statistics Honours programmes.

Those students who wish to arrange inter-disciplinary programmes (with such fields as Physics, Chemistry, Biology, Engineering, Psychology and Economics) are invited to discuss their interests with the department.

### Co-operative Education Programmes

The Co-operative Education Programme is an integrated programme of 8 academic terms and 4 work-terms of relevant industrial/laboratory employment. The work-terms, each of 4 months duration, are spent in industrial and laboratory positions. The work experience helps students see the applicability of their training in mathematics, statistics and computing science and helps them make intelligent career choices. Upon successful completion of the programme the student's transcript indicates that the programme was a cooperative one.

A Co-op degree normally takes 4 1/3 years. The co-op programmes are available either as an Advanced Major (20-credit) degree programme or as an Honours degree programme.

There are three Advanced Major Co-op programmes; one in each division of the Department.

There are four Honours Co-op programmes available within this Department, in the areas of:

- Mathematics
- Mathematics and Computing Science combined
- Computing Science
- Statistics

A Combined Honours Co-op degree, combining Mathematics or Computing Science or Statistics and another appropriate subject, is

possible. Students interested in such a programme should consult the Director of Co-op Education.

Students who are interested in Co-operative Education Programmes in the Department should consult the Co-operative Education in Science entry in this calendar for further information.

### Departmental Requirements

#### Classes required for Honours Co-op:

Same as for regular Honours in Mathematics as above with the addition of the following:

- 4 Co-op Work-Terms: MATH 8891.00, 8892.00, 8893.00, 8894.00
- Co-op Seminar: SCIE 8700.00

#### Classes required in Advanced Major Co-op:

Same as for regular Advanced Major in Mathematics as above with the addition of the following:

- 4 Co-op Work-Terms: MATH 8891.00, 8892.00, 8893.00, 8894.00
- Co-op Seminar: SCIE 8700.00

### Prerequisites and Performance Test

The prerequisites listed in the class descriptions indicate the mathematical background expected of students entering that class, but may be waived with the consent of the instructor. In addition to the listed prerequisites students may write a short preliminary performance test before enrolling in the following classes: MATH 0010.00, 1000.03, 1060.03, 1110.03, and 1120.03.

These preliminary tests are held regularly during the summer and during fall registration. Students are urged to make arrangements for taking these tests as soon as possible. Further information is obtainable by contacting the department or the Math Learning Centre (902-494-2484).

### Classes Offered

Class descriptions for Computing Science can be found in the calendar under Computing Science. Class descriptions for Statistics can be found in the calendar under Statistics.

Credit may not be obtained twice for the same class even if the numbers have been changed.

Classes with the designation (MLC) are supported by the tutorial services of the Math Learning Centre.

Classes marked with an asterisk (\*) may not be offered every year.

MATH 0010.00R: Pre-University Mathematics, "Classroom Version". This class does not count as part of the regular student class load. This class is designed for students who do not have the usual prerequisite for first-year math classes (i.e. N.S. Math 441), or for others who wish to strengthen their background in mathematics. The class begins with a review of algebra, use of variables, exponents, absolute value, factoring methods and solution of equations and inequalities. This leads to graphing and the functional approach which is the focus of the

class. Functions studied include linear, quadratic, inverse, exponential, logarithmic and trigonometric. Throughout the year, there is strong emphasis on the use of mathematical models to solve application problems. Students completing this class should not only be adept at the mechanics of mathematics, but also have an understanding of the uses of these skills.

After successful completion of this class, the student will have the necessary prerequisite for any first-year university mathematics, statistics or computing science class. Students register and pay for this class at Henson College, Centre for Continuing Studies, 6100 University Avenue.

**Format:** Lecture 3 hours, (non-credit class), MLC

**Prerequisite:** Performance test

**Note:** Mathematics 1000.03 and Mathematics 1010.03 introduce the basic ideas of the calculus, and together constitute a solid foundation for study in the Sciences (Physics, Chemistry, Biology, etc.), as well as for further study in Mathematics. Students who require one or both of these classes, but are uncertain of their ability to handle them, are invited to make use of the diagnostic and remedial services offered in the Mathematics Learning Centre, located in the basement of the Chase Building.

**MATH 1000.03A or B or R: Differential and Integral Calculus.** A self-contained introduction to differential and integral calculus. The topics include: functions, limits, differentiation of polynomial, trigonometric, exponential and logarithmic functions, product, quotient and chain rules, applications of differentiation, antiderivatives and definite integrals, integration by substitution. A sequel to this class is Mathematics 1010.03.

**Format:** Lecture 3 hours, tutorial 1 hour, MLC

**Prerequisite:** Nova Scotia Mathematics 441 or equivalent

**Exclusion:** Credit will be given for only one of MATH 1000.03, 1120.03

\***MATH 1001.03A: 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 satisfy the B.Sc. mathematics requirement.

**Format:** Lecture 3 hours, MLC

\***MATH 1002.03B: Mathematics for Liberal Arts Students II.** Same as 1001A above, but with a different set of topics. Either one or both of 1001.03 and 1002.03 may be taken for credit. This class cannot be used to satisfy the B.Sc. mathematics requirement.

**Format:** Lecture 3 hours, MLC

**MATH 1010.03A or B: Differential and Integral Calculus.** A continuation of the study of calculus with topics including: techniques of integration, elementary differential equations and applications, Riemann sums, parametric equations and polar coordinates, sequences and series, Taylor series.

**Format:** Lecture 3 hours, tutorial 1 hour, MLC

**Prerequisite:** MATH 1000.03

**MATH 1060.03A or B: Introductory Statistics for Science and Health Sciences.** See class description for STAT 1060.03 in the Statistics section of this calendar.

**MATH 1110.03A or B: Finite Mathematics for Commerce.** This class provides an introduction to the methods of finite mathematics with special emphasis on applications to business. Topics include linear equations, systems of linear equations, matrices, determinants, matrix inverses, linear programming including the simplex method, an introduction to nonlinear functions and the elements of the mathematics of finance. This class replaces half of the previous class Math 1100.06. This class may not be used to partially satisfy the requirement that BSc students must have at least one full university class in mathematics.

**Format:** Lecture 3 hours, MLC

**Prerequisite:** Nova Scotia Mathematics 442 or equivalent

**MATH 1120.03A or B: Calculus for Commerce.** This is an elementary calculus class with special emphasis on applications to business. Topics include functions, limits, rate of change, derivatives, one variable optimization and curve sketching, exponential functions, logarithmic functions, functions of several variables, Lagrange multipliers, elementary integration. This class replaces half of the previous class Math 1100.06. This class may not be used to partially satisfy the requirement that BSc students must have at least one full university class in mathematics.

**Format:** Lecture 3 hours, MLC

**Prerequisite:** Nova Scotia Mathematics 442 or equivalent

**Exclusion:** Credit can be given for only one of MATH 1120.03, and MATH 1000.03

**MATH 1670.03A: Discrete Structures I.** This class together with MATH 2670.03 offers a survey of those areas in Mathematics which may be classified as dealing with discrete structures. Areas covered include 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 Computing Science.

**Format:** Lecture 3 hours

**Prerequisite:** Nova Scotia Mathematics 441 or equivalent

**Cross-listing:** COMP 1670.03

**MATH 2001.03 A or B/2002.03 A or B: Intermediate Calculus I and II.** The topics of these two classes include functions of several variables, partial derivatives, multiple integrals, indeterminate forms, improper integrals, infinite series, power series, Taylor and MacLaurin series, matrices, determinants, systems of linear equations, complex numbers, elementary ordinary differential equations.

**Format:** Lecture 3 hours, MLC

**Prerequisite:** MATH 1010.03

**Exclusion:** Credit will be given for only one of the following combinations: MATH 2001.03 and 2002.03 or MATH 2480.03 and 2490.03.

**MATH 2030.03A: 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 Mathematics 1000.03 is expected.

**Format:** Lecture 3 hours, MLC  
**Prerequisite:** Nova Scotia Mathematics 441 or equivalent

**MATH 2040.03B: Matrix Theory and Linear Algebra II.** This class is a continuation of Mathematics 2030.03. Topics include: similarity, diagonalization, inner product spaces.

**Format:** Lecture 3 hours, MLC  
**Prerequisites:** MATH 2030.03 and 1000.03  
**Exclusion:** Credit can be given for only one of MATH 2040.03 and 2135.03

**\*MATH 2050.06R: Problems in Geometry.** This class is organized around a sequence of stimulating geometrical problems. A set of approximately 20 challenging problems is given to the students at the beginning of the year. The students are expected to attempt these problems throughout the year. Good students should be able to do some of these problems and are encouraged to present their solutions to the class for extra credit on the final grade. These problems are chosen so that their solutions use a wide variety of geometrical ideas (from Combinatorial, Projective, Inverse, Transformational, Topological, Differential and Non-Euclidean Geometry).

**Format:** Lecture 3 hours  
**Prerequisite:** MATH 1010.03  
**Exclusion:** Credit can be given for only one of MATH 2050.06 and MATH 2051.03.

**\*MATH 2051.03A or B: Problems in Geometry.** A half class on such material from MATH 2050.06 as time permits.

**Format:** Lecture 3 hours  
**Prerequisite:** MATH 1010.03  
**Exclusion:** Credit can be given for only one of MATH 2050.06 and MATH 2051.03.

**MATH 2060.03A or B: Introduction to Probability and Statistics I.** See class description for STAT 2060.03 in the Statistics section of this calendar.

**MATH 2080.03B: Statistical Methods For Data Analysis & Inference.** See class description for STAT 2080.03 in the Statistics section of this calendar.

**MATH 2135.03B: Linear Algebra.** This class is a continuation of MATH 2030.03. Topics include: similarity, diagonalization, inner product spaces. It is intended for honours students only.

**Format:** Lecture 3 hours  
**Prerequisite:** MATH 2030.03

**Exclusions:** Credit can be given for only one of MATH 2040.03 and 2135.03

**MATH 2300.03A or B: Mathematical Modelling I.** This class is designed to provide a bridge between introductory calculus and the applications of mathematics to various fields. By using fundamental calculus concepts in a modelling framework, the student investigates meaningful and practical problems chosen from common experiences encompassing many academic disciplines, including the mathematical sciences, operations research, engineering and the management and life sciences. Some simple user-friendly computer packages will be introduced.

**Format:** Lecture 3 hours, MLC  
**Corequisite:** MATH 2030.03 and MATH 1000.03  
**Cross-listing:** COMP 2300.03, STAT 2300.03

**MATH 2480.03A/2490.03B: Intermediate Calculus for the Engineering Programme.** The topics for these two half classes include functions of several variables, partial derivatives, multiple integrals, indeterminate forms, improper integrals, infinite series, power series, Taylor and MacLaurin series, matrices, determinants, systems of linear equations, complex numbers, elementary ordinary differential equations.

**Format:** Lecture 3 hours, MLC  
**Prerequisite:** MATH 1010.03  
**Exclusion:** Students who take MATH 2480.03/2490.03 may not also receive credit for 2000.06 or 2001.03/2002.06

**MATH 2505.03B: Introductory Analysis.** For honours students and other serious students of mathematics. Topics include: the axioms for the real number system, geometry and topology of Euclidean space, limits, continuity, differentiability, the inverse and implicit function theorems.

**Format:** Lecture 3 hours  
**Prerequisite:** Good standing in MATH 2001.03

**\*MATH 2540.03A: Basic Set Theory.** An introduction to the basic topics of set theory, including equivalence relations, order, recursion, the axiom of choice, ordinals and cardinals.

**Format:** Lecture 3 hours  
**Prerequisite:** MATH 1000.03

**\*MATH 2600.03 A or B: Theory of Interest.** A detailed examination of the theory of simple and compound interest. The syllabus includes the material on which the theory of interest portion of Examination 4 in the Society of Actuaries 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, special topics. This class should appeal to students in mathematics, economics and commerce. Students interested in an actuarial career should take this class and are urged to consult the department for guidance in class selection and additional information.

**Format:** Lecture 3 hours, MLC  
**Prerequisite:** MATH 1010.03 or 1110.03  
**Cross-listing:** STAT 2600.03



## 250 Mathematics

**MATH 2670.03B: Discrete Structures II.** See class description for COMP 2670.03 in the Computing Science section of this calendar.

**\*MATH 2800.03A or B: Applied Mathematics for the Life Sciences.** This class is intended as a preparation for the mathematical aspects of advanced classes in ecology, genetics and physiology and is designed primarily for honours students in the biological sciences. The topics to be covered include complex numbers, linear algebra, difference equations and differential equations. Students are introduced to each topic through examples drawn from appropriate areas of biology and physiology. Computer software packages such as MINITAB, MATLAB and MAPLE are used to solve specific problems. This class is not given every year and students interested should consult the department. Students interested in the applications of mathematics should also consider MATH 2300.03 and/or MATH 3260.03.  
Format: Lecture 3 hours, MLC  
Prerequisites: MATH 1000.03 and BIOL 1000.06

**SCIE 3000.06R: Science Fundamentals.** An interdisciplinary class that stresses the motivations, methodologies, and responsibilities of scientists, and provides extensive formal instruction in written and oral communication of scientific material. For details, see main calendar entry "Science, Interdisciplinary." The status of this class (elective, minor, or major credit) varies from department to department; check with your undergraduate advisor.

**MATH 3030.06R: Abstract Algebra.** In this first class in abstract algebra the following topics are treated: groups, sub-groups, factor groups, homomorphisms, rings, ideals, Euclidean domains, polynomial rings, fields, unique factorization, irreducible polynomials, Sylow theorems, solvability of polynomial equations, Galois theory, and the Jordan canonical form.  
Format: Lecture 3 hours  
Prerequisite: MATH 2040.03 or 2135.03

**\*MATH 3040.03A or B: Metric Spaces and Elementary Topology.** Topics include: metric spaces: bounded-, totally bounded-, compact- and complete sets in metric spaces; Lipschitz and contraction mappings; topological spaces; open and closed sets, bases; continuity, compactness, connectedness.  
Format: Lecture 3 hours  
Prerequisites: MATH 2000.06 and 2135.03 (or 2040.03)

**\*MATH 3050.06R: Differential Geometry and Tensor Analysis.** The material consists of two parts. The first part discusses the theory of curves and surfaces in three-dimensional Euclidean space. Topics include: theory of curves, surfaces, first and second fundamental forms, Gaussian and mean curvature, formulae of Weingarten and Gauss, geodesic curvature and geodesics. The second part consists of an introduction to Riemannian geometry, and, if time permits, an introduction to general relativity as an application of Riemannian geometry. Topics include: foundations of tensor calculus, differentiable manifolds, foundations of Riemannian geometry, absolute differentiation and connexions.

Format: Lecture 3 hours  
Prerequisites: MATH 2000.06 and 2135.03 (or 2040.03)

**\*MATH 3070.03A or B: Theory of Numbers.** The following topics are discussed: congruences and residues; elementary properties of congruences; linear congruences; theorems of Fermat, Euler and Wilson; Chinese remainder theorem; quadratic residues; law of quadratic reciprocity; Legendre, Jacobi and Kronecker symbols, arithmetic functions; algebraic fields; algebraic numbers and integers; uniqueness of factorization, definition and elementary properties of ideals; ideal classes and class number.

Format: Lecture 3 hours  
Prerequisite: MATH 2040.03 (or 2135.03)

**\*MATH 3080.03A or B: 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 2000.06

**MATH 3090.03A: Advanced Calculus I.** An introduction to Fourier Series. Topics covered include half range expansions, expansions on other intervals, convergence theorems, differentiation and integration of Fourier Series and the Complex form of Fourier Series. Also an introduction to special functions, including Gamma and Beta functions and orthogonal polynomials and some of their properties is given. Additional topics covered include some implicit function theorems and an introduction to transformations.

Format: Lecture 3 hours  
Prerequisites: MATH 2000.06 and MATH 2030.03

Exclusion: Credit cannot be given for both MATH 3090.03 and MATH 3500.06

**MATH 3100.03B: Advanced Calculus II.** Topics covered include properties of functions defined by integrals: differentiation under the integral sign, tests for the convergence of improper integrals, improper multiple integrals and functions defined by improper integrals. Also considered is the Fourier integral and various other integral transforms, a review of multiple integrals and vector field theory. Green's, Stokes' and the divergence theorems and related matters are also considered.

Format: Lecture 3 hours  
Prerequisite: MATH 3090.03  
Exclusions: Credit cannot be given for both MATH 3500.06 and 3100.03

**MATH 3110.03A: Differential Equations.** One of the aims of this class is to give students the ability to analyze and solve a number of different types of differential equations. Wherever possible, applications are drawn from the fields of physics, chemistry, biology, and other areas. The class is intended mainly for mathematics students interested in applications and for science students who wish to be able to solve problems arising in their major areas of interest.

**Format:** Lecture 3 hours, MLC  
**Prerequisite:** MATH 2000.06

**MATH 3120.03B: 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 3170.03A: Introduction to Numerical Linear Algebra.** See class description for COMP 3170.03, in the Computing Science section of this calendar.

**Format:** Lecture 3 hours  
**Prerequisites:** MATH 1010.03, 2030.03 and COMP 1410.03

**Cross-listing:** COMP 3170.03

**\*MATH 3210.03B: Introduction to Numerical Analysis.** Some more advanced aspects of numerical linear algebra, including the Power Method and the QR Algorithm are examined. Various acceleration procedures for iterative processes are examined. Several forms of interpolating polynomials including Newton, Lagrange and Hermite are considered. Finite differences are also introduced. Numerical differentiation and integration is examined. In particular, interpolatory, Gaussian, Romberg and adaptive quadrature are discussed, and error estimates considered. Polynomial splines and some of their properties are introduced. Methods for solving nonlinear equations including the Newton-Raphson method are considered. Special attention is paid to finding the roots of a polynomial. Throughout, the difficulties of implementing the various methods are discussed, and illustrated via assignments. Finally, some indication of the difficulties involved in multidimensional numerical analysis is given.

**Format:** Lecture 3 hours  
**Prerequisites:** Instructor's permission  
**Cross-listing:** COMP 3210.03

**MATH 3260.03A or B: Mathematical Modelling II.** This class is an introduction to mathematical modelling and analysis using intermediate level calculus and elementary differential equations. It includes such topics as "can we prove mathematically that relativistic effects explain the procession in the perihelion of Mercury?", "is there truth to the legend of Samson and the Euler column?", "how do we quantify and analyze traffic flow?", "how does mathematics prove that a guitar is more musical than a drum?", and "what is an economically optimal forest harvesting strategy?"

**Format:** Lecture 3 hours  
**Prerequisite:** MATH 3110.03 (may be taken concurrently)

**MATH 3300.03A: Optimization I.** This class is 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  
**Prerequisites:** MATH 2000.06 and 2040.03

**MATH 3310.03B: Optimization II.** This class continues the study of the topics in MATH 3300.03. Additional topics to be covered include network flow theory, graph theoretic matching problems, shortest route problems, discrete dynamic programming models, and combinatorial optimization with emphasis on integer programming problems.

**Format:** Lecture 3 hours  
**Prerequisites:** MATH 3300.03

**\*MATH 3320.03A or B: Applied Group Theory.** This interdisciplinary half-class is intended for third and fourth-year undergraduate and first-year graduate students in Chemistry, Mathematics and Physics. With some additional reading in Physics, it is equivalent to PHYC 4480.03. Topics include: review of matrices, fundamentals of groups, normal subgroups, homomorphisms, representations, character, orthogonality, symmetry groups in crystallography, role of symmetry groups in quantum physics and chemistry, normal modes and molecular vibrations.

**Format:** Lecture 3 hours  
**Prerequisites:** MATH 2000.06 and 2030.03  
**Cross-listing:** PHYC 4480.03/5480.03

**\*MATH 3330.03A or B: Graph Theory and Combinatorics.** The following topics are discussed: elements of graph theory, paths and cycles, Eulerian graphs, trees, planar graphs and the Euler polyhedral formula, Hamiltonian graphs, chromatic numbers, the five-colour theorem; items to be selected from the following topics to suit class: graphs and matrices, graphs and groups, extremal problems, and enumeration problems.

**Format:** Lecture 3 hours  
**Prerequisites:** MATH 2000.06 and 2040.03

**\*MATH 3340.03A or B: Regression and Analysis of Variance.** See class description for STAT 3340.03, in the Statistics section of this calendar.

**\*MATH 3360.03A or B: Probability.** See class description for STAT 3360.03, in the Statistics section of this calendar.

**\*MATH 3380.03A or B: Sample Survey Methods.** See class description for STAT 3380.03, in the Statistics section of this calendar.

**\*MATH 3460.03 A or B: Intermediate Statistical Theory.** See class description for STAT 3460.03 in the Statistics section of this calendar.

**MATH 3500.06R: Intermediate Analysis.** MATH 3500.06 continues the analysis sequence begun in MATH 2505.03. Topics include: number systems, metric spaces, compactness, continuous functions on metric spaces, Stone-Weierstrass theorem, Arzela-Ascoli theorem, sequences and series of functions and their properties, inverse and implicit function theorems, extrema, co-ordinate transformations

**Format:** Lecture 3 hours  
**Prerequisites:** MATH 2135.03, 2505.03

**Exclusions:** Credit cannot be given for both MATH 3500.06 and 3090.03, or for both MATH 3500.06 and 3100.03

**MATH 4010.03A or B: 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, Fourier series.

**Format:** Lecture 3 hours

**Prerequisite:** MATH 3500.06

**Cross-listing:** MATH 5010.03

**\*MATH 4020.03A or B: 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.

**Format:** Lecture 3 hours

**Prerequisites:** MATH 3060.03 and either 3100.03 or 3500.06

**Cross-listing:** MATH 5020.03

**\*MATH 4025.03A or B: Commutative Algebra I.** This introduction to commutative algebra includes a selection of the following topics: prime and maximal ideals, primary decomposition, Noetherian rings, Hilbert's Basis Theorem and the Nullstellensatz.

**Format:** Lecture, 3 hours

**Prerequisite:** Math 3030.06 or equivalent

**Cross-listing:** MATH 5025.03

**\*MATH 4035.03A or B: Commutative Algebra II.** This class will examine some geometric applications of the material developed in Commutative Algebra I. Topics will include plane curves and Bezout's theorem, cubic curves, higher dimensional varieties, and an introduction to the Riemann-Roch Theorem.

**Format:** Lecture, 3 hours

**Prerequisite:** Math 4025.03

**Cross-listing:** MATH 5035.03

**\*MATH 4045.03A or B: 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

**Prerequisites:** MATH 3030.06

**Cross-listing:** MATH 5045.03

**\*MATH 4055.03A or B: 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

**Prerequisites:** MATH 3030.06

**Cross-listing:** MATH 5055.03

**\*MATH 4060.06R: Advanced Statistical Theory.** See class description for STAT 4060.06, in the Statistics section of this calendar.

**\*MATH 4065.03A or B: Algebraic Geometry.** an introduction to the basic concepts of algebraic geometry.

**Format:** Lecture 3 hours

**Prerequisites:** MATH 3030.06

**Cross-listing:** MATH 5065.03

**\*MATH 4070.03A or B: 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 a 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

**Prerequisites:** Math 3070.03

**Cross-listing:** MATH 5070.03

**\*MATH 4080.03A or B: Time Series Analysis II.** See class description for STAT 4400.03 in the Statistics section of this calendar.

**\*MATH 4090.03A or B: Probability.** A mathematically rigorous treatment of probability theory in Euclidean space. Topics include the definitions and properties of random variables and their distribution functions, various convergence concepts, the Borel-Cantelli lemma, weak and strong laws of large numbers, characteristic functions, central limit theorems. Although the necessary measure theory is introduced, a previous analysis class is an asset.

**Format:** Lecture 3 hours

**Prerequisite:** Mathematics 3360.03 and a third year analysis class

**Cross-listing:** MATH 5090.03, STAT 4090.03/5090.03

**\*MATH 4130.03A or B: Analysis of Algorithms.** See class description for COMP 4130.03 in the Computing Science section of this calendar.

**\*MATH 4135.03A or B: Introduction to Category Theory.** Categories, functors, natural transformations and adjointness are introduced with emphasis on examples drawn from undergraduate Mathematics and theoretical Computer Science. The calculus of diagram chasing, limits, colimits and Kan Extensions is explored in detail to provide a thorough foundation for subsequent specialized classes.

**Format:** Lecture 3 hours

**Prerequisites:** MATH 3030.06 or permission of the instructor.

**Cross-listing:** MATH 5135.03

**\*MATH 4140.03A or B: Introduction to Functional Analysis.** An introduction to the basic principles of functional analysis including the following topics: infinite dimensional vector spaces, normed spaces, inner-product spaces, Banach and Hilbert spaces, linear and continuous linear functionals, the Hahn-Banach Theorem, the principle of uniform

boundedness, dual spaces, weak\* topology, and the Alaoglu theorem, the open mapping and closed graph theorems, and consequences and applications.

Format: Lecture 3 hours  
Prerequisites: MATH 2135.03 and 3040.03 or 3500.06

Cross-listing: MATH 5140.03

**\*MATH 4150.03A or B: Functional Analysis.**

Topics include: topological vector spaces, locally convex spaces, normability, function spaces, strict convexity, uniform convexity, reflexive spaces, support functionals, geometry of convex sets and other topics.

Format: Lecture 3 hours  
Prerequisite: MATH 4140.03  
Cross-listing: MATH 5150.03

**\*MATH 4160.03A or B: Operator Theory.** An introduction to the theory and applications of continuous linear operators on Hilbert spaces, culminating with the spectral theorem, and including such topics as spectrum; adjoint; symmetric, self-adjoint, unitary, and normal operators; polar decomposition; differential and integral operators;  $C^*$  algebras; Gelfand's Theorem; and the spectral theorem.

Format: Lecture 3 hours  
Prerequisites: MATH 4010.03 and 4140.03  
Cross-listing: MATH 5160.03

**\*MATH 4170.03A or B: General Topology.** An introduction to topological spaces, and includes the following topics: classification in terms of cardinality of bases, separation, etc., product spaces, Tychonoff theorem, compactness, compactifications, Tychonoff spaces, metrization.

Format: Lecture 3 hours  
Prerequisite: MATH 3040.03 or 3500.06  
Cross-listing: MATH 5170.03

**\*MATH 4180.03A or B: Introduction to Algebraic Topology.** An introduction to algebraic topology and including the following topics: homotopy type and the fundamental group, geometry of simplicial complexes, homology theory of complexes, chain complexes, homology groups for complexes, subdivision, induced homomorphisms, axioms for algebraic topology, singular homology, the singular complex, properties of cell complexes.

Format: Lecture 3 hours  
Prerequisite: MATH 4170.03  
Cross-listing: MATH 5180.03

**\*MATH 4190.03A or B: Differential Equations.** Mathematics 3120.03 is recommended. Topics covered include existence and uniqueness theorems, continuity of solutions, Floquet theory, autonomous differential equations and their relation to dynamical systems and flows, periodic solutions and the Poincaré-Bendixson theorem.

Format: Lecture 3 hours  
Prerequisites: MATH 3500.06 (3090.03 and 3100.03) and 2030.03/2040.03 or 2135.03  
Cross-listing: MATH 5190.03

**\*MATH 4200.03A or B: Differential Equations - Qualitative Theory.** Qualitative theory is concerned with what can be determined about the phase-portrait and the general behaviour of solutions of differential equations even though those solutions are not explicitly exhibited.

Topics are selected from Liapunov stability theory, stable and unstable manifolds of singular points and periodic solutions, classification of plane singular points, structural stability, differential equations on manifolds and Hamiltonian systems. Various equations occurring in applications are qualitatively analyzed. The precise topics and equations covered depend on the specific interests of the instructor and the students.

Format: Lecture 3 hours  
Prerequisite: MATH 4190.03  
Cross-listing: MATH 5200.03

**\*MATH 4220.03A or B: Introduction to Partial Differential Equations.** This class is the first half of a two term sequence designed to introduce the student to the theoretical and numerical aspects of partial differential equations. Topics to be covered include: review of the theory of ordinary differential equations, classification of partial differential equations, solution of first order equations, the diffusion equation and random walk, Fourier Series and transforms, generalized functions, eigenfunction expansions.

Format: Lecture 3 hours  
Prerequisite: MATH 3110.03  
Cross-listing: MATH 5220.03

**\*MATH 4230.03A or B: Partial Differential Equations.** This class continues the study of partial differential equations begun in MATH 4220.03. Topics to be covered include: The Rayleigh-Ritz method, Green's Functions, finite difference methods of solution, an introduction to the finite element method.

Format: Lecture 3 hours  
Prerequisite: MATH 4220.03  
Cross-listing: MATH 5230.03

**\*MATH 4270.03A or B: Numerical Software.** See class description for COMP 4270.03 in the Computing Science section of this calendar.

**\*MATH 4300.03A or B: Optimal Control Theory and Applications.** Initially the classical calculus of variations is studied and the sufficiency conditions emphasized. A constructive solution of the Euler equations is presented. Then the modern theory of optimal control is developed using techniques of mathematical programming. This approach is applied to a variety of problems such as economic growth theory, inventory control and regulator problems. Numerical methods are also presented.

Format: Lecture 3 hours  
Prerequisite: Consent of instructor  
Cross-listing: MATH 5300.03

**\*MATH 4310.03A or B: Nonlinear Programming.** A thorough introduction to the mathematical problem of optimizing a real-valued function of  $n$  variables subject to a system of constraints. Theoretical topics include the theory of convex sets and functions, directional derivatives, the Karush-Kuhn-Tucker optimality conditions, and dual problems. Several algorithms will be developed for the numerical solution of problems, including quasi-Newton and barrier methods. Software packages will be used to solve several practical applications.

Format: Lecture 3 hours

## 254 Mathematics

**Prerequisite:** Math 3500.06 (or 3090.09 and 3100.03) and 2135.03 (or 2040.03)

**Cross-listing:** MATH 5310.03

**MATH 4330.03A or B: Topics in Graph Theory.** This class is intended for math and computing science students. Items to be selected from the following topics: graphs and matrices, graphs and groups, network analysis, extremal graph theory, enumeration problems, algebraic methods in graph theory.

**Format:** Lecture 3 hours

**Prerequisites:** MATH 2000.06 and 2040.03

**Cross-listing:** MATH 5330.03, COMP 4330.03/5330.03

**\*MATH 4400.03A or B: Mathematical Modelling III.** This class is concerned with the construction, analysis and interpretation of mathematical models in the natural sciences with an emphasis on industrial applications. Specific applications of potential theory, diffusion phenomena and wave propagation will be examined in detail. A brief introduction to the calculus of variations approach to the optimal control of dynamical systems will be given and some recent applications discussed.

**Format:** Lecture 3 hours

**Prerequisite:** MATH 3110.03

**Recommended:** MATH 3120.03

**Cross-listing:** MATH 5400.03

**MATH 4410.03A or B: Cosmology.** A self-contained introduction to cosmology will be given and no prior knowledge of differential geometry or general relativity will be assumed (although some knowledge of elementary differential equations will be useful). A cosmological model is a model of the universe, as a whole, on the largest scales; the emphasis of the class will be on the modelling aspects of cosmology.

**Format:** Lecture 3 hours

**Prerequisite:** Instructor's permission

**Cross-listing:** MATH 5410.03, PHYC 4660.03/5660.03

**MATH 4650.03A or B: 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

**Prerequisites:** MATH 3050.06 or permission of the instructor.

**Cross-listing:** MATH 5650.03, PHYC 4650.03/5650.03

**\*MATH 4660.03A or B: Automata and Computability.** See class description for COMP 4660.03, in the Computing Science section of this calendar.

**SCIE 8700.00: Co-op Seminar.** This seminar is used to prepare Co-op students for their work-term experience. It is a prerequisite for the first work-term.

**MATH 8891.00: Co-op Work-Term I**

**MATH 8892.00: Co-op Work-Term II**

**MATH 8893.00: Co-op Work-Term III**

**MATH 8894.00: Co-op Work-Term IV**

# Microbiology and Immunology

G.J. Tyrrell, PhD (Tor) (Antimicrobial Resistance; Verotoxins)

## Instructor

L.E. Murray, PhD (Dal) (Molecular Genetics)

**Location:** Sir Charles Tupper Medical Building, 7th & 10th Floors  
Halifax, N.S. B3H 4H7  
**Telephone:** (902) 494-3587  
**FAX:** (902) 494-5125

## Head of Department

G.C. Johnston

## Undergraduate Advisors

D.B. Stoltz (494-2590)  
C. Stuttard (494-6566)  
D.W. Hoskin (494-6509)

## Professors

R. Anderson, PhD (Cologne), Graduate Studies Coordinator, (Viral Pathogenesis)  
P.S. Hoffman, PhD (Virginia Polytech.), (Microbial Pathogenesis)  
G.C. Johnston, PhD (York), (Molecular Genetics: Regulation of Proliferation)  
S.H.S. Lee, PhD (Dal), (Diagnostic Virology; Interferon)  
D.E. Mahony, PhD (McG), (Bacteriology; Bacteriocins, Toxins and Plasmids of Clostridia)  
K.R. Zozie, PhD (Dal), (Microbial Pathogenesis; Epidemiology)  
D.B. Stoltz, PhD (McM), Undergraduate Studies Coordinator, (Biology of Parasitic Insects; Insect Virology)  
C. Stuttard, PhD (Dublin), (Microbial Genetics)

## Associate Professors

R.I. Carr, MD (Tor), PhD (Rockefeller), Prof., Medicine (Rheumatology) (Immunoregulation; CNS Immune System Interactions and Auto Immune Diseases)  
D.W. Hoskin, PhD (McG) (Tumour Immunology; MHC-Unrestricted Killer Cells)  
A.C. Issekutz, MD (Dal), FRCP(C), Prof., Pediatrics (Inflammation)  
S.F. Lee, PhD (Guelph) (Oral Microbiology; Microbial Pathogenesis)  
T. Lee, PhD (Glasgow) (Molecular Immunology; Transplantation Immunology)  
R. Rajaraman, PhD (Dal), Asst. Prof., Medicine (Integrins, Neutrophil Activation, Programmed Cell Death in Neoplasia)

## Assistant Professors

C. Barnes, BA, PhD (Dal), Molecular Genetics  
M.A. Drobot, PhD (Dal) (Viral Diagnostics and Pathogenesis)  
R. Duncan, PhD (Guelph) (Molecular Virology)  
G. Faulkner, PhD (Dal) (Ultrastructural Analysis of Infection and Cancer Cells)  
D.J.M. Haldane, MBChB (Dundee), FRCP(C) (Medical Microbiology)  
W.A. Kennedy, MDCM (McG), FRCP(C), Pediatrics (Parainfluenza and Coronavirus Respiratory Tract Infection Pathogenesis)  
A.W. Stadnyk, PhD (McM) (Intestinal Inflammation; Cytokines)

## Introduction

The Department of Microbiology and Immunology is involved in teaching and research in several vital areas of biomedical endeavour including molecular and medical microbiology, virology, immunology and microbial genetics.

The Microbiology programme is designed to familiarize the student with the biology and pathogenesis of viruses, bacteria, yeast and multicellular parasitic organisms. Advanced classes deal specifically with selected aspects of virology, molecular mechanisms of pathogenesis, microbial genetics, cell and molecular biology.

A set of classes in molecular genetics has been identified to meet the needs of honours Microbiology or Biochemistry students who hope to pursue further study in molecular and genetic approaches to fundamental problems. These classes provide solid grounding in bacterial and eukaryotic gene structure and function, regulation and evolution, and both practical and theoretical presentations of recombinant DNA methods (genetic engineering).

They can be taken along with classes in metabolism, enzymology, bacteriology, virology and immunology and provide a good practical grounding for fields as diverse as genetic diagnosis and gene therapy, forensics, industrial microbiology and molecular evolution (see below and the Biochemistry listings and consult departmental advisors).

The Department also has a significant teaching programme in Cellular and Molecular Immunology. The Immunology programme is designed for students interested in fundamental questions in molecular immunology, tumour immunology, autoimmunity or inflammation, and defences against microbial infection.

These programmes provide the education needed for professional activities after graduation or for graduate studies in microbiology or immunology.

## Degree Programmes

There is a 4-year "advanced major" programme in Microbiology but no 3-year programme leading to a Microbiology major. MICR 2100.06 is a prerequisite for most other microbiology classes offered in this Department. Students interested in an honours programme (see below) should consult a departmental advisor, preferably prior to registration for 2nd year classes. Biology majors are advised that classes in Microbiology and Immunology DO count toward a BSc in Biology even though they are not cross-listed with the Biology Department.

Students should consult the "Degree Requirements" section of this calendar for specific regulations.

## 256 Microbiology and Immunology

### BSc with Honours in Microbiology

This programme is designed to give students the best possible preparation for future graduate work or a professional career in microbiology or immunology. Students applying for admission to this programme must have obtained a grade of B- or better in BIOL 1000.06 or BIOL 1001.06 and must, in their 2nd year, obtain a grade of B- or better in MICR 2100.03. Students should consult an undergraduate advisor (D. Stoltz; C. Stuttard; D.W. Hoakkin) at their earliest convenience.

#### Departmental Requirements

##### Classes required in Honours:

1000 level:	BIOL 1000.06, CHEM 1010.06 or 1500.06 or 1040.06, and 2 of the following: MATH 1000.03, 1010.03 or 1060.03
2000 level:	MICR 2100.03, BIOL 2020.03, 2030.03, BIOC 2200.03, CHEM 2400.06
3000 level:	BIOC 3400.03
4000 level:	MICR 4900.06

In addition to the above 4.5 classes, at least one half class at the 3000 - 4000 level in the 4 following core subjects: MICR 3033.03, 3114.03, 3115.03, 3118.03 (or BIOL 3100.03, 4101.03, 4113.03 substituting for MICR 3118.03).

The remaining 2.5 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): MICR 3033.03, 3114.03, 3115.03, 3118.03, 4022.03, 4024.03, 4026.03, 4027.03, 4037.03, 4114.03, 4115.03, 4118.03, 4301.03, 4302.03, 4303.03, 4601.03, 5038.03.

BIOC 4403.03, 4404.03, 4603.03, 4802.06

BIOL 2101.03, 3100.03, 4101.03, 4102.03, 4113.03

For students wishing to specialize in molecular genetics, the following classes are strongly recommended: BIOC 3400.03, MICR 3033.03, MICR 4037.03/MICR 4038.03, MICR 4118.03, MICR 4403.03, MICR 4404.03 and MICR 4601.03. Students should also consult an undergraduate advisor.

For students wishing to specialize in the area of immunology the following classes are recommended: MICR 3033.03, 3115.03, 4115.03; BIOC 3200.03, MICR 4026.03, 4027.03, 4301.03, 4302.03, 4303.03, 4601.03. Immunology students should consult the Immunology undergraduate advisor, Dr. D.W. Hoakkin.

For students wishing to specialize in virology, the following classes (in addition to the core) are recommended: BIOC 3200.03, BIOL 3020.03 or MICR 4026.03, MICR 4114.03, MICR 4115.03, MICR 4118.03, MICR 4403.03, MICR 4404.03 and MICR 4601.03.

##### Notes:

1. In the 4 half-credit classes taken at the 3000-4000 level to fulfil the core subjects requirement described above, students must maintain a B average with no grade less than B-.
2. The minor can be in any subject (excluding Microbiology); this includes Biology and Biochemistry.

3. The honours research thesis (MICR 4900.06) can be done in either the Microbiology, Biochemistry or Biology Departments (or in other departments in the Faculty of Science or Medicine if appropriate). The thesis work, however, must be relevant to the interests of the Department. Similarly, it should be noted that Biology majors may conduct their honours thesis project (i.e., BIOL 4900.06) in this Department.
4. Students should be aware of Academic Regulation 19. Students should also note that certain advanced classes require a particular grade be achieved in the prerequisite class and/or permission of the instructor be obtained for registration in the class, or both.

### BSc with Combined Honours in Microbiology and Biochemistry

Students in this programme must complete 11 credits above the 1000 level in Microbiology and Biochemistry. The required classes in Biochemistry are BIOC 2200.03, 3200.03, 3300.03, 3400.03 and 4603.03. Students must also take 2 credits in the 4 defined core subject areas in Microbiology and Immunology. In addition, students must take MICR 2100.03, BIOL 2020.03, BIOL 2030.03 and either MICR 4900.06 or BIOC 4602.06. The remaining 4.5 credits must include at least 1 full credit from each Department at the 4000 level (excluding MICR 4900.06 and BIOL 4602.06).

### BSc with Combined Honours in Microbiology and Biology

Students in this programme must complete the core requirements of each department. Students are required to maintain an average grade of B in core classes with no grade lower than B-. BIOL 1000.06 should be taken in year 1, and MICR 2100.03 in year 2. Research thesis work can be carried out in either Department. Advisors: D.B. Stoltz (Microbiology); J. Wright (Biology).

### Advanced Major in Microbiology

#### Departmental Requirements

##### Classes required in Advanced Major:

1000 level:	Biology 1000.06 or 1001.06; Chemistry 1010.06
2000 level:	Three credits at or above the 2000 level
3000 level:	Three additional credits at or above the 3000 level

### Classes Offered

Note: Owing to the combined pressures of student numbers and a dearth of available space, the names of students not appearing on the first day of class may be deleted from class lists; students are therefore advised that being signed into the class is no guarantee of late admission.

MICR 1100.03B: See class description in Nursing section of this calendar. NOTE: Students registering in this class must also register for either a morning or afternoon laboratory session.

**MICR 1200.03A: Introduction to General and Oral Microbiology.** See class description in the Dental Hygiene section of the Dentistry, Law and Medicine Calendar.

**MICR 2020.03B: General Microbiology.** This class is geared to students in pharmacy and in other health-oriented programmes. It provides a brief introduction of microbial structure, physiology and genetics in relation to microbial pathogenesis. General concepts and practices of sterilization and disinfection, antibiotics and immunity will be examined with emphasis on mechanism of action. Bacterial, fungal, parasitic and viral pathogens of medical importance will be discussed according to the mode of entry, transmission, clinical features, prevention and chemotherapy. Laboratory sessions using demonstration and/or experimentation are designed to complement the lectures and to provide a practical appreciation of the isolation, identification, cultivation and control of microorganisms. Note: MICR 2020.03 cannot be taken for credit in a BSc. programme.

**Instructor:** S.H.S. Lee

**Format:** Lecture 3 hours, lab 3 hours

**Prerequisite:** BIOL 1000.06 or instructor's consent

**Cross-listing:** PHYT 2070.03

**MICR 2100.03A: Introductory Microbiology and Immunology.** An introduction to the basic concepts of microbiology and immunology through lectures, laboratory sessions and demonstrations. Topics include the structure, growth, genetics and physiology of microorganisms and viruses, as well as basic immunology. This is normally a required class for Microbiology and Immunology honours students; as such, it is directed primarily to second year students. In fact, roughly three out of four laboratory spaces will normally be reserved for second year students. Note: Students who have taken (or are taking) any of MICR 3033.03, 3114.03 or 3115.03 are not permitted to register in MICR 2100.03. Lab section assignments are made during the first lecture period. Consequently, because of limits to lab space, students not attending that lecture may be denied admission to the class **EVEN IF THEY ARE ALREADY REGISTERED.**

Students wishing to repeat the class must have approval to do so from the class coordinator.

MICR 2100.03 is the preferred route into other microbiology offerings.

**Instructor:** D.B. Stoltz

**Format:** Lecture 2 hours, lab 3 hours

**Prerequisite:** Grade of B or better in BIOL 1000.06 or BIOL 1001.06.

**Note:** Biology students taking BIOL 2101.03 are advised that this class may be used as a prerequisite into 3000-level Microbiology classes provided that a grade of B or better has been obtained.

**MICR 3033.03B: Microbial Genetics.** Heredity in bacteria and their viruses, with principal emphasis on mutation, gene transfer, and genetic mapping; DNA repair, recombination, and restriction; molecular approaches to genetic analysis and gene expression on microorganisms (e.g., gene cloning, DNA sequencing).

**Instructors:** C. Barnes, C. Stuttard

**Format:** Lecture 3 hours

**Prerequisites:** MICR 2100.03 (or BIOL 2101.03 with a grade of B or better), BIOL 2030.03, BIOC 3400.03 or instructor's consent

**MICR 3114.03A: Virology.** Viruses are extremely efficient nucleoprotein complexes that have played, and continue to play, significant roles in the analysis of gene organization and expression, cancer biology, molecular pathogenesis, cell biology, biotechnology, gene therapy and molecular evolution. This introductory class is designed to give the student an appreciation for the diversity of viruses and their biological interactions with the host at both a cellular and organismal level. Topics discussed include virus structure, assay, characterization, gene organization and expression, host-cell interactions, cell transformation and pathogenesis. The lecture material relies on concepts introduced in BIOC 2200.03 and BIOL 2020.03 and complements material presented in other classes such as immunology, cell biology, biochemistry, molecular biology and gene expression.

**Instructors:** R. Duncan, D.B. Stoltz, M.

Drebot, R. Anderson

**Format:** Lecture 3 hours

**Prerequisite:** Normally includes all of MICR 2100.03 (or BIOL 2101.03 with a grade of B or better), BIOC 2200.03, BIOL 2020.03

**MICR 3115.03A: Immunology.** This class is designed to provide the student with an understanding of the fundamental principles of cellular and molecular immunology. Lectures will focus on mechanisms governing the generation and regulation of cell-mediated and humoral immune responses. Topics to be discussed include cells and tissues of the immune system, the structure and synthesis of antibodies, complement pathways, T cell subsets and their functions, hypersensitivity reactions and the genetics of the immune response.

**Instructors:** D.W. Hoakin, T. Lee

**Format:** Lecture 3 hours

**Prerequisites:** MICR 2100.03 (or BIOL 2101.03 with a grade of B- or better) plus a 2000-level class in cell biology, or instructor's consent

**MICR 3118.03A: Medical Bacteriology.** A survey of several bacterial groups with particular attention devoted to bacteria of medical interest. Attention is given to those criteria which are regarded as important in the classification of bacteria, and to the techniques used to identify particular species.

**Instructor:** D.E. Mahony

**Format:** Lecture 2 hours, lab 3 hours

**Prerequisite:** Grade of B- or better in MICR 2100.03 or grade of B or better in BIOL 2101.03

**MICR 4024.03A: Microscopy.** The class is concerned with biological ultrastructural analysis concentrating on transmission and scanning electron microscopy. The importance of a proper understanding of the physical and chemical principles governing technical procedures such as fixation, freeze-fracture, colloidal gold probes, stereology, autoradiography, x-ray microanalysis and



## 258 Microbiology and Immunology

photography is emphasized. During laboratory periods students have the opportunity through individual projects to participate in some of the techniques covered in the lectures.

**Instructors:** G.T. Faulkner, D.B. Stoltz  
**Format:** Lecture 3 hours, lab 3 hours  
**Prerequisite:** Instructor's consent  
**Restriction:** Honours and Graduate students only  
**Cross-listing:** BIOL 4024.03/5024.03, MICR 5024.03

**MICR 4026.03A: The Mammalian Cell as a Microorganism.** The class considers recent advances and current concepts in cellular and molecular biology with reference to the mammalian cell cultured *in vitro*. The following general areas are discussed: cell cycle; differentiation; somatic cell aging; extracellular, cytoplasmic and nuclear matrices; transmembrane interactions; gene expression; growth factors and their receptors; hybridoma technology; metagenesis and somatic cell and molecular genetics.

**Instructor:** R. Rajaraman  
**Format:** Lecture 3 hours  
**Prerequisite:** BIOL 2030.03 or BIOL 2020.03 or instructor's consent  
**Cross-listing:** MICR 5026.03

**MICR 4027.03B: Molecular Mechanisms of Cancer.** The class considers recent cellular and molecular biology of cancer cells viewed as microorganisms *in vivo*. Students participate by giving seminars on recent articles and by writing term papers on selected topics. The following general areas are discussed: types of tumours; the transformed phenotype; extracellular matrix and neoplasia; hormones and neoplasia; anchorage and growth control; analysis of malignancy by cell fusion; transformation by DNA and RNA viruses, and by radiation; chemical carcinogenesis; oncogenes; interferon and cancer; reverse transformation and chemoprevention of cancer; immunoresponse and cancer; anti-oncogenes, transgenic mice in cancer research and cellular basis of metastasis.

**Instructor:** R. Rajaraman  
**Format:** Lecture/seminar 3 hours  
**Prerequisite:** MICR 4026.03 or instructor's consent  
**Cross-listing:** MICR 5027.03

**MICR 4037.03A: Genetics of Industrial Bacteria.** We review specific aspects of genetic structure, regulation, transmission and recombination in bacteria used to make commercial products such as antibiotics or having other commercial exploitable activities including insecticidal toxin production and metabolism of toxic chemicals. Seminars consider recent research papers.

**Instructor:** C. Stuttard  
**Format:** Lecture/seminar 3 hours  
**Prerequisite:** MICR 3033.03  
**Cross-listing:** MICR 5037.03

**MICR 4103.03B: Infectious Diseases of Aquatic Organisms.** See class description for BIOL 4103.03 in the Biology section of this calendar.

**MICR 4114.03B: Advanced Topics in Molecular and Medical Virology.** A class for advanced students designed to look in detail at

selected aspects of virology. The class is divided into four sections that look in detail at current developments in molecular and medical virology. The class is based on student presentation of current literature, in combination with introductory lectures and paper discussions. This class, in combination with the virology lab module from MICR 4601.03R, offers students a look at the leading edge of virus research.

**Instructors:** R. Duncan, D.B. Stoltz, M. Drebot, R. Anderson  
**Format:** Lecture/presentation/discussion 3 hours  
**Prerequisite:** Grade of B or better in MICR 3114.03  
**Cross-listing:** MICR 5114.03

**MICR 4115.03B: Immunology of Host Resistance.** An advanced class in which students read and discuss research papers taken from the current literature in immunology. While all major areas of immunology are discussed, particular emphasis is placed on mechanisms involved in the host immune response to pathogens and tumour cells.

**Instructor:** D.W. Hoskin  
**Format:** Lecture/discussion 3 hours  
**Prerequisites:** Minimum grade of B+ in MICR 3115.03 and instructor's consent  
**Cross-listing:** MICR 5115.03

**MICR 4118.03A: Molecular Pathogenesis.** An advanced class on the molecular basis of bacterial pathogenesis. The class will use selected bacterial pathogens to develop basic principles regarding genes, regulatory mechanisms and the molecular function of gene products in surface colonization, invasion, intracellular growth and toxin production. The class will be taught from reviews and original research papers and will emphasize the use of modern molecular biological tools in problem solving.

**Instructor:** P.S. Hoffman  
**Prerequisites:** MICR 3033.03 plus an advanced class in Bacteriology (MICR 3118.03 preferred)  
**Cross-listing:** MICR 5118.03

**MICR 4301.03A: Immunobiology.** An advanced class designed to examine the experimental approaches which have led to our current knowledge of the biological characteristics of the immune system, including its cells and the interactions between them; the idiotype network; antigen processing and presentation; the mucosal immune system; CNS-immune system interactions; and both normal and pathological autoimmunity. Cytokines and inflammation; the host response to infection; lymphocyte migration; and immunodeficiency will also be discussed.

**Instructors:** R. Carr, A. Issekutz  
**Format:** Lecture/discussion 3 hours  
**Prerequisites:** MICR 3115.03 and/or instructor's consent  
**Cross-listing:** MICR 5301.03

**MICR 4302.03B: Molecular Immunology.** An advanced class which investigates the molecules involved in the generation and expression of immune responses. Topics typically include the structure and function of cytokines, the generation of antibody diversity by immunoglobulin gene rearrangement, the

structure and function of cell surface receptors such as the T cell antigen receptor, MHC and adhesion molecules, and the molecular interactions which lead to immune non-responsiveness. This class is offered on alternate year to MICR 4303.03.

Instructors: T. Lee, A.W. Stadnyk, B. Pohajdak

Format: Lecture, student presentations, discussion

Prerequisites: MICR 3115.03 and/or instructor's consent

Cross-listing: BIOL 4302.03/5302.03

**MICR 4303.03B: Granulocytes and the Immune Response.** (Not offered in 1996/97)

An advanced class dealing with the contribution of granulocytes to immunologic function. Mast cells, basophils, neutrophils, macrophages, NK cells and eosinophils will be considered with respect to their unique functions and contribution to a variety of immune effector mechanisms. This class is offered on alternate year to MICR 4302.03.

Instructors: T. Lee, A.W. Stadnyk, B. Pohajdak

Format: Lecture, student presentations, discussion

Prerequisites: MICR 3115.03 and instructor's consent

Cross-listing: BIOL 4303.03/5303.03

**MICR 4403.03B: Genes and Genomes.** See class description for BIOC 4403.03 in the Biochemistry section of this calendar.

**MICR 4404.03A: Gene Expression.** See class description for BIOC 4404.03 in the Biochemistry section of this calendar.

**MICR 4601.03A or R: Laboratory Techniques in Molecular Biology.** This class consists of a series of laboratory modules covering techniques used in molecular biology and immunology (each of 4 weeks duration, 6 hours per week). The class is intended primarily for honours and graduate students. Students must choose three modules from those given by any of the three participating departments (Microbiology and Immunology, Biology, Biochemistry). Students are not restricted to the Microbiology and Immunology listings. Students should consult with the class coordinator regarding eligibility and availability of space.

Instructor: L.E. Murray

Format: Lab 6 hours

Cross-listing: BIOL 4012.03/5012.03, BIOC 4603.03/5603.03, MICR 5601.03

**MICR 4700.06R: Special Topics.** This class is in most respects equivalent to MICR 4900.06.

**MICR 4701.03A/4702.03B: Special Topics.** This class is intended to permit further study of a specific topic of interest, or to correct a deficiency in a student's programme.

**MICR 4900.06R: Honours Research and Thesis.**

# Music

**Location:** Dalhousie Arts Centre, 5th floor, University Ave., Halifax, N.S.  
**Telephone:** (902) 494-2418  
**Fax:** (902) 494-2801

## Chair

W.H. Kemp (494-1142)

## Student Advisors

W.H. Kemp (494-1142) - BMus, BA  
 P. Perron (494-1926) - MusEd

## Professors

D.M. Farrell, BA (St. Norbert Col), MMus, PhD (Wisc), (Theory and Composition)  
 W.H. Kemp, MusBac, MusM (Tor), AM (Harv), DPhil (Oxon), (Theory, History and Choral)  
 C. van Feggelen, (Guitar and Lute)  
 D.P. Schroeder, AMus, BA, MA (Western) PhD (Cantab), (Theory and History)

## Associate Professors

P. Djokic, BMus, MMus (Juilliard), (Violin)  
 E. Gonnella-Welch, Dipl of Art (Dundee Col of Art), LRAM (Royal Academy Lond), (Voice)  
 P.A. Perron, BMus (McG), MMusEd (Holy Names College), (Music Education)  
 L. Stodola, BMus (Chic), MMus (Juilliard), (Piano)  
 T. Zonneveld, Dipl (Teach), Dipl (School Mus), Dipl (Performance), (Royal Conservatory, The Hague), (Piano, Foundational Studies, Keyboard Skills Coordination)

## Assistant Professors

A. Ferenc, BMus, MA (McGill), PhD (Michigan), (Theory, Form and Analysis)  
 G. Servant, BMus (Dal), MMus, DMA (Hartt), (Voice, Opera Workshop)

## Part-Time Faculty

N. Babineau (Music Education, String Studies)  
 E. Fralick (Keyboard Skills, Orchestration)  
 T. Hill, MA (Calif, Davis), (Music Education, Band Studies)  
 L. Hoffman, BA, MA (Radford), DMA (Memphis State), (Keyboard Skills)  
 V. Kemp, MusBac (Tor), (Music Education, Orff)  
 D. MacDonald, BMusEd (Dal), Dipl Mus (Paris) MMA (McGill) (Organ and Church Music)  
 R. MacKay (Band Director)  
 S. Naylor, BA (Waterloo Lutheran), BIS (Waterloo)  
 D. Palmer (Jazz Studies)

## Applied Skills Instructors

**Flute:** P. Creighton BMus (Tor);  
 E. DuBois, BMus (Rochester), MMus (Emporia State)  
 Suzanne Lemieux  
**Oboe:**  
**Clarinet:** J. Rapson  
**Bassoon:** I. Rothwell  
**Recorder:** P. Evans  
**Saxophone:** D. Palmer  
**Horn:** R. McCosh

**Trumpet:** J. Stern, BMus, MMus (New England Conservatory)

**Trombone and Tuba:** H. Schoales  
**Cello:** S. Walt  
**String Bass:** L. Turofsky, BMus (Tor);  
 M. Kasper  
**Percussion:** J. Faraday  
**Harpaichord:** D. MacDonald

## Staff Piano

**Accompanist:** H. Murray, BAHonMus, LRCT (Tor) ARCCO  
**Technician:** F. Haines

## Introduction

The resources of the Music Department provide a thorough discipline to 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.

In the Bachelor of Music Programme, the Department offers training to the prospective professional musician: performer, composer, theorist, historian or critic. Future teachers instructing in the elementary and secondary school classroom are provided with methods, skills and field experience in the Bachelor of Music Education Programme. In our society today there are many vocations in which a working knowledge of various aspects of music is a desirable part: librarianship, media programming and production, arts management, recreational and therapeutic work, to name only a few. A carefully chosen BA (General) or combined Honours BA or BSc programme could furnish a basic equipment for further studies in preparation for such professions. The truly contemporary listener, too, must acquire style-specific tools, if there is to be an informed response to the musical experience.

Thus the University's Music Department is ready to serve many needs within a general standard of excellence. Crafts and skills, history, practice and appreciation are presented in studies flexible enough to be useful to each student's identity as a musical person.

## Classes for Non-Majors

Classes offered as arts electives for non-majors are as follows:

MUSC 1000.06: Listening to Music  
 MUSC 1001.03: Materials of Music  
 MUSC 1002.03: Introductory Music Theory  
 MUSC 1010.06: Music and Culture  
 MUSC 2007.06: Guitar and Lute  
 MUSC 2008.06: Modern Guitar  
 MUSC 2087.06: Electronic and Experimental Music  
 \*MUSC 2011.06: History of Opera  
 \*MUSC 2012.06: Music and Psychology  
 \*MUSC 2013.06: The Evolution of Jazz  
 \*MUSC 2015.06: Music and Cinema  
 \*MUSC 3064.03: Women in Canadian Music  
 MUSC 3319.06: History of Musical Theatre

\*MUSC 4050.03: Music and Science, Ancient World to Boethius

\*MUSC 4051.03: Music and Science, Since Boethius

Other classes in Music may be taken by special permission of the department.

Note: Classes marked \* are not offered every year. Please consult the current timetable on registration to determine if this class is offered.

## Degree Programmes

### Foundational Classes

These classes are for those prospective music majors who, in the opinion of the auditioning faculty, indicate University-level talent and aptitude in performance but who are in need of a more prolonged exposure to pre-major levels of music literature, theory and related skills.

Students admitted to this level enrol in the BA Non-major Music Foundational Classes Programme, and may take a maximum of five full-credit classes.

#### Curriculum

- MUSC 1100.06: Foundational Applied Skills
- MUSC 1000.06: Listening to Music
- MUSC 1001.03: Materials of Music
- MUSC 1002.03: Introduction to College Music Theory
- Required Writing Class (from another department - see Degree Requirements 1.2 for a list of writing classes)
- Second non-music elective full-credit

#### Special Notes:

1. Music classes MUSC 1000.06, MUSC 1001.03, and MUSC 1002.03, although credit classes, may not be counted toward the BMus, BMusEd, or BA degree with a major in Music; however, they may be counted as electives in other BA or BSc Degree Programmes.
2. All students registered in the Foundational classes shall not enrol in the first-year classes of the Bachelor of Music Core Curriculum until all prerequisites for those classes are completed.
3. The foundational music classes and the required writing class must be taken in the same academic year.

### Standard for Foundational Classes

#### Minimum grades:

- MUSC 1100.06 - B
- MUSC 1000.06 - C
- MUSC 1001.03 - C
- MUSC 1002.03 - C
- Writing Class - C
- Each Elective - C

### Bachelor of Music (BMus)

The BMus is a four-year programme with sixteen out of twenty classes in music. Upon successful completion of the second year, students may choose to concentrate in performance, music history and literature, or composition, or elect the unconcentrated programme.

### Common Curriculum

First-Year: MUSC 1000-level Applied Skills; MUSC 1350.03: History of Music I (Med./Ren.); MUSC 1351.03: History of Music II (Baroque); MUSC 1201.03: Theory I; MUSC 1202.03: Theory II; MUSC 1270.03: Aural Perception I; MUSC 1271.03: Keyboard Skills I; and an Arts and Social Sciences or Science Elective, one full credit (Writing Class Elective).

Second-Year: MUSC 2000-level Applied Skills; MUSC 2350.03: History of Music III (Classical); MUSC 2351.03: History of Music IV (Romantic); MUSC 2201.03: Theory III; MUSC 2202.03: Theory IV; MUSC 2270.03: Aural Perception II; MUSC 2271.03: Keyboard Skills II; and an Arts and Social Sciences or Science Elective, one full credit.

#### Concentration in Performance

Third-Year: MUSC-3000 level Applied Skills; MUSC 3281.03: Form and Analysis I; MUSC 3351.03: Music Since 1950; MUSC 3280.03: Counterpoint; MUSC 3282.03: Orchestration; MUSC 3199.03: Recital; Music Elective, one half credit; and an Arts and Social Sciences or Science Elective, one full credit.

Fourth-Year: MUSC 4000-level Applied Skills; MUSC 4199.03: Area Graduation Requirement (Recital); MUSC 4281.03: Form and Analysis II; Music Elective, 2 full credits; and an Arts and Social Sciences or Science Elective, one full credit.

Note: Church Music Option - Organ majors may complete a curriculum in church music by successful achievement in the following classes taken in the third- and fourth-years: MUSC 4271.03, MUSC 4370.03, MUSC 4198.03, and the half-credit class in church music offered at the Atlantic School of Theology and taken through letter of permission.

#### Concentration in Composition

Third-Year: MUSC 3000-level Applied Skills; MUSC 3281.03: Form and Analysis I; MUSC 3351.03: Music Since 1950; MUSC 3280.03: Counterpoint; MUSC 3282.03: Orchestration; MUSC 3210.06: Composition; and an Arts and Social Sciences or Science Elective, one full credit.

Fourth-Year: MUSC-4000 level Applied Skills; MUSC 4280.03: Advanced Harmony and Counterpoint; MUSC 4281.03: Form and Analysis II; MUSC 4210.06: Composition; MUSC 4299.03: Area Graduation Requirement (Composition); Music Elective, one half credit; and an Arts and Social Sciences or Science Elective, one full credit.

#### Concentration in History and Literature

Third-Year: MUSC 3000-level Applied Skills; MUSC 3281.03: Form and Analysis I; MUSC 3351.03: Music Since 1950; MUSC 3280.03: Counterpoint; MUSC 3282.03: Orchestration; MUSC 3362.03: Music in Canada to 1950; Music elective; one half credit; and an Arts and Social Sciences or Science Elective, one full credit.

Fourth-Year: MUSC 4000-level Applied Skills; MUSC 4281.03: Form and Analysis; MUSC 4368.03: & MUSC 4369.03: Special Studies; MUSC 4399.03: Area Graduation Requirement (Thesis); Music Elective, one credit; and an Arts

and Social Sciences or Science Elective, one full credit.

#### Unconcentrated Programme

Third-Year MUSC 3000-level Applied skills; MUSC 3281.03: Form and Analysis I; MUSC 3351.03: Music Since 1950; MUSC 3280.03: Counterpoint; MUSC 3282.03: Orchestration; Music elective, one full credit; and an Arts and Social Science or Science elective, one full credit.

Fourth-Year: MUSC 4000-level Applied Skills; MUSC 4282.03: Form and Analysis; MUSC 4599.03: Graduation Requirement, Unconcentrated; Music Elective, two full credits; and an Arts and Social Science or Science elective, one full credit.

#### Standards

All students wishing to enter third-year required Music classes other than MUSC 3351.03 in the BMus programme must successfully complete their MUSC 2000-level Applied Skills and MUSC 2202.03, MUSC 2270.03 and MUSC 2271.03 and achieve an overall average of B- in the music classes of the first- and second-years, including a minimum standing of C in each of MUSC 1201.03, MUSC 1202.03, MUSC 2201.03 and MUSC 2202.03, and a minimum of B- in each of their MUSC 2000-level Applied Skills, MUSC 1270.03 and MUSC 2270.03. Students failing to demonstrate the required standards in MUSC 2270.03 must repeat the class, but, with the permission of the Department, those with an otherwise satisfactory academic achievement may do so concurrently with their third-year curriculum, within the five full classes or as an approved overload.

Students wishing to enter the concentration in performance must achieve an average of B+ in their MUSC 1000- and MUSC 2000-level Applied Skills; in history and literature, an average of B+ in MUSC 1350.03, MUSC 1351.03, MUSC 2350.03 and MUSC 2351.03 and demonstrate acceptable writing ability; in composition, submit one or more original pieces for assessment by the composition faculty.

Students in the BMus programme must maintain a minimum standing of B- in each of the music classes of the third- and fourth-years.

Students who at the end of the third year have not obtained at least five credits of B or better in their music classes above the 1000 level will not be admitted to the fourth year without the explicit recommendation of the Department and the prior approval of the Committee on Studies.

Students must achieve a minimum standing of C in each of their Arts and Social Sciences or Science electives.

#### Bachelor of Music Education (BMusEd)

**Please note:** The Bachelor of Music Education programme here described will be phased out. The deadline for completion of all requirements by currently registered students is June 30, 1999. Please consult the Department for Music Education classes available to students enrolled in September 1995 and after.

The four-year BMusEd programmes in elementary and secondary music education offer training in an instrument or in voice; theoretical and historical knowledge; aural and keyboard skills; the methods and repertoires needed by the music teacher in the classroom; and the foundational principles of education. Observation and field experience in classroom settings constitute an important part of the programmes. These programmes lead to certification by the Nova Scotia Department of Education.

In first- and second-year, students will enrol in the Bachelor of Music programme common curriculum (q.v.); second-year students are advised to take two Education Foundation half credit classes. After successful application to the Department, students will proceed to the BMusEd programmes, Third- and Fourth-years choosing between curricula in Classroom Music or Instrumental Music. Normally these programmes are as follows:

#### Classroom Music

Third-Year: MUSC 3000-level Applied Skills; MUSC 3400.06: Elementary Methods; MUSC 3470.03: Field Experience; MUSC 3160.03: Conducting; MUSC 3161.03: Choral Technique; MUSC 3351.03: History of Music VI - Music Since 1950; Music 3471.03: Solfa; and a half credit elective in Music or Music Education.

Fourth-Year: MUSC 4000-level Applied Skills; MUSC 4400.03: Secondary Methods; MUSC 4470.03: Field Experience; MUSC 4482.03: Choral Arranging; EDUC 4450.06:R and one-half Education Foundation credit; and one full credit elective in Music, Music Education, or Arts and Social Sciences or Science.

#### Instrumental Music

Third-Year MUSC 3000-level Applied Skills; MUSC 3351.03: History of Music VI - Music Since 1950; Either MUSC 3480.03: Band Instruments or MUSC 3481.03: String Instruments; MUSC 3400.06: Elementary Methods; and MUSC 3470.03: Elementary Field Experience; MUSC 3160.03: Conducting; MUSC 3471.03: Solfa; and a half credit in Music or Music Education.

Fourth-Year: MUSC 4000-level Applied Skills; MUSC 4400.03: Secondary Classroom Teaching Methods; MUSC 4470.03: Secondary Classroom Field Experience; MUSC 3282.03: Orchestration; either MUSC 4481.03: Band Methods and Field Experience or MUSC 4483.03: String Methods and Field Experience; and EDUC 4450.06: and one-half Education Foundation credit.

#### Bachelor of Music Education/Bachelor of Education (BMusEd/BED)

**Please note:** The five year Bachelor of Music Education/Bachelor of Education combined programme here described will be phased out. The deadline for completion of all requirements by currently registered students is June 30, 1999. Please consult the Department for Music Education classes available to students enrolled in September 1995 and after. For programme requirements please consult the calendar of the year in which you started the programme.

The five-year BMusEd/BEEd integrated programmes in elementary and secondary music education combine the curricula of the BMusEd programmes with additional training in either elementary classroom teaching or a second teachable subject appropriate for secondary school. The BMusEd/BEEd leads to certification by the Nova Scotia Department of Education.

In the first- and second-years students will enrol in the Bachelor of Music programme common curriculum (q.v.); second-year students are advised to take a class in a co-required second "teachable subject" as their elective. After successful application to the Department and to the School of Education (the application to be supported by the Chair of the Department), students will proceed to the three senior years of the programmes, choosing between Classroom Music and Instrumental Music, and the elementary or secondary school teaching option.

### Co-requirements

**Elementary:** A student must complete a minimum of 3 full classes from English, History, Math, and Science. It is recommended that classes be selected from each area.

**Secondary:** A student must complete a minimum of 3 full classes above the 1000 level in a teachable subject. Teachable subjects are English, French, History, Math, Biology, Chemistry, Physics, Economics, and Geography.

To assure all requirements are fulfilled, and to select electives where available in the programmes, students must consult with the Music Education Advisor and the School of Education BEEd Programmer.

### Standards

All students wishing to enter third-year required Music classes other than MUSC 3351.03 in either the BMusEd or BMusEd/BEEd programme, must successfully complete their MUSC 2000-level Applied Skill, MUSC 2202.03, MUSC 2270.03 and MUSC 2271.03 and achieve an overall average of B- in the music classes of the first- and second-years, including a minimum standing of C in each of MUSC 1201.03, MUSC 1202.03, MUSC 2201.03 and MUSC 2202.03, and a minimum of B- in each of their MUSC 2000-level Applied Skills, MUSC 1270.03 and MUSC 2270.03. Students failing to demonstrate the required standard in MUSC 2270.03 must repeat the class. In order to qualify for the award of a BMusEd or BMusEd/BEEd degree, candidates must have obtained a minimum overall average of B in their music and music education classes above the 2000 level and maintain a minimum average of B in both their education and teachable subject Arts and Social Sciences or Science classes. With special permission, a student in the BMusEd or BMusEd/BEEd programme may give a graduation recital instead of a final jury exam.

## Bachelor of Arts (Major in Music)

### Departmental Requirements

#### Classes required in Major:

1000 level:	MUSC 1350.03, 1351.03, 1201.03 and 1202.03, 1270.03, 1271.03, Music 1000 level applied skills
2000 level:	At least 2 credits
3000 level:	At least 2 credits

Classes in subjects other than Music, to a maximum total of 8 full credit classes including the writing class (in compliance with Degree Requirements 1.2), may be selected in consultation with the Department to suit a student's individual needs and interests. Music Education classes and Foundational Music classes are not considered applicable to this degree. Students in the BA (General) programme enrolled in Applied Skills classes are required to pass jury examinations.

Students wishing to transfer from another institution into this programme may be required to enrol in an Applied Skills Class at the first-year level, depending upon the standard of their performance proficiency demonstrated in the audition-interview.

### Bachelor of Arts and Bachelor of Science (Combined Honours Programmes)

Students may enrol in a combined honours programme with the joint approval of the Music Department and the department of the allied subject (in compliance with the Combined Honours degree requirements detailed in the Degree Requirements section of this calendar).

### Academic Dismissal/Voluntary Withdrawal

Students required to apply for readmission to a university degree programme in Music must also submit to the department a supplementary readmission form. When a student in a Music degree programme has been dismissed on academic grounds and one of the classes failed is Applied Skills, that student must take a new audition upon application for readmission. When a student formerly registered in a music degree programme has been absent from the university for more than two years for reasons other than academic dismissal, it shall be within the discretion of the Music Department to require a new audition and/or validation tests before continuing in that programme.

### Classes Offered

#### Classes Designed for Non-Majors

**MUSC 1000.06R: Listening to Music.** Designed for the interested listener who desires to acquire an informed response to musical experiences. A knowledge of musical notation and terminology is not a prerequisite except for Foundational Music students assigned to this class.

The class includes a survey of the evolution of music from primitive cultures to the modern age; music in contemporary society; music in non-Western civilizations; music and image; music and the related arts; the art and psychology of listening.

Instructor: W.H. Kemp  
Format: Lecture 3 hours

**MUSC 1010.06R: Music and Culture.** This is an interdisciplinary class, presented as a series of topics, with music discussed in relation to literature, cinema, painting, gender, social change, religion, ecology, as well as issues of perception, semiotics, proportion and audience reception. Various types of music will be discussed, including European and Canadian music, world music, popular music, music of men and women, and music of living composers or musicians. Evaluation is based on assignments and listening exams. This class fulfils the first-year writing class requirement.

Instructor: D. Schroeder  
Format: Writing Requirement, lecture / discussion 3 hours

**MUSC 2007.06R: Guitar and Lute.** For students with a serious interest in classical guitar and lute playing and for whom it is not possible to provide individual instruction. Basic playing technique and the history of fretted instruments.

#### SIGNATURE REQUIRED

Instructor: C. van Feggelen  
Format: Lab 2 hours  
Prerequisite: Personal interview with Instructor

**MUSC 2008.06R: Modern Guitar.** A class for students with a serious interest in preparing for studio guitar playing and including jazz, folk, rock and accompanying idioms. Class instruction and ensemble playing in improvisation, score reading, chording and arranging.

#### SIGNATURE REQUIRED

Instructor: C. van Feggelen  
Format: Lab 2 hours  
Prerequisite: Interview with Instructor

**MUSC 2015.06R: Music and Cinema.** A survey of music used in Cinema in Europe, the United States and Canada from the earliest sound films to the present, covering the four following categories: opera on film, notable film scores, music as film subject, and music used in a special way in films. The types of films used will include feature-length works, documentaries, animations and experimental works.

Instructor: D. Schroeder  
Format: Lab (Screening) / lecture 4 hours  
Exclusion: Music Majors

**MUSC 4050.03A: Music and Science: The Technical Heritage from the Ancient World up to the Time of Boethius.** The "low-tech" basis of musical composition: origins and geographical transmission of musical scales, intervals, tuning, basic acoustics; comparison of "musical" ratios; ideas inclusive of (pre-Pythagorean) Western and Non-Western musical cultures are discussed, including cosmology, heavenly harmony, religion, and related arts. The nature of hearing and perception are introduced from reputable

scientific summaries. Assignments consist of short papers, practice in formal presentational skills, plus small compositional excursions into creative working with actual musical and scientific materials. Also of interest to future teachers of interdisciplinary classes.

#### SIGNATURE REQUIRED

Instructor: D.M. Farrell  
Format: Seminar 2 hours  
Prerequisite: Some formal (i.e., non-self-taught) private or high-school background in the study of Music, with demonstrable fluency in reading music notation. Permission of instructor.

**MUSC 4051.03B Music and Science: The Technical Heritage since the Time of Boethius.** The "low-tech" shift in thinking from the conception of a "heavenly" toward more present-day notions of harmony. Tuning crises resulting from part song composition, along with their attendant notational systems, emergent compositional forms and musical instruments; musical allusions in poetry and literature, perspective drawing, physiology. Assignments consist of short papers, practice in formal presentational skills, plus small compositional excursions into creative working with actual musical and scientific materials. Also of interest to future teachers of interdisciplinary classes.

#### SIGNATURE REQUIRED

Instructor: D.M. Farrell  
Format: Seminar 2 hours  
Prerequisite: Some formal (i.e., non-self-taught) private or high-school background in the study of Music, with demonstrable fluency in reading music notation. Permission of instructor.

The following classes, subsequently described, are also directed to non-majors:

- MUSC 1001.03: Materials of Music
- MUSC 1002.03: Introductory Music Theory
- MUSC 2087.06, MUSC 2287.06: Electronic and Experimental Music
- \*MUSC 2011.06, \*MUSC 3311.06: History of Opera
- \*MUSC 2012.06, \*MUSC 3312.06: Music and Psychology
- \*MUSC 2013.06, \*MUSC 3313.06: The Evolution of Jazz
- \*MUSC 3064.03, \*MUSC 3364.03: Women in Canadian Music
- \*MUSC 3319.06R: History of Musical Theatre

### Classes Designed for Music Majors

N.B.: The following classes designed for music majors are available to non-majors with the permission of the instructor.

### Studies in Music History and Literature

**MUSC 1350.03A: History of Music I.** A study of music in Western Civilization to 1600, including style, cultural contexts, and non-Western influences.

**SIGNATURE REQUIRED**

**Instructor:** W.H. Kemp  
**Format:** Lecture 3 hours  
**Prerequisite:** Permission of the instructor  
**Co-requisite:** Normally, for Music majors, MUSC 1201.03, MUSC 1270.03, MUSC 1271.03

**MUSC 1351.03B: History of Music II.** A study of the history and literature of music in the Baroque period (c. 1600-1750) with an emphasis on the development of style and performance practices.

**SIGNATURE REQUIRED**

**Instructor:** W.H. Kemp  
**Format:** Lecture 3 hours  
**Prerequisite:** MUSC 1350.03  
**Co-requisites:** Normally, for Music majors, MUSC 1202.03, MUSC 1270.03, MUSC 1271.03

**MUSC 2350.03A: History of Music III.** A detailed study of the history, literature and cultural contexts of music from C. 1750 to 1830.

**SIGNATURE REQUIRED**

**Instructor:** D. Schroeder  
**Format:** Lecture 3 hours  
**Prerequisites:** MUSC 1202.03, MUSC 1350.03, MUSC 1351.03  
**Co-requisite:** Normally, for Music majors, MUSC 2201.03

**MUSC 2351.03B: History of Music IV.** A detailed study of the history, literature and cultural contexts of music from C. 1830 to 1950.

**Instructor:** D. Schroeder  
**Format:** Lecture 3 hours  
**Prerequisites:** MUSC 2201.03, MUSC 2350.03  
**Co-requisite:** Normally, for Music majors, MUSC 2202.03

**\*MUSC 3311.06R: History of Opera.** An historical and analytical survey of operatic compositions from 1600 to the present day; opera as drama; changing tastes in operatic productions; operetta and musical comedy.

**Instructor:** Staff  
**Format:** Lecture 3 hours  
**Prerequisite:** Permission of the Department

**\*MUSC 3312.06R: Music and Psychology.** The interrelationship of music and psychology, as it relates to and informs the listener, student, educator and professional musician. Topics include (a) the perception of tones as a foundation for the appreciation of musical experiences, music as passing time and as information; (b) musical taste and aesthetics from a psychological point of view; (c) the social psychology of music; (d) theories of learning and of behaviour as appropriate to musical training and performance; (e) the diagnostic and evaluative testing of musical aptitude and ability; (f) the function of music in therapy and in special education. A rudimentary knowledge of musical notation is a prerequisite to this study; no previous classes in Psychology are necessary.

**Instructor:** W.H. Kemp  
**Format:** Lecture 3 hours  
**Prerequisite:** Permission of the Department

**\*MUSC 3313.06R: The Evolution of Jazz.** A survey of the historical and social background of jazz and its musicians. The evolution of jazz styles is illustrated in live performances as well

as on recordings. A knowledge of musical notation is not a prerequisite to this class.

**Instructor:** D. Palmer  
**Format:** Lecture 3 hours

**MUSC 3319.06R: 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.

**Instructor:** W.H. Kemp and D. Overton  
**Format:** Lecture 3 hours  
**Prerequisite:** Permission of the Department  
**Cross-listing:** THEA 3010.06R

**\*MUSC 3350.03A or B: Music in the Middle Ages and Renaissance.** A detailed study of the development of Western music in the Medieval and Renaissance periods with an emphasis on style, cultural contexts and performance practices.

**Instructor:** Staff  
**Format:** Lecture 3 hours  
**Prerequisites:** MUSC 1202.03, MUSC 1350.03, or permission of the instructor

**MUSC 3351.03B: Music Since 1950.** A detailed study of the history, literature, cultural contexts and practices of music from C. 1950 to the present; the roots of the "new" music in earlier twentieth century composition.

**SIGNATURE REQUIRED**

**Instructor:** W. Kemp  
**Format:** Lecture 3 hours  
**Prerequisite:** Normally, for Music majors, MUSC 2202.03, MUSC 2351.03

**\*MUSC 3353.03A or B: Chamber Music Literature.** A study in depth of chamber music from the Eighteenth century to contemporary schools.

**Instructor:** Staff  
**Format:** Lecture 3 hours  
**Prerequisite:** MUSC 2202.03, 2351.03

**\*MUSC 3355.03A or B: 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:** L. Stodola  
**Format:** Lecture 3 hours  
**Prerequisites:** MUSC 2351.03 and permission of the Department

**MUSC 3361.03A: History of Dance.** The class will explore the development of dance from the Basque dances of the Middle Ages, through the birth of ballet to the dances of today; it will include an introduction to dance notation as well as the practical and theoretical aspects of historical dance.

**SIGNATURE REQUIRED**

**Instructor:** P. Richards  
**Format:** Lecture 2 hours  
**Cross-listing:** LEIS 3157.03

**MUSC 3362.03A: Music in Canada to 1950.** An historical survey of music in Canada to 1950: the socio-economic factors essential to the successful transplantation and growth of European musical culture in Canada; indigenous Canadian music and nationalism in Canadian composition; Canadian composers from the Colonial era to 1950; experience in Research skills through the preparation of a



study paper on an historical or contemporary topic. Approved with Canadian Studies.

Instructor: W.H. Kemp  
Format: Lecture 2 hours; individual tutorial

Prerequisite: Permission of the Department

\*MUSC 3363.03B: Music in Canada since 1950. The development of musical life in Canada from the end of World War II until the present day; special emphasis on contemporary Canadian composers and an analytical study of their work.

**SIGNATURE REQUIRED**

Instructor: W.H. Kemp  
Format: Lecture 2 hours, individual tutorial

Prerequisite: Permission of the Department

\*MUSC 3364.03B: Women in Canadian Music. An historical review of the contribution to the growth of music in Canada by women composers, performers, and educators; the life and works of major 20th Century Canadian women composers Violet Archer, Norma Beecroft, Jean Coulthard and Barbara Pentland; a survey of the younger generation of contemporary Canadian women composers. Approved with Canadian Studies.

Instructor: W.H. Kemp  
Format: Lecture 2 hours  
Prerequisite: Permission of the Department

\*MUSC 3370.03R: Performance Practice. The principles of performance practice in 18th and 19th-century music will be discussed in the context of treatises, contemporary accounts, manuscripts and early editions. Areas to be covered include instruments, ornamentation, dance-related music, and problems of interpreting expression markings.

**SIGNATURE REQUIRED**

Instructor: D. Schroeder  
Format: Seminar 2 hours  
Prerequisites: MUSC 1350.03, MUSC 1351.03, MUSC 2350.03, MUSC 2351.03

MUSC 4350.03A: Music and Science. (Note: Music Majors may count this only as one of their Music electives). See class description for MUSC 4050.03A, in the Music Classes Designed for Non-Majors section, earlier in this departmental section.

**SIGNATURE REQUIRED**

Instructor: D.M. Farrell  
Format: Seminar 2 hours  
Prerequisite: Permission of Instructor and normally MUSC 2201.03, 2202.03, 2270.03, concurrently 3280.03. High-school Science; Math 440/441.

MUSC 4351.03B: Music and Science. (Note: Music Majors may count this only as one of their Music electives). See class description for MUSC 4051.03B, in the Music Classes Designed for Non-Majors section, earlier in this departmental section.

**SIGNATURE REQUIRED**

Instructor: D.M. Farrell  
Format: Seminar 2 hours  
Prerequisite: Permission of Instructor and normally MUSC 2201.03, 2202.03, 2270.03, 2271.03, 4350.03 concurrently 3280.03.

High-school Science; Math 440/441.

MUSC 4364.03A or R/MUSC 4366.03B or R: Topics in Music. These are intensive studies of selected topics announced annually.

**SIGNATURE REQUIRED**

Instructor: Staff  
Format: Seminar 2-3 hours  
Prerequisites: MUSC 1350.03, MUSC 1351.03, MUSC 2350.03, MUSC 2351.03

MUSC 4365.03 A or R/MUSC 4367.03B or R: Topics in Music History. These are intensive studies of selected topics announced annually.

**SIGNATURE REQUIRED**

Instructor: Staff  
Format: Seminar 2-3 hours  
Prerequisites: Mus 1350.03, MUSC 1351.03, MUSC 2350.03, MUSC 2351.03

\*MUSC 4368.03A/4369.03B: Special Studies. Individually directed research and writing under the supervision of an appropriate member of the Department.

**SIGNATURE REQUIRED**

Instructor: Staff  
Prerequisites: MUSC 2350.03, MUSC 2351.03, MUSC 3350.03 and MUSC 3351.03

\*MUSC 4370.03R: The Organ and its Literature. The historical development of the organ, and the interrelationship between organ construction and repertoire from the Renaissance to the present day.

**SIGNATURE REQUIRED**

Instructor: D. MacDonald  
Format: Lecture 3 hours  
Prerequisite: Permission of the Department

MUSC 4399.03R: Area Graduation Requirement (Thesis)

## Theory and Related Skills

MUSC 1001.03A: Materials of Music. An introduction to University music studies for prospective music majors recommended by audition to foundational level classes in music; also open to non-majors. A knowledge of music reading and rudiments is presumed. Extensive work in rudiments applied to all aspects of music learning; the phenomenon of the tonic-melodic, harmonic and formal; modes, pentatonic scale formation, dissonances, 2-part writing to encompass these; non-tonal formations; acoustics. Note: 1. auditioned students will be advised to take a year of private studies if their preparedness falls below the introductory level; 2. non-majors taking MUSC 1001.03 as an elective are not required to enrol in the aural/keyboard labs.

Instructor: T. Zonneveld  
Format: Lecture 2 hours, lab: aural skills 1 hr, keyboard skills 1 hr

MUSC 1002.03B: Introductory Music Theory. Also open to non-majors. Rhythm and phrase structures, "musica ficta" and elementary modulation in two- and three-part writing. Comparison of tonality, atonality, modality, and chromatic tonality, exploration of chord building triadic and otherwise, simple (bar) chording; elementary diatonic harmony previewing the start of MUSC 1201.03; four-part writing as an immediate transition to MUSC 1202.03. Note: non-majors taking MUSC 1002.03

as an elective are not required to enrol in the aural/keyboards lab.

**Instructor:** T. Zonneveld  
**Format:** Lecture 2 hours, lab: aural skills 1 hr, keyboard skills, 1 hr  
**Prerequisite:** MUSC 1001.03

**MUSC 1201.03A: Music Theory I.** A survey of musical phenomena in general, subsequently of tonal music in particular. The material in this survey is immediately applied to two- and three-part writing, stressing both the harmonic and the contrapuntal dimensions.

**SIGNATURE REQUIRED**  
**Instructor:** A. Ferenc  
**Format:** Lecture 3 hours  
**Prerequisites:** Permission of the Department, plus Royal Conservatory of Toronto Grade II Theory equivalent or MUSC 1001.03/MUSC 1002.03

**Co-requisites:** MUSC 1270.03, MUSC 1271.03

**MUSC 1202.03B: Music Theory II.** A concentration upon a complete grounding in the traditional four-part writing skills, culminating in the study of the dominant seventh and elementary modulation.

**SIGNATURE REQUIRED**  
**Instructor:** A. Ferenc  
**Format:** Lecture 3 hours  
**Prerequisites:** MUSC 1201.03 or permission of the Department  
**Co-requisites:** MUSC 1270.03, MUSC 1271.03

**MUSC 1270.03R: Aural Perception I.** A class designed to correlate with MUSC 1201.03A and MUSC 1202.03B. 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**  
**Instructor:** A. Ferenc  
**Format:** Lab 3 hours  
**Prerequisite:** Permission of the Department; MUSC 1001.03/1002.03 or equivalent

**Co-requisites:** MUSC 1201.03 & MUSC 1202.03, MUSC 1271.03

**MUSC 1271.03R: Keyboard Skills I.** The development of basic skills in sight reading, score reading and harmonized accompaniment at the keyboard.

**SIGNATURE REQUIRED**  
**Instructor:** E. Fralick, D. MacDonald  
**Format:** Lab 2 hours  
**Prerequisite:** Permission of Department; MUSC 0071.00 or equivalent

**MUSC 2201.03A: Music Theory III.** A continuation of Theory II, covering the study of altered chords, modulation to all closely related keys, and the relationship of harmony to melody, phrasing, rhythm, meter and performance issues. Emphasis is placed on concepts of functional tonality by means of written exercises in four-part harmony and analysis of 18th and 19th century music.

**SIGNATURE REQUIRED**  
**Instructor:** D. Farrell  
**Format:** Lecture 3 hours  
**Prerequisites:** MUSC 1202.03, MUSC 1270.03, MUSC 1271.03

**Co-requisites:** MUSC 2270.03, MUSC 2271.03

**MUSC 2202.03B: Music Theory IV.** The study of chromatic harmony and complex modulation. Exercises may include some texture other than four-part choral style, and analysis includes forms such as binary, ternary, sonata, rondo and variation.

**SIGNATURE REQUIRED**  
**Instructor:** D. Farrell  
**Format:** Lecture 3 hours  
**Prerequisites:** MUSC 2201.03  
**Co-requisites:** MUSC 2270.03, MUSC 2271.03

**MUSC 2270.03R: Aural Perception 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**  
**Instructor:** Staff  
**Format:** Lab 2 hours  
**Prerequisites:** MUSC 1201.03 & MUSC 1202.03, MUSC 1270.03, MUSC 1271.03

**Co-requisites:** MUSC 2201.03, MUSC 2202.03, MUSC 2271.03

**MUSC 2271.03R: Keyboard Skills II.** A continuation of MUSC 1271.03.

**SIGNATURE REQUIRED**  
**Instructor:** L. Hoffman; D. MacDonald  
**Format:** Lab 2 hours  
**Prerequisites:** MUSC 1201.03 & MUSC 1202.03, MUSC 1270.03, MUSC 1271.03

**Co-requisites:** MUSC 2201.03, MUSC 2202.03, MUSC 2270.03

**\*MUSC 3270.03R: Aural Perception III.** Advanced sight-singing and dictation. Singing music of all periods on solfa syllables and letter names with emphasis on contemporary music. Dictation of modulating excerpts in four-part chorales. Chromaticism, modality, whole-tone and contemporary music are studied along with musical examples of more rhythmic complexity. Also included: singing and dictation of atonal compositions, advanced chords, sing and play exercises.

**Instructor:** P. Perron  
**Format:** Lab 2 hours  
**Prerequisites:** MUSC 2202.03, MUSC 2270.03, MUSC 2271.03

**MUSC 3280.03R: Counterpoint.** The development of skills in polyphonic architecture in two- and three-voice 16th century contrapuntal style using canonic techniques. An introduction to 18th century counterpoint: inventions, canons, and fugal expositions, etc.

**SIGNATURE REQUIRED**  
**Instructor:** D. Farrell  
**Format:** Lecture 2 hours  
**Prerequisite:** MUSC 2202.03

**MUSC 3281.03R: Form and Analysis I.** Analytic study of the form and context of selected late eighteenth and nineteenth century compositions in various styles and idiom.

**SIGNATURE REQUIRED**  
**Instructor:** A. Ferenc  
**Format:** Lecture 2 hours  
**Prerequisites:** MUSC 2202.06, 2350.06, 2351.06

**MUSC 3282.03R: 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 a medium-sized orchestra common in the 20th century.

**SIGNATURE REQUIRED**

Instructor: E. Fralick  
Format: Lecture 2 hours  
Prerequisite: MUSC 2202.03

**MUSC 4190.06r: Symphony Apprenticeship.** A fourth-year 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. Normally the majority or all of the 34-38 services will be played during the First Term. Qualification for this credit will be subject to the needs of the Symphony, nomination by the Department, and a successful audition for the Symphony Artistic Director and relevant Symphony Section Principals. The student will be hired by the Symphony at the current per-service rate, and must be a Member in Good Standing of the Atlantic Federation of Musicians. The student will be graded by his/her supervising instructor on personal observation and on receipt of a signed evaluation from the Artistic Director of the Symphony. Normally there shall be only one such apprenticeship per season, and it is not renewable.

Instructor: Staff  
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 Programme Performance Concentration

**\*MUSC 4271.03R: Basso Continuo, Service Playing and Accompaniment.** This class is designed to teach elementary principles of basso continuo and realization of figured bass as well as the practical study of the role of the organ in worship. Students will gain experience in continuo playing through ensemble participation. Topics for study in service playing include solo and anthem accompaniment, hymn playing, and examination of various forms of service music.

**SIGNATURE REQUIRED**

Instructor: D. MacDonald  
Format: Lab 2 hours  
Prerequisite: Departmental consent and an interview with the instructor

**MUSC 4280.03R: Advanced Harmony and Counterpoint.** The application of acquired harmonic and contrapuntal technique to various instrumental and vocal textures and forms; chorale prelude and fugue.

**SIGNATURE REQUIRED**

Instructor: L. Hoffman  
Format: Lecture 2 hours

Prerequisites: MUSC 2202.03, MUSC 3280.03 and 3281.03

**MUSC 4281.03R: Form and Analysis II.** Analytic study of the form and content of selected twentieth century compositions in various styles and idioms.

**SIGNATURE REQUIRED**

Instructor: A. Ferenc  
Format: Lecture 2 hours  
Prerequisites: MUSC 2202.03, MUSC 2350.03, MUSC 2351.03, MUSC 3280.03 and 3281.03

**MUSC 4282.03A: Choral Arranging.** See MUSC 4482.03, in Music Education later in this section.

Instructor: D. Farrell  
Format: Lecture 2 hours

**Composition**

**MUSC 2287.06R: Electronic and Experimental Music.** Introduction to the experimental Sound Studio. Recording, mixing, and tape manipulation techniques; analysis and composition of tape music; voltage control concepts, synthesizer theory and practice. Composition and live performance with electronics; group improvisation with both studio and personal resources. Design and execution of live performance situations which may include verbal, visual and other theatrical elements.

**SIGNATURE REQUIRED**

Instructor: S. Naylor  
Format: Lab 3 hours  
Prerequisite: Interview with Instructor

**MUSC 3210.06R/MUSC 4210.06R:** Composition I and II. Particular works are analyzed to serve as a springboard for original composition by the student. Students' works are evaluated in small group discussions and in individual tutorial sessions.

**SIGNATURE REQUIRED**

Instructor: D. Farrell  
Prerequisites: Permission of the Department, an interview with the instructor, and the submission of a folio of original compositions for assessment by the composition faculty.

**MUSC 4299.03R: Area Graduation Requirement (Composition)**

**Performance**

**Note:** The various levels of applied study indicate the year of study in the Department and are not intended solely as an indication of relative standard. Term gradings are based upon progress as well as upon the actual performing standard displayed in the jury examination.

Classes offered in all band and orchestral instruments, guitar and lute, piano, organ, harpsichord, recorder, voice. Normally all students receive a one hour weekly individual lesson in their major performance idiom. In addition to the one-hour lesson, and appropriate to the idiom, group instruction in technique and repertoire may be a required part of all sequences of Applied Skills classes.

Applied Skills classes are designated as follows:

- MUSC 1101.06, MUSC 2101.06, MUSC 3101.06,  
MUSC 4101.06: Voice I, II, III, IV
- MUSC 1102.06, MUSC 2102.06, MUSC 3102.06,  
MUSC 4102.06: Guitar I, II, III, IV
- MUSC 1103.06, MUSC 2103.06, MUSC 3103.06,  
MUSC 4103.06: Piano I, II, III, IV
- MUSC 1104.06, MUSC 2104.06, MUSC 3104.06,  
MUSC 4104.06: Organ I, II, III, IV
- MUSC 1105.06, MUSC 2105.06, MUSC 3105.06,  
MUSC 4105.06: Violin I, II, III, IV
- MUSC 1106.06, MUSC 2106.06, MUSC 3106.06,  
MUSC 4106.06: Viola I, II, III, IV
- MUSC 1107.06, MUSC 2107.06, MUSC 3107.06,  
MUSC 4107.06: Cello I, II, III, IV
- MUSC 1108.06, MUSC 2108.06, MUSC 3108.06,  
MUSC 4108.06: Double Bass I, II, III, IV
- MUSC 1109.06, MUSC 2109.06, MUSC 3109.06,  
MUSC 4109.06: Flute I, II, III, IV
- MUSC 1110.06, MUSC 2110.06, MUSC 3110.06,  
MUSC 4110.06: Oboe I, II, III, IV
- MUSC 1111.06, MUSC 2111.06, MUSC 3111.06,  
MUSC 4111.06: Clarinet I, II, III, IV
- MUSC 1112.06, MUSC 2112.06, MUSC 3112.06,  
MUSC 4112.06: Bassoon I, II, III, IV
- MUSC 1113.06, MUSC 2113.06, MUSC 3113.06,  
MUSC 4113.06: Saxophone I, II, III, IV
- MUSC 1114.06, MUSC 2114.06, MUSC 3114.06,  
MUSC 4114.06: French Horn I, II, III, IV
- MUSC 1115.06, MUSC 2115.06, MUSC 3115.06,  
MUSC 4115.06: Trumpet I, II, III, IV
- MUSC 1116.06, MUSC 2116.06, MUSC 3116.06,  
MUSC 4116.06: Trombone I, II, III, IV
- MUSC 1117.06, MUSC 2117.06, MUSC 3117.06,  
MUSC 4117.06: Tuba I, II, III, IV
- MUSC 1118.06, MUSC 2118.06, MUSC 3118.06,  
MUSC 4118.06: Percussion I, II, III, IV
- MUSC 1119.06, MUSC 2119.06, MUSC 3119.06,  
MUSC 4119.06: Lute I, II, III, IV
- MUSC 1120.06, MUSC 2120.06, MUSC 3120.06,  
MUSC 4120.06: Harpsichord I, II, III, IV
- MUSC 1121.06, MUSC 2121.06, MUSC 3121.06,  
MUSC 4121.06: Recorder I, II, III, IV

**MUSC 4150.06R: Advanced Applied Skill.** By special permission of the Department a student may enrol in a fifth year of an applied skill, subject to enrolment quotas and budget.

**MUSC 1100.06R: Foundational Applied Skills.** By special recommendation some music majors may be advised by the Auditioning Committee to begin individual lessons at a level prerequisite to 1000-level Applied Skills classes.

**MUSC 3160.03A: Conducting.**  
**SIGNATURE REQUIRED**

Instructor: P. Djokic  
Format: Lab 2 hours  
Prerequisites: MUSC 2202.03, MUSC 2270.03, MUSC 2271.03

**MUSC 3161.03B: 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 in conducting.

**SIGNATURE REQUIRED**

Instructor: W.H. Kemp  
Format: Lab 2 hours  
Prerequisites: MUSC 2202.03, MUSC 2270.03, MUSC 2271.03, MUSC 3160.03

**MUSC 4198.03R: Church Music Internship.** This class is restricted to students in the fourth year of the BMus Organ and Church Music Programme. Under the guidance of the liturgical and musical staff of the Atlantic School of Theology, students will prepare and perform Services pertaining to the principal church denominations. In the second term, students will be assigned to a minimum of three representative city churches, for observation and practice of the Service, supervised by the Department in collaboration with the city church musicians and clergy participating in the programme.

Instructor: D. MacDonald, Staff Coordinator

Prerequisite: Permission of the Department

Restriction: Restricted to 4th year BMus Organ and Church Music students.

**MUSC 3199.03A or R: Recital.** Required of all third-year Bachelor of Music students whose concentration is in Performance.

**MUSC 4199.03A or R: Area Graduation Requirement (Recital).**

### Unconcentrated BMUSC

**MUSC 4599.03R: Graduation Requirement, Unconcentrated.** Students in the Unconcentrated BMus programme must receive Departmental approval to fulfil their graduation requirements with one of the following: (1) a single-topic thesis (2) two essays (on different topics) (3) a half recital and an essay (4) a lecture-recital (with supporting documentation).

Instructor: Staff

### Music Education

Prerequisites for all classes: permission of the Department, and an interview with the designated member of the Music Education faculty.

#### Core Classes

**MUSC 3400.06R: Elementary Classroom Teaching Methods.** An introduction to the development of a music programme at the elementary level. Emphasis is on how to teach song materials, movement and creativity, reading and writing skills and what to listen for in music. The educational philosophies of Kodaly and Orff are examined in some detail. Solmization, hand signs, rhythm names and body co-ordination are some of the skills to be developed.

**SIGNATURE REQUIRED**

Instructor: P. Perron  
Format: Lecture 3 hours  
Cross-listing: EDUC 4890.06

**MUSC 3470.03R: Elementary Classroom Field Experience.** Students must spend a minimum of 100 hours in various elementary schools during the school year practice teaching (75%) and observing master teachers (25%). This consists of one morning per week during the university year and a three week period in April-May.

**SIGNATURE REQUIRED**

Instructor: P. Perron

**MUSC 3471.03R: Solfa Pedagogy in the Classroom.** An in-depth study of the theoretical and practical aspects of solfa and related ear training skills pertaining to students taking music education. The melodic, rhythmic and harmonic features of aural perception will be studied through sight-singing and dictation emphasizing the pedagogical aspects of the movable do system, hand-sign singing, singing on absolute letter names, and the use of rhythm names and stick notation.

**SIGNATURE REQUIRED**

Instructor: P. Perron  
 Format: Lab 2 hours  
 Prerequisites: MUSC 2270.03  
 Co-requisite: MUSC 3400.06 and/or MUSC 4400.03

**MUSC 3480.03R: 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**

Instructor: J. Stern, Staff Coordinator  
 Format: Lab 2 hours

**MUSC 3481.03R: String Instruments.** A practical introduction in group lessons to the instruments of the string orchestra. This class normally is restricted to students majoring in a string instrument.

**SIGNATURE REQUIRED**

Instructor: N. Babineau, Staff Coordinator  
 Format: Lab 2 hours

**MUSC 4400.03R: Secondary Classroom Teaching Methods.** An introduction to the development of a music programme at the secondary level. Emphasis is on how to teach a general music class exploring the use of song materials, music theory, movement and creativity and listening skills.

**SIGNATURE REQUIRED**

Instructor: P. Perron  
 Format: Lecture 1½ hours  
 Cross-listing: EDUC 4891.03

**MUSC 4470.03R: Secondary Classroom Field Experience.** Students must spend a minimum of 100 hours in various secondary school classrooms during the school year practice teaching (75%) and observing master teachers (25%). This consists of one morning per week during the university year and a three week period in April-May.

**SIGNATURE REQUIRED**

Instructor: P. Perron

\***MUSC 4490.03R: Band Instruments II.** A continuation of MUSC 3480.03.

Instructor: J. Stern, Staff Coordinator  
 Format: Lab 2 hours

**MUSC 4481.03R: Band Methods and Field Experience.** A survey of the literature for band, band methods for schools and purchase and maintenance of band instruments; supervised band leadership practice in the school setting.

**SIGNATURE REQUIRED**

Instructor: T. Hill  
 Format: Lab 2 hours  
 Prerequisite: MUSC 3460.03

**MUSC 4483.03R: String Methods and Field Experience.** A survey of literature and string methods for schools and purchase and maintenance of string instruments; supervised string teaching practice in the school setting.

**SIGNATURE REQUIRED**

Instructor: N. Babineau  
 Format: Lab 2 hours  
 Prerequisites: MUSC 3481.03 or permission

**Electives**

**MUSC 4462.03A: Guitar in the Classroom.** Introductory guitar instruction including vocal/choral accompanying methods and techniques for the school classroom setting, tablature reading and finger-style playing, development of skills in a variety of accompaniment and rhythmic figurations. Practical applications will be available in MUSC 3470.03R/4470.03R.

**SIGNATURE REQUIRED**

Instructor: C. van Feggelen  
 Format: Lab 2 hours

**MUSC 4471.03A, B, or R: Field Projects.** Under supervision, students design a project that results in an in-depth study of the theoretical and practical aspects of a particular area of music education. The project entails library research as well as working with specialists in the field.

**MUSC 4482.03A: Choral Arranging.** Arranging for school choral ensembles.

Instructor: D. Farrell  
 Format: Lecture 2 hours  
 Prerequisite: MUSC 3282.03

\***MUSC 4490.03A or B: Orff Method and Practice, Level One, Basic.** An introduction to Carl Orff's Music for Children designed for the elementary school classroom teacher and music specialists; the material is also suitable for those using music in the pre-school, recreational or studio setting. Emphasis is on how to apply the four principal elements of the Orff approach - speech, movement, rhythm and melody - to the teaching of basic musical concepts (beat, rhythm, simple metre, pentatonic scale, fundamental Bourdon, phrasing, form and notation). Creative procedures and teaching methods are explored using song, Orff instruments and the recorder.

**SIGNATURE REQUIRED**

Instructor: V. Kemp  
 Format: Lecture and practicum  
 Prerequisite: Permission of the Department

\***MUSC 4491.03A or B: Orff Method and Practice Level Two, Intermediate.** A continuation of MUSC 4490.03 at the intermediate level. Emphasis is on the acquisition and practice of procedures and methods of the Orff approach using increasingly developed musical materials and constructs (complete scale repertoire, melodic formulation, harmonic relationships and chordal formations, cross-rhythms and irregular metres, rondo and antiphony). Advanced training is given in instrumental technique (recorder, hand drum, mallets, etc.). The Orff approach is applied to ways of musically interpreting and improvising children's speech, recitation, poetry, and drama.

**SIGNATURE REQUIRED**

Instructor: Staff

**Format:** Lecture/practicum  
**Prerequisite:** MUSC 4490.03 or a similar class in Basic Orff; an interview with the Department.

**Ensembles**

Participation in both large and small ensembles is required of all students whose major field of study is music in each of the years of the degree programmes. Details of specific participation requirements are available in the Department of Music.

Membership in the various ensembles is open to the University and the community by audition.

Following is a list of the ensembles sponsored by the Department of Music:

**MUSC Dalhousie Chorale (W.H. Kemp):**I. 0151.00, II. 0251.00, III. 0351.00, IV. 0451.00, V. 0551.00, Found. 0051.00

**MUSC Dalhousie Chamber Choir (W.H. Kemp):** I. 0152.00, II. 0252.00, III. 0352.00, IV. 0452.00, V. 0552.00, Found. 0052.00

**MUSC Dalhousie Symphonic Wind Ensemble (R. MacKay):** I. 0153.00, II. 0253.00, III. 0353.00, IV. 0453.00, V. 0553.00, Found. 0053.00

**MUSC Dalhousie Chamber Orchestra (P. Djokic):** I. 0154.00, II. 0254.00, III. 0354.00, IV. 0454.00, V. 0554.00, Found. 0054.00

**MUSC Dalhousie Jazz Ensemble (D. Palmer):** I. 0155.00, II. 0255.00, III. 0355.00, IV. 0455.00, V. 0555.00, Found. 0055.00

**MUSC Dalhousie Brass Ensemble (R. MacKay):** I. 0156.00, II. 0256.00, III. 0356.00, IV. 0456.00, V. 0556. Found. 0056.00

**MUSC Dalhousie Musica Antiqua (Staff):** I. 0157.00, II. 0257.00, III. 0357.00, IV. 0457.00, V. 0557.00, Found. 0057.00

**MUSC Dalhousie Percussion Ensemble (J. Faraday):** I. 0158.00, II. 0258.00, III. 0358.00, IV. 0458.00, V. 0558.00, Found. 0058.00

**MUSC Dalhousie Opera Workshop (G. Servant):** I. 0159.00, II. 0259.00, III. 0359.00, IV. 0459.00, V. 0559.00, Found. 0059.00

**MUSC Guitar Ensemble (C. van Feggelen):** I. 0160.00, II. 0260.00, III. 0360.00, IV. 0460.00, V. 0560.00, Found. 0060.00

**MUSC Small Ensembles (staff coaches):** I. 0161.00, II. 0261.00, III. 0361.00, IV. 0461.00, V. 0561.00, Found. 0061.00

**MUSC Accompanying:** I. 0162.00, II. 0262.00, III. 0362.00, IV. 0462.00, V. 0562.00, Found. 0062.00

**MUSC Dalhousie Orchestra (by invitation):** I. 0163.00, II. 0263.00, III. 0363.00, IV. 0463.00, V. 0563.00, Found. 0063.00

**MUSC Nova Scotia Youth Orchestra (by invitation, and Department permission):** I. 0164.00, II. 0264.00, III. 0364.00, IV. 0464.00, V. 0564.00, Found. 0064.00

**MUSC New Music Ensemble (staff):** I. 0166.00, II. 0266.00, III. 0366.00, IV. 0466.00, V. 0566.00, Found. 0066.00

# Neuroscience

Location: Psychology Department Life Sciences Centre  
 Telephone: (902) 494-3417  
 FAX: (902) 494-6585

## Programme Advisors

B. Rusak (494-2159)  
 S.R. Shaw (494-2047)

## Introduction

The last two decades have witnessed the remarkable emergence of a new, interdisciplinary field called Neuroscience which has as its primary goal the understanding of the brain. Neuroscience is a rapidly developing research area which includes all aspects of the structure and function of nervous systems. Neuroscience involves a variety of experimental strategies to understand nervous systems. These include molecular, biochemical, behavioural, anatomical, physiological, and developmental approaches. Although firmly grounded in the natural sciences, the scope of Neuroscience also encompasses fundamentally important philosophical issues, such as the nature of human thought and its mechanism. The programme outlined below represents all of these approaches, with an emphasis on behaviour as the adaptive product of neural activity. Knowledge obtained from research in Neuroscience is applied to a variety of human health problems, including neurological conditions such as those occurring in Alzheimer's disease, Parkinsonism, and a variety of drug- or injury-induced behavioural disorders. Research in Neuroscience is also contributing new information related to the major psychiatric disorders, including affective disorders and the schizophrenias.

## BSc with Honours in Neuroscience

This programme is intended to serve as a preparation for graduate work in neuroscience, biological psychology, medicine, human communication disorders and related fields. Its interdisciplinary nature is reflected in the participation of faculty from several departments in the programme, which is offered through the Department of Psychology. Students interested in the Neuroscience degree programme should consult with B. Rusak in the Department of Psychology early in their undergraduate careers, preferably by the end of their first year of study. Admission is often deferred until the end of the second year, however.

### Structure

In the first year of study, students are required to take classes which provide a firm grounding in the physical and biological sciences. In subsequent years, the programme includes 9 credits in classes drawn from Neuroscience, Psychology and Biology. These include a number of required core classes which emphasize the acquisition and application of laboratory skills. Note that students intending

to obtain an Honours degree in Neuroscience may not use Psychology as their minor subject, nor may Psychology Honours students use Neuroscience as a minor subject. It is anticipated, but not required, that Neuroscience Honours students will have Biology as their minor subject. In that case, classes cross-listed with classes in Biology cannot count for credit towards both the Neuroscience programme and the Biology minor.

Students wishing to take Combined Honours in Neuroscience and a second discipline, e.g. Biology, Biochemistry, should consult with a programme advisor. In general, the required classes in the honours programme in Neuroscience will be required of all such students, except PSYO 2000.03. Thus, the minimum programme after year I is NESC 2470.03, NESC 2570.03, BIOL 2020.03; one credit in NESC labs, one credit in NESC options, one of the listed Neuroscience seminar classes (half credit), and (for those students who take Neuroscience as a major subject of a combined honours programme) NESC 4500.06 (honours thesis).

## Departmental Requirements

### Classes required in Honours:

- 2000 level:** NESC 2470.03, 2570.03, PSYO 2000.03, BIOL 2020.03, plus one half credit selected from each of: (a) NESC 2130.03, 2140.03, 2150.03; and (b) NESC 2160.03, 2170.03, 2190.03, 2270.03, 2370.03
- 3000 level:**
- i) Lab: one half credit selected from each of: (a) NESC 3775.03, 3370.03, 3371.03, and (b) NESC 3440.03, 4375.03
  - ii) PSYO 3500.06
  - iii) One credit (or two half credits) selected from NESC 3051.03, 3052.03, 3130.06, 3160.06, 3260.03, 3270.03, 3770.03, 3970.03, 4374.03
- 4000 level:** NESC 4500.06 plus two half classes selected from NESC 4000.03, 4050.03, 4070.03, 4160.03, 4374.03 or 4375.03 plus two half classes at 3000 or 4000 level from the lists above

### Other required classes:

BIOL 1000.06, CHEM 1010.06 or 1030.06, MATH 1000.03 and 1010.03 or 1500.03, PSYO 1000.06 or 1010.06 or 1500.06, PHYC 1100.06 or 1300.06.

**Recommended:** It is recommended that students take Psychology 3500.06 (Statistical Methods) in either their third or fourth year of study.

### Notes:

1. In designing the first year of study, students should consider the requirements for a BSc degree as outlined in Section 1 of the Degree Requirements.
2. BIOL 2020.03: Cell Biology and BIOL 3440.03: Neuroanatomy; (same as NESC 3440.03) cannot be counted as credits toward completing a minor in Biology.
3. Students are encouraged to consider the following classes as electives. Classes

marked with an asterisk are recommended electives in the first or second year of study: BIOC 4301.03: Biochemical Communication; BIOL 3012.03 or BIOC 3200.03: Introduction to Biological Chemistry; BIOL 3013.03/BIOC 3300.03: Intermediary Metabolism; BIOL 3014.03/BIOC 3400.03: Nucleic Acid Biochemistry and Molecular Biology; \*CHEM 2400.06: Organic Chemistry; PHIL 3460.03: Mind and Brain; \*PHYC 1100.06/1300.06: Introductory Physics.

### BSc Advanced Major in Neuroscience

This programme is intended to provide a four-year survey of neuroscience, and is designed for students not anticipating expressly experimental graduate-level training in neuroscience or related disciplines. The Advanced Major programme thus differs from the Honours one in not having thesis (and related) requirements, and in having only two credits of required classes in each of the second, third and fourth years.

#### Departmental Requirements

##### Classes required in Advanced Major:

2000 level: NESC 2470.03, 2570.03, BIOL 2020.03, PSYO 2000.03

3000 / 4000 level: One half credit selected from NESC 3775.03, 3370.03, 3371.03, one half credit selected from NESC 3440.03, 4375.03, and one credit, or two half credits, selected from NESC 3051.03, 3052.03, 3130.06, 3160.06, 3260.03, 3270.03, 3770.03, 3970.03, 4374.03; plus two additional credits of 3000- or 4000-level NESC classes.

#### Other required classes:

BIOL 1000.06, CHEM 1010.06 or 1030.06, MATH 1000.03 and 1010.03 or 1500.03, PSYO 1000.06 or 1010.06 or 1500.06, PHYC 1100.06 or 1300.06.

#### Notes:

- In designing the first year of study, students should consider the requirements for a BSc degree as outlined in Section 1 of the Degree Requirements.
- BIOL 2020.03: Cell Biology and BIOL 3440.03: Neuroanatomy (same as NESC 3440.03) cannot be counted as credits toward completing a concurrent major in Biology if they are already counted as credits toward a major in Neuroscience.

### Classes Offered

**NESC 2130.03A or B: 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: B. Earhard  
Format: Lecture 3 hours  
Prerequisite: PSYO 1000.06 or 1010.06 or 1500.06 (with a grade of B- or better)

Cross-listing: PSYO 2130.03

**NESC 2140.03A or B: Learning.** 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 conditions, 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: V. LoLordo  
Format: Lecture 3 hours  
Prerequisite: PSYO 1000.06 or 1010.06 or 1500.06

Cross-listing: PSYO 2140.03

**NESC 2150.03A or B: 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: D.E. Mitchell, S.R. Shaw  
Format: Lecture 3 hours  
Prerequisite: PSYO 1000.06 or 1010.06 or 1500.06 or BIOL 1000.06

Cross-listing: PSYO 2150.03

**NESC 2160.03A or B: Animal Behaviour.** An examination of the natural and, to a lesser extent, the laboratory behaviour of several intensively-studied groups of animals. Foraging and communication, predation and defense, sex and aggression, homing and migration are studied as they occur in such organisms as bees and ants, moths, bats, various birds, and chimpanzees.

Instructor: B.R. Moore  
Format: Lecture 3 hours  
Prerequisite: PSYO 1000.06 or 1010.06 or 1500.06 (with a grade of B- or better) or BIOL 1000.06

Cross-listing: PSYO 2160.03

**NESC 2170.03A or B: Hormones and Behaviour.** An introduction to the endocrinological bases of mammalian social behaviour. Emphasis is on the mechanisms by which the hormones of the hypothalamus, pituitary gland, gonads and adrenal gland



control 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; the pineal gland; neuro-transmitters; pheromones; crowding and social stress.

Instructor: R.E. Brown  
 Format: Lecture 3 hours  
 Prerequisite: PSYO 1000.06 or 1010.06 or 1500.06 or BIOL 1000.06  
 Cross-listing: PSYO 2170.03

**NESC 2190.03A or B: Language and the Brain.** This class is an introduction to the study of languages that are considered as symbolic functions of the human brain. The main topics are the common properties and organizing principles of languages; the acquisition of languages by children; the brain structures involved in language and the effects of brain damage on language disorders.

Instructor: M. Yoon  
 Format: Lecture 3 hours  
 Prerequisite: PSYO 1000.06 or 1010.06 or 1500.06  
 Cross-listing: PSYO 2190.03

**NESC 2270.03A or B: Human Neuropsychology.** This class explores not only normal but also abnormal brain function, as revealed by the consequences of trauma, disease, and surgical intervention. Aphasia, epilepsy, the role of certain brain chemicals in behaviour, cerebral asymmetry, localization of brain function are examples of topics covered.

Instructor: M. Ozier  
 Format: Lecture 3 hours  
 Prerequisite: PSYO 1000.06 or 1010.06 or 1500.06  
 Cross-listing: PSYO 2270.03

**NESC 2370.03A or B: 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. Nakajima  
 Format: Lecture 3 hours  
 Prerequisite: PSYO 1000.06 or 1010.06 or 1500.06  
 Cross-listing: PSYO 2370.03

**NESC 2470.03A: Introduction to Neuroscience I. Brain Systems.** This lecture class is intended to provide an introduction to the gross structures and functions of the brain. The class treats the brain as a set of neural systems, each with relatively well-defined anatomical substrates and functional roles. The class examines each neural system one at a time, exploring its anatomical architecture, connections and function. These systems may include the peripheral nerves, the mechanisms of sensation and motor control, the cranial nerves, the brainstem, cerebral cortex and cerebellum. For each of the neural systems, the class examines some of the clinical consequences of injury or pathology. Introduction is also provided to recent advances in brain imaging and brain chemistry. This

class does not cover cellular or molecular mechanisms of brain function in any detail; students wishing explicit instruction in those fields should see the Calendar entries for "Introduction to Neuroscience II. Cellular Neurobiology" and/or "Molecular Neuroscience", respectively.

Instructor: D. Phillips, W. Tatton and D. Mitchell

Format: Lecture 3 hours  
 Prerequisite: PSYO 1000.06 or 1010.06 or 1500.06 (with a grade of B- or better) or BIOL 1000.06

Exclusion: Credit will not be given for both NESC/PSYO 2071.03 and NESC/PSYO 2470.03.

Cross-listing: PSYO 2470.03

**NESC 2570.03B: Introduction to Neuroscience II. Cellular Neurobiology.** Building on the knowledge of holistic aspects of brain function gained in NESC 2470.03, this class explores the neuronal basis of activity in all nervous systems. Starting with an analysis of the structure of neurons, the function of nerve cells will be explored with respect to the ionic and molecular basis of resting potentials and of electrical activity in nerve cells; synaptic transmission; the release and postsynaptic action of synaptic transmitters; aspects of the neurochemistry of synaptic transmitters and of drug action; and glial cells. Cellular phenomena relevant to neurological dysfunction will be discussed.

Instructors: I.A. Meinertzhagen, S.R. Shaw  
 Format: Lecture 3 hours  
 Prerequisite: NESC/PSYO 2470.03 or instructor's consent

Exclusion: Credit will not be given for both NESC/PSYO 2072.03 and NESC/PSYO 2570.03

Cross-listing: PSYO 2570.03

**SCIE 3000.06R: Science Fundamentals.** See class description in Science, Interdisciplinary section of this calendar.

**NESC 3000.06R: Independent Research in Modern Psychology.** Primarily for honours students wishing further experience an understanding of psychological research. The student chooses a faculty member who serves as an advisor throughout the academic year, and under whose supervision independent research is conducted. Before registering for this class, a student must provide the instructor with a letter from the faculty member who has agreed to supervise the course of study. Class approval will not be given until this is done.

#### SIGNATURE REQUIRED

Instructor: D.E. Mitchell  
 Format: Lab 4 hours  
 Prerequisites: PSYO 2000.03 or NESC/PSYO 2470.03 and previous or concurrent enrolment in two other 3000-level classes; and the prior consent of the instructor  
 Cross-listing: PSYO 3000.06

**NESC 3051.03A or B: 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:** D. Mitchell  
**Format:** Lecture 3 hours/lab 2 hours  
**Prerequisites:** PSYO 2000.03, and NESC/PSYO 2150.03 or 2470.03  
**Exclusion:** Credit will not be given for both NESC/PSYO 3050.06 and NESC/PSYO 3051.03.  
**Cross-listing:** PSYO 3051.03

**NESC 3052.03A or B: Sensory Neuroscience II. Hearing and Speech.** Hearing and speech are two behavioural capacities of fundamental importance to normal human communication. This lecture class is designed to provide a basic understanding of the peripheral and central neural mechanisms of hearing, and of some psychological and physiological processes involved in speech production and speech perception. The class is intended for those students anticipating more advanced training in neural mechanisms of hearing, speech science, human communication disorders and/or audiology. The class emphasizes normal hearing and speech mechanisms, but will address pathology where evidence from pathological subjects is pertinent to understanding normal function. Class content: introductory acoustics; structure and function of the outer and middle ears; structure and function of the cochlea; hair cell physiology and sensory transduction; coding of simple and complex sounds in the auditory nerve; sound localization mechanisms as an example of the correspondence between the physical properties of the stimulus, neural sensitivity and behavioural performance; theories of speech production; theories of speech perception; acoustic and linguistic contributions to speech perception.

**Instructor:** D.P. Phillips  
**Format:** Lecture 3 hours  
**Prerequisite:** NESC/PSYO 2150.03 or 3051.03  
**Strongly Recommended:** NESC/PSYO 2470.03  
**Exclusion:** Credit will not be given for both PSYO/NESC 3150.03 and PSYO/NESC 3052.03  
**Cross-listing:** PSYO 3052.03

**NESC 3075.03A or B: Physiological Psychology.** In Physiological Psychology we study current theory and research about the relation between brain function and behaviour. More specifically, the focus is upon the psychological consequences of physiological events in the nervous system. Among the topics included might be selections concerning brain processes underlying: hunger and thirst, sexuality and reproduction, arousal and attention, memory systems, movement and

motor control, tactile senses and pain perception, states of consciousness, emotion and stress, speech and language.

**Instructor:** M. Ozier  
**Format:** Lecture 3 hours  
**Prerequisites:** PSYO 2000.03 and one of NESC/PSYO 2470.03, 2270.03, 2370.03  
**Cross-listing:** PSYO 3075.03

**NESC 3130.06R: Cognitive Psychology.** Cognitive psychology deals with how we gain information about the world, how such information is represented and transformed as knowledge, how it is stored and how that knowledge is used to direct our attention and behaviour. It involves the processes of perception, memory, attention and thinking. This class focuses not only on what is known about human cognition, but also on techniques cognitive scientists have developed to discover this knowledge.

**Instructor:** P. McMullen  
**Format:** Lecture 2 hours, research lab 2 hours  
**Prerequisites:** PSYO 2000.03 and either NESC/PSYO 2130.03, 2150.03, 2270.03 or instructor's consent  
**Cross-listing:** PSYO 3130.06

**NESC 3160.06R: Ethology.** Ethology is the biological study of behaviour. It uses psychology, genetics, physiology, ecology and evolutionary theory to solve problems in the development, function and causation of behaviour across all animal species. These diverse approaches to the study of animal behaviour are presented in naturalistic and experimental situations. In laboratory exercises qualitative and quantitative records of behaviour are made in the field and in the laboratory. There are several group research projects (first term) and an individual research project (second term).

**Instructor:** J. Fentress  
**Format:** Lecture 2 hours, lab 2 hours  
**Prerequisite:** NESC/PSYO 2160.03 or BIOL 1000.06  
**Cross-listing:** PSYO 3160.06

**NESC 3260.03A or B: Biological Rhythms.** The temporal structure of animal and human physiology is governed by both homeostatic mechanisms and by a system of biological clocks. These internal clocks generate rhythms with various periods in virtually every physiological and behavioural system. Daily (circadian) clocks are the most prominent; they generate rhythms in sleep, reproduction, intellectual performance and many other functions. This class examines the nature of these biological clocks and their physiological substrates, with an emphasis on the neural mechanisms involved in rhythm generation and synchronization in a variety of species. It also explores the hypothesized role of circadian mechanisms in sleep disorders, jet lag and depression.

**Instructor:** B. Rusak  
**Format:** Lecture 3 hours  
**Prerequisite:** PSYO 1000.06 or 1010.06 or 1500.06 or BIOL 1000.06  
**Cross-listing:** PSYO 3260.03

**NESC 3270.03A or B: Developmental Neuroscience.** This class introduces students

who are already familiar with the structural organization and functional properties of the mature nervous system to aspects of neural development, especially at the cellular level. The first part of the class will link the early events of neural development to general embryonic development. Cell determination, pattern regulation, cell production, cell-lineage analysis, and neuronal differentiation, movement and migration will be discussed. Special attention will then be given to later developmental events such as neuronal growth cones, cell death, growth factors, neuron-neuron interactions and synapse formation using invertebrate and vertebrate examples.

**Instructor:** M. Yoon  
**Format:** Lecture 3 hours  
**Prerequisites:** NESC/PSYO 2470.03 and 2570.03  
**Cross-listing:** PSYO 3270.03

**NESC 3370.03A or B: Neuroscience Laboratory I.** The two classes NESC 3370.03 and 3371.03 (see next entry) are coordinated and provide introduction to several techniques used in contemporary neuroscience. The following information applies to these classes as a pair, between which the exact distribution of experimental approaches may vary from year to year according to availability of equipment and material, and numbers enrolled. Usually, electrical recording methods from several types of preparation are emphasized in 3370.03, while detailed neuroanatomically-based approaches are favoured in 3371.03. Regularly scheduled labs with students working in groups of 2 or 3 under supervision are supplemented by occasional lectures, in both classes. Students become familiar with electrical recording and stimulation methods and related techniques, currently using both sensory and motor system preparations. Neuroanatomical analysis is introduced by way of techniques usually selected from the following: Golgi impregnation of neurones, immunocytochemistry, dye-tracing of connections, and electronmicroscopy of the visual system or central nervous system. Lab II (3371.03) usually runs in the second term for selected, advanced students, building upon foundations laid in 3370.03 but using different practical approaches.

**Instructor:** S.R. Shaw  
**Format:** Lab 3 hours  
**Prerequisites:** NESC/PSYO 2470.03 and 2570.03, or 3270.03, and instructor's consent  
**Cross-listing:** PSYO 3370.03

**NESC 3371.03A or B: Neuroscience Laboratory II.** For a description of this neuroscience lab class, see the entry under 3370.03 above; usually, 3371.03 is coordinated closely with 3370.03.

**Instructor:** I.A. Meinerzhagen  
**Format:** Lab 3 hours  
**Prerequisites:** NESC/PSYO 3370.03 and instructor's consent  
**Cross-listing:** PSYO 3371.03

**NESC 3440.03B: Neuroanatomy.** A survey of the histology, development and organization of the central nervous systems, with emphasis on the developmental and structural relationships

between spinal cord and brainstem. The organization of cranial nerves and microanatomy of the brain stem is discussed. The organization of sensory and motor systems is presented in detail. The cerebral cortex, cerebellum, basal ganglia, and limbic system are also covered.

**Instructor:** D.A. Hopkins (Anatomy and Neurobiology Dept.)  
**Format:** Lecture/lab 3 hours  
**Prerequisite:** BIOL 2020.03  
**Cross-listing:** ANAT 2100.03, BIOL 3440.03

**NESC 3760.03A or B: Neuroethology.** Neuroethology is the study of the neural bases of animal behaviour. The class will emphasize cellular approaches toward understanding the integrative mechanisms of the nervous systems which underlie complex behaviours. Feature detectors, command systems and motor programme generators will be examined in depth using examples from vertebrate preparations. Cellular bases of higher order functions such as motivation, learning and choice will be explored if time permits.

**Instructor:** Staff  
**Format:** Lecture 2 hours  
**Prerequisite:** PSYO 2000.03 or NESC/PSYO 2160.03 or 2470.03 or 2570.03 or BIOL 2020.03, or instructor's consent

**Cross-listing:** PSYO 3760.03

**NESC 3770.03A or B: Behavioural Neuroscience.** Behavioural neuroscience concerns itself with the neural mechanisms underlying a variety of behavioural phenomena. Its subject matter includes the neural mechanisms controlling a variety of regulatory and motivational systems, including: feeding, drinking, reward, sexual and parental behaviour, temperature regulation, sleep and waking, motor and sensory system function, learning and other forms of behavioural plasticity, memory, and the physiological mechanisms underlying behavioural disorders. Students should be familiar with experimental research methods, and have some background in biological or neural aspects of psychology.

**Instructor:** B. Rusak  
**Format:** Lecture 3 hours  
**Prerequisites:** PSYO 2000.03 and NESC/PSYO 2470.03.

**Exclusion:** Credit will not be given for NESC/PSYO 3070.06 or 3071.06 and 3770.03.

**Cross-listing:** PSYO 3770.03

**NESC 3775.03A or B: 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.

**Instructor:** B. Rusak  
**Format:** Lab 3+ hours

**Prerequisites:** NESC/PSYO 3770.03 and instructor's consent  
**Restriction:** Credit will not be given for both NESC/PSYO 3070.06 and 3775.03  
**Cross-listing:** PSYO 3775.03

**NESC 3970.03A or B: Molecular Neuroscience.** This class will continue ideas introduced in NESC 2570.03 on the molecular basis of neuronal function and of the role of gene expression in the functioning and development of the nervous system. We will introduce the role of G-proteins and their receptors in neuronal signalling, and of second messengers in neuronal function and development. We will extend into areas of neuronal development, especially of gene regulation in the nervous system, transcription and transcription factors, as well as the molecular control of neural development, especially through the control of cell differentiation and the outgrowth of axons in the nervous system and the specificity of their connections, and neuron-target interactions, especially through the role of trophic factors.

**Instructor:** I.A. Meinertzhagen  
**Format:** Lecture 3 hours  
**Prerequisite:** NESC/PSYO 2570.03  
**Cross-listing:** PSYO 3970.03

**NESC 4000.03A or B: Senior Seminar.** See class description for PSYO 4000.03 in the Psychology section of this calendar.

**Instructor:** Staff  
**Format:** Lecture 2 hours  
**Cross-listing:** PSYO 4000.03

**NESC 4050.03A or B: Topics in Perception.** This class explores the neural basis of perception, emphasizing the visual, tactile and auditory senses.

**Instructor:** Staff  
**Format:** Lecture 2 hours  
**Cross-listing:** PSYO 4050.03

**NESC 4070.03B: Neuroscience Seminar.**

**Instructor:** Staff  
**Format:** Lecture 2 hours  
**Prerequisites:** NESC/PSYO 2470.03, 2570.03 and 3270.03, or instructor's consent

**Cross-listing:** PSYO 4070.03, ANAT 5070.03

**NESC 4160.03A or B: Topics in Behavioural Biology.**

**Instructor:** Staff  
**Format:** 2 hours  
**Cross-listing:** PSYO 4160.03

**NESC 4374.03A: 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 man. The interaction of drugs with the central and peripheral nervous systems will be covered. 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.

**Instructors:** H.A. Robertson, J. Blay (Co-ordinator)  
**Format:** Lecture 3 hours  
**Prerequisite:** Permission of the Co-ordinator  
**Cross-listing:** BIOL 4404.03, BIOC 4804.03, PHAR 5406.03

**NESC 4375.03B: Introduction to Pharmacology II.** This class is intended to cover specific aspects of drug action in greater depth than 4374.03 and to provide students with practical expertise in pharmacology. The laboratory component consists of prescribed exercises using varied techniques.

**Instructors:** H. Robertson, J. Blay (Co-ordinator)  
**Format:** Lecture 1 hour, lab 3 hours  
**Prerequisites:** NESC 4374.03 and permission of Co-ordinator  
**Cross-listing:** BIOL 4405.03, BIOC 4405.03, PHAR 5407.03

**NESC 4500.06R: 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 major area of interest and closely supervises an original research project carried out by the student. The students meet together occasionally throughout the year to describe their proposed research and their progress. Each student must submit a formal written report of the completed research. The final grade is based upon the originality and skill displayed in executing the project, with emphasis upon the submitted report and an oral presentation.

**Instructors:** J.W. Clark, staff  
**Restriction:** Restricted to honours students in their graduating year  
**Cross-listing:** PSYO 4500.06

# School of Nursing

**Location:** Forrest Building, 5869  
University Avenue, Halifax,  
N.S. B3H 3J5  
**Telephone:** (902) 494-2535

## Academic Staff 1995-96

### Director

J. Black, BN (Dal), MEd (Media) (Boston),  
DipPH (Dal), EdD (UBC), RN

### Professors

B. Keddy, BScN (MSVU), MA, PhD (Dal), RN  
J.A. Ritchie, BN (UNB), MN, PhD (UPitts), RN  
M. Stewart, BScN (McM), MN (Dal), RN, PhD  
(Dal)

### Associate Professors

M. Arklie, BN (Dal), MS (Boston), PhD  
(Texas-Austin), RN  
J. Black, BN (Dal), MEd (Media) (Boston),  
DipPH (Dal), Ed D (UBC), RN  
B.L. Downe-Wamboldt, BN, MEd, Dip.PH  
(Dal), PhD (U Texas-Austin) RN  
M.L. Ellerton, BScN (Ott), MN (McG), RN  
H.D. Fraser-Davey, BScN (MSVU), DipTScN  
(Dal) MSc (A)(McG), PhD (Dal), RN  
F. Gregor, BN, MN, PhD (Dal), RN  
G. Hart, BN (McG), MSN (UBC), RN  
M.J. Horrocks, BSN (UBC), MS (PsychN), MS  
(CHN), DCMH (UCSF), AED (Tor)  
J.M. Hughes, BN (Dal), MS (Boston), RN  
E. Lambie, BSc (Home Ec) (Acad), MPH  
(Nutrition) (Mich), Pdt, FCDA  
P. Melanson, BScN (Ott), MN (Dal), RN  
L.L. Mensah, BN (Dal), MA, DPHN (Dal), SCM  
(England), RN  
C.I. Smillie, BScN (UBC), MSc (Ed) (Dal), RN  
D. Sommerfeld, BScN (MSVU), MSN (UBC), RN  
D.L. Tamlyn, BN (McG), MEd (Ott), PhD (Dal),  
RN  
J. Wong, BScN (MSVU), MScN (Western), PhD  
(Dal), RN  
S. Wong, BScN (MSVU), MScN (Western), PhD  
(Dal), RN

### Assistant Professors

C. Barrett, BN (Memorial), MScN (Western), RN  
D.M. Meagher-Stewart, BScN (MSVU), MS  
(McM), RN  
N.J. Murphy, BN (Dal), MScN (UBC), RN  
F. Myrick, BN (Mem), MScN (Western), RN  
G. Tomblin Murphy, BN, MN (Dal), RN

### Lecturers

K. Cockersell, DipOP&CHN (Dal), BPharm  
(UBradford), RN  
M. Heinrichs, BScN (Alta), DOCHN (Dal), RN  
R. Martin-Misener, DOCHN, BScN (Dal), RN  
R.A. Pogoda, CertCHN (Man), RN  
K. Stares, DOCHN, BN (Dal), RN  
A.R. Vukic, BN (Dal), RN  
C.F. Wight Moffatt, BN (MUN), MS (Boston),  
RN

### Senior Instructors - Skills Laboratory

E. Bethune, BScN (MSVU), RN  
B. Bleasdale, BN (Dal), RN

### Honorary Appointments

K. Allen, BN (Dal), MSc(N) (Tor), RN  
M. Amirault, BA (Acadia), MN (Dal), RN  
M. Bacon, BA (York), MEd (Tor), RN  
M. Jean Bayer, BN (Dal), MEd (Acadia), PhD  
(Dal)  
R. Blois, BScN (MSVU), CHE, RN  
D. Bowes, BN (Dal), RN  
J. Braumstein, BScN (Cornell), MPH (Minn)  
M. Brennen, BScN (St.FX), MN (Dal), RN  
L. Butler, BScN (MSVU), MN (Dal), RN  
G. Carson, BN, MN (Dal), RN  
S. Christie, BN, MN (Dal), RN  
S. Cobbett, BN (Dal), DipGerontology (MSVU),  
RN  
S. Daniels, BScN (MSVU), MN (Dal), RN  
D. Denney, BScN (MSVU), MN (Dal), RN  
R. Enghehart, BN, MN (Dal), RN  
P. English, BN (Mem), MN (Dal), RN  
T. Fillatre, MHSA (Dal), RN  
S. Foster, BN (Mem), MN (Dal), RN  
J. Francis, BN (Dal), RN  
C. Gibson, BN (UNB), MScN (Tor), PhD (Boston  
Coll), RN  
A. Gillis, BScN, MAdEd (St.FX), PhD  
(Texas-Austin), RN  
J. Hamilton, BN (Dal), MSN (McG), RN  
L. Hamilton, BScN (Philippines), MN (Dal), RN  
J. Hartigan-Rogers, BN (Dal), RN  
K. Hooper, BScN (St.FX), RN  
L. Judge, BN (Dal), MEd (MSVU), RN  
J. Knox, BN (UNB), MN (Dal), RN  
A. LeBlanc, BN (Dal), RN  
H. Love, BSc, MN, PhD (Dal)  
N. MacNeil, BScN, MN (Alta), RN  
A. McGuire, BN (McG), MHSA (Dal), RN  
D. McLeod, BN, MN (Dal), RN  
A. Miller, RN, SCM (GB), MN (Cal), RN  
C. Moore, BScN (MSVU), MScN (Tor), RN  
M. Mulse-Davis, BN, MN (Dal), RN  
L. Patterson, BN (UNB), MN (Dal), RN  
C. Power, BScN (MSVU), MHSA (Dal), RN  
P. Reid, BN (UNB), MSc (Dal), RN  
S. Ross, BN (McG), MN (Dal), RN  
P. Runciman, BSc, MPhil, MSc (N) (Edinburgh),  
RGN, SCM, HVcert  
M. Ryan, BN (Dal), MN (Calgary), RN  
D. Sheppard-LeMoine, BN (Dal), RN  
C. Thibeault, BScN (MSVU), MN (Mem), RN  
J. Thomson, BN (UNB), MN (Dal), RN  
P. Thorpe, BN, MA (Dal), RN  
C. Turner, BN (Dal), MN (Dal), RN  
D. Vandewater, BN, MN (Dal), RN  
A. Ward, BScN (Ott), RN  
D. Whitehorn, BSc (Mich), MScN (Yale), PhD  
(Wash)  
L. Wittstock, BScN (St.FX), RN  
L. Woodworth, BN (Dal), BSc(A) (McG), RN  
E. Wright, SNNEB (Scotland)  
H. Young, BN (Mem), MScN (Western)  
D. Younker, BN (UNB), MN (Western), RN  
J. Zevenhuizen, BN, MN (Dal), RN

## Cross Appointments

- K. Mann, BScN (Dal), MSc (Dal), PhD (Dal), Associate Dean, Faculty of Medicine  
 J. Singleton, BA (Waterloo), MS (Penn State), PhD (Maryland), Associate Professor, School of Recreation, Physical & Health Education

## Preceptors

Many nurses, health-care professionals and persons in other disciplines give of their time and expertise to assist in the education of the nursing students in all years of all programmes. These valuable preceptors are too numerous to list, but are a vital part of the programme. Names can be obtained by contacting the School of Nursing.

## Introduction

The School of Nursing was organized in 1949. In 1961 the School of Nursing became a constituent part of the newly established Faculty of Health Professions. Currently the School offers an undergraduate programme for basic and Post RN students, a Masters of Nursing programme and a 15-month programme leading to a diploma in Outpost and Community Health Nursing.

## 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 the profession of Nursing. A student who, in the judgement of the faculty, fails to attain a satisfactory standard in this assessment may be required to withdraw from the School.
3. Students in the Baccalaureate Degree Programme 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 a clinical experience. Additional expenses are incurred by the student in the Basic Baccalaureate Degree Programme for field experience, books, first aid course, CPR course, graduation pin, equipment, and nurse registration examinations and recommended and/or required immunizations and/or testing. Each student must also purchase name tags and crests from the University.
4. Because of enrolment limits on class size, all part-time students who wish to change their status to full-time must present this request in writing to the Associate Director of Undergraduate Student Affairs by March 1.
5. Students are assigned to a faculty member from the Academic Advising Committee to help them plan their academic programme and to discuss academic progress or difficulties.
6. Students wishing to appeal a decision based on faculty regulations or decisions should follow the School Appeal Procedure.

## 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).

It is recognized that both students and faculty have rights and responsibilities and further, that as the University is a complex system, a student may experience difficulty in determining how to express dissatisfaction. This document is provided as a guideline for students and faculty in solving dissatisfactions.

The University has established a system which allows the student the opportunity to appeal an academic decision made by faculty. This appeal can be heard at three different levels within the University: (1) School, (2) Faculty, and (3) Senate. Appeals are heard in the School by the Committee on Studies, at the Faculty level by the Faculty Committee on Studies, and at the Senate level by the Senate Academic Appeals Committee.

## Procedure for Undergraduate Appeals

Undergraduate appeals in the School will be heard by the Committee on Studies. Appeals on academic matters may be made to the Committee on Studies. Procedures for Undergraduate Appeals are available from the School of Nursing.

## Bachelor of Science (Nursing) for Basic Students

### 1. Degree Requirements

A student must obtain a minimum cumulative GPA of 2.00 throughout the entire undergraduate programme. A student must accumulate a minimum of 126 credit hours and have successfully completed all compulsory classes, as well as the necessary number of elective classes. The degree must be completed within 6 years of commencing nursing classes, although 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. School regulations relating to GPA apply to students whose initial registration in the School was in the Fall of 1990 or earlier. Consult calendar of the appropriate year.

### 3. Grades

A letter grade system is used to evaluate performance. The following grades are considered passing: A+, A, A-, B+, B, B-, C+, C, C-, D, and F except in nursing classes where a student must attain a C in both theory and clinical/laboratory components. FM, F, and INC are failing grades. ILL and W are considered neutral.

### 4. Requirements for Promotion

Besides meeting the GPA requirements students must meet the following requirements for promotion:

**Year I to Year II:** A student must pass all first year level classes in order to advance to second year nursing classes.

**Year II to Year III:** A student must pass all second year nursing classes, MICR 1100.03, STAT 1060.03 and SOSA 1000.06.

**Year III to Year IV:** A student must pass all third year nursing classes.

### 5. Normal Workload

The programme consists of 129 credit hours (21.5 credits); these are divided to give the following yearly normal workload:

**Year I:** a normal workload is considered 30 credit hours (5 credits)

**Year II:** a normal workload is considered 36 credit hours (6 credits)

**Year III:** a normal workload is considered 33 credit hours (5.5 credits)

**Year IV:** a normal workload is considered 30 credit hours (5 credits).

## Bachelor of Science (Nursing) for Registered Nurses

### 1. Degree Requirements

A student must obtain a minimum cumulative grade point average of 2.00 throughout the entire undergraduate programme. A student must accumulate a minimum of 78 credit hours and successfully complete all compulsory classes, as well as the required number of elective classes. The degree must be completed within six years of commencing nursing classes, although 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 Nurse Registration as an active practicing member in Nova Scotia or their province/country of residence each year they are enrolled in the School of Nursing. All other regulations are as outlined in the BScN Basic stream in the University Calendar, including Immunization, and Grades.

The RNANS recognizes university credit as counting towards practice hours (eg. a half-credit class which is three credit hours, is equivalent to 180 practice hours). Full-time student status in a BScN (Post RN) degree programme constitutes 1725 practice hours; the equivalent of working full-time.

### 3. Normal Workload

The 78 credit hours of study may be completed over three academic years of full-time study with a normal yearly workload as follows: Year 1: 25 credit hours; Year 2: 26 credit hours; Year 3: 27 credit hours.

## Bachelor of Science (Nursing) Degree Programme

In response to a health care system based on principles of primary health care (Bryant, 1988), the Bachelor of Science (Nursing) programme at Dalhousie prepares nurses to work in partnerships with individuals, families, groups and communities to promote, maintain and strengthen health. In addition, graduates

are prepared to respond appropriately to a range of health and illness needs of human beings in a variety of settings and organizational infrastructures for health care. In keeping with the direction of the Nova Scotia Health Care System in regards to collaboration, the School of Nursing has committed itself to partnerships with the Nova Scotia Department of Health, the Queen Elizabeth II Health Sciences Centre, the Western Regional Health Centre (Yarmouth), the Grace Maternity Hospital, and the Reproductive Care Programme of Nova Scotia in the design and delivery of its generic and Post-RN BScN programmes. The curriculum is designed to enable graduates to meet the standards of nursing practice in Canada and be eligible for registration in Nova Scotia.

A unique new project in nursing education has begun in Yarmouth. Dalhousie University and the Western Regional Health Centre (Yarmouth) are collaborating to offer Dalhousie's four year Bachelor of Science (Nursing) degree programme in Yarmouth.

Although all successful students register with and graduate from Dalhousie University, the programme is offered on site in Yarmouth through the use of innovative technologies, on site professors, and visiting professors (with the exception of chemistry for which students are bused to Universite Ste. Anne in Church Point once per week during the first year of the programme.)

## Programme Objectives

The Bachelor of Science (Nursing) graduate will:

1. Be a nurse who demonstrates application of nursing science through independent thought, critical inquiry, and commitment to life-long learning.
2. Nurse competently\*, applying the principles of primary health care with persons with diverse needs and in a variety of health care settings.
3. Communicate and collaborate with individuals, families, groups, communities and other members of the health care team to achieve health goals.
4. Reflect ethical, legal, and professional accountability in the practice of nursing.
5. Influence nursing and health care on a professional, social and political basis.

\*Competence: includes interpersonal, technological and intellectual skills.

## Bachelor of Science (Nursing) for Basic Students

The Bachelor of Science (Nursing) degree is a four year programme. Graduates are eligible to write examinations for membership in the Registered Nurses' Association of Nova Scotia.

### Immunization

Before commencing studies in first year, students must show proof of current immunization against: tetanus, diphtheria, polio, measles and rubella.

Immunization against Hepatitis B is recommended for all students and is available through Dalhousie Health Services at a cost of \$77 (based on 1994-95 cost).

Evidence of tuberculin testing (mantoux) must also be shown each September. TB testing can be done by the Public Health Nurse or is offered yearly by Dalhousie Health Services. This information must be sent to the Undergraduate Programme Secretary - Records, School of Nursing. Students failing to provide this evidence will be withdrawn from clinical areas.

### CPR, (BCLS) & Basic First Aid Certification

Students must show proof of CPR and Basic First Aid certification before entering clinical in first year. This proof is to be sent to the Undergraduate Programme Secretary - Records, School of Nursing. A cardio-pulmonary resuscitation course and basic first-aid course are the student's responsibilities in time and cost.

### Course of Study

The following is an outline of classes that are normally taken each year.

This curriculum pertains only to students starting their first year of the programme in 1995 or later. Students who began their first year of the Nursing Programme before 1995 should refer to the calendar from their year of entry for their Course of Study.

**First Year:** ANAT 1010.03; CHEM 1410.03; BIOC 1420.03; PHYL 1010.06; PSYO 1000.06; NURS 1000.03, 1020.03, 1240.03. NURS 1240.03 is a clinical class that begins toward the end of April.

**Second Year:** MICR 1100.03; STAT 1060.03; SOSA 1000.06; NURS 2050.03, 2240.03, 2060.03, 2200.03, 2220.06, 2090.03 as well as 3 credit hours of elective chosen from any Faculty. This elective is to be at the 2000 level or above except for a language class (French, German, Russian, Spanish) which can be taken at the 1000 level. NURS 2220.06 is a six week clinical nursing class usually starting toward the end of April.

**Third Year:** NURS 3020.03, 3200.03, 3260.03, 3030.03, 3280.03, 3080.03, 3240.03, 3250.03, 3270.03, and 6 credit hours of electives. Human Sexuality Workshop Part I is integrated into NURS 3020.03. NURS 3250.03 and NURS 3240.03 are clinical nursing classes usually starting towards the end of April.

**Fourth Year:** NURS 4040.03, 4030.03, 4250.03, 4210.03, 4220.03, 4010.03, 4260.03, one nursing elective (3 credit hours), NURS 4240.06, Human Sexuality Part II is integrated into NURS 4010.03. NURS 4240.06 is a five week clinical nursing class usually beginning around the end of April.

### Bachelor of Science (Nursing) for Registered Nurses

The Bachelor of Science (Nursing) for registered nurses consists of 78 credit hours of study. Students may complete the programme

through part-time or full-time study. The programme can be completed in two calendar years of full-time study provided Faculty resources allow required nursing classes to be offered during the summer session. Otherwise, students without transfer credits can complete the programme in two full-time and one part-time academic years (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.

The Dalhousie Bachelor of Science Nursing Collaborative Project in Yarmouth includes study for the BScN (Post RN) degree. The programme can be completed on a full or part-time basis. Although all successful students register with and graduate from Dalhousie University, the programme is offered on site in Yarmouth through the use of innovative technologies, on site professors, and visiting professors (with the exception of chemistry for which students are bused to Universite Ste. Anne in Church Point once per week during the first year of the programme.

The Perinatal Education Partnership Project (PEPP) is a unique approach to providing specialty education for practicing perinatal nurses. The classes for the BScN/RN (PEPP Stream) are based on Dalhousie University BScN curriculum framework with specific emphasis on perinatal health care.

Students who enrol in the BScN/RN (PEPP Stream) have two options. They may choose to complete five selected core classes of the BScN/RN curriculum and exit with a certificate of completion from the PEPP, as well as with a Dalhousie University transcript indicating completion of the five classes. They may then choose to continue in the BScN/RN programme to complete the remaining requirements for the degree.

### Course of Study

With the help of an academic advisor, each student is able to map out an individual course of study. An individual course of study may be affected by the actual classes given in an academic year as well as in which semester (Fall, Winter, Spring, Summer) they are given. Certain classes may have pre-requisites as noted in the class descriptions. Part-time students are encouraged to complete most of the required non-nursing classes before starting nursing classes. NURS 2250.03 and NURS 2070.03 are pre-requisites for all nursing classes. Non-clinical nursing classes may be taken concurrently with NURS 2250.03 by special permission of the class professor. Anatomy and Physiology are normally pre-, or co-requisites for NURS 2250.03. The course of study varies considerably when the student applies accepted transfer credits toward the degree programme. Transfer credit regulations are as outlined under the Academic Regulations section of the University Calendar.

The required non-nursing classes are (credit hours in brackets): ANAT 1010.03, PHYL 1010.06, CHEM 1430.06, PSYO 1000.06, SOSA 1000.06, MICR 1100.03, STAT 1060.03. The nine credit hours of electives may be chosen from any Faculty and are to be at the 2000 level or



USE  
1997/98  
CALENDAR  
TO GET THE  
CORRECT CLASS  
DESCR

NURS 2060  
of  
1996/97  
CALENDAR



ase of a language (French,  
Danish) which can be taken

**Classes**  
Analysis and Development of  
Communication in Nursing  
Foundations for  
Practice  
Learning Transactions in

Nursing Research  
Nursing Practice: Caring for

Social Justice Issues in Health

Collaborative Leadership for

Therapeutic Communication in

Community Health Assessment  
Community Development and

(6 credit hours)

Students of electives may be chosen  
Interdisciplinary classes.  
Vary by year. Please consult the  
table for class offerings:

- NURS 3200.03: Nursing the Adult/Elderly I
- NURS 3210.04: Nursing Parents and Newborn
- NURS 3230.05: Nursing the Adult/Elderly II
- NURS 3250.03: Clinical Nursing I
- NURS 4210.03: Nursing Practice: Children and Families
- NURS 4220.03: Mental Health Nursing Practice

Please refer to specific class descriptions.

## Class Descriptions

### Required Non-nursing classes

Class descriptions for CHEM 1410.03 BIOC  
1420.03, ANAT 1010.03, PHYL 1010.06, PSYO  
1000.06, SOSA 1000.06, MICR 1100.03, STAT  
1060.03 and potential electives can be found in  
the calendar under specific  
departments/faculties.

### Required Nursing Classes

\* Indicates PEPP required classes.

**NURS 1000.03A: Introduction to the Foundations of Nursing.** Major concepts of health and professional nursing are introduced. Learners begin to develop an awareness of the practice of nursing based on the determinants of health, primary health care and major nursing concepts. Emphasis will be given to the helping role of nursing. A variety of experiences will facilitate learning. Students are introduced to the practice of nursing in clinical settings.  
Format: Lecture 2 hours, lab 2 hours

**NURS 1020.03B: Human Development and Health.** Examines concepts and theories of healthy growth and development across the life-span. Content is organized around health, nutrition, and the safety of individuals at specific stages in their physical, cognitive, and psychosocial development. Concepts of

culture/ethnicity, environment, economic status and other life situations are introduced in terms of their relationship to optimal health.  
Format: Lecture 3 hours

**NURS 1240.03B: Introduction to Nursing Practice.** (Intersession) Students are introduced to health care settings where they will interact with persons at different stages of development and health and illness. As a basis for these experiences the foundations of nursing addressed in NURS 1020.03 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 15 hours, clinical 15 hours/week for 3 weeks  
Prerequisites: NURS 1000.03, 1020.03

**NURS 2050.03B: Pharmacology and Nursing.** Introduces students to the pharmacokinetics of the major classes of drugs. Includes the study of the absorption, distribution, metabolism, and excretion of drugs as well as side effects of medications and their implications for nursing practice. Periodic laboratory sessions are scheduled for learning about drug administration as a basis for the nursing domain of administering and monitoring interventions and regimens.  
Format: Lecture 3 hours  
Prerequisites: NURS 2200.03

**NURS 2060.03B: Culture, Caring and Health Care.** Designed to promote student awareness of the Canadian mosaic, race relations, cross cultural communications issues and the impact of culture on health beliefs and client access to the health care system. Learners explore their own attitudes and approaches to other cultures. Through this exploration, the learner identifies culturally sensitive strategies for health care practices.  
Format: Lecture 3 hours  
Prerequisites: NURS 1240.03 for Generic Students; NURS 2250.03 or instructor's consent for Post-Diploma students

**\*NURS 2070.03A or B: Analysis and Development of Therapeutic Communication in Nursing.** (for Post-Diploma Students only). Enables learners to build on their existing communication knowledge and skills developed through their practice. The focus is on strategies for enabling clients to be active participants in health care. Learners use several interaction theories to critically analyze their own communication skills and their impact on clients and colleagues. Learners analyze the critical aspects of the caring role of the nurse in relation to other domains of nursing practice. (This class can be challenged).  
Format: Lecture 2 hours, lab 2 hours  
\* This class and NURS 2250.03 are prerequisite to all other clinical nursing classes for Post-Diploma students.

**NURS 2090.03B: Pathophysiology and Nursing.** Provides a foundation for understanding human physiological responses to altered health states in terms of structural and functional changes from normal. This class is basic to (1) the understanding and practice of

the monitoring and diagnostic domain of nursing practice and (2) for administering and monitoring interventions and regimens.

Format: Lecture 3 hours

Prerequisites: MICR 1100.03, ANAT 1010.03, PHYL 1010.06 or instructor's consent

**NURS 2200.03A: Knowledge and Process in Nursing Practice I.** The learner uses theoretical bases of nursing to evaluate persons' health behaviours and outcomes in carrying out nursing roles. The learner focuses on learning health assessment, and the diagnostic and client monitoring functions, as well as administering and monitoring interventions and regimens. The learner is introduced to nursing research to guide reflective nursing practice, and applies safe use of technology and caring approaches in laboratory settings.

Format: Lecture 2 hours, lab 2 hours

Prerequisites: NURS 1240.03, ANAT 1010.03, PHYL 1010.06, CHEM 1410.03, BIOC 1420.03, PSYO 1000.06/1100.06/1200.06

**NURS 2220.06B: Nursing Practice II.**

(Interession) This clinical practicum enables students to begin to integrate primary health care principles, nursing knowledge and theory, and nursing processes within the domains of nursing practice. The student consolidates concepts, theories and skills in caring for individuals in acute and chronic care settings. Emphasis is placed on collaborating with clients to identify health goals as well as perceptions and attitudes about their health.

Format: Clinical practicum 240 hours/6 weeks

Prerequisites: NURS 2050.03, 2090.03, 2060.03, 2240.03, MICR 1100.03

**NURS 2240.03B: Knowledge and Process in Nursing Practice II.** Develops student competence in the use of the domains of nursing practice learned in NURS 2200.03. The students integrate comprehensive health assessments as a basis for clinical interventions inherent in the caring role. In addition, learners are introduced to the organizational and work role competencies required for clinical practice. This class includes clinical and laboratory practice.

Format: Lecture 2 hours, clinical/lab 4 hours

Prerequisites: NURS 2200.03

**\*NURS 2250.03A or B: Foundations for Contemporary Nursing Practice.** (for Post-Diploma students only) Provides experienced nurses with opportunities to focus on the evolution of nursing as a profession and the domains of nursing practice. Through an exploration of theories from nursing and other disciplines relevant to nursing, learners are challenged to critically examine their nursing practice and to explore areas for change. Clinical experiences in hospitals and community-based agencies provide opportunities to carry out comprehensive health assessment skills.

Format: Lecture 2 hours, clinical 4 hours.

\* This class and NURS 2070.03 are prerequisite to all other clinical nursing classes for Post-Diploma students.

**\*NURS 3020.03A: Learning Transactions in Nursing.** Learning transactions between nurses and clients are integral to health promotion and illness prevention. This class is designed to assist students to critically analyze and integrate the teaching-coaching domain of nursing practice in relation to the helping role of the nurse. Principles and theories of learning are used to identify strategies to help clients acquire knowledge, skills and attitudes that empower them to attain/maintain optimal levels of health. To develop self-knowledge as well as interdisciplinary learning and interaction skills, students participate in a workshop that explores the nature of healthy human sexuality across the life span.

Format: Lecture 3 hours

Prerequisites: NURS 2220.03 for Generic students; NURS 2250.03 and NURS 2070.03 for Post-Diploma students or instructor's consent

**NURS 3030.03B: Nursing Research.** The research process is examined in relation to nursing. Through the study of the critical thought processes basic to research methodology, measurement techniques and ethical and legal issues, the student integrates research-based nursing knowledge with practice.

Format: Lecture 3 hours

Prerequisites: NURS 2220.06 and STAT 1060.03 for Generic students; NURS 2250.03 and STAT 1060.03 for Post-Diploma students or instructor's consent

**NURS 3080.03A: Legal and Ethical Issues in Nursing Practice.** Designed to promote student understanding and application of ethical and legal concepts and theory within the dimensions of nursing practice. Learners focus on the decision making processes and the impact of technology in nursing practice.

Format: Lecture 3 hours

Prerequisites: NURS 2220.06 for Generic Students; None for Post-Diploma students

**NURS 3200.03A: Nursing Practice: Short-term Alterations in Health.** Students learn to integrate nursing knowledge and processes in the care of adults coping with acute illnesses. Emphasis is placed on the integration of primary health concepts as related to short-term alterations in health. Learners further develop knowledge and skill in the domains of nursing practice during clinical experiences in acute care settings.

Format: Lecture 2 hours, clinical 6 hours

Prerequisite: NURS 2220.06

**NURS 3240.03B: Nursing Practice III (Interession)** Integration and application of concepts, theories and skills essential for nursing practice with adult and elderly persons experiencing illness is the focus of this hospital-based practicum. Analysis and integration of research-based knowledge in the synthesis of the domains of practice will be incorporated within a caring context.

**Format:** Clinical practicum 120 hours/3 weeks

**Prerequisites:** NURS 3020.03, 3270.03, 3280.03

**NURS 3250.03B: Nursing Practice IV.** (Interession) This clinical practicum continues the integration and application of concepts, theories and skills essential for reflective nursing practice with individuals, families and aggregates within community health agencies. The focus of this practicum is on the principles of primary health care and the application of skills related to community development and collaborative leadership.

**Format:** Clinical Practicum 120 hours/3 weeks

**Prerequisite:** NURS 3020.03, 3260.03, 3270.03

**\*NURS 3260.03A or B: 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 will be 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 postbirth in hospital and home settings enable learners to focus on health promotion within the context of family-centered care.

**Format:** Lecture 3 hours, clinical 6 hours

**Prerequisites:** NURS 2220.06 for Generic students

**\*NURS 3270.03A or B: Nursing Practice: Caring for Families.** Students focus on families and family health and well being with an emphasis on a thorough understanding of family assessments. Students examine family health and health issues from nursing, cultural, sociological and psychological theories and concepts as they relate to nursing practice in providing care to the family as a client group. A variety of family assessment approaches are critically analyzed. Laboratory and clinical experiences with families provide the student with opportunities to integrate and practice family assessment.

**Format:** Lecture 2 hours, clinical 6 hours

**Prerequisites:** NURS 2220.06 for Generic students; NURS 2250.03 and NURS 2070.03 for Post-Diploma students; SOSA 1000.06/1100.06/1200.06 for both groups of students

**NURS 3280.03B: Nursing Practice: Long-term Alterations in Health.** Building on NURS 3200.03, this class focuses on family-centered nursing practice with adults who are managing chronic health problems. Students continue to critique and integrate theory-based nursing strategies and the principles of primary health care in demonstrating reflective nursing practice. Experiences in hospitals and long-term settings enable students to participate in the care of adults with chronic health problems.

**Format:** Lecture 2 hours, clinical 6 hours

**Prerequisites:** NURS 3020.03, 3200.03

**NURS 4010.03B: Social Justice Issues in Health Care Practice.** Certain inequities make it impossible for some communities to be as healthy as others. This class is designed to address poverty, unemployment, racism, illiteracy, violence, rural isolation, ageism, ableism, sexism, classism, militarism as well as environmental issues. The learner reflects upon implications of competitive versus cooperative ideologies to examine how society is structured and functions. Furthermore, the learner analyzes social action approaches to address the dynamic impact that these issues have on achieving health and identify strategies for social action. As a required part of this class, learners participate in an interdisciplinary learning opportunity that examines the relationship of human sexuality issues with those of social justice.

**Format:** Lecture 3 hours

**Prerequisites:** NURS 3240.03, 3250.03 for Generic students; NURS 3270.03, SOSA 1000.06/1100.06/1200.06 for Post-Diploma students or instructor's consent

**NURS 4030.03A: Collaborative Leadership for Nursing Practice.** Based on the view that the practice of leadership is the practice of every nurse, the focus of the class is on the leadership theory and behaviours essential to nursing practice. Critical thinking, decision-making processes and other leadership behaviours will be achieved through experiential and simulated learning methods.

**Format:** Lecture 3 hours

**Prerequisites:** NURS 3240.03 and 3250.03 for Generic students; NURS 2250.03 for Post-Diploma students; or instructor's consent

**NURS 4040.03A or B: Therapeutic Communication in Complex Situations.** The focus of this class is the critical analysis of interactive and relationship theories in the practice of nursing with client groups.

Application of theories in simulated laboratory situations enables the student to develop reciprocal, interactive skills in complex collaborative situations such as those requiring confrontation, advocacy and leadership.

**Format:** Lecture 3 hours, lab 2 hours

**Prerequisites:** NURS 3240.03 and 3250.03 for Generic students; NURS 2070.03 and 2250.03 for Post-Diploma students

**NURS 4210.03A or B: Nursing Practice: Children and Families.** Students focus on nursing practice in the care of children and their families. The determinants of child and family health 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 basic arts, science and nursing class work. Students work in clinical settings where care is given to children with acute and chronic illness.

**Format:** Lecture 2 hours, clinical 6 hours

**Prerequisites:** NURS 3240.03, 3250.03

**NURS 4220.03A or B: 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, students assist clients through the challenges of mental health problems, crisis and mental disorders. Using nursing theories and effective communication skills, students help clients transform personal experiences. Students will appreciate the social responsibility of the nursing profession through not only direct care, but also, client advocacy.  
**Format:** Classes 2/week, clinical 6/week  
**Prerequisites:** NURS 3240.03, 3250.03

**NURS 4240.06B: Nursing Practice V.** (Intercession) The focus of this practice-based class is on synthesis of the domains of nursing practice with learned knowledge and processes. Learners integrate leadership knowledge and behaviours within social health care systems. Collaboration and advocacy with clients, other health care professionals and peers is emphasized. The learner may choose a clinical setting based on their learning needs and interests.  
**Format:** Clinical practicum 200 hours/5 weeks  
**Prerequisites:** NURS 4010.03, 4030.03, 4040.03, 4210.03, 4220.03, 4250.03, 4260.03

**NURS 4250.03A: 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. Collaboration with individuals, families, groups, communities and other health care professionals in working towards health goals will be emphasized. The learner will apply critical thinking in assessing needs and strengths for community development in a variety of community settings.  
**Format:** Lecture 2 hours, clinical 6 hours  
**Prerequisites:** NURS 3240.03 and 3250.03 for Generic students; NURS 3020.03 and 3270.03 for Post-Diploma students

**NURS 4260.03B: Community Development and Advocacy.** Builds on the content of NURS 4200.03. The focus is on critical thinking, intervention strategies and the evaluation of community health nursing strategies with client groups and communities. Community development through collaboration of health care agencies and community agencies with groups will be analyzed. Clinical experience in a variety of community settings will allow the student to apply the domains of nursing practice in a reflective manner to improve the health of the community as a whole.  
**Format:** Classes 2/week, clinical 6/week  
**Prerequisite:** NURS 4250.03

### Nursing Elective Classes

Basic students are required to complete 3 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 1996-97 offerings. When resources allow, the following are offered:

**NURS 4310.03: Advanced Clinical Decision Making in Nursing**

**NURS 4320.03: Transcultural Nursing.** Cultural factors affecting health, health services, practitioners and nursing care will be studied. Principles and tools of transcultural nursing care will be studied using simulated and real cross-cultural nursing situations.  
**Format:** Lecture 3 hours

**NURS 4330.03: Self-Directed Learning.** Students may carry out an independent study or project related to the theory or practice of nursing, under the direction of the faculty facilitator. Students will be encouraged to systematically identify, plan, execute and evaluate a learning project in nursing that is relevant to nursing practice.  
**Format:** Flexible according to study/project

**NURS 4340.03: Palliative Care; Theory and Practice.** This class will provide a general overview of the significant issues facing individuals and their families related to life threatening illness and dying. Research findings, theories of pain and symptom management, grief and loss, communication, and coping and their significance for palliative care nursing practice will be explored. The impact of health care reform on services for clients with life threatening illness (LTI) and the role of the nurse within palliative care will be a focus.  
**Format:** Lecture 2 hours  
**Prerequisites:** NURS 2070.03, 2220.03, 2250.03

**NURS 4350.03: Rehabilitation Concepts Applies to Nursing Chronically Ill and Disabled Adults**

**NURS 4360.03: Management: The Process in Health Care Agencies.** Focuses on management of resources to achieve goals within health care agencies and institutions. The agency/institution is viewed as a system within which each manager uses a variety of theory and practice based techniques to establish goals, plan and utilize resources and evaluate outcomes. Emphasis is placed on the day to day use of management strategies, techniques and skills. Relevant theoretical constructs and research will be explained and discussed examining its implications for practice. Current management problems in nursing will be explored. This is a beginning level class in management with emphasis on managing nursing.  
**Format:** Lecture/seminar  
**Prerequisites:** NURS 4030.03, or with instructor's permission

### Interdisciplinary Nursing Elective Classes

**NURS 4370.03: Women and Aging.** As women grow older the experience of aging is generally more difficult for them than for men. 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 ("granny bashing"), older women and housing; self-image and sexuality; health and the aging woman; and older women and poverty.

**Format:** Lecture/discussion/seminar 2 hours

**Prerequisites:** SOSA 1000.06, 1100.06, 1200.06, or two classes in Women's Studies

**Cross-listing:** SOSA 3245.03/5245.03, WOST 3810.03

**NURS 4800.03B: Interdisciplinary Course in Human Nutrition.** The class is an interdisciplinary study of the basic principles of nutrition needs throughout the life cycle. Physiological, psychological, socio-economic, physical, educational and cultural determinants are explored to explain why the nutritional status of Canadians can vary and how this variation affects the development of chronic disease. Special emphasis is given to community nutrition in the Atlantic Region.

**Format:** Lecture 3 hours/week

**Prerequisite:** BIOL 1000.06 or instructor's consent

**Cross-listing:** PHAR 4950.03, PHYT 3090.03, HEED 2250.03

**Please Note:** Descriptions for the following classes that qualify as nursing electives can be found in the Health Professions Interdisciplinary entry in this calendar.

**HLTH 3000.03: An Interdisciplinary Approach to Health Promotion.** See class description in Health Professions, Interdisciplinary section of this calendar.

**HLTH 4900.03: An Interdisciplinary Approach to Gerontology (Social Perspectives).** See class description in Health Professions, Interdisciplinary section of this calendar.

**HLTH 4910.03: An Interdisciplinary Approach to Gerontology (Health Perspectives).** See class description in Health Professions, Interdisciplinary section of this calendar.

### Classes Offered by Other Faculties

Classes offered by other faculties may be found in the calendar of the respective faculties. The following are required classes in the BScN degree.

**ANAT 1010.03R: Basic Human Anatomy.** See class description in Anatomy section of this calendar.

**BIOC 1420.03R: Introductory Biochemistry.** See class description in the Biochemistry section of this calendar.

**CHEM 1410.03R: Introductory Chemistry.** See class description in Chemistry section of this calendar.

**MICR 1100.03B: Health Science Microbiology.** This class is given by the Department of Microbiology of the Faculty of Medicine to meet the needs of the students in the Faculty of Health Professions. Elementary bacteriology and immunology includes a study of the structure and physiology of microorganisms, the ways microorganisms cause disease in man and the ways they affect man's well-being. Laboratory work provides experience in the

cultivation, isolation and identification of microorganisms and demonstrates their various activities.

**NOTE:** Students registering in this class must also register for either a morning or afternoon laboratory session.

**Format:** Lecture 1 hour, laboratory 2 hours

**PHYL 1010.06R: Human Physiology.** See class description in the Physiology and Biophysics section of this calendar.

## Diploma Programme for Registered Nurses in Outpost and Community Health Nursing

The programme in Outpost and Community Health Nursing prepares registered nurses for positions in Canadian outpost settings where nurses are the only resident health-care professionals. Instruction during the programme is highly individualized and clinically oriented. A 15-month programme beginning in September is offered for registered nurses. One academic year, extending over a period of approximately eight months, is spent at the University. This is followed by a 28-week, University-directed internship located in northern Canada. A 9-month programme beginning in August and in January is offered for nurses with a baccalaureate degree in nursing. Students spend one expanded term (approx. 16 weeks) at the University followed by a 21 week internship in northern Canada. A diploma in Outpost and Community Health Nursing is awarded at the completion of the programme. Current graduates of the programme, who are admitted to the Dalhousie BScN programme for registered nurses, can complete the BScN programme in approximately 16 months provided resources allow required nursing classes to be offered during the summer session.

Fees and a living allowance are paid by the sponsoring agency to all students. In return, all students are committed to a period of employment within an outpost setting with the sponsoring agency after completion of the programme.

### Course of Study for Outpost Nursing

**First Year: at the University:** NURS 0550.03, NURS 0551.03, NURS 0640.03, NURS 0930.03, NURS 0940.03, NURS 0950.03, NURS 0960.03, NURS 4800.03, HEED 1163.03.

**Internship: in northern Canada:** NURS 0193.06, NURS 0191.06, NURS 0196.06.

Students with baccalaureate degrees in nursing are exempted from NURS 0550.03, NURS 0551.03, NURS 4800.03, NURS 0191.06 and most components of HEED 1163.03. Class descriptions are available from the School of Nursing.

## Classes Offered

All Outpost nursing classes (numbered NURS 0550.03 through HEBD 1163.03) are open only to students enrolled in the Outpost Nursing Programme.

**NURS 0550.03A: Community Health Nursing and Health Education.** An introduction to theories, concepts, roles, tools and functions of community/public health nursing. Emphasis is on assessing, planning and evaluating primary health care in collaboration with communities and groups in cross-cultural settings. Principles and theories of teaching and learning are examined with a focus on the nurse as an educator.

**Instructor:** A. Vukic

**Format:** Lectures, discussion, group exercises, term papers and presentations. 4 hours/week

**NURS 0551.03B: Family Nursing.** An introductory class examining theories, concepts and nursing skills necessary for the provision of care to the family unit. Health needs throughout the lifespan are examined and the influences of social and cultural factors explored. Clinical practice includes supervised home visiting to a family in the community. It offers the student an opportunity to provide nursing care at various levels of health and illness as an individual and a member of the health team.

**Instructor:** A. Vukic

**Format:** Lectures, discussion, presentations. 3 hours/week, clinical 2 hours/week

**NURS 0640.03A or B: Mental Health Issues.** Mental health, as influenced by cultural, environmental, and developmental factors is addressed. Communication, leadership and problem solving skills are fostered through seminar discussion. Crisis theories and resolutions are explored. Emphasis is on cross-cultural community health nursing.

**Instructor:** A. Vukic

**Format:** Seminars, group exercises, lectures, discussions. 2 hours/week

**NURS 0930.03A or B: Clinical Medicine.** Common medical problems are addressed in seminars, clinical teaching and guided experience at local hospitals under the direction of Outpost Nursing instructors and University Medical School personnel. Skill in taking histories and performing physical examinations is developed. Concepts related to health promotion, illness prevention and practice management in a remote northern setting are integrated throughout the class. Instruction and supervised practise in basic laboratory procedures is provided by the staff of the provincial pathology laboratory.

**Instructors:** K. Cockersell, K. Stares

**NURS 0940.03A or B: Clinical Obstetrics and Gynaecology.** A programme of seminars, clinical teaching, and practical experience is conducted under the direction of Outpost Nursing instructors and University Medical School personnel. This class emphasizes the evaluation and care of the normal obstetrical patient and her family. Attention is given to common gynaecological problems. Supervised

clinical experience is provided at the Grace Maternity Hospital. Discussion of common abnormal conditions and their recognition is included. Concepts related to health promotion, illness prevention and practice management in a remote northern setting are integrated throughout the class.

**Instructor:** K. Stares

**NURS 0950.03A or B: Clinical Paediatrics.** Common paediatric problems are addressed in seminars, clinical teaching and guided experience at the IWK Children's Hospital under the direction of Outpost Nursing instructors and University Medical School personnel. Clinical placement in the office of a practising paediatrician is arranged. Skill in taking histories and examining children is developed. Consideration is given to normal growth and development and the health supervision of the well child. Concepts related to health promotion, illness prevention and practice management in a remote northern setting are integrated throughout the class.

**Instructor:** R. Martin-Misener

**NURS 0960.03A or B: Clinical Surgery.** This class is designed to prepare the student to care for patients with minor surgical problems and to recognize and provide emergency care for patients with more serious conditions. Students will complete the Basic Trauma Life Support Programme. An introduction to commonly encountered eye problems is included. This class is directed by Outpost Nursing instructors and University Medical School personnel.

**Instructor:** K. Cockersell

**NURS 0191.06A or B: Field Experience in Community Health Nursing.** A six week period of supervised field experience in community health nursing is arranged at a northern health centre for outpost nursing students during their internship. It is designed to enable the student to practise, in a northern setting, the community health teaching offered previously in the programme.

**NURS 0193.06A or B: Hospital Clinical Practicum.** A 14-week period of supervised clinical experience at a small northern hospital is arranged for outpost nursing students during their internship. This experience builds on clinical teaching offered previously in the programme and provides opportunity for students to strengthen clinical skills and judgement in a practice setting. Student experience is directed by the medical staff of the hospital and an Outpost Nursing instructor. Assignment to medical-surgical, obstetrical, paediatric, and ambulatory patients is arranged. Students have opportunity, under supervision, to care for women during labour and to conduct normal deliveries.

**NURS 0196.06A or B: Nursing Station Field Experience.** A six-week period of supervised field experience at a northern nursing station is arranged for outpost nursing students during their internship. This placement is designed to integrate teaching previously given during the programme and also to provide opportunity for students to become familiar with the types of administrative and supervisory roles which a nurse assumes in this setting. Students have the

opportunity to experience challenges relating to living and working within an unfamiliar culture and in a remote area.

**HEED 1163.03A: Biostatistics and Epidemiology.** See class description in Recreation, Physical and Health Education section of the calendar.

**NURS 4800.03B: Human Nutrition - Interdisciplinary Class.** See class description under this title previously stated in this section.

### Graduate Programme

For details of the Master's of Nursing programme, please consult the Faculty of Graduate Studies calendar.

# School of Occupational Therapy

**Location:** Forrest Building, Room 215,  
5869 University Avenue  
Halifax, N.S. B3H 3J5

**Telephone:** (902) 494-8804

**FAX:** (902) 494-1229

## Director

B.J. O'Shea, DipP & OT (Tor), BSc (Queen's),  
MS (Colorado State)

## Professor

B.J. O'Shea, DipP & OT (Tor), BSc (Queen's),  
MS (Colorado State)

## Associate Professor

E. Townsend, DipP & OT, BSc (OT) (Tor),  
MAEd (St. FX), PhD (Dal)

## Assistant Professors

S. Banks, BSc, MA (Dal)

E.B. Bell, DipP & OT (Tor) BSc (Queen's), MS  
(Virginia Commonwealth)

S.E. Doble, BSc (OT) (Western), MS (Boston)

J. Ferguson, BSc (OT) (Dal), MS (Boston)

L. Primeau, BSc (OT) (Western), MA, PhD (USC)

E. Smits, BSc (OT) (Western), MSc, PhD  
(Queen's)

A. Unruh, BSc (OT) (Western), MSW (Carleton)

## Fieldwork Co-ordinator

E. B. Bell, DipP & OT (Tor) BSc (Queen's), MS  
(Virginia Commonwealth)

## Provincial Fieldwork Co-ordinators

New Brunswick: L. Bleau, BSc (OT) (McG)

Newfoundland: B. Head, BSc (OT) (Alberta)

Nova Scotia: S. Taylor, Dip OT (Queen's)

Prince Edward Island: H. Cutcliffe, Dip OT  
(Man)

## Honourary Appointments

A.M. Cassin, BA (Man), MA (UBC), PhD (Tor),  
Assistant Professor, School of Public  
Administration, Faculty of Management

A.J. Clark, BSc, MD (Dal), Assistant Professor,  
Department of Anaesthesia, Faculty of  
Medicine

P. McGrath, BA, MA (Sask), PhD (Queen's),  
Professor, Department of Psychology, Faculty  
of Science

M. Spindler, DipP & OT (Tor)

## Regional Facilities Currently Participating in the Fieldwork Programme

Practising occupational therapists in the Atlantic region give their time and expertise to a structured practical fieldwork education programme. The following sites provide network education for students:

## New Brunswick

Bio-Engineering Institute, Fredericton

Campbellton Regional Hospital, Campbellton

Centracare, Saint John

Centre Hospitaliere Restigouche, Campbellton

Chaleur Regional Hospital, Bathurst

Community Mental Health Services, Saint John

Dr. Everett Chalmers Hospital, Fredericton

Family and Community Social Services, Saint John

Father J. Angus MacDonald Centre, Moncton

Hopital Docteur George L. Dumont, Moncton

Hopital l'Enfant Jesus, Caraquet

Moncton City Hospital, Moncton

New Brunswick Extra-Mural Hospital  
Region 7 Hospital Corporation,  
Chatham/Newcastle

Saint John Regional Hospital, Saint John

St. Joseph's Hospital, Saint John

Stan Cassidy Centre for Rehabilitation,  
Fredericton

Sussex Health Centre, Sussex

Tobique Valley Hospital Inc., Plaster Rock

Worker's Rehabilitation Centre, Saint John  
Newfoundland

Bay St. George Senior Citizen's Centre

Carbonear General Hospital

Central Newfoundland Regional Health Centre,  
Grand Falls-Windsor

Children's Rehabilitation Centre, St. John's

Community Health, St. John's Region

Dr. Charles L. LeGrow Health Centre,  
Port-aux-Basques

Dr. G.B. Cross Memorial Hospital, Clarendville

Fit For Work, St. John's

Health Sciences Centre, St. John's

Integrated Occupational Health Services

Janeway Child Health Centre, St. John's

St. Clare's Mercy Hospital, St. John's

Therapeutic Consulting, Gander

Waterford Hospital, St. John's

Western Memorial Hospital, Corner Brook

## Nova Scotia

Camp Hill Medical Centre, Halifax

Cape Breton Hospital, Sydney

Devtek Applied Electronics, Dartmouth

Digby General Hospital, Digby

Eastern Shore Memorial Hospital, Sheet  
Harbour

Harbourview Hospital Corp, North Sydney

Health Services Association of the South Shore,  
Bridgewater and Lunenburg

Hershey Canada Inc., Moirs Division,  
Dartmouth

Izaak Walton Killam Hospital for Children,  
Halifax

Multiple Sclerosis Society, Dartmouth

Nova Scotia Hospital, Dartmouth

Nova Scotia Rehabilitation Centre, Halifax

Soldier's Memorial Hospital, Middleton

St. Martha's Hospital, Antigonish

Victoria General Hospital, Halifax

Yarmouth Regional Hospital, Yarmouth

## Prince Edward Island

Community and Residential Services

Hillsborough Hospital, Charlottetown



Prince County Hospital, Summerside  
Prince Edward Home, Charlottetown  
Queen Elizabeth Hospital, Charlottetown  
Workers Compensation Board, Charlottetown

## Regional History and Mandate

The School of Occupational Therapy was established in 1982 as the only occupational therapy education programme in the Atlantic Region. The School exists in response to strong regional advocacy, particularly since 1958 when a School was approved in principle by the University Senate. The regional orientation of the School fosters collaborative teaching, research and professional activities linking those at the University with occupational therapy and other service providers, government workers, and citizens in the four Atlantic Provinces.

## What is Occupational Therapy?

Occupational therapy is a health profession concerned with restoring optimal occupational function, both physical and mental, in individuals from all age groups, and assisting them to resume a responsible role in the family and in society. "Occupation" refers to all activities in which someone (child or adult) engages, including self care, home and community activities, work-related activities, and social and leisure activities. The occupational therapist evaluates function through an analysis of human performance, relationships and situations. Occupational therapy engages a person in directed experiential learning and problem solving activities which are appropriate to the individual and which have been scientifically selected to accomplish a specific functional goal. The dysfunctional person is taught to set realistic goals. Through occupational therapy, the person is guided in the acquisition of adaptive skills which enable resumption of a productive and satisfying role in society. Occupational therapy services are best delivered in the community within the normal environment of the client, although initial services may be provided within a hospital or rehabilitation setting.

## Career Opportunities

Occupational therapy practice is broad in scope and offers a wide range of career opportunities for both men and women as it is directed towards preventing or reducing the effects of occupational dysfunction arising from any cause in any age group. Job opportunities exist for occupational therapists in acute and chronic care hospitals, mental retardation facilities, mental health centres, rehabilitation centres, nursing homes and community service agencies. Career opportunities for occupational therapists in schools, government, industry and correctional services are increasing. Occupational therapists may find careers in administration, education, research or consulting. Normally, graduate education would be required for careers in education and research.

## Licence to Practice Occupational Therapy

In some provinces, occupational therapists require a licence to practice. The School of Occupational Therapy has no jurisdiction in matters relating to licensing. These functions are entirely under the control of the provincial licensing body. Information on provincial licensing regulations may be obtained from: the Nova Scotia Association of Occupational Therapists, Suite 740, 5991 Spring Garden Road, Halifax, Nova Scotia, B3H 1Y6; the New Brunswick Association of Occupational Therapists, c/o Occupational Therapy Services, Stan Cassidy Centre for Rehabilitation, 180 Woodbridge St., Fredericton, New Brunswick, E3B 4R3; the Prince Edward Island Association of Occupational Therapists, PO Box 2227, Charlottetown, P.E.I., C1A 3N3; or the Newfoundland and Labrador Association of Occupational Therapists, PO Box 5423, St. John's, Newfoundland, A1C B1B.

## Professional Associations

The Canadian Association of Occupational Therapists represents the professional interests of occupational therapists across Canada at the national level. Membership is encouraged for students and graduates. Information on membership may be obtained from the School or by writing directly to: the Canadian Association of Occupational Therapists, Suite 3400, 1125 Colonel By Drive, Carleton University, Ottawa, ON K1S 5R1. Internationally, occupational therapy standards of education and practice are set and maintained by the World Federation of Occupational Therapists.

Provincial professional organizations represent the interests of occupational therapists within a province. Further information may be obtained by writing directly to the organization. In the Atlantic region, these are: the Nova Scotia Society of Occupational Therapists, Suite 740, 5991 Spring Garden Road, Halifax, Nova Scotia, B3H 1Y6; the New Brunswick Association of Occupational Therapists, c/o Occupational Therapy Services, Stan Cassidy Centre for Rehabilitation, 180 Woodbridge St., Fredericton, New Brunswick, E3B 4R3; the Prince Edward Island Occupational Therapy Society, PO Box 2248, Charlottetown, Prince Edward Island, C1A 8B9; the Newfoundland & Labrador Association of Occupational Therapists, PO Box 5423, St. John's, Newfoundland, A1C B1B.

## School of Occupational Therapy Regulations

All students are required to observe the University and Academic Regulations as described in this calendar.

### 1. Workload

Students must have their programme approved by their faculty advisor in the School of Occupational Therapy before registration each year. In seeking this approval, students should have determined their eligibility for the proposed classes by having satisfied the

prerequisites prescribed. The elective classes must be at the 2000 level or higher. Electives should be chosen to expand knowledge in an area of special interest of relevance to occupational therapy. Electives must be approved by Director or faculty advisor. Except in special circumstances, a student's workload must not exceed the maximum workload described in Course of Study below. A maximum course load is 36, 35, and 34 credit hours respectively in years II, III, and IV (see Academic Regulation 4.1.3). For the purposes of residency, loan, and scholarship requirements 30 credit hours is considered a full course load in all years.

## 2. Grade Point Average Requirements

The grade point average system is described in the Academic Regulations, under 19.1.

## 3. Grade Requirements for Academic Classes

Professional classes are all classes with Occupational Therapy numbers. A student must obtain a grade of at least C (GPA 2.00) in each professional class for that class to be counted as a credit for the degree or as a prerequisite for another professional class. Passing grade in all non-professional required classes and electives is D. In grade point average calculations a D counts 1.00 point (see Academic Regulation 19.1.1).

A student who earns a grade of C or better for term work but fails a final exam worth 40% or more may be given a grade of FM and be permitted to write a supplemental examination (Academic Regulation 18.6). In cases, where FM is not permitted, the student must repeat that class to obtain a passing grade.

## 4. Grade Requirements of Fieldwork Classes

Fieldwork is graded on a Pass/Fail system. A student must obtain a passing grade in each fieldwork placement in order to be eligible to proceed in the programme.

## 5. Requirements for Promotion

Promotion each year is dependent upon satisfactory completion of fieldwork and achievement of academic requirements. The fieldwork requirement is satisfactory completion of OCCU 2222.00 for promotion to third-year, and OCCU 3322.00 for promotion to fourth year.

## 6. Degree Requirements

To satisfy requirements for the Degree of Bachelor of Science in Occupational Therapy, a student must:

- a) accumulate at least 135 credit hours (or the equivalent for a transfer student) including all prescribed classes, with a cumulative GPA of at least 2.00, and
- b) satisfactorily complete 975 hours of fieldwork experience, additional to credit classes (OCCU 2222.00: 225 hours, OCCU 3322.00: 375 hours, OCCU 4420.00: 300 hours)

## 7. Class Changes

Academic Regulation 6 applies to all class changes in Occupational Therapy with the exception of 4000 level B classes.

The last day for adding all 4000-level B term Occupational Therapy classes without academic penalty is Friday of the first week following study break (see Schedule of Academic Dates).

The last day for withdrawing from all 4000-level B term Occupational Therapy classes, without academic penalty, is Friday of the second week following study break.

## 8. Degree with Honours Requirements

All classes taken while registered in the School of Occupational Therapy will be included in the GPA calculation to determine honours standing. Honours standing is achieved by students who satisfy degree requirements with a cumulative GPA of 3.00 or higher, have no grade in an advanced class (2000 level and above) less than B- and achieve a minimum grade of A- in OCCU 4421.06 (independent research project).

## 9. Degree with First Class Honours Requirements

First class honours standing is achieved by students who satisfy degree requirements with a GPA of 3.70 or higher, have no grade in an advanced class (2000 level and above) less than B and achieve a minimum grade of A- in OCCU 4421.06 (independent research project).

## 10. Required Withdrawal From the Programme

A student is normally required to withdraw from the programme if at the end of the academic year:

- (a) less than 22 credit hours have been accumulated in that year for full time students or less than the number of credit hours in which the student was registered have been accumulated for part-time students or
- (b) having accumulated sufficient credit hours the required cumulative GPA is not attained.

A student who fails a repeated class (academic or fieldwork) is normally required to withdraw from the programme.

## 11. Appeals

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 in academic classes or with the fieldwork coordinator and preceptor in fieldwork classes before proceeding according to School Appeal Procedures, a copy of which may be obtained from the School Office. Briefly, such an appeal should be addressed to the Chairman of the School Committee on Studies and must clearly state the arguments and expectations of the petitioner (see Academic Regulation 26.2).

## Programme Objectives

The Bachelor of Science programme in Occupational Therapy at Dalhousie University is designed to prepare generalist occupational therapists to be competent, responsible practitioners. This honours baccalaureate programme has been designed to emphasize the theoretical foundation and scientific principles which form the basis for occupational therapy practice. With this knowledge base, the students are guided in the development of the skills required by entry level occupational therapists through fieldwork experiences integrated with the academic curriculum.

The School of Occupational Therapy at Dalhousie University is a regional school serving the four Atlantic Provinces. Since many practice settings in the Atlantic region are non-traditional in nature, the programme is designed to provide students with opportunities to apply and practice skills in a variety of settings and with a range of clients from different age groups and with different types of occupational dysfunction. With this background, graduates will be prepared to accept the challenge of expanding the occupational therapy services in the Atlantic region.

The educational approach used in the Occupational Therapy programme at Dalhousie University is one which encourages logical thinking, creative problem solving and the application of scientific principles to the occupational therapy clinical reasoning process. The medium of occupational therapy is presented as purposeful activity in its broadest context. Students have an opportunity to familiarize themselves with a wide range of activities and to become adept at analyzing activities for therapeutic use.

The emphasis on the scientific nature of Occupational Therapy practice culminates in the fourth year of the programme in which students are required to complete a research project in conjunction with their final fieldwork placement. This project addresses a research question pertinent to occupational therapy practice in Atlantic Canada.

The Bachelor of Science (Occupational Therapy) programme embraces the educational standards of the Canadian Association of Occupational Therapists (CAOT) and is fully accredited by that body. Graduates are eligible to take the Certification Examination offered by CAOT. Successful completion of this examination is required for membership in CAOT and for licensure to practice in provinces where practice is governed by statute.

## Programme

The degree of Bachelor of Science (Occupational Therapy) requires a minimum of four years of University study. The programme of study requires at least one year of general science followed by three years of occupational therapy. Applicants must successfully complete the prescribed first-year course of study in the College of Arts and Science at Dalhousie University or the equivalent programme at another recognized university before they can

be considered for admission to the School of Occupational Therapy. These requirements must be completed by May in the year of expected admission to the School of Occupational Therapy.

## Fieldwork

Fieldwork is the practical component of the educational programme completed in a variety of sites in which students have direct contact with patients/clients with the guidance of a preceptor. It enables students to integrate theoretical knowledge with practice and to demonstrate their knowledge and professional competence in actual practice situations.

All Fieldwork is completed in full-time blocks which are integrated with the academic programme. The block curriculum design permits full use of professional sites throughout the Atlantic region and allows students the opportunity of gaining experience in other parts of Canada as well. The second year of the programme has a normal academic schedule as well as six weeks of fieldwork during the summer months. In the third and fourth year full-time fieldwork is included within the second academic term. During the 1237.5 fieldwork hours, each student must gain a balance of experience in addressing problems arising from both physical and psychosocial occupational dysfunction. As far as possible, students are placed to gain experience in at least one specialized programme such as programmes for children or elderly people or programmes in the area of vocational assessment. Students may be assigned to fieldwork placements in occupational therapy programmes in any of the four Atlantic provinces. Normally a student will complete at least two regional placements outside the Halifax/Dartmouth area and one 8-week placement (OCCU 4420.00) outside the Atlantic region for which there is a \$30.00 placement fee. Students are responsible for the placement fee and for travel and living costs associated with fieldwork. Placements will be arranged by the School and will be assigned on the basis of the student's previous fieldwork experience and level of preparation. Student preference is constrained by limited availability of fieldwork placements.

Fieldwork hours are completed in the following pattern, calculated on the basis of a 37.5 hour week:

- Six weeks following Year 2: (OCCU 2222.00) 225.0 hours in the Atlantic region
- Ten weeks beginning during Year 3: (OCCU 3322.00) 375.0 hours in the Atlantic region
- Eight weeks following Year 3 or Year 4: (OCCU 4420.00) 300.0 hours outside of the Atlantic region
- Seven weeks during Year 4: (as part of OCCU 4421.06) 262.5 hours in the Atlantic region

**TOTAL: 31 weeks; 1,162.5 hours**

## Course of Study

The prescribed first-year classes are listed in the section describing admission requirements.

Year 2: ANAT 2170.06, 2100.03; PHYL 2030.06; OCCU 2207.03, 2208.03, 2210.02, 2213.03, 2215.03, 2218.04, 2222.00; and STAT 1060.03 (if no previous credit in Statistics).

Year 3: PHYL 3110.03; OCCU 3302.05, 3307.04, 3308.03, 3310.03, 3318.04, 3322.00, 3330.04, 3350.03, 3360.03, and one 3 credit hour elective in psychology or sociology, 2000 level or above.

Year 4: Health Services Administration (HEAS) 4401.03; OCCU 4420.00, 4400.01, 4404.03, 4407.03, 4419.06, 4421.06, 6 credit hours of electives in Occupational Therapy, 6 credit hours of electives chosen from Arts and Science, Administrative Studies, Education, Health Professions, or Medicine, 2000 level or above.

All classes are completed during the normal academic year with the exception of OCCU 2222.00, 3322.00, and 4420.00 which are completed during the summer months (see class descriptions).

## Classes Offered

### Required Classes

**ANAT 2170.06R: Gross Anatomy.** See class description in Anatomy section of this calendar.

**ANAT 2100.03B: Neuroanatomy.** See class description in Anatomy section of this calendar.

**STAT 1060.03A: Introductory Statistics for Science and Health Science.** See class description in Statistics section of this calendar.

**PHYL 2030.06R: Human Physiology.** See class description in the Physiology and Biophysics section of this calendar.

**OCCU 2207.03A: Occupational Function: Life Span Development.** Theories and processes of physical, psychological and social development throughout the life cycle are presented and related to occupational development through the life span. Roles and developmental life tasks are analyzed and discussed with particular reference to facilitation of adaptive occupational function. The class will also focus on the significance of human development to the practice of occupational therapy.

**Instructor:** TBA  
**Format:** Lecture, 3 hours  
**Prerequisite:** PSYO 1000.06, 1010.06 or 1500.06, SOSA 1000.06, 1050.06, 1100.06 or 1200.06  
**Restriction:** Occupational Therapy students only

**OCCU 2208.03A: Occupational Therapy: Theory and Process.** The theoretical base of occupational therapy practice is addressed through the work of Mosey, Kielhofner and other theorists. Students gain an appreciation of the relationship between theory and practice through client storytelling and experiential activities using a generic human occupation frame of reference.

**Instructor:** B. O'Shea  
**Format:** Client storytelling seminar 3 hours, lab 2 hours  
**Prerequisite:** SOSA 1000.06, 1050.06, 1100.06 or 1200.06, PSYO 1000.06, 1010.06 or 1500.06  
**Restriction:** Occupational Therapy students only

**OCCU 2210.02R: Kinesiology.** The scientific approach to the analysis of human movement is introduced. Mechanical principles governing human motion and functional anatomy are discussed and inter-related to develop an understanding of the factors responsible for normal movement. Techniques of analysis of the physical components of activities using observation skills and motion analysis technology are also presented.

**Instructor:** TBA  
**Format:** Lecture/lab 2 hours  
**Co-requisite:** ANAT 2170.06  
**Restriction:** Occupational Therapy students only

**OCCU 2213.03B: Occupations - Analysis, Therapeutic Selection and Adaptation.** The medium of occupational therapy intervention is occupation, defined in its broadest concept. The role of occupation in accomplishing life tasks, satisfying physical and emotional needs and restoring physical and mental occupational health is explored. Through independent learning modules and directed laboratory experience, students analyze a range of occupations. Analysis of the physical, cognitive, perceptual and psychosocial demands of an occupation are related to the therapeutic selection and adaptation of occupation to meet client defined goals.

**Instructor:** Staff  
**Format:** Lecture/lab 4 hours  
**Prerequisite:** OCCU 2208.03  
**Co-requisite:** OCCU 2210.02, ANAT 2170.06  
**Restriction:** Occupational Therapy students only

**OCCU 2215.03B: Client-Centred Occupational Assessment.** This class introduces student occupational therapists to fundamental concepts, processes, and strategies in client-centred occupational assessment. The focus is on embedding occupational therapy theory in the assessment stage of practice. Students learn to collaborate in the assessment of occupations with clients who may be individuals, groups, agencies, or businesses. They learn to integrate qualitative, quantitative and critical assessment data into occupational profiles of individuals or environments. Introductory knowledge and skill in client-centred occupational assessment are demonstrated through individual and group, experiential and written assignments which require initiative, resourcefulness, problem solving, reflective reasoning, critical analysis, and self-reflection.

**Instructor:** E. Townsend  
**Format:** Problem-based seminars/labs/self-directed assignments 5 hours  
**Prerequisite:** PSYO 1000.06, 1010.06, or 1500.06; SOSA 1000.06, 1050.06, 1100.06 or 1200.06; STAT 1060.03; OCCU 2207.03 and 2208.03  
**Co-requisite:** ANAT 2170.06 and 2100.03; PHYL 2030.06; OCCU 2210.02, 2213.03, 2218.04  
**Restriction:** Occupational Therapy students only

**OCCU 2218.04R: Introduction to Professional Practice.** The professional skills and ethics fundamental to the practice of occupational therapy are introduced by means of seminar and practical experience. Both dyadic and group therapeutic interaction are examined using communication skills in a variety of professional relationships. Other practice skills such as professional behaviour, interviewing, and the application of the occupational therapy clinical reasoning process are also taught. Brief field experiences in clinical occupational therapy programmes augment didactic and experiential classroom instruction. These skills are applied during Fieldwork: Level 1.

**Instructor:** J. Ferguson  
**Format:** Seminar/practical 2 hours  
**Co-requisite:** OCCU 2207.03, 2208.03  
**Restriction:** Occupational Therapy students only

**OCCU 2222.00B: Fieldwork I.** This initial six-week field experience in an accredited setting in the Atlantic region introduces the student to occupational therapy practice environments. Here, under the on-going direction of a preceptor, students begin to observe and learn professional skills and patterns of behaviour. They practice specific knowledge application and skills with clients in harmony with the stated fieldwork learning objectives.

**Co-requisite:** All other prescribed second-year classes except STAT 1060.03

**Restriction:** Occupational Therapy students only

**PHYL 3110.03A: Neurophysiology.** The student is provided with the principles of neurophysiology. Current concepts of the organization and function of the mammalian nervous system are surveyed.

**Instructor:** D. Rasmussen  
**Format:** Lecture/tutorial 5 hours  
**Prerequisites:** PHYL 2030.06, ANAT 2100.03

**OCCU 3302.05R: Mental Disorders.** (OCCU 3302.05 replaces OCCU 2201.02 and OCCU 3301.03) This class provides an overview of the field of psychiatry and mental disorders. Students learn about legal and ethical guidelines for psychiatric diagnosis and treatment, and about the classification, epidemiology, multiple causation and assessment of mental disorders. The etiology, symptoms, behaviour, functional problems, treatment, management and prognosis of a variety of mental disorders occurring in persons of all ages including children, adolescents, adults and the elderly are reviewed. The management of mental disorders in those with developmental disabilities and those with chronic mental disorders is discussed. Other management issues such as indications for individual or group, institutional or community treatment are considered.

**Instructors:** S. Taylor, staff  
**Format:** Lecture 3 hours  
**Prerequisites:** PSYO 1000.06, 1010.06 or 1500.06; OCCU 2207.03

**Restriction:** Occupational Therapy students only

**OCCU 3307.04R: Therapeutic Procedures - Psychosocial.** This class is designed to increase students' understanding of the psychosocial adaptation problems experienced by those with mental disorders, physical disorders, developmental disabilities, and lifestyle problems. Major psychosocial issues, such as the influences that change, loss of meaning and feelings of incompetence have on individuals' occupational functioning, will be explored. Students will be provided with opportunities to develop the ability to apply theoretical frames of reference of the practice of psychosocial occupational therapy. The ability to determine the occupational needs of individuals experiencing psychosocial dysfunction, and to apply techniques and strategies to restore, maintain and/or develop occupational functioning will be emphasized. Through the use of case studies, students will learn how to develop and implement individual and group intervention programmes in community-based and institutionally-based settings for clients at various stages of the life cycle.

**Instructor:** L. Primeau  
**Format:** Lecture/lab 3 hours  
**Prerequisites:** OCCU 2207.03, 2208.03, 2218.04, 2213.03, 2215.03  
**Co-requisite:** OCCU 3302.05  
**Restriction:** Occupational Therapy students only

**OCCU 3308.03R: Therapeutic Procedures - Neurodevelopmental.** Current theories of the neurodevelopmental approach to the remediation of dysfunction resulting from neurological damage are presented. Theoretical constructs are applied to the development of occupational therapy programmes for clients with congenital, neonatal and acquired neurological defects. Evaluation tools and therapeutic strategies appropriate for neurological dysfunction are presented and practised. Among the current theorists discussed are Ayres, Bobath, Brunnstrom and Rood.

**Instructor:** E. Smits  
**Format:** Lecture 3 hours  
**Prerequisites:** ANAT 2170.06, 2100.03; PHYL 2030.06; OCCU 2207.03, 2208.03, 2218.04, 2213.03, 2215.03

**Co-requisites:** PHYL 3110.03, OCCU 3330.04  
**Restriction:** Occupational Therapy students only

**OCCU 3310.03A: Rehabilitation Technology.** This class addresses primarily three areas of rehabilitation technology, namely orthotics, prosthetics and the use of computerized technical aids in occupational therapy. The principles and current theories of orthotic and prosthetic management of upper and lower limb problems are presented along with laboratory experience in design and construction of static and dynamic orthoses. Technical aids used in occupational therapy range from simple therapeutic computer applications to computerized environmental controls and communication aids. Emphasis is on problem analysis and design of simple devices and evaluation and selection of technology to solve occupational problems.

**Instructor:** TBA  
**Format:** Lecture/lab 6 hours

**Prerequisites:** ANAT 2170.06; PHYL 2030.06; OCCU 2208.03, 2210.02, 2213.03, 2215.03, 2218.04  
**Co-requisites:** OCCU 3330.04, 3350.03, 3360.04  
**Restriction:** Occupational Therapy students only

**OCCU 3318.04R: Professional Practice.** This class expands on the professional skills studied in OCCU 2220.02 and Fieldwork I to include an in-depth perspective of family dynamics pertinent to occupational therapists and a broad understanding of leadership, co-leadership, group dynamics, programme planning for groups, and analysis of group process.

**Instructor:** S. Banks  
**Format:** Lecture/practical 2 hours  
**Prerequisites:** All second-year classes  
**Co-requisites:** All third-year classes except OCCU 3322.00  
**Restriction:** Occupational Therapy students only

**OCCU 3322.00B: Fieldwork II.** During this ten-week field experience in the Atlantic Region students continue to develop skills and patterns of behaviour and begin to acquire competence in the role of occupational therapist through modelling on the behaviours of their preceptor. They also gradually develop their professional reasoning skills in the context of client-centered problem solving with on-going coaching and monitoring by the preceptor. Students assume partial responsibility for gradually increasing caseloads thus gaining experience in applying therapeutic principles to occupational problems. Students also complete a community occupational therapy project that enables them to explore the community beyond the practice setting.

**Co-requisites:** All third-year classes except elective  
**Restriction:** Occupational Therapy students only

**OCCU 3330.04A: Medical Conditions and Disease Processes: Sources of Occupational Difficulty.** This class uses a variety of knowledge sources and strategies to help students learn about medical conditions and disease processes they are likely to encounter in the practice of occupational therapy. Pathologists introduce students to general pathological processes underlying medical conditions and disease processes. Health professionals from different specialty fields introduce students to their roles in treating people with different medical conditions and disease processes. Health consumers introduce students to the daily experience of living with a medical condition of disease process. Students also develop information searching skills for learning about medical conditions and disease processes through published information. Students are expected to apply this knowledge to their growing understanding of occupational therapy. Through this class students learn to use a variety of strategies to update their knowledge of medical conditions and disease processes underlying occupational difficulties throughout their professional careers.

**Instructors:** S. Banks, staff  
**Format:** Lecture/independent study  
**Prerequisites:** ANAT 2170.06, 2100.03, PHYL 2020.06; OCCU 2210.02

**Co-requisite:** PHYL 3110.03  
**Restriction:**

Occupational Therapy students only

**OCCU 3350.03B: Therapeutic Procedures - Biomechanical.** The principles and techniques of biomechanical analysis are applied to the development of joint protection programmes and programmes to increase joint mobility, muscle strength and endurance in conditions which result in musculoskeletal dysfunction. Mechanical principles are applied to the adaptation of equipment and procedures to achieve maximum restoration of occupational function. Graduated work conditioning programmes are discussed. Biofeedback is presented as an adjunct to therapeutic programmes.

**Instructor:** TBA  
**Format:** Lecture/lab 4 hours  
**Prerequisites:** ANAT 2170.06; PHYL 2030.06; OCCU 2207.03, 2208.03, 2210.02, 2213.03, 2215.03, 2218.04

**Co-requisite:** OCCU 3330.04  
**Restriction:** Occupational Therapy students only

**OCCU 3360.04A: Therapeutic Procedures - Rehabilitative.** The theory and principles of rehabilitation are presented and applied to the management of temporary and permanent disability. Evaluation tools used include occupational assessment, vocational and pre-vocational testing and environmental accessibility evaluation. The principle of adaptation applied to occupational performance, equipment, and environment is integrated with the problem solving approach in planning programmes to achieve maximum occupational function at home, at work, at school, and in the community.

**Instructor:** J. Ferguson  
**Format:** Lecture/lab 4 hours  
**Prerequisites:** ANAT 2170.06; PHYL 2030.06; OCCU 2207.03, 2208.03, 2210.02, 2213.03, 2215.03, 2218.04

**Co-requisites:** OCCU 3330.04 and 3302.05  
**Restriction:** Restricted to Occupational Therapy students

**HEAS 4001.03A: Health Services Management.** The development and structure of the Canadian Health Care System are presented. The management cycle is taught with an emphasis on effective management of human resources. Legal and ethical issues are explored in the context of health services management.

**Instructor:** TBA  
**Format:** Lecture

**OCCU 4400.01A: Pharmacology.** This class covers the effects, side effects, indications and contraindications of major classes of drugs used in selected medical and psychiatric conditions. The issue of compliance is discussed.

**Instructor:** Staff  
**Format:** Lecture 1 hour  
**Prerequisites:** PHYL 3110.03; OCCU 3302.05, 3330.04

**Restriction:** Occupational Therapy students only

**OCCU 4404.03A: Occupational Therapy Programme Design and Evaluation.** The process of how to design remediation, maintenance, promotion and prevention

programmes to meet the occupational performance needs of various target populations is addressed. Students are provided with opportunities to explore how various factors, such as qualities of the setting and professional theoretical models, will influence the design and implementation of a programme. Strategies that one might utilize to enhance the process of developing and implementing programmes are identified. In order to ensure that programmes meet the needs of the target population, students determine how to develop evaluation protocols that will measure the process, impact and outcome of programmes.

**Instructor:** TBA  
**Format:** Lecture/lab 3 hours  
**Prerequisites:** All third-year classes  
**Restriction:** Occupational Therapy students only

**OCCU 4407.03A: Scientific Inquiry in Occupational Therapy.** Basic research methodology and its application to occupational therapy practice are discussed. Emphasis is on programme evaluation and investigations based on scientific principles. Students learn to design clinical recording methods to facilitate analysis of therapy effects. Critical analysis and interpretation of research literature is included.

**Instructor:** E. Smits  
**Format:** Lecture 3 hours  
**Prerequisites:** STAT 1060.03, OCCU 3321.00  
**Restriction:** Occupational Therapy students only

**OCCU 4419.06R: Advanced Professional Practice.** This class is designed to develop the leadership potential of student occupational therapists so that they are proactive practitioners in occupational therapy and society. Specifically, students are challenged to develop analyses and action strategies for shaping institutional and community environments. The emphasis is on creating therapeutic and living environments which enable people to identify and develop meaningful patterns of occupation despite disability, difficult life transitions, or social disadvantages. Building particularly on OCCU 2218.04, 2221.00, 3318.04, 3319.00 and 3321.00 (class and field experience/knowledge) students will explore leadership potential in occupational therapy resource persons, advocates, policy and programme developers, educators, consultants and community developers. To promote leadership, the class emphasizes problem-based and experimental learning.

**Instructor:** E. Townsend  
**Format:** Lecture/project 4 hours  
**Prerequisites:** All third-year classes  
**Restriction:** Occupational Therapy students only

**OCCU 4420.00A or B: Fieldwork III.** Eight weeks are spent in practice under professional direction outside the Atlantic region. Students develop competence in applying theoretical knowledge and clinical skills to identification and definition of client problems, planning and conducting programmes and measuring goal attainment. Under supervision, students assume responsibility for a caseload of

approximately 75% of that of an entry level therapist. Opportunities for involvement in community health care programmes are included. This class would normally be completed in the summer preceding the fourth year.

**Prerequisite:** OCCU 3321.00  
**Restriction:** Occupational Therapy students only

**OCCU 4421.06R: Independent Study and Advanced Fieldwork.** Students complete a scientific study of an approved topic under the direction of an assigned tutor. Topics must be relevant to current occupational therapy practice. Seven weeks of fieldwork experience relevant to the topic of study are used to increase knowledge and experience in the area and allow collection of data pertinent to the study. A seminar presentation and typewritten report.

**Instructor:** TBA  
**Prerequisites:** STAT 1060.03, all third-year classes

**Corequisites:** OCCU 4404.03, 4407.03, 4419.06  
**Restriction:** Occupational Therapy students only

## Occupational Therapy Electives

**OCCU 4412.03B: Advanced Neurodevelopmental and Sensory Integration Therapy.** An in-depth analysis of advanced theories and techniques of neurodevelopmental and sensory integration therapy. Experience in applying these therapeutic procedures to clinical problems is gained in laboratory sessions and through individual field tutoring.

**Instructor:** R. Smits  
**Prerequisites:** ANAT 2100.03; PHYL 3110.03; OCCU 3308.03 and 3321.00

**Restriction:** Occupational Therapy students only

**OCCU 4416.03B: Vocational Rehabilitation.** The role of the occupational therapist in vocational rehabilitation is explored. Job analyses, pre-vocational skills exploration and evaluation, job sample design and evaluation, situational assessment and work adjustment programmes are major topics. Work related aptitude testing and career counselling methods are discussed in relation to individuals experiencing physical, cognitive and emotional dysfunctions. The use of work information indexes and relevant community resources is emphasized.

**Instructor:** Staff  
**Prerequisites:** OCCU 3350.03, 3360.04, 3321.00  
**Restriction:** Occupational Therapy students only

**OCCU 4425.03B/4426.03B/4427.03B: Directed Study in Occupational Therapy.** In this class students may individually or in small groups explore a particular topic within occupational therapy under the direction of a faculty member. The topic and requirements for the class are jointly decided by the students and the professor involved. An outline of the objectives and evaluation methods for the class must be approved by the Committee on Studies before class work begins. A paper or presentation prepared for this class may not be submitted for credit in any other class.

**Instructor:** Staff

**Prerequisite:** Permission of Committee on Studies

**Restriction:** Occupational Therapy students only

**HLTH 4900.03A: An Interdisciplinary Approach to Gerontology (Social Perspectives).** See class description in Health Professions, Interdisciplinary section of this calendar.

**HLTH 4910.03B: An Interdisciplinary Approach to Gerontology (Health Perspectives).** See class description in Health Professions, Interdisciplinary section of this calendar.



# Oceanography

Location: Life Sciences Centre  
 Telephone: (902) 494-3557  
 FAX: (902) 494-3877  
 e-mail: OCEANOGRAPHY@DAL.CA

## Chairperson of Department

A.J. Bowen

## Undergraduate Advisor

B.R. Ruddick (494-2505)

## Graduate Advisor

J. Grant (494-2021)

## Professors

- C. Beaumont, BSc (Sussex), PhD (Dal), (INCO Fellow of the CIAR)  
 A.J. Bowen, MA (Cantab), PhD (Scripps), FRSC  
 C.M. Boyd, MA (Ind), PhD (Scripps)  
 P. Chylek, Diploma (Charles), PhD (Calif) (NSERC/AES Research Chair)  
 J. Cullen, AB (Calif), PhD (Scripps) (NSERC/SatIantic Research Chair)  
 R.O. Fournier, MSc (Wm. & Mary), PhD (URI) Associate Vice-President (Research)  
 M.R. Lewis, BS, MS (UMd), PhD (Dal)  
 E.L. Mills, BSc (Carl), MS, PhD (Yale), FLS  
 R.M. Moore, BA (Oxon), PhD (Southampton)  
 B.R. Ruddick, BSc (UVic), PhD (MIT)

## Associate Professors

- B.P. Boudreau, BSc (UNB), PhD (Yale)  
 J. Grant, BSc (Duke), PhD (South Carolina)  
 K.E. Loudon, BA (Oberlin), MEd (Temple), PhD (MIT)  
 C.T. Taggart, BSc (Carleton), MSc (York), PhD (McGill)  
 K.R. Thompson, BSc, MSc (UManc), PhD (Liv) (jointly with Mathematics, Statistics and Computing Science)

## Associate Professor (Research)

- B.D. Johnson, BEng (NC State), MEng (TUNS), PhD (Dal)

## Assistant Professors

- I. Foulds, BSc (Dal), MSc, PhD (UofT) (NSERC/AES Research Chair)  
 Q. Fu, MSc (Peking), PhD (Utah) (NSERC/AES Research Chair)  
 P.S. Hill, AB (Dartmouth), MSc, PhD (Wash)  
 D. Kelley, BSc (Mt A), PhD (Dal) (NSERC University Research Fellow)  
 W. Miller, BA (Wake Forest), MSc (S. Florida), PhD (URI)

## Honorary Adjunct Professors

- A. Cembella, BSc (Simon Fraser), PhD (UBC)  
 K.T. Frank, BSc, PhD (Toledo)  
 E.T. Hargrave, BSc, MSc (Dal), PhD (UBC)  
 O. Hertzman, BA, BSc, MSc (UBC), PhD (Washington)  
 K. Higuchi, BSc (Carleton), MSc, PhD (UofT)  
 G. Isaac, BSc, MSc, PhD (McG)

M. King, BA (Colorado Coll), MSc, PhD (Arizona)

L. Mayer, BS (Univ. Rhode Island), PhD (Scripps)

N. Oakey, BSc (McGill), MSc (Sask), MhD (McM)

S. Pearre, BSc (Virginia), MSc, PhD (Dal)

D.J.W. Piper, BA, MA, PhD (Cantab)

S. Sathyendranath, BSc (St. Teresa's College), PhD (Univ. P&M Curle)

J.N. Smith, BSc (McG), MSc (Chicago), PhD (UofT)

P.C. Smith, BSc, MS (Brown), PhD (MIT/WHOI)

P.J. Wangersky, BSc (Brown), PhD (Yale)

D. Wright, BSc (Laurentian), PhD (UBC)

## 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 crystal structures. The Atmospheric Science group applies physics, mathematics and other basic sciences to the study of the atmosphere, its weather, and its climate. In addition, they conduct field and laboratory measurement programmes and analyze data from these and other experiments; and as well, model climate-related processes at less than global scale. Career oceanographers are employed in Canada in a few 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.

A good background in basic science is a necessary prerequisite to entering the department. Properly prepared undergraduates are permitted to take one or more graduate classes as electives. There are graduate introductory classes which survey the entire field and advanced classes in each of the major specialties - physical, chemical, geological and biological oceanography and atmospheric sciences.

In addition, several undergraduate classes are offered. Classes marked \* are not offered every year. Please consult the timetable on registration to determine if this class is offered.

## Classes Offered

**OCEA 2850.06R: Introduction to Oceanography.** A general survey of Oceanography showing how the oceans, which account for more than 70% of the earth's surface, function as a dominant environmental force. Consideration also is given to man's impact on this ecological system. Designed to give a background or feeling for the ocean, what oceanography is, and what oceanographers do. It is not a good "background to science" class, since little feeling will be obtained for scientific techniques which would otherwise be acquired in a laboratory class. Most of the material covered is

descriptive rather than basic, inasmuch as it is impossible in the time allowed and the material covered to also teach the basic required sciences.

**Instructor:** R.O. Fournier  
**Format:** Lecture 3 hours  
**Restriction:** Second year students only, or more advanced students

**OCEA 2851.03A/2852.03B: Introduction to Oceanography.** These classes will cover topics already described under OCEA 2850.06 and are only open to Marine Biology Co-Op students that are unable to take OCEA 2850.06 due to their work-term schedules. These students must take both classes as they are mandatory requirements for Marine Biology Honours. The format, instructor and prerequisites are the same as for OCEA 2850.06.

**OCEA 3000.03B: The Atmosphere.** The purpose of this class is to provide understanding of the basic physical and chemical processes determining the evolution, behaviour and anthropogenic modification of the atmosphere. Topics include: (a) formation and evolution of the atmosphere, chemical composition, recent anthropogenic changes, greenhouse gases, stratospheric ozone; (b) atmospheric motions, mesoscale and large scale dynamics, general circulation, numerical weather prediction and general circulation models; (c) solar radiation as a source of atmospheric motions, terrestrial radiation, energy balance, scattering and absorption of radiation in the atmosphere, elements of radiative transfer; (d) hydrological cycle, thermodynamics of water vapor, phase transitions, role of aerosols and clouds, precipitation; and (e) climate models, past climate, global change, anthropogenic effects.

**Instructor:** I. Fokkins  
**Prerequisites:** MATH 1000.03/1010.03 or equivalent and PHYC 1000.06 or 1100.06 or equivalent

**Cross-listing:** PHYC 2700.03B

**SCIE 3000.06R: Science Fundamentals.** See class description in Science, Interdisciplinary section of this calendar.

**OCEA 3170.03A: Physics and Chemistry of the Ocean.** This class outlines concepts in physical and chemical oceanography with special emphasis on the ocean's role in the global biogeochemical and physical/climate systems. This class is in two parts. In the first part, topics include: the oceans as a physical system, water properties, basic dynamical concepts, the forces creating oceanic motion, ocean circulation, shelf and coastal processes. In the second part topics include: the oceans as a chemical system, composition of sea water, control of pH and redox potential, nutrient chemistry, trace elements, organic materials, distributions and geochemical cycles.

**Instructors:** D. Kelley, W. Miller  
**Format:** Lecture 3 hours  
**Prerequisites:** MATH 1000.03/1010.03, plus first-year chemistry, or equivalent or permission of the instructor  
**Restriction:** Third- and fourth-year students only

**OCEA 3420.03A: Geochemistry of Aquatic Environments.** Given the abundance of water at the earth's surface and the wide use both

humans and other organisms make of aqueous environments, it becomes imperative for environmentally-oriented scientists to understand the chemistry of natural bodies of water. In particular, we need to comprehend the processes that lead to the observed composition of groundwaters, lakes, rivers and oceans. We also need to be aware of how man's activities can alter these natural systems. Water is also an agent for geologic and environmental change, both on short and long time-scales. Earth and environmental scientists should have an appreciation of these processes (sources, sinks and transport mechanisms) and the resulting geological cycles. This class is an introduction to the governing principles and processes of aquatic geochemistry. Specific topics will include physical chemistry of natural waters, kinetics (mechanisms & rates) of geochemical reactions, the hydrologic cycle, the dissolved carbonate system and pH controls, redox reactions and the influence of life, rainwater and acid rain, weathering and the formation of soils, mineral-solution equilibria, controls on the composition of rivers, lakes and oceans, sediments and their after-burial changes, and the global cycles of carbon, nitrogen, and sulfur. Students will be taught to approach problems quantitatively through the principles of mass action (Eh-pH and activity-activity diagrams) and of mass balance (box models and conservation equations).

**Instructor:** B. Boudreau  
**Format:** Lecture 3 hours  
**Prerequisites:** CHEM 1010.06 or 1020.06 or 1040.06

**Recommended:** EARTH 1000.06  
**Cross-Listing:** EARTH 3020.03A

**\*OCEA 4080.03A or B: Time Series Analysis II.** See class description for STAT 4400.03, in the Statistics section of this calendar.

**OCEA 4110.03B: Introduction to Geological Oceanography.** This class is intended to give a broad survey of topics in marine geology and geophysics for new students in Oceanography at a graduate level. No previous background in Geology or Geophysics is required. The class content covers recent methods and observations with quantitative applications to an understanding of geophysical and geological processes. Some topics covered in Part 1 are plate tectonics and seismic, heat flow, gravity, and magnetic methods. In Part 2 patterns and processes of sediment transport and deposition are explored. Some laboratory exercises augment the lectures, including a field cruise to Bedford Basin.

**Instructor:** P. Hill  
**Format:** Lecture 3 hours  
**Prerequisite:** Instructor's consent  
**Cross-listing:** OCEA 5110.03

**OCEA 4120.03A: Introductory Physical Oceanography.** This class explores the physical forces driving the oceans, and describes the responses of ocean water to these forces. Scales of ocean motion discussed range from currents of oceanic dimensions, like the Gulf Stream, through tides and waves, down to very small-scale random movements of water known as turbulence. The class also includes a brief introduction to practical aspects of instruments and methodology, via a field trip and a

laboratory session. 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. Those desiring a more qualitative approach are urged to consider OCEA 3170.03.

Instructor: B. Ruddick

Format: Lecture 3 hours

Prerequisite: MATH 1000.03, MATH 1010.03, classic calculus or equivalent, or permission of the instructor

Restriction: Third- and fourth-year students only

Cross-listing: OCEA 5120.03

**OCEA 4130.03A: Introductory Chemical Oceanography.** This class covers the major and minor constituents of sea water, the controls on its chemical composition, nutrient cycling, gas exchange and the influence of the oceans on atmospheric chemistry. Other topics included are chemical tracers, and radiochemical dating methods, stable isotope studies, chemical speciation and chemical models of sea water.

Instructor: R.M. Moore

Format: Lecture 3 hours, some labs

Prerequisite: Instructor's consent

Cross-listing: OCEA 5130.03

**OCEA 4150.03A: Principles of Biological Oceanography.** Quantitative descriptions of biological oceanographic processes are used to explore interactions with physical and chemical processes in various oceanic ecosystems. Topics discussed range from factors affecting rates of microalgal photosynthesis to expected response of the ocean ecosystem to global variation in carbon dioxide and climate. Laboratory emphasizes independent, original research.

Instructor: C.M. Boyd

Format: Lecture 2 hours, lab 1+ hours

Prerequisites: BIOL 2060.03 or equivalent and instructor's consent

Cross-listing: BIOL 4660.03

**\*OCEA 4160.03B: Fisheries Oceanography.**

Students who cannot demonstrate competence with fundamental statistical analysis will not be permitted to enrol. Familiarity with the fundamentals of population dynamics, ecology, physical oceanography, calculus, statistics, and computerized analysis is ESSENTIAL. The class will focus on the ecology of marine fisheries (including significant advances in freshwater systems) and the biotic and abiotic influences on population dynamics and production, distribution and abundance. Lecture topics include reproduction, early life history, feeding, growth, metabolism, mortality, and recruitment variability and forecasting. Emphasis will be placed on how hydrological and meteorological process influence the above as well as on the primary literature, current problems and hypotheses, and fruitful research directions, approaches and techniques. Some emphasis will also be placed on population and community ecology as well as fishery management techniques and models. Students are required to write a research style paper.

Instructor: C.T. Taggart

Format: Lecture 3 hours, some labs/tutorials

Prerequisites: OCEA 2850.06 or 2851.03 or 2852.03, BIOL 2060.03 and/or

3067.03 or equivalent.

MATH/STAT 1060.03 and or 2080.03 or equivalent and instructor's consent.

Cross-listing: BIOL 4369.03B, OCEA 5160.03

**OCEA 4210.03A: Time Series Analysis in Oceanography.** Time series analysis in both the time and frequency domain is introduced. The class is applied and students are required to develop their own computer programmes in the analysis of time series drawn from real problems. Topics to be discussed include the nature of time series, stationarity, auto and cross covariance functions, the Box-Jenkins approach to model identification and fitting, power and cross spectra and the analysis of linear time-invariant relationships between pairs of series.

Instructor: K. Thompson

Format: Lecture 3 hours

Prerequisite: Instructor's consent

Cross-listing: STAT 4390.03/5390.03, OCEA 5210.03

**\*OCEA 4230.03B: 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: M. Lewis

Format: Lecture 3 hours, some labs

Prerequisite: Instructor's consent

Cross-listing: OCEA 5230.03

**\*OCEA 4280.03A: Chemical Sedimentology and Early Diagenesis.** The present class aims at a quantitative understanding of the chemistry of sedimentary systems and the changes that occur during early burial history.

Thermodynamic, kinetic and transport models are employed to describe and conceptualize the biological, chemical and physical processes responsible for these modifications. Some topics to be covered include compaction, formation and dissolution of carbonate and siliceous sediments, organic matter degradation and nutrient regeneration, iron and manganese diagenesis and the formation of ferromanganese nodules, and basalt-sediment interactions.

Instructor: B. Boudreau

Format: Lecture 3 hours

Prerequisites: Knowledge of physical chemistry/intermediate calc./professor's consent

Cross-listing: OCEA 5280.03

**\*OCEA 4311.03A/4312.03B: Fluid Dynamics I and II.**

An introduction to the theory of fluid dynamics, with some emphasis on geophysically important aspects. Part I: flow kinematics, equations of motion, viscous flow, potential flow and basic aerodynamics; Part II: open channel flow, compressible, rotating and stratified flows, hydrodynamic stability, convection and turbulence. A knowledge of methods of mathematical physics is a desirable prerequisite. Some laboratory experiments on stratified and rotating flows are included in Part II.

Instructor: D. Kelley

Format: Lecture 3 hours

Prerequisites: Intended for first-year graduate students in physical

oceanography, but graduate students or senior undergraduates in Mathematics or Physics are invited to take it (subject to instructor approval)

**Cross-listing:** PHYC 4311.03/4312.03, PHYC 5311.03/5312.03, OCEA 5311.03/5312.03

**\*OCEA 4330.03B: 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:** J. Grant  
**Format:** Lecture 3 hours  
**Prerequisite:** Instructor's consent  
**Cross-listing:** BIOL 4666.03, OCEA 5330.03

**\*OCEA 4331.03B: 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:** E.L. Mills  
**Format:** Lecture 3 hours  
**Prerequisite:** Instructor's consent  
**Cross-listing:** BIOL 4664.03, OCEA 5331.03, SCIB 4001.03

**\*OCEA 4380.03B: 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:** M. Lewis  
**Format:** Lecture 3 hours  
**Prerequisites:** OCEA 4120.03, MATH 4220.03 and Instructor's consent  
**Cross-listing:** OCEA 5380.03

**\*OCEA 4411.03A: Dynamic Meteorology I.** The basic laws of fluid dynamics are applied to studies of atmospheric motion, including the atmospheric boundary layer and synoptic scale weather disturbances (the familiar highs and lows on weather maps). Emphasis will be placed on the blend of mathematical theory and physical reasoning which leads to the best understanding of the dominant physical mechanisms.

**Instructor:** Q. Fu

**Format:** Lecture 3 hours  
**Prerequisite:** Instructor's consent  
**Cross-listing:** PHYC 4411.03/5511.03, OCEA 5511.03

**\*OCEA 4412.03B: Dynamic Meteorology II.** The approach is the same as for 4411.03, with emphasis placed on synoptic-scale wave phenomena, frontal motions, and the global circulation. An introduction to numerical techniques and their use in weather forecasting models and studies of climate is included. Additional special topics are covered at the discretion of the instructor.

**Instructor:** Q. Fu  
**Format:** Lecture 3 hours  
**Prerequisite:** PHYC/OCEA 4411.03 or instructor's consent  
**Cross-listing:** PHYC 4412.03/5412.03, OCEA 5412.03

**\*OCEA 4500.03A: Atmospheric Physics I.** See class description for PHYC 4500.03 in the Physics section of this calendar.

**\*OCEA 4510.03B: Atmospheric Physics II.** See class description for PHYC 4510.03 in the Physics section of this calendar.

**\*OCEA 4515.03R: Weather Briefing.** Weather briefing is intended to develop skills in presenting a coherent and scientifically sound discussion of the current weather using real-time weather maps and data. It is primarily for students in the Meteorology Diploma Programme.

**Instructor:** Staff  
**Cross-listing:** PHYC 4515.03

**OCEA 4520.03A: Introduction to Meteorology.** This is a self-contained class that provides an introduction to the main ideas and concepts in meteorology. The emphasis will be on developing an understanding of how the atmosphere works and to begin to "read" and appreciate the ever-changing sky and weather. Mathematics will be used only occasionally (some first year calculus and algebra). Class participation will be encouraged by using a discussion and seminar format in the afternoon classes. The class is open to all students of all interests and disciplines.

**Instructor:** TBA  
**Format:** Lecture 3 hours  
**Prerequisite:** Instructor's consent  
**Cross-listing:** PHYC 4520.03/5520.03, OCEA 5520.03

**\*OCEA 4530.03B: Introduction to Radiation and Climate.** This class provides the student with an understanding of the origin, composition and thermal structure of the atmosphere, and radiative transfer through clear and cloudy atmospheres. There will be some discussion of the atmospheric general circulation, radiative transfer, atmosphere-ocean-biosphere interaction, and climate change.

**Instructor:** P. Chylek  
**Format:** Lecture 3 hours  
**Prerequisite:** Instructor's consent  
**Cross-listing:** PHYC 4530.03/5530.03, OCEA 5530.03

**\*OCEA 4541.03A: Synoptic Meteorology I.** See class description for PHYC 4540.03 in the Physics section of this calendar.

## 302 Oceanography

---

**\*OCEA 4550.03B: Synoptic Meteorology II.** See class description for PHYC 4550.03 in the Physics section of this calendar.

**OCEA 4595.03B: 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. Students taking this class have taken "Introduction to Meteorology", or have some other previous exposure to Atmospheric Science.

**Instructor :** I. Folkins

**Format:** Lecture 3 hours

**Prerequisite:** OCEA 4520.03 and Instructor's consent

**Cross-listing:** OCEA 5595.03

**OCEA 4600.03B: Invertebrate Fisheries and Aquaculture.** Subject matter will deal with commercially exploited invertebrates (crustaceans and molluscs) with a heavy emphasis on bivalves. Topics to be covered include: (1) Review of the major invertebrate harvest fisheries (locations, methods, population cycles, fisheries models) (2) Biology and ecology of the Bivalvia (feeding, bioenergetics, growth, and reproduction) (3) Shellfish aquaculture (methods, species, site location, economics). These topics will be covered with respect to the Maritime as well as non-local fisheries. Class structure will be a mixture of lecture and class discussions, supplemented by visits to aquaculture sites. Class requirements will include a research paper and oral presentations.

**Instructors:** J. Grant, G. Newkirk, R. Mohn

**Format:** Lecture/discussion 3 hours

**Prerequisites:** BIOL 2001.03, 2060.03, and 3321.06; fundamental knowledge of statistics; permission of instructor

**Cross-listing:** BIOL 4600.03/5600.03, OCEA 5600.03

# Pharmacology

**Location:** Sir Charles Tupper Medical Building, 6th Floor  
**Telephone:** (902) 494-3435  
**Fax:** (902) 494-1388

## Head of Department

H.A. Robertson

## Professor Emeritus

J.G. Aldous, BA, MA (UBC), PhD (Tor)

## Professors

J.W. Downie, BSc, PhD (Man), joint appointment in Department of Urology  
 G.R. Ferrier, BSc, PhD (Man)  
 J.D. Gray, BSc, MD, (Alta), FRCPC, major appointment in Department of Medicine  
 K.W. Renton, BSc (Sir G Wms), PhD (McG), cross appointment in Institute for Resource and Environmental Studies  
 H.A. Robertson, BA, MSc, (Western), PhD (Cantab), cross appointment in departments of Medicine and Psychology  
 J. Ruedy, MDCM (Queen's), FRCPC, FACP, major Appointment Dean, Faculty of Medicine  
 B. Rusak, BA, (Tor), PhD (Berkeley), major appointment in Psychology  
 J. Sawynok, BSc, MSc (Melb), PhD (Queen's), honorary appointment in Occupational Therapy  
 M.M. Vohra, BPharm, MPhm, PhD (Ban)  
 T.D. White, BSc, MSc (Western), PhD (Bristol)

## Associate Professors

R.I. Hall, BSc Pharm, MD (Dal), FRCPC, major Appointment in Department of Anaesthesia  
 S.E. Howlett, BSc (Concordia), MSc, PhD (Memorial)  
 G. McKenzie, BSc (Windsor), MSc, PhD (Dal)

## Assistant Professors

J. Day, BSc (Brad), PhD (Cantab)  
 M. Hong, BSc, MSc, PhD (Queen's), major appointment in Department of Surgery  
 O.R. Hung, BSc Pharm, MD (Dal), FRCPC, major appointment in Department of Anaesthesia  
 M.E.M. Kelly, BSc, PhD (Southampton)  
 T. Peterson, BSc (St. Mary's), MSc, Ph.D. (Dal), major appointment in Department of Medicine

## Post-Doctoral Fellows and Research Associates/Assistants 1995

J. Armstrong, BSc (Laurentian), MSc, PhD (Carleton)  
 J. Babity, BSc, PhD (UBC)  
 E. Denovan-Wright BSc, PhD (Dal)  
 R. Drobitch, BSc (Windsor), BSc, PhD (Wayne State)  
 H. Du, PhD (University of Beijing)  
 M. Guido, BSc, PhD (Univ. of Cordoba, Argentina)  
 G. Li, MSc, MD (Tongji University, China)  
 R. Newton, BSc (Surrey) D.Phil (Oxford)  
 J. Zhu, PhD (Tongji University, China)

## Introduction

The Department of Pharmacology offers a range of undergraduate and graduate classes in addition to those restricted to students in the Faculties of Medicine, Dentistry and Health Professions. The Department of Pharmacology does not offer a specific Bachelor's degree programme (see the Graduate Studies Calendar for details on the Master and Doctorate degree programmes).

The classes listed below are designed to provide the student with an understanding of how chemicals interact with living systems. A knowledge of pharmacology is therefore of interest not only to those in the health professions but also to those interested in Chemistry, Leisure studies, Law and Environmental Studies to name but a few.

Pharmacology is the interactions of chemicals with biological systems and thus students who take pharmacology classes should have a background in both chemistry (and preferably biochemistry), biology and physiology. However, students from a wide variety of backgrounds have been successful in pharmacology classes.

Biology 4404.03 is an introductory class for those interested in a general introduction to the subject of pharmacology. Admission to this class is by permission of the coordinator but a background in physiology and biochemistry is generally important.

## Classes Offered For Health Professions Students

Students in the Occupational Therapy programme receive a class of lectures designated OCCU 4400.03. Students in Nursing receive instruction in systematic pharmacology designated as NURS 2030.03.

**Note:** Students in the Faculty of Arts and Social Sciences or the Faculty of Science must attain permission from the Faculty to enrol in Pharmacology classes. This permission must be in writing, and be presented to the Registrar's Office upon registration for the classes.

**PHAC 3470.06R: The Influence of Chemical Agents on Living Organisms.** An introduction to the actions of drugs on physiological and biochemical functions of man and lower animals. The basic mechanisms of actions and structure-activity relationships of various groups of pharmacological agents are stressed and wherever possible, discussed at the molecular and macro-molecular level of cell organization. Factors influencing the absorption, distribution, biotransformation, and excretion of drugs are discussed, as are potential uses.

**Coordinator:** G. Ferrier  
**Instructor:** Staff  
**Format:** Lecture 3 hours  
**Prerequisite:** PHYL 4403.03

**BIOL 4404.03A: 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. The interaction of drugs with the central and peripheral nervous

## 304 Pharmacology

systems will be covered. 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.

Coordinator: J. Blay

Instructors: Staff

Format: Lecture 3 hours

Co-requisite

/Prerequisites: Upper level physiology or instructor's consent

Cross-listing: PHAC 5406.03, BIOC 4804.03, NESC 4374.03

**BIOL 4405.03B: Introduction to Pharmacology**

**II.** This class is intended to cover specific aspects of drug action in greater depth than BIOL 4404.03 and to provide students with practical experience in pharmacology. The laboratory component consists of prescribed exercises using varied techniques. Instructor's consent and signature are required.

Coordinator: J. Blay

Instructors: Staff

Format: Lecture 3 hours, laboratory 3 hours

Prerequisite: BIOL 4404.03

Cross-listing: PHAC 5407.03, BIOC 4805.03, NESC 4375.03

# College of Pharmacy

**Location:** George A. Burbidge Building,  
5968 College Street, Halifax,  
N.S. B3H 3J5  
**Telephone:** (902) 494-2378  
**FAX:** (902) 494-1396

## Academic Staff, 1995-96

### Director and Professor

R.P. Chandler, BSc Pharm, MSc (Alta), PhD  
(Syd)

### Professors Emeriti

J.G. Duff, BSP, MSc (Sask), PhD (Fla)

M. Mezei, DipPharm (Bud), PhD (Oregon)

### Professors

E.I. Butler, BSc(Chem), MSc(Chem),  
PhD(Colloid Chem) (Bp)

R.P. Chandler, BSc (Pharm), MSc (Alta), PhD  
(Syd), Director and Professor

I.S. Sketris, BSc(Pharm) (Tor), PharmD (Minn),  
MPA (HSA) (Dal)

D.K. Yung, BA, BSP, MSc (Sask), PhD (Alta)

### Associate Professors

L. Abraham, BPharm, MPharm (UST Ksi), PhD  
(Neb)

P.S. Farmer, BSP, MSc (Sask), PhD (Portsmouth)

M.E. MacCara, BSc (Pharm) (Dal), PharmD  
(Minn)

A.M. Whelan, BSc (Pharm) (Dal), PharmD  
(MUSC)

P.K.F. Yeung, BSc(Pharm), MSc (Man), PhD  
(Sask)

### Assistant Professor

T. Brinkness, BSc (Western), PharmD (Ferris  
State)

K. Janke, BA (St. Olaf), PhD (Minn)

T. Jurgens, BSc (Pharm), MSc (Dal), PhD (Minn)

S.A. Mansour, BSc (Pharm), MBA (Dal), PhC

T. Sorensen, BSc (Pharm), PharmD (Minn)

### Externship Administrator

TBA

### Sessional Lecturers

S. Ferguson, BSc (Pharm) (Dal)

N. Kennie, BSc (Pharm) (Dal)

A.K. Kirumira, BSc Hons (Mosul, Iraq), MSc  
Distinction (Reading, PhD) (Murdoch)

J.P. King, BEd (UPBI), MBA (Dal)

A. Kyte, BSc (Pharm) (Dal)

L. Tanner, BSc (Pharm) (Dal), PhC

N. Wentzell, BSc (Pharm) (Dal), PhC

### Joint Appointment

E.A. Foy, Professional Information Officer,  
College of Pharmacy, Pharmacy Subject  
Specialist and Information Officer, WK  
Kellogg Health Sciences Library.

## Honorary Appointments

D.W. Jones, BSc, PhD (Birm), FICeram, CChem,  
FRSC(UK), FADM; Honorary Professor,  
College of Pharmacy; Professor and Head,  
Division of Dental Biomaterials Science,  
Faculty of Dentistry

A.K. Kirumira, BSc, MSc, PhD (Australia),  
Honorary Adjunct Professor, College of  
Pharmacy; President Octopus Diagnostics, Inc.

P.T. Pollock, BSc, MD, PhD (Western), Staff  
Physician, Department of Internal Medicine,  
Victoria General Hospital; Honorary  
Assistant Professor, College of Pharmacy

M.A. Quilliam, BSc (Honors), PhD (Man);  
Honorary Adjunct Associate Professor,  
College of Pharmacy; Associate Research  
Officer, Atlantic Research Laboratory, NRC.

K. Slayter, BSc (Pharm), PharmD (NY)

R. Steeves, BSc (Pharm) (Dal), PharmD (Fla),  
PhC, Honorary Lecturer, College of Pharmacy,  
Clinical Co-ordinator and Residency Program  
Director

## Special Lecturers

S. Ashton

H. Barbour

S. Black

D.M. Frail

A.D. Fraser

B. Lai

W. MacDonald

J. MacDonnell

K. MacIsaac

B. McBean Cochran

P. McCaughan

D. Osborne

J. Parmeter

S. Pierre

R. Plant

K. Renton

B. Stotz

C. B. Tuttle

S. Wedlake

D. Wheeler-Usher

B. Zwicker

## Preceptors

Throughout the Maritime Provinces pharmacist preceptors in the community and hospitals participate in a structured practical training programme. The College of Pharmacy would like to acknowledge the contribution the preceptors make to the education process, and thank them for their time and energy they devote to the students.

The programme is administered by the College with the support of the Pharmacy Licensing Bodies in the Maritimes. It requires the second and third year students to demonstrate their knowledge and professional competency in actual practice situations in community and hospital pharmacy.

## Clinical Associates

Pharmacists at the hospitals, medical centres and pharmacies listed below contribute their time and expertise to a Clinical Clerkship programme. The College of Pharmacy would



like to thank these pharmacists for their contribution to the education process.

During the Clerkship, students attend conferences and clinical drug rounds at participating hospitals and learn to apply clinical pharmacy principles.

#### Nova Scotia

Camp Hill Medical Center  
Canadian Forces Hospital (Stadacona)  
Cape Breton Regional Hospital  
Izaak Walton Killam Hospital For Children  
Lawton's Drugs  
Nova Scotia Hospital  
Northwood Clinical Pharmacy:  
Valley Regional Hospital  
Victoria General Hospital

#### New Brunswick

Dr. Everett Chalmers Hospital  
Edmunston Regional Hospital  
Moncton Hospital  
Saint John Regional Hospital

#### Prince Edward Island

Queen Elizabeth Hospital

## History

Formal pharmacy education in the Maritime provinces began in 1908, with evening classes in pharmacy and chemistry conducted in the Nova Scotia Technical College. Success of these classes encouraged the Nova Scotia Pharmaceutical Society to establish the Nova Scotia College of Pharmacy in 1911. The College was affiliated with Dalhousie University in 1912.

The New Brunswick Pharmaceutical Society and the Prince Edward Island Pharmaceutical Association were admitted to affiliation with the College in 1917 and 1950, respectively. With the affiliation of the former society, the College was renamed the Maritime College of Pharmacy.

In 1961, the Maritime College of Pharmacy was admitted into Dalhousie University as the College of Pharmacy, a constituent part of the new Faculty of Health Professions. A four-year baccalaureate programme was introduced.

In 1966, a Master's programme was established, followed by a Doctor of Philosophy programme in 1977.

In 1972, a twelve month pharmacy residency programme was initiated by Camp Hill Hospital in cooperation with the College of Pharmacy. Programmes were initiated at the Halifax Infirmary in 1974, at the Victoria General Hospital in 1981 and at the Saint John Regional Hospital in 1982.

In the fall of 1968, the College of Pharmacy moved into the George A. Burbidge Pharmacy Building. This building, the former Medical Sciences Building was renamed in honour of the first Dean of the College, in recognition of his contribution to pharmacy education in the Maritimes. Present facilities accommodate approximately 260 undergraduate and 8 graduate students.

## College of Pharmacy Regulations

All students are required to observe the University and Academic Regulations as described in this calendar.

There is, within the College of Pharmacy, a Committee on Studies that assesses the academic performance of each student in the College.

### Academic Requirements

1. A student must obtain a grade of at least C (C- or lower is not acceptable) in each class except for non-science elective for that class to be counted as credit for the degree or as a prerequisite for another class. A student who earns a grade of less than C in any of these classes but is still eligible to continue in the College of Pharmacy must repeat that class until a grade of C or better is obtained.
2. Any student failing a professional class for the second time must withdraw from the College of Pharmacy.
3. Students are required to attend class to the satisfaction of their instructors. Attendance is mandatory in laboratory, tutorial and seminar classes and externship programmes offered by the College of Pharmacy unless otherwise specified by the instructor.
4. When the work of a student becomes unsatisfactory or his/her attendance irregular, the student may be required to discontinue and be excluded from the class concerned.
5. If laboratory work or assignments are not completed in a satisfactory manner in any class or classes, credit for the class is withheld until all work has been satisfactorily completed.
6. In the case of failure in the laboratory portion of a pharmacy class, the laboratory, together with the corresponding lecture portion of the class, must be repeated.
7. As an academic requirement, students are assessed in each year on their aptitude and fitness for the profession of pharmacy. A student who, in the judgement of the faculty, fails to attain a satisfactory standard in the assessment may be retired from the College of Pharmacy.
8. Failure in Pharmacy 3000.00 (PTP) results in the student having to repeat the class at its next regular offering.

### Externship Programmes

Students may be required to complete externship programmes (currently Pharm 3000.00B and clerkship programme) outside the Halifax/Dartmouth area. Students are responsible for any travel and living expenses associated with externship programmes.

### Grading System

Students will be governed by regulations found in the Academic Regulations section of this calendar.

### 1. Credit Hours

For classes offered by the College of Pharmacy, one credit hour is defined as one hour of lecture per week per term, or three hours of laboratory per week per term.

### 2. Requirements for Degree

To satisfy the requirements for the degree of Bachelor of Science in Pharmacy a student must:

- accumulate at least 122 credit hours (or its equivalent for transfer students), with an overall (cumulative) GPA of at least 2.00 in the prescribed classes; and
- accumulate at least 116 credit hours (or its equivalent for transfer students), with an overall (cumulative) GPA of at least 2.00 in all classes excluding non-science electives.

Note: For a list of prescribed and professional classes see the section "Prescribed Classes."

### Reassessment of a Grade

See Academic Regulation 18.7. In all cases of reassessment, the calculations used to arrive at the final grade will be checked. In those classes where the student has had ample time to consider marks obtained for all work done, except for the final examination, reassessment in such classes shall be done on the final examination only. For other classes, a reassessment shall include the results from all work not previously available to the student during the term.

### Supplemental Examinations

A student who has met the yearly academic requirements but has a C- or a D in one prescribed class, and no failures, may, on the approval by Faculty Action of a recommendation by the Committee on Studies and at the discretion of the professor(s) in charge of the class, be allowed to raise the grade to an acceptable level by writing a supplemental examination.

When the class in question is a half-class held in the first-term and is a pre-requisite for a class scheduled for the second term, the student may explore the possibility of writing the supplemental examination before the end of January. Such a supplemental will be permitted only if all other first-term grades are C or better and the first-term (sessional) grade point average is 2.00 or higher.

Supplemental examinations will be subject to the following regulations:

1. Supplemental examinations will be allowed for not more than six credit hours of class work in a student's programme.
2. The College of Pharmacy is responsible for scheduling Supplemental examinations for Pharmacy classes. These examinations will be written at a time agreed to by the professor(s) of the class and the student. However, it is advised that this must be before February 1 (for A term classes) and before September 1 (for B and R term classes) immediately following the class.
3. On successful completion of a supplemental examination, the lowest passing grade (C) is entered on the student's record along with the notation that the C was earned by supplemental examination. In the case of a

failure an F is entered. The recorded supplemental examination mark, will be used for grade point average calculations. However, the original grade of C- or D also remains on the transcript.

4. A student who fails to pass a supplemental examination can obtain credit for that class only by successfully repeating the class.
5. Supplemental examinations may not be deferred.

Students eligible to write supplemental examinations must submit to the office of the Director of the College a completed application form (obtained from that office).

### Leave of Absence from the College of Pharmacy

A student who needs to take leave from the pharmacy programme may apply to the Director to do so. A leave of absence will be limited to one leave period and will not normally exceed one academic year.

#### Procedure:

1. A leave of absence must be approved in advance by the Director of the College of Pharmacy. Normally, a student who absents himself/herself from the College of Pharmacy without prior permission for an extended period (four weeks or greater) will be presumed to have withdrawn and will have to re-apply for admission to the College of Pharmacy.
2. Following the approved absence from the College of Pharmacy, the Committee on Studies will determine the classes the student will be required to take on re-entry. Preferably, this will be decided upon at the time the leave of absence is granted, and the student will be so notified in writing.
3. The Director will inform the Registrar's Office, the College faculty and staff members, and other faculty members currently involved in teaching the student, of the leave of absence.
4. The student granted a leave of absence will inform the Director, in writing, by a predetermined date, of the intent to resume the study of pharmacy. If approved, the Director will inform the Registrar's Office and ask that the student returning from a leave of absence be sent the appropriate registration materials.

### Appeals

Students wishing to appeal a decision based on Academic Regulations should request from the Director the Appeal Procedures.

### Programmes Offered

The College of Pharmacy offers a four-year programme leading to the degree of Bachelor of Science in Pharmacy (BScPh).

The undergraduate programme, which admits 66 students into the first professional year, has a patient-oriented curriculum integrating clinical pharmacy with the pharmaceutical sciences. This programme is more completely described in the following pages.

The College participates with the Camp Hill Medical Center, the Victoria General Hospital, and the Moncton Hospital in providing a twelve-month Hospital Pharmacy Residency Programme. Through structured rotations in various areas of pharmacy practice, the programme aims to prepare pharmacists for exemplary pharmacy practice. Areas of rotations include patient care, drug information, drug distribution, pharmacy administration, a research project and inservices and education. The emphasis is on providing exemplary patient care. Practitioner role models/preceptors are utilized throughout the programme so the necessary skills, knowledge and values required to be a pharmacist can be acquired and applied by the resident. A stipend is provided and a certificate is presented to candidates successfully completing the programme.

## Library

The Pharmacy Library, housed on the first floor of the Burbridge Building, is the only branch library of the W. K. Kellogg Health Sciences Library located next door in the Sir Charles Tupper Medical Building. Holdings in the Pharmacy Library include several thousand bound volumes, microforms, and approximately 150 serial subscriptions relating to pharmacy and allied sciences. In addition, there is access to several CD-Rom databases unique to the Pharmacy Library, and access to many others through the University Libraries' local area network (LAN).

## Immunization

Students must show proof of current immunization against tetanus, diphtheria, polio, measles, and rubella.

Immunization against Hepatitis B is recommended before Clerkship rotations and is available through Dalhousie Health Services. Students must cover the cost of the immunization.

Evidence of tuberculin testing (mantoux) is required before Clerkship experiences. The College of Pharmacy will arrange for the University Health Services to administer the test.

## Career Opportunities

Pharmacy is a health science concerned with many aspects of the use of drugs for the health care of the patient. This includes the preparation of suitable materials for use as medicines from natural and synthetic sources, the compounding of drugs and the dispensing of suitable medication, the taking of medication histories, keeping patient drug profiles, counselling patients on their prescribed medication, educating patients on their self-medication habits, monitoring drug interactions, adverse drug reactions and patients' compliance with their drug treatment, and the provision of information on drugs to patients and other health professionals.

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, production, research and quality control.

The increased role of federal and provincial governments in public health has provided opportunities for pharmacists in analytical laboratories and in administrative positions as government inspectors and health supplies officers. Opportunities may also be available in universities as teachers and researchers.

A Bachelor of Science in Pharmacy is necessary for those who wish to practice as pharmacists. For those who wish to enter research or teaching, a Master of Science degree or further postgraduate study is usually required.

## Practice Requirements

### 1. Licence in Pharmacy

The College of Pharmacy, being purely educational, has no jurisdiction in matters relating to licensing or to registration as a Pharmaceutical Chemist (Pharmacist). These functions are entirely under the control of the provincial licensing body concerned. A period of practical training or apprenticeship is required before a graduate in pharmacy is licensed as a pharmacist. Information regarding licensing or registration in each province may be obtained from the respective provincial society: the Registrar of the New Brunswick Pharmaceutical Society, Heritage Court, Suite 204, 95 Foundry Street, Moncton, N.B., E1C 5H7; the Registrar of the Prince Edward Island Board of Pharmacy, PO Box 1084, Charlottetown, P.E.I., C1A 7M4; or the Registrar of the Nova Scotia Pharmaceutical Society, 1526 Dresden Row, PO Box 3363, Halifax South Postal Station, Halifax, N.S., B3J 3J1.

### 2. Pharmacy Examining Board of Canada (PEBC)

The Pharmacy Examining Board of Canada was created by Federal Statute on December 21, 1963, to establish qualifications for pharmacists acceptable to participating pharmacy licensing bodies. The Board provides for annual examinations and issues a certificate to the successful candidate which may be filed with a Canadian provincial licensing body in connection with an application for licence to practice pharmacy under the laws of that province. Baccalaureate graduates from the College of Pharmacy are eligible to write these examinations. Successful completion of these examinations is a prerequisite to licensure for Dalhousie graduates in the Maritime Provinces. Information relative to the dates of examinations, application forms, etc., may be obtained through the Director's Office, College of Pharmacy.

## 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 licensing bodies 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 representation in the Canadian Pharmaceutical Association.

## Prescribed Classes

All classes offered are within the normal academic year with the exception of PHAR 3000.00. PHAR 3000.00 includes a practical training programme which the student must complete on a full-time basis in a pharmacy, normally during the month of May following the second and third year of study.

The following are descriptions of classes which are expected to be offered in the academic year 1996-97.

**Year 1:** PHAR 1110.06, 1700.03; ANAT 1010.03; MICR 2020.03; CHEM 2400.06; STAT 1060.03; and one additional full credit or two half-credits in non-science elective(s).

**Year 2:** PHAR 2130.06, 2800.03, 2120.03, 2320.03, 2510.06, 2310.03; PHYL 4403.06; BIOC 3101.03, 3102.03

**Year 3:** PHAR 3510.06, 3320.06, 3140.03, 3141.03, 3110.03, 3000.00, 3700.03; PHAC 3470.06

**Year 4:** PHAR 4510.06, 4511.02, 4530.03, 4720.03, 4110.03; and one additional full credit class and a half credit class in Pharmacy electives, or three half credit classes in Pharmacy electives.

## Classes Offered

### Pharmacy Classes

**PHAR 1110.06R: Introduction to Pharmacy.** An introduction that includes a description of the roles and the responsibilities of the pharmacist in practice, the prescription, pharmaceutical calculations, an introduction to communication skills, an introduction to drug information, and a programmed text approach to medical terminology. The major topics are dosage forms and compounding and dispensing techniques. Laboratory work concentrates on the compounding and dispensing of examples of the dosage forms discussed in class. Dispensing labs and seminars are compulsory parts of this class.

**Instructor:** TBA  
**Format:** Lecture 3 hours; lab 3 hours or seminar 2 hours; tutorial 1 hour

**PHAR 1700.03A: Pharmacy Administration I.** An introduction to the history of Pharmacy, pharmacy organizations, law, ethics, and business management.

**Instructor:** N. Wentzell  
**Format:** Lecture 3 hours

**PHAR 2120.03B: Biopharmaceutics.** The class deals with the application of physicochemical and physiological factors in the design and delivery of drug dosage forms. Topics include: drug design and drug development, routes of drug administration, membrane structure and

transmembrane transport of drug molecules, physicochemical and physiological factors in drug absorption, distribution and elimination, biopharmaceutical consideration of new drug delivery systems.

**Instructor:** I. Abraham  
**Format:** Lecture 2 hours  
**Prerequisites:** PHAR 1110.06  
**Corequisites:** PHAR 2130.06

**PHAR 2130.06R: Physical Pharmacy.**

**Fundamentals:** Properties of solutions: non electrolytes, electrolytes. Isotonic solutions. Ionic equilibria. Buffers. Solubility and distribution. Kinetics - fundamentals, chemical stability of drugs. Accelerated stability analysis. Diffusion. Dissolution of drugs. Rheology. Interfacial phenomena: (a) surface tension, wettability; (b) absorption at various interfaces; (c) electrokinetic phenomena. Colloid systems: macromolecules, association colloids and dispersion colloids. Kinetic stability of dispersions, drug preparations. Coarse dispersions: suspensions, emulsions. Physical properties of drugs - measuring methods.

**Instructor:** E.V. Butler  
**Format:** Lecture 3 hours, 1st term; lecture 2 hours, lab 3 hours/2nd term; tutorial 1hr/week  
**Prerequisites:** CHEM 1140.06; STAT 1060.03; PHAR 1110.06 and CHEM 2400.06

**Corequisites:** PHAR 2120.03

**Recommended:** Continuous study following the guidelines distributed for each topic. Participation in tutorials and small group classes

**PHAR 2310.03A: Pharmaceutical Analysis.**

Topics include gravimetric, volumetric, chromatographic, and spectrophotometric methods of analysis of drug products, and principles and methodology of drug product quality assurance.

**Instructor:** D.K. Yung  
**Format:** Lecture 2 hours, lab 3 hours  
**Prerequisite:** CHEM 2400.06  
**Recommended:** Review of general chemistry

**PHAR 2320.03B: Medicinal Chemistry I.**

Introductory medicinal organic chemistry, including a review of functional groups and acid-base properties of organic molecules, an introduction to heterocyclic chemistry and to the prediction of water solubilities of organic compounds. Medicinal chemistry topics covered are receptors and drug-receptor interactions, introduction to structure-activity relationships, quantitative structure-activity relationships, organic chemistry, as studies in CHEM 2400.06, is assumed.

**Coordinator:** P.S. Farmer  
**Instructors:** P.S. Farmer, P.K.F. Yeung, D.K. Yung

**Format:** Lecture 3 hours  
**Prerequisite:** CHEM 2400.06

**PHAR 2510.06R: Therapeutics I.** This class introduces the application of pharmaceutical care to selected disease states and drug and non-drug therapy. Both prescription drugs and non-prescription drugs are considered.

**Coordinator:** S. Marsour  
**Format:** Lecture/seminar 3 hours  
**Prerequisites:** Successful completion of first year pharmacy

## 310 Pharmacy

**Corequisites:** PHYL 4403.06, PHAR 2120.03 and PHAR 2320.03

**PHAR 2800.03A: Introduction to Hospital Pharmacy.** This class provides the student with a general overview of hospital pharmacy and the day-to-day activities of a hospital pharmacist. The role of the hospital pharmacist in activities ranging from drug distribution, pharmaco-economic analyses, and clinical pharmacy services are presented along with general topics including the role of pharmacy technicians, and IV admixture preparation.

**Coordinator:** T. Sorensen

**Format:** Lecture 2 hours; lab 3 hours (every other week)

**Prerequisites:** Successful completion of first year pharmacy

**PHAR 3000.00B: Practical Training Programme.** This class is a structured practical training programme (PTP) which consists of two rotations, including a two-week rotation in a hospital pharmacy after second year and a three week rotation in a community pharmacy after third year. In each rotation, the student works with a practising pharmacist preceptor to gain experience in pharmacy services and systems. Students are responsible for finding their own preceptors and practice sites for this programme and are responsible for any costs that are incurred as a result of the programme.

**Instructor:** TBA

**Format:** 5 weeks (175 hours)

**Prerequisites:** Completion of all second year classes prior to the second year rotation. Completion of all third year classes prior to the third year rotation.

**PHAR 3110.03R: Introduction to Computer Dispensing and Prescription Management.** Students are introduced to basic prescription filling procedures on two prescription management systems.

**Instructor:** L. Tanner

**Format:** Lecture 1½ hours; lab 3-4 hours

**Prerequisites:** Successful completion of second year pharmacy

**PHAR 3140.03A: Pharmacokinetics.** Students are introduced to the basic principles of pharmacokinetics, such as quantitative aspects of drug absorption, distribution, metabolism and excretion.

**Instructor:** I. Abraham

**Format:** Lecture 2 hours

**Prerequisites:** PHAR 2120.03, PHAR 2130.03

**PHAR 3141.03B: Clinical Pharmacokinetics.** This class deals with topics in clinical pharmacokinetics including: management of patients with renal failure, kinetics in pregnancy, placental drug transfer, hepatic drug clearance, transfer of drugs in breastmilk, relationship of pharmacokinetics and pharmacological response, non-linear pharmacokinetics, kinetics in geriatrics and pediatrics and the application of these principles to the clinical pharmacokinetics of representative drugs.

**Instructor:** TBA

**Format:** Lecture 3 hours

**Prerequisites:** PHAR 3140.03

**PHAR 3320.06R: Medicinal Chemistry II.** Principles of medicinal organic chemistry are demonstrated through an examination of the major classes of drugs in use today. Drug action, drug toxicity, and drug interactions are discussed in the context of mechanism and structure-activity relationships. The class is organized by classes of drug action, broadly: nonmessenger targets for drug action, drugs acting on neurotransmitters and their receptors, and drugs acting on hormones and their receptors. Current thorough understanding of the principles of organic chemistry, as studied in CHEM 2400.06, is assumed.

**Coordinator:** P.S. Farmer

**Instructors:** P.S. Farmer, D.K. Yung

**Format:** Lecture 3 hours

**Prerequisite:** PHAR 2320.03

**Corequisites:** PHAC 3470.06, PHAR 3510.06

**PHAR 3510.06R: Therapeutics II.** Therapeutic and prophylactic use of prescription and some OTC drugs are discussed. Application of drug and disease knowledge to patient-focused care is emphasized.

**Coordinator:** A.M. Whelan

**Instructor:** Staff

**Format:** Lecture 2 hours; seminar 1 hour (average)

**Prerequisites:** PHAR 2510.06, PHYL 4403.06, MICR 2020.03, BIOC 3101.03 and 3102.03

**Corequisites:** PHAC 3470.06 or 3480.06; PHAR 3140.03 and 3141.03

**PHAR 3700.03B: Pharmacy Administration II.** This class provides the student with basic pharmacy-related communication skills. In addition, students examine the concept of professionalism and are introduced to various health care professions.

**Coordinator:** K. Janke

**Format:** Lecture/seminar 3 hours

**Prerequisites:** PHAR 1700.03

**PHAR 4000.06R: Pharmaceutical Investigation.** Library, laboratory, clinical and/or field investigations related to an area in pharmacy, carried out by an individual (preferable) or a small group of students under the supervision of one or more faculty members. Presentation of seminars on the completed project is required. A written report must be submitted. A paper or a presentation which is prepared for this class may not be submitted for credit in any other class.

**Coordinator:** E.V. Butler

**Instructor:** Staff

**Format:** Independent study 6-8 hours per week

**Prerequisites:** Approval of the project by the Committee on Studies before registration in the class. The project proposal should be presented for consideration before the end of the previous academic term if possible.

**PHAR 4010.03A, 4020.03B, 4030.03R: Directed Study in Pharmacy.** For a description of these half classes, see the full class Pharm 4000.06.

**Coordinator:** E.V. Butler

**Instructor:** Staff

**Format:** independent study 6-8 hours per week for Pharm 4010.03 and 4020.03. 3-4 hours of

independent study per week for Pharm 4030.03.

**Prerequisites:** Approval of the project by the Committee on Studies before registration in the class. Projects should be presented for consideration before the end of the previous academic term.

**PHAR 4110.03A: Senior Dispensing Lab.** This class is concerned with the proper compounding and dispensing of pharmaceutical products, and professional communication techniques.

**Instructor:** S. Ferguson

**Format:** TBA

**Prerequisites:** Successful completion of third year pharmacy

**PHAR 4130.03A: Physicochemical/Industrial Aspects of Controlled Release Drug Delivery: An Introduction.** New trends in drug delivery: sustained, controlled, topical and targeted drug delivery. Application areas of controlled release of substances. Scale-up and technology transfer procedures and related problems, in general. History of the development of new delivery systems. How to do literature search. (E. Foy, Librarian)

**Liposomes:** types of liposomes, methods of preparation, special influencing parameters of liposomes on drug encapsulation, release.

**Technological problems in liposome production.** Application areas. **Polymers in drug delivery:** selections of polymers - biodegradable and non-biodegradable polymers. Bioadhesive polymers, multi-layered polymeric compositions (patch). Microcapsules - microspheres, nanoparticles. Special parameters of polymers influencing drug delivery. Technological problems. Application areas. Other drug delivery systems.

**Physical/chemical properties and specific surface characteristics of drugs and vesicles; their effect on drug delivery. Selected methods for measuring these parameters (theory and lab demonstration).**

**Instructor:** E.V. Butler

**Format:** lecture 1 hrs, seminar/workshop 1 hr, lab/workshop 3 hrs during the last two weeks of the term.

**Prerequisites:** PHAR 2120.03, 2130.06, 3250.02; CHEM 2400.06; STAT 1060.03 or equivalent for Pharmacy students. For students with a background other than pharmacy; consent of instructor.

**Cross-listing:** PHAR 5130.03

**Note:** The class is given every other year. During the alternate years, however, request for class will be considered.

**PHAR 4140.03A: Introduction to Therapeutic Drug Monitoring.** The application of fundamental pharmacokinetic principles to the solution of commonly encountered therapeutic problems. Specific areas of focus will be on the estimation of drug dosage and adjustment, the underlying assumptions of commonly used dosing algorithms, reliability of analytical techniques, and the basic concepts of population pharmacokinetics. This class is presented in a problem-based format:

**Instructor:** TBA

**Format:** Seminar 3 hours

**Prerequisites:** PHAR 3140.03, 3141.03 or equivalent, permission of instructor

**PHAR 4141.03B: Current Topics in Xenobiotic Disposition.** Application and extension of pharmacokinetic/pharmacodynamic principles to biologically active compounds outside those associated with patient management. The integration of biopharmaceutic/pharmacodynamic information to forensic applications, human/animal exposure to herbicides/pesticides, environmental contamination, application to biotechnology, detection to illicit drug use, and drug testing in sports will be examined.

**Instructor:** P. Yeung

**Format:** Seminar 3 hours

**Prerequisite:** PHAR 3140.03 or equivalent, permission of instructor

**Note:** Preference will be given to students within the College of Pharmacy

**PHAR 4150.03A or B: Computer Dispensing and Prescription Management.** Students fill a selection of difficult prescriptions for a patient base with a variety of allergies/disease states/drug plans, to best utilize computer menu options. Also covered are reports, auxiliary patient counselling and drug interaction programs.

**Instructor:** TBA

**Format:** Lecture 3 hours; lab 5-6 hours

**Prerequisite:** PHAR 3110.03 or instructor's consent

**PHAR 4250.03B: Advanced Pharmacokinetics.** Course is designed for students with research career interests in pharmacokinetics, pharmaceutical dosage form development, clinical pharmacology, drug metabolism and toxicology.

Topics include application of Laplace Transforms in the solution of linear mammillary compartmental models, physiologically-based (perfusion) models, drug absorption models, concept of drug distribution and clearance, noncompartmental analyses of pharmacokinetics data based on statistical moment theory; nonlinear pharmacokinetic; absorption kinetics of sustained-release medications.

**Instructor:** I. Abraham

**Format:** Lecture 2 hours

**Prerequisites:** PHAR 3250.02, 4100.05; MATH 2000.06 or consent of instructor

**Cross-listing:** PHAR 5250.03

**Note:** The class is given every other year, check with the College.

**PHAR 4330.03B: Herbal Remedies.** Herbal remedies, "health foods", and pharmaceutical agents of plant origin are examined with respect to history, traditional usage, constituents, pharmacology and toxicology. An introduction to the chemistry, pharmacology and toxicology of the major plant constituents is presented. The class emphasizes safety and efficacy of herbs and formulated herbal products.

**Instructor:** R.F. Chandler

**Format:** Lecture 3 hours

**Prerequisite:** Consent of instructor

## 312 Pharmacy

**Recommended:** Some knowledge of organic chemistry, human physiology and pharmacology is strongly recommended.

**PHAR 4340.03R: Drug Design.** The increasing role of biochemical knowledge in lead generation in drug design is emphasized, followed by consideration of available methods for lead exploitation. The subject is studied by reviewing examples of drug discovery.

**Instructor:** P.S. Farmer

**Format:** Seminar 2 hours 1st term, term paper 2nd term

**Prerequisites:** Instructor's consent

**PHAR 4351.03A: Medical Biotechnology I.** An introduction to biotechnology fundamentals from a medical perspective. Topics will include a DNA recombinant technology, the polymerase chain reaction, immunochemical techniques, tissue culture, monoclonal antibodies and hybridoma technologies.

**Instructor:** A.K. Kirumira

**Format:** Lecture 3 hours, some demonstrations

**Prerequisite:** BIOC 3101.03 and 3102.03; PHAC 3470.06 and consent of instructor

**PHAR 4352.03B: Medical Biotechnology II.** A discussion of the applications of biotechnology in medicine and pharmacy. Topics will include modern vaccines, antibiotics and interferon production, technology of innovative biotech drugs, medical diagnostic devices, genetic and immunoadaptive therapy, biotech drug delivery and monitoring systems, forensic medicine and DNA finger printing.

**Instructor:** A.K. Kirumira

**Format:** Lecture 3 hours, some demonstrations

**Prerequisite:** BIOC 3101.03 and 3102.03; PHAC 3470.06; PHAR 4351.03 and consent of instructor

**PHAR 4510.06A: Therapeutics III.** A discussion of the application of pharmaceutical sciences to various diseases, pharmaceutical care, therapeutic use of drugs and drug induced disease is presented. Emphasis is placed on self-directed learning. Case study seminars are conducted in conjunction with instruction and application of clinical pharmacy principles.

**Co-ordinator:** TBA

**Instructor:** Staff

**Format:** TBA

**Prerequisites:** BIOC 3101.03 and 3102.03; PHAC 3470.06 or 3480.06; PHAR 3510.06, 3140.03, and 3141.03, consent of instructor.

**PHAR 4511.03B: Therapeutics IV.** A four-week clinical clerkship in participation sites that focuses on the on the provision of pharmaceutical care and other clinical pharmacy services in a patient oriented environment. Students may be assigned to sites not in the Halifax area and are responsible for any costs incurred as a result of the programme.

**Coordinator:** TBA

**PHAR 4530.03A: Introductory Drug Metabolism and Toxicology.** Topics include chemical and biochemical aspects of drug metabolism, factors influencing drug metabolism, toxicity related to drug

metabolism, treatment of poisoning, drug disposition and aging, forensic toxicology, application of pharmacokinetics, metabolism, and pharmacodynamics in novel drug development.

**Instructor:** P. Yeung

**Format:** Lecture 2 hours

**Prerequisites:** BIOC 3101.03 and 3102.03; PHAC 3470.06 or 3480.06; PHAR 3500.09, 3300.05, 3310.03 or consent of the instructor.

**PHAR 4550.03B: Pharmacy Home Health Care.** Topics include operation of a pharmacy-based home health care centre and the use of durable medical equipment, surgical supplies and appliances, health supports and orthotic fittings, home diagnostics, electromedicals, sports medicine, incontinence/urologicals, and nutritional support.

**Instructors:** TBA

**Format:** Lecture 3 hours

**Prerequisites:** Consent of Instructor

**Co-requisites:** PHAR 4510.06

**PHAR 4570.03A or B: Pharmacology of Drug Abuse.** The education objectives of this class are to extend the student's knowledge of the pharmacology of drugs of abuse, to enable the student to develop an insight into the biochemical mechanism and consequences of abuse, and to develop in the student an appreciation of the pharmacological basis for the use of drugs during rehabilitation.

**Instructor:** G.M. McKenzie

**Format:** Lecture 2 hours

**Prerequisite:** PHAC 3470.06

**PHAR 4720.03A: Pharmacy Administration III.**

This class provides students with a basic understanding of various components within the health care system. In addition, students are exposed to financial analysis, human resource management, marketing, ethics and pharmacy law.

**Coordinator:** K. Janke

**Format:** Lecture/seminar 3 hours

**Prerequisites:** PHAR 1700.03

**PHAR 4810.03A: Hospital Pharmacy.** An in-depth study of the principle elements of hospital pharmacy practice. Emphasis will be placed on enabling the student to acquire practical knowledge and skills to assist in performing a hospital pharmacist's function.

**Instructor:** TBA

**Format:** TBA

**Prerequisites:** Successful completion of third year pharmacy

**PHAR 4900.03B: Drug Information.** Topics include sources of drug information, how and when these sources should be used and comparisons of the information found in each, formulating and communicating responses to drug information requests, evaluation of drug literature, drug utilization review, evaluation of drug advertisements and research methods.

**Instructor:** M. MacCra

**Format:** Lecture 3 hours

**Prerequisites:** PHAR 3500.09; PHAC 3470.06 or 3480.06

**Corequisite:** PHAR 4510.06

**PHAR 4910.03A or B: Advances in Drug Metabolism and Disposition.** Topics include methods for isolation, quantitation, and

characterization of drugs and their metabolites in biological samples, immunoassays and their applications, kinetics and dynamics of drugs and their metabolites and their clinical relevance, cardiovascular system in health and disease, pharmacokinetics and pharmacodynamic modelling.

**Instructors:** P. Yeung, M. Quilliam, G. Klassen, and T. Pollak

**Format:** Lecture 2 hours

**Prerequisites:** BIOC 3101.03 and 3102.03; PHAC 3470.06 or 3480.06; PHAR 3510.06, 4530.03, or instructor's consent

**Cross-listing:** PHAR 5910.03

**PHAR 4950.03B: Interdisciplinary Course in Human Nutrition.** See class description for Nurs 4800.03 in the Nursing section of this calendar.

## Classes Offered by other Departments

**ANAT 1010.03R: Human Anatomy.** See class description in Anatomy section of this calendar.

**BIOC 3101.03A: Biological Chemistry for Students of Pharmacy.** Students will first be introduced to the structures and functions of proteins and nucleic acids, including an outline of the topic of genetic engineering. Next, the phenomena of enzymic catalysis will be examined in some detail. Finally, the topic of biological membrane structure and the chemical forms of energy storage will be explored.

**Instructor:** D.W. Russell

**Format:** Lecture 3 hours, lab 2 hours, tutorial 1 hour

**Prerequisite:** CHEM 2400.06

**Note:** BIOC 3101.03 is a prerequisite for BIOC 3400.03 (a fourth year elective).

**BIOC 3102.03B: Metabolism for Students of Pharmacy.** The class, using the chemical background gained in BIOC 3101.03, will examine the generation, storage, liberation, and uses of biological energy.

**Instructor:** D.W. Russell

**Format:** Lecture 3 hours, lab 2 hours, tutorial 1 hour

**Prerequisite:** BIOC 3101.03

**CHEM 2400.06R: Introductory Organic Chemistry.** See class description in the Chemistry section of this calendar.

**HLTH 4900.03A: An Interdisciplinary Approach to Gerontology.** See class description in the Health Professions, Interdisciplinary section of this calendar.

**HLTH 4910.03B: An Interdisciplinary Approach to Gerontology.** See class description in the Health Professions, Interdisciplinary section of this calendar.

**HLTH 3000.03B: An Interdisciplinary Approach to Health Promotion.** See class description in the Health Professions, Interdisciplinary section of this calendar.

**MICR 2020.03B: General Microbiology.** This class is geared to students in pharmacy and in other health-oriented curricula. It provides a brief introduction of microbial structure, physiology, and genetics in relation to microbial pathogenesis. General concepts and practices of

sterilization and disinfection, antibiotics, and immunity will be examined with emphasis on mechanism of action. Bacterial, fungal, parasitic, and viral pathogens of medical importance will be discussed according to the mode of entry, transmission, clinical features, prevention, and chemotherapy. Laboratory sessions using demonstration and/or experimentation are designed to complement the lectures and to provide a practical appreciation in the isolation, identification, cultivation, and control of microorganisms.

**Instructor:** S.H.S. Lee

**Format:** lecture 3 hours, lab 3 hours

**Prerequisite:** BIOL 1000.06 or instructor's consent

**PHAC 3470.06R: The Influence of Chemical Agents on Living Organisms.** An introduction to the actions of drugs on physiological and biochemical functions of man and lower animals. The basic mechanisms of actions and structure-activity relationships of various groups of pharmacological agents are stressed and wherever possible, discussed at the molecular and macro-molecular level of cell organization. Factors influencing the absorption, distribution, biotransformation, and excretion of drugs are discussed, as are potential uses.

**Coordinator:** G. McKenzie

**Instructor:** Staff

**Format:** Lecture 3 hours

**PHYL 4403.06R: Human Physiology.** See class description in the Physiology and Biophysics section of this calendar.

**STAT 1060.03A or B: Introductory Statistics for non-Mathematicians.** See class description in the Statistics section of this calendar.

## Electives

The first year elective may be any non-science full credit class or two non-science half classes. The student should discuss the available electives with his or her faculty counsellor. Electives for the fourth year of study must be approved by the Committee on Studies.



# Philosophy

Location: 1400 Henry Street, Halifax, N.S.  
 Telephone: (902) 494-3810  
 Fax: (902) 494-3518

## Chair

R.M. Campbell

## Undergraduate Advisors

N.C. Brett  
 S.B. Sherwin

## Honours Advisor

T. Vinci

## Professor Emeritus

D. Braybrooke, BA (Harv), MA, PhD (Corn),  
 FRSC

## Professors

S.A.M. Burns, BA (Acadia), MA (Alta), PhD  
 (Lond)

R.M. Campbell, BA (Harv), PhD (Corn)

R.M. Martin, BA (Col), MA, PhD (Mich)

P.K. Schotch, PhD (Waterloo)

S.B. Sherwin, BA (York), PhD (Stanford)

## Associate Professors

N.C. Brett, BA (New Hampshire), MA, PhD  
 (Waterloo)

D. MacIntosh, BA (Queen's), MA (Waterloo),  
 PhD (Tor)

T. Tomkow, BA (SFU), PhD (Cantab)

T. Vinci, BA (Tor), MA, PhD (Pitts)

## Assistant Professors

J. Arscott, BA (Queen's), MA (Oxon), PhD  
 (Queen's)

S. Campbell, BA, MA (Alta), PhD (Tor)

M. Hogan, AB (UC Berkeley), MA, PhD  
 (Wisconsin)

S. Maltzen, BA (Northwestern), MA, PhD (Corn)

## Adjunct Professor

A. Kernohan, SB (MIT), MSc (Tor), MA (Dal),  
 PhD (Tor)

## Beginning in Philosophy

There are many different ways of beginning in philosophy. The Dalhousie Philosophy Department offers three sorts of classes for beginners: (1) general survey introductions, which will give you a taste of a variety of questions and answers; (2) introductions to special areas; (3) logic, which is the study of the theory and techniques of good reasoning. Students wishing to major in philosophy are encouraged to begin with Introduction to Philosophy (either PHIL 1000.06, or PHIL 1010.06, or PHIL 2040.03, or PHIL 2050.03) in which a wide range of philosophical issues is 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. Any of these classes provides the student with a good introduction to philosophical thinking. Choose the class that best suits your interests -

it's not necessary to start with a general survey. 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.

## Degree Programmes

### BA with Honours in Philosophy

Students wishing to specialize in philosophy should take an honours degree, the normal preparation for graduate study in philosophy.

### Departmental Requirements

#### Classes required in Honours:

At least 10 credits in Philosophy of which at least 9 and no more than 11 are beyond the 1000 level

#### Select at least one credit from the following:

Philosophy (logic) full-credit: 1111.06;  
 half-credit: 1112.03, 2100.03, 2130.03,  
 2140.03, 2660.03, 3060.03, 3900.03

#### Select at least one credit from the following:

Philosophy (history) half-credit: 2350.03,  
 2370.03, 2610.03, 2620.03, 3630.03, 3640.03

At least three credits at or above the 3000 level.

At least one credit at the 4000 level.

Honours Qualifying Exam

### BA with Advanced Major in Philosophy

### Departmental Requirements

#### Classes required in Advanced Major:

At least 6 and no more than 9 credits in Philosophy beyond the 1000 level, including 3 beyond the 2000 level

#### Select at least one half credit from the following:

Philosophy (logic) full-credit: 1111.06;  
 half-credit: 1112.03, 2100.03, 2130.03,  
 2140.03, 2660.03, 3060.03, 3900.03

#### Select at least one credit from the following:

Philosophy (history) half-credit: 2350.03,  
 2370.03, 2610.03, 2620.03, 3630.03, 3640.03

At least three credits at or above the 3000 level.

### BA with Major in Philosophy

### Departmental Requirements

#### Classes required in major:

At least 4 and no more than 8 credits in Philosophy beyond the 1000 level

#### Select at least one half credit from the following:

Philosophy (logic) full-credit: 1111.06;  
 half-credit: 1112.03, 2100.03, 2130.03,  
 2140.03, 2660.03, 3060.03, 3900.03

Select at least one half credit from the following:

Philosophy (history) half-credit: 2350.03, 2370.03, 2610.03, 2620.03, 3630.03, 3640.03

At least two credits at or above the 3000 level.

All students planning to take a degree in philosophy should first talk to an undergraduate advisor in the department.

## Classes Offered

**Note:** Many classes are listed as being Exclusionary to one another. This means that students may not take both classes so designated. The class numbers designate classes which, prior to 1984-85, were numbered without the last digit (zero), e.g., the present class PHIL 2130.06 was previously called Philosophy 213. The prerequisite and exclusionary designations below should be interpreted accordingly. Detailed descriptions are available from the department on request.


**Note:** Classes marked \* may not be offered every year. Please consult the current timetable on registration to determine if these classes are offered.

### 1000-Level

**PHIL 1000.06R: 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.

**Instructor:** Staff  
**Format:** Lecture/discussion 2 hours  
**Exclusion:** PHIL 1010.06, PHIL 1020.06, PHIL 2000.06, PHIL 2040.03 and PHIL 2050.03

**PHIL 1010.06R: Introduction to Philosophy.** See description for PHIL 1000.06. This class does satisfy the Faculty Writing Requirement.

**Instructor:** Staff  
**Format:**  Writing Requirement, lecture/discussion 2-3 hours  
**Exclusion:** PHIL 1000.06, PHIL 1020.06, PHIL 2000.06, PHIL 2040.03 and PHIL 2050.03

**\*PHIL 1090.03A or B: 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:** T. Vinci  
**Format:** Lecture/discussion 2 hours  
**Exclusion:** PHIL 1090.03, and PHIL 2150.03

**\*PHIL 1090.03A or B: How to Win an Argument.** This class is devoted to developing the practical skills involved in evaluating reasoning and producing convincing arguments. Note this class does not count toward satisfying the logic requirement for the major or honours programme.

**Instructor:** T. Tomkow  
**Format:** Lecture/discussion 2 hours  
**Restriction:** For first-year students only.  
**Exclusion:** PHIL 1090.03, and PHIL 2150.03

**PHIL 1100.03A or B: Legal Thinking.** Examination of controversial legal cases leading to increased understanding of the nature of law and the techniques of practical moral reasoning.

**Instructor:** N. Brett  
**Format:** Lecture/discussion 2 hours

**\*PHIL 1111.06R: Logic: Elementary Symbolic Logic.** An introduction to an artificial language constructed so as to make the operations of reasoning more precise. Meets logic requirement for majors only if taken in first-year.

**Instructors:** P. Schotch, R. Martin  
**Format:** Lecture/discussion 2-3 hours  
**Exclusion:** PHIL 1112.03, PHIL 2110.06 and PHIL 2130.03

**\*PHIL 1112.03A or B: Logic: Elementary Symbolic Logic.** An abbreviated version of PHIL 1111.06. Meets logic requirement for majors only if taken in first-year.

**Instructors:** P. Schotch, R. Martin  
**Format:** Lecture/discussion 2 hours  
**Exclusion:** PHIL 1111.06, PHIL 2110.06 and PHIL 2130.03

### 2000-Level

**\*PHIL 2040.03A/PHIL 2050.03B: Introduction to Philosophy I and II.** See description for PHIL 1000.06 above. A student may take either or both half-year classes. Neither class satisfies the Faculty Writing Requirement.

**Instructor:** Staff  
**Format:** Lecture/discussion 2 hours  
**Exclusion:** PHIL 1000.06, PHIL 1010.06, PHIL 1020.06 and PHIL 2000.06

**PHIL 2070.06R: Foundations of Political Thought II: Rights, Rationality, and Democracy.** See class description for POLI 2401.06, in the Political Science section of this calendar.

**\*PHIL 2080.06R: Ethics in the World of Business.** Business practices are sometimes in accord with moral principles, sometimes at odds with them. Where in business is it easiest to be scrupulous? Where is it hardest? Could things be changed for the better, and, if so, what would be involved?

**Instructor:** Staff  
**Format:** Lecture/discussion 2-3 hours  
**Exclusion:** PHIL 2081.03

**\*PHIL 2081.03A, B, or R: Ethics in the World of Business.** See description for 2080.06.

**Instructor:** Staff  
**Format:** Lecture/discussion 2-3 hours  
**Exclusion:** PHIL 2080.06

**\*PHIL 2100.03A or B: Logic: Logic and Knowledge.** An introduction to logic, theory of

## 316 Philosophy

knowledge, and some basic concepts used in contemporary philosophy, through the use of the notion of "possible worlds".

Instructor: R.M. Martin  
Format: Lecture

**PHIL 2130.03A or B: Logic: Deduction.** A systematic introduction to the operations of formal deductive logic. The same topics are covered as in PHIL 1111.06, but at a quicker pace, with considerable attention devoted to the relation between artificial and natural language and to the philosophical problems that arise from the study of reasoning. No previous study of logic is presupposed.

Instructor: P.K. Schotch, R.M. Martin  
Format: Lecture/discussion 2 hours  
Exclusion: PHIL 1111.06, PHIL 1112.03 and PHIL 2110.06

**PHIL 2140.03A or B: Logic: Logical Theory I.** An introduction to metalogic, with special attention to the soundness and completeness of formal systems, and to the philosophical evaluation of non-classical logics.

Instructor: P.K. Schotch  
Format: Lecture/discussion 2 hours  
Prerequisite: PHIL 1111.06, PHIL 1112.03 or PHIL 2130.03

**PHIL 2160.03A or B: 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. Sherwin, S. Campbell  
Format: Lecture/discussion 3 hours  
Cross-listing: WOST 2500.03

**\*PHIL 2200.06R: Philosophy of Religion.** An introduction to the philosophy of religion, examining such questions as: Why is religion so difficult to define? Is it rational to believe in a divine being? Can religious experiences be validated?

Instructor: Staff  
Format: Lecture/discussion 2 hours  
Exclusion: PHIL 2205.03

**\*PHIL 2205.03A or B: Philosophy of Religion.** See description for PHIL 2200.06.

Instructor: Staff  
Format: Lecture/discussion 2 hours  
Exclusion: PHIL 2200.06

**\*PHIL 2260.03A or B: Philosophy of Art.** Examines questions such as: What is art? Can judgements of artistic value be rational and objective? Can fear of fictional objects be real fear? Can music be a language?

Instructor: S.A.M. Burns  
Format: Lecture/discussion 2 hours

**PHIL 2270.06R: Foundations of Political Thought I: Order, Knowledge, and Natural Law.** See class description for POLI 2400.06, in the Political Science section of this calendar.

**PHIL 2350.03A or B and \*PHIL 2370.03A or B: History of Philosophy: Ancient Philosophy I and II.** The beginnings of Western philosophy are studied in the writings of pre-Socratics, Plato, Aristotle, and their successors.

Instructors: T. Vinci, S.A.M. Burns  
Format: Lecture/discussion 3 hours

Prerequisite: One previous class in philosophy

**\*PHIL 2361.03A or B and \*PHIL 2362.03A or B: Classical and Early Christian Philosophy.** See class descriptions for CLAS 2361.03B and CLAS 2362.03, in the Classics section of this calendar.

**\*PHIL 2380.06R: Medieval Philosophy.** See class description for CLAS 3380.06, in the Classics section of this calendar.

**\*PHIL 2410.03A or B: Philosophy of Psychology.** An examination of philosophical issues arising from the scientific study of the mind.

Instructor: T. Tomkow, M. Hogan  
Format: Lecture/discussion 2 hours  
Prerequisite: One previous class in philosophy or psychology

**\*PHIL 2480.03A or B: Environmental Ethics.** This class will examine the relationship of humankind to nature and contemporary environmental problems from a philosophical perspective. Areas looked at will include pollution, energy, rare species, and environmental law, with a special emphasis on ethical issues in agriculture. An overall question of the class will be whether or not we need reform or radical change in our relationship to nature.

Instructor: Staff  
Format: Lecture and discussion

**\*PHIL 2550.03A or B: Marxist Theory and Its Upshot in the Modern World.** Marxist theory combines themes of Hegelian philosophy with the economics of the British classical school. The class will consider how the mature works of Marx and Engels express this combination. It will then trace the fate of the combination in diverse attempts to fit it to circumstances, in Western Europe and in Russia, that Marx did not foresee. Finally it will ask how far any of these versions of Marxism is relevant to the current epoch.

Instructor: Staff  
Format: Lecture/discussion 2 hours  
Cross-listing: POLI 2455.03/5455.03

**PHIL 2610.03A or B: History of Philosophy: The Rationalists.** The philosophy of Descartes, Spinoza, and Leibniz.

Instructors: S. Campbell, S.A.M. Burns  
Format: Lecture/discussion 3 hours  
Prerequisite: One previous class in philosophy

**PHIL 2620.03A or B: History of Philosophy: The Empiricists.** The philosophy of Locke, Berkeley, and Hume, with an introduction to Kant.

Instructors: S.A.M. Burns, T. Vinci, D. MacIntosh  
Format: Lecture/discussion 3 hours  
Prerequisite: One previous class in philosophy

**\*PHIL 2660.03A or B: Logic: Understanding Scientific Reasoning.** An introduction to the principles of scientific prediction and rational choice. The class examines the workings of chance, or probability, and the theory of games.

Instructor: Staff  
Format: Lecture/discussion 2 hours

**\*PHIL 2700.06R: Philosophy in Literature.** A study of some philosophical themes in modern literature. All readings will be literary works.  
**Instructor:** R.M. Martin  
**Format:** Lecture/discussion 2 hours  
**Exclusion:** PHIL 2705.03

**\*PHIL 2705.09A or B: Philosophy in Literature.** See description for PHIL 2700.06.  
**Instructor:** R.M. Martin  
**Format:** Lecture/discussion 2 hours  
**Exclusion:** PHIL 2700.06

**PHIL 2710.03A or B: Existentialism.** A general introduction to existentialist themes and authors including Kierkegaard, Nietzsche, Sartre, and Camus.  
**Instructor:** N. Brett  
**Format:** Lecture/discussion 2 hours  
**Exclusion:** PHIL 2170.06

**PHIL 2800.06R: Ethics and Health Care:** (formerly Ethics & Medicine). Modern health care generates moral problems which cannot be settled on the basis of medical knowledge alone but need to be considered in the light of moral philosophy. Among the problems to be considered in this class are: euthanasia, informed consent, confidentiality, paternalism, coercion, abortion, and the allocation of scarce resources.  
**Instructor:** S. Sherwin  
**Format:** Lecture/discussion 3 hours

**3000-Level**

**PHIL 3051.03A or B: Theory of Knowledge.** A study of fundamental issues in the theory of knowledge. The class examines Skepticism, Rationalism, and Empiricism, and investigates the nature of knowledge, belief, meaning, evidence, and truth. Questions are raised about perception and memory and their relation to knowledge as well as questions about our knowledge of ourselves and other people. Attention is given to ancient and modern authors.

**Instructors:** R. Campbell, D. MacIntosh, T. Vinci  
**Format:** Lecture/discussion 3 hours  
**Prerequisite:** PHIL 2610.03, PHIL 2620.03 or permission of the instructor  
**Exclusion:** PHIL 3050.06  
**Cross-listing:** PHIL 5051.03

**\*PHIL 3060.03A or B: Logic: Logical Theory II.** Devoted primarily to the study of formal semantics and its relation to symbolic language.  
**Instructor:** P.K. Schotch  
**Format:** Lecture/discussion 2 hours  
**Prerequisite:** PHIL 2130.03, PHIL 2140.03 or permission of the instructor  
**Cross-listing:** PHIL 5060.03

**PHIL 3100.06R: Ethics.** A systematic study of the foundation of morality, including readings from Kant, *Foundation of the Metaphysics of Morals*; Hume, *A Treatise of Human Nature*; and Rawls, *A Theory of Justice*.  
**Instructor:** N. Brett, R. Campbell  
**Format:** Lecture/discussion 3 hours  
**Prerequisite:** 2 previous classes in philosophy  
**Exclusion:** PHIL 3105.03  
**Cross-listing:** PHIL 5100.06

**\*PHIL 3105.03A, B, or R: Ethics.** An abbreviated version of PHIL 3100.06.  
**Instructor:** N. Brett

**Format:** Lecture/discussion 2-3 hours  
**Prerequisite:** Two previous classes in philosophy  
**Exclusion:** PHIL 3100.06  
**Cross-listing:** PHIL 5105.03

**PHIL 3170.03A or B: Theories of Feminism.** A study of the theoretic underpinning of the major feminist theories in critical comparison, concentrating on the ideological disputes and the implications for traditional approaches to social and political thought.  
**Instructor:** J. Arscott, S. Sherwin  
**Format:** Seminar 2 hours  
**Prerequisite:** Two previous classes in Philosophy or Women's Studies  
**Cross-listing:** POLI 3428.03, PHIL 5170.03, WOST 3500.03

**\*PHIL 3211.03A or B: Philosophy of Law.** Is coercion central to the concept of law? How are law and morality related? These and other issues relating to the analysis and evaluation of law will be dealt with in a way that utilizes specific statutes and cases, e.g. the Narcotics Control Act and the Morgentaler Case.  
**Instructor:** N. Brett  
**Format:** Lecture/discussion 2 hours  
**Prerequisite:** Two previous classes in philosophy, or instructor's consent  
**Cross-listing:** PHIL 5211.03

**\*PHIL 3265.03A or B: Aesthetics.** This class examines major texts in philosophical aesthetics. We begin with relevant parts of Kant's *Critique of Judgement* and conclude with a consideration of Wittgenstein's contribution, especially in *Lectures and Conversations*, and *Culture and Value*.  
**Instructor:** S.A.M. Burns, S. Campbell  
**Format:** Lecture  
**Prerequisite:** PHIL 2260.03 or instructor's consent  
**Cross-listing:** PHIL 5265.03

**PHIL 3300.03A or B: Philosophy of Language.** What does it mean to say that the elements of language have meaning?  
**Instructors:** M. Hogan, D. MacIntosh, R. Martin  
**Format:** Lecture/discussion 2 hours  
**Prerequisite:** Two previous classes in philosophy including one logic class, half- or full-year  
**Cross-listing:** PHIL 5300.03

**\*PHIL 3420.03A or B: Philosophy of Biology.** The class begins with a general introduction to the philosophy of science, focusing on the often conflicting criteria for evaluating scientific theories. The relative importance of successful novel predictions, consistency, simplicity, scope, and fruitfulness are assessed in relation to the current status of Darwinian evolutionary theory. In considering the competing views of Popper, Hempel, Kuhn, Lakatos, and Giere, emphasis will be placed on the logic of scientific reasoning and the question whether there can be objectivity and progress in science. The class then turns to issues surrounding the role of teleology in current biological thought: the interpretation and significance of biological functions, the debate about whether genes are the fundamental units of natural selection, and the alleged reduction of modern genetics to

physics and chemistry. Finally, the class considers the implications of human sociology for matters of traditional philosophical concern: the possibility of biological determinism, the origins of morality, and the reliability of cognitive functions.

**Instructor:** R. Campbell  
**Format:** Lecture/discussion 2 hours  
**Prerequisite:** One previous class in philosophy or biology  
**Exclusion:** PHIL 2420.03  
**Cross-listing:** BIOL 3580.03, PHIL 5420.03

**\*PHIL 3427.03A or B: Women in Western Political Thought.** The role of women in political life has been vilified, praised or ignored by major thinkers. Pertinent texts will be read along with interpretations by modern feminists in order to assess why the formal political enfranchisement of women has not resulted in greater substantial equality.

**Instructor:** J. Arscott  
**Format:** Lecture/discussion 2 hours  
**Prerequisite:** POLI 2400.06/PHIL 2270.06 or POLI 2401.06/PHIL 2070.06, or instructor's permission  
**Exclusion:** POLI 2327.03  
**Cross-listing:** POLI 3427.03, WOST 2600.03

**PHIL 3431.03A or B: The Political Imagination in Literature.** After having looked at how the study of literature both complements and supplements the social scientific approach to understanding politics, the seminar will analyze the implicit and explicit treatment of a number of political themes in a list of works by both modern and classical novelists and playwrights.

**Instructor:** J. Arscott  
**Format:** Seminar 2 hours  
**Prerequisite:** POLI 2400.06 or 2401.06, or instructor's permission  
**Cross-listing:** POLI 3431.03/5431.03

**\*PHIL 3440.03A or B: Philosophy of Mind. A systematic study of the mind-body problem and/or theories of personal identity.**

**Instructor:** T. Tomkow  
**Format:** Lecture/discussion 2 hours  
**Prerequisite:** Two previous classes in philosophy  
**Exclusion:** PHIL 4460.03  
**Cross-listing:** PHIL 5440.03

**\*PHIL 3460.03A or B: Mind and Brain.** An interdisciplinary approach, combining philosophical analysis and neuroscientific data to study current controversies about the relation between brain function and conscious experience, such as why consciousness evolved and how it is organized in the normal human brain, and whether the mental can be construed as itself physical.

**Instructor:** M. Hogan, T. Tomkow  
**Format:** Lecture/discussion 2 hours  
**Prerequisite:** Two previous classes in philosophy  
**Cross-listing:** PHIL 5460.03

**\*PHIL 3475.03A or B: Democratic Theory.** See class description for POLI 3475.03 in the Political Science section of this calendar.

**\*PHIL 3520.03A or B: Philosophy of Social Science.** An examination of philosophical questions about the presupposition, aims, and

methods of the social sciences, for example, whether the quantitative methods of the natural sciences are appropriate in the social sciences.

**Instructor:** Staff  
**Format:** Lecture/discussion 2 hours  
**Prerequisite:** One previous class in philosophy, political science, economics, or sociology and social anthropology  
**Exclusion:** PHIL 3510.03 and PHIL 2510.03  
**Cross-listing:** POLI 3496.03

**\*PHIL 3530.03A or B: 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.

**Instructors:** P. Schotch, D. MacIntosh  
**Format:** Lecture/discussion 2 hours  
**Prerequisite:** Two previous classes in philosophy  
**Exclusion:** PHIL 4450.06, PHIL 4530.03  
**Cross-listing:** PHIL 5530.03

**\*PHIL 3630.03A or B: History of Philosophy: Kant.** Special attention will be paid to Kant's metaphysics.

**Instructor:** T. Vinci  
**Format:** Lecture/discussion 2 hours  
**Prerequisite:** PHIL 2610.03 or PHIL 2620.03 or permission of the instructor  
**Cross-listing:** PHIL 5630.03

**\*PHIL 3640.03A or B: 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 Frege, Russell, Wittgenstein, and Quine.

**Instructor:** D. MacIntosh  
**Format:** Lecture/discussion 2 hours  
**Prerequisite:** One previous class in the history of philosophy or permission of the instructor  
**Cross-listing:** PHIL 5640.03

**\*PHIL 3650.03A or B: Modern Philosophy.** "Modern Philosophy" refers to a philosophical perspective that arose during the great advances of Western science in the 17th and 18th centuries. Modern Philosophy seeks to advance the thesis that persons are beings with conscious thoughts (ideas) and that all of the interesting forms of contact people have with the world - perceptual, semantic, epistemic, casual - are mediated by conscious thoughts. Modern Philosophy also seeks to reconcile this thesis with the scientific/materialistic image of the world then emerging. This class involves a study of the systematic properties of this perspective employing both historical primary sources and contemporary commentary. (This class is designed to complement PHIL 3660.03 but can be taken independently).

**Instructor:** T. Vinci  
**Format:** Lecture/tutorial  
**Prerequisite:** PHIL 2160.03, 2620.03 or permission of the instructor  
**Cross-listing:** PHIL 5650.03

**\*PHIL 3660.03A or B: 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 Sellars and Rorty in the English-speaking world as well as those like Derrida and Habermas on the Continent. (This class is designed to complement PHIL 3650.03 and 3640.03 but can be taken independently).

Instructor: T. Vinci  
 Format: Lecture/tutorial  
 Prerequisite: Permission of the instructor  
 Cross-listing: PHIL 5660.03

**\*PHIL 3670.03A or B: Philosophy of Science.** Induction, probability, and explanation are studied with special attention to the nature of scientific theories. No scientific background is presupposed.

Instructor: D. MacIntosh  
 Format: Lecture/discussion  
 Prerequisite: At least two previous classes in philosophy, including one half- or full-year logic class such as PHIL 2660.03

Cross-listing: PHIL 5670.03

**\*PHIL 3851.03A or B: Metaphysics.** A study of topics such as the nature of substance and change, body and mind, cause and effect, and the concept of existence.

Instructor: M. Hogan, T. Tomkow  
 Format: Lecture/discussion  
 Prerequisite: Two previous philosophy classes including at least one half- or full-year logic class

Exclusion: PHIL 3850.06  
 Cross-listing: PHIL 5851.03

**\*PHIL 3900.03A or B: Logic: Logic and Philosophical Analysis.** This class will examine the application of logical theory to philosophical problems and issues in the philosophy of logic. Topics in this area include: reference and definite descriptions, problems of intensionality, relativized identity and sortals, bivalence and the sorites paradox, logicism and set theoretic paradoxes, trans-world identity, paradoxes of confirmation, counterfactuals, multi-valued logic, quantum logic, Arrow's theorem, analyticity and the a priori, negative existentials.

Instructor: R. Campbell  
 Format: Lecture/discussion  
 Prerequisite: Two previous philosophy classes including one half- or full-year class in modern symbolic logic

Cross-listing: PHIL 5900.03

### 4000-Level

Note: Classes at this level are intended for advanced undergraduates with a strong background in philosophy. No specific prerequisites are listed, but it is assumed that normally a student will have already taken relevant classes at the 3000-level. Classes with titles beginning "Topics in..." have no description, since the selection of topics and instructor is determined after the time of calendar preparation. The format for these classes is seminar, 2 hours, and enrolment is limited to 15. Interested students should consult the department for up-to-date information.

**\*PHIL 4055.03A or B: Topics in Epistemology**

Instructor: S. Maitzen  
 Cross-listing: PHIL 5055.03

**\*PHIL 4070.03A or B: Topics in Philosophical Psychology**

Cross-listing: PHIL 5070.03

**\*PHIL 4080.03A or B: Topics in Logical Theory**

Cross-listing: PHIL 5080.03

**\*PHIL 4115.03A or B: Topics in Ethics I**

Cross-listing: PHIL 5115.03

**\*PHIL 4120.03A or B: Theory of Rational Decision.** A study of foundational problems in contemporary theory of rational decision, drawing on work by philosophers, psychologists, economists and mathematicians.

Instructor: R. Campbell, D. MacIntosh  
 Cross-listing: PHIL 5120.03

**\*PHIL 4125.03A or B: Topics in Ethics II**

Cross-listing: PHIL 5125.03

**\*PHIL 4190.03A or B: Topics in the History of Philosophy I**

Cross-listing: PHIL 5190.03

**\*PHIL 4191.03A or B: Topics in the History of Philosophy II**

Cross-listing: PHIL 5191.03

**\*PHIL 4192.03A or B: Topics in the History of Philosophy III**

Cross-listing: PHIL 5192.03

**\*PHIL 4200.03A or B: Topics in Normative Theory**

Cross-listing: PHIL 5200.03

**\*PHIL 4215.03A or B: Topics in the Philosophy of Law**

Cross-listing: PHIL 5215.03

**\*PHIL 4220.03A or B: 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: artificial intelligence, probability, sociobiology, theories of causation, reduction.

Instructor: Staff  
 Cross-listing: PHIL 5220.03

**\*PHIL 4430.03A or B: Game Theory as a Foundation for Ethics and Politics.** The most innovative recent work in ethical theory has applied the theory of games to the perennial problem of the social contract. To what extent can any organized society to which people freely adhere be represented as constituted by rules arrived at by rational agents trying each to arrive at the best bargain about rules with the other agents present? These rules can be regarded simultaneously as the foundation of political organization and as elementary rules of ethics, and a study of this topic forms the basis of the class.

Instructor: Staff  
 Format: Seminar  
 Prerequisite: Permission of the instructor  
 Cross-listing: POLI 4485.03, ECON 4447.03, PHIL 5430.03

**\*PHIL 4470.03A or B: Utilitarianism, Classical Liberalism, and Democracy.** The study of two beliefs characteristic of classical liberalism: that good government is strictly limited

## 320 Philosophy

---

government, and that there is no standard for social policy beyond the combination of personal preferences.

Instructor: J. Arscott  
Format: Seminar  
Prerequisite: Permission of the instructor  
Cross-listing: POLI 4479.03/5479.03, ECON 4446.03/5446.03, PHIL 5470.03

**\*PHIL 4480.03A or B: 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: Staff  
Format: Seminar  
Prerequisite: Permission of the instructor  
Cross-listing: POLI 4480.03/5480.03, ECON 4448.03/5448.03, PHIL 5480.03

**\*PHIL 4500.03A or B: Topics in Feminist Philosophy.** In this class we shall explore some of the current research in a focused area of feminist philosophy, such as feminist ethics, feminist epistemology, feminist philosophy of science, or postmodern feminism.

Instructor: S. Sherwin  
Format: Seminar, 2 hrs  
Prerequisite: Strong background in philosophy or feminist theory (normally including at least one previous class in feminist philosophy or instructor's consent)

Cross-listing: WOST 4500.03, PHIL 5500.03

**\*PHIL 4510.03A or B: Topics in the Philosophy of Language**

Cross-listing: PHIL 5510.03

**\*PHIL 4600.03A or B: Philosophy of Religion**

Cross-listing: PHIL 5600.03

**\*PHIL 4680.03A or B: Topics in the Philosophy of Science**

Cross-listing: PHIL 5680.03

**\*PHIL 4801.03A or B: Topics in Ethics and Health Care**

Instructor: S. Sherwin  
Prerequisite: PHIL 2800.06  
Cross-listing: PHIL 5801.03

**\*PHIL 4855.03A or B: Topics in Metaphysics**

Cross-listing: PHIL 5855.03

**PHIL 4940.03A or B/4960.03A or B/ 4980.03A or B/ 4950.06R/ 4970.06R/ 4990.06R: Directed Reading.** Consult department for details. In special cases, classes to suit individual interests can be developed jointly by a student and an instructor.

Instructor: Staff  
Prerequisite: Permission of instructor

### Changes and Additions

As the Calendar goes to press before plans for the next academic year are completed, there may be significant changes in the classes listed above. In particular, not all classes are offered in each academic year. Students should consult the Department for names of instructors and revisions.

# Physics

Location: Sir James Dunn Science Building  
 Telephone: (902) 494-2337  
 Fax: (902) 494-5191

## Chair of Department

D. Kiang

## Undergraduate Advisor

D. Kiang (494-2315)

## Graduate Advisor

J.G. Cordes (494-2315)

## Co-ordinator, Diploma in Meteorology

I. Fokids (494-3701)

## Coordinator, Co-op Programme

G. Stroink (494-7062)

## Professors Emeriti

W.J. Archibald, MA (Dal), PhD (Virg), DSc (UNB), DSc (Dal), FRSC

D.D. Betts, BSc, MSc (Dal), PhD (McG), FRSC

## Professors

B.L. Blackford, BSc (Acadia), MSc (MIT), PhD (Dal)

M.G. Calkin, BSc, MSc (Dal), PhD (UBC)

F. Chylek, Physics Diploma (Charles U., Czech.), PhD (Calif-Riverside), FOA - cross appointment with Oceanography

R.A. Dunlap, BS (Worcester), AM (Dart), PhD (Clark)

D.J. W. Geldart, BSc (Acadia), PhD (McM), FRSC - Research

M.H. Jericho, BSc, MSc (Dal), PhD (Cantab) - George Munro Professor of Physics

D.B. I. Kiang, BSc. (MtA), MSc, PhD (McM)

H.J. Kreuzer, MSc, DSc (Bonn), FRSC - Faculty of Science Killam Professor

G.F.O. Langstroth, BSc (Alta), MSc (Dal), PhD (London)

B.E. Paton, BSc, MSc (Waterloo), PhD (McG)

R. Ravindra, BSc, MTech (IIT, Kharagpur), MA (Dal), MSc, PhD (Tor) - major appointment with Comparative Religion

P.H. Reynolds, BSc (Tor), PhD (UBC) - cross appointment with Earth Sciences

A.M. Simpson, BA (Cantab), MSc, PhD (Dal)

G. Stroink, BSc, MSc (Delft), PhD (McG), PEng - minor appointment with Physiology and Biophysics

M.A. White, BSc (Western), PhD (McM) - major appointment with Chemistry

## Associate Professors

J.G. Cordes, BSc, MSc (Dal), PhD (Cantab)

D.F. Goble, BSc, MSc (Alta), PhD (Tor)

D.A. Tindall, BA, PhD (Cantab)

## Assistant Professors

I. Fokids, BSc (Dal), MSc, PhD (Tor) - cross appointment with Oceanography

M.E. Hale, BSc, PhD (UNB) - major appointment with Radiation Oncology  
 W.T. Hyde, BSc (Tor), MSc (Waterloo), PhD (Tor) - cross appointment with Oceanography  
 D. Labrie, BSc (Montreal), MSc, PhD (McM)

## Senior Instructors

F.M. Fyfe, MSc (Dal)

W. Zukauskas, BSc (Dal)

## Honorary Adjunct Professors

N. Jan, PhD (Cambridge), Physics, St. Francis Xavier U.

D.A.H. Pink, PhD (UBC), Physics, St. Francis Xavier U.

M. Steinitz, PhD (Northwestern), Physics, St. Francis Xavier U.

## Research Associates

A.K. Das, DPhil (Oxon)

V. Gelfandbein, PhD (Tech. Inst., Israel)

S.H. Payne, PhD (Canterbury, NZ)

R.L. Wang, PhD (Dal)

## Postdoctoral Fellows

Z. Kozlól, PhD (Amsterdam)

M. Lam, PhD (Dal)

T. Stirner, PhD (Hull)

W. Tso, PhD (Stevens Inst. of Tech.)

M. Wang, PhD (Utah)

W. Xu, PhD (Dal)

M. Yewondwossen, PhD (Dal)

## MacGregor Teaching Fellows

A. Adams

A. Billyard

S. Bonev

T. L'Ecuyer

M. Miller

M. Small

M. Walsh

J. Wong

## Introduction

Physics is the study of the fundamental properties of energy and matter, and of the space in which they are found. It seeks 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 disciplined by logic, and its success is judged by whether or not nature confirms its predictions when tested by experiment. An understanding of physics must be built on a good foundation. The various programmes are arranged to do this in an orderly, efficient way.

The Honours programme is a focused, intensive programme aimed at those intending to pursue either graduate study or professional research work either in physics or in allied sciences. The various Majors programmes provide the opportunity to pursue a broad education in both physics and other allied areas. Such programmes provide a suitable background for employment in industry, and for further studies in such fields as meteorology, engineering, education, law, medicine and business.



## First Year Classes

There are four first year classes. Physics 1450.06 is a general interest classes for BA students and is not acceptable as a prerequisite for further classes in physics. Physics 1000.06, 1100.06, and 1300.06 all give a general introduction to physics, but each has its own particular approach and selection of topics.

Physics 1000.06R is a survey class offering a wide range of topics in both classical and modern physics. It is primarily intended for students in arts and science, has regular tutorials, no labs, does not use calculus, and is not normally accepted as a prerequisite for advanced physics classes.

Physics 1100.06R 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. Background in physics equivalent to Nova Scotia Grade XII is strongly recommended.

Physics 1300.06R 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 1000.03A and 1010.03B are taken concurrently.

## Degree Programmes

Students should consult the "Degree Requirements" section of this calendar for specific regulations.

### BSc with Honours in Physics

All students who intend to take a BSc with Honours in Physics are encouraged to discuss their programme with staff members of the department, and to consult with the Chairperson or the Undergraduate Advisor of the department at the beginning of the second year.

### Departmental Requirements

#### Classes required in Honours:

1000 level: PHYC 1100.06 or 1300.06

2000 level: PHYC 2000.03, 2005.03, 2010.03, 2015.03

3000 level: PHYC 3000.03, 3010.03, 3090.03, 3140.03, 3200.03, 3210.03

4000 level: PHYC 4000.03, 4100.03, 4151.03, 4160.03, 4900.03 plus 1.5 other 4000-level physics credits

#### Other required classes:

CHEM 1010.06; MATH 1000.03/1010.03; MATH 2001.03/2002.03 or MATH 2480.03/2490.03; MATH 2030.03/2040.03; MATH 3110.03, 3120.03.

### Honours Qualifying Examination

Note: The Calendar regulation "minimum of nine (9), maximum of eleven (11) credits in the honours subject" cannot include PHYC 3450.06, 3402.03, 4020.03.

Under exceptional circumstances, permission may be granted to substitute PHYC 4311.03 for PHYC 4000.03.

Students with special interests must select electives carefully. The following suggestions may serve as a guide.

**Applied Physics Option:** PHYC 3250.03, 3340.03, 3440.03, 3610.03, 4220.03.

**Theoretical Physics Option:** PHYC 4152.03, 4170.03, 4180.03, 4480.03, 4650.03/4660.03; Mathematics classes such as complex variables, modelling, or advanced differential equations.

## 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 programmes combining physics with mathematics, biology, earth science, and chemistry. The Combined Honours in Physics and Computing Science is especially popular. Students contemplating such a programme should, in any case, consult the department before the beginning of their second year of study.

## Combined Honours in Physics and Computing Science

An approved selection of classes which includes a core programme in physics with a substantial computing science component is as follows:

**Year 1:** PHYC 1100.06; COMP 1400.03, 1410.03; MATH 1000.03/1010.03; CHEM 1010.06; Elective (language and humanities group, which also satisfies the writing requirement).

**Year 2:** PHYC 2000.03, 2005.03, 2010.03, 2015.03; COMP 2450.03, 2610.03; MATH 2001.03/2002.03 or MATH 2480.03/2490.03 and MATH 2030.03/2040.03.

**Year 3:** PHYC 3000.03, 3010.03, 3090.03, 3140.03, 3200.03, 3210.03; COMP 2350.03, 2700.03; MATH 3110.03, 3120.03.

**Year 4:** PHYC 4100.03, 4151.03, 4152.03, and one of 4000.03, 4160.03 or 4220.03; COMP 3040.03, 3170.03, 3250.03, 3700.03; Elective (social sciences group).

## Advanced Major (20-credits)

### Departmental Requirements

#### Classes required in Advanced Major:

1000 level: PHYC 1100.06 or 1300.06

2000 level: PHYC 2000.03, 2005.03, 2010.03, 2015.03 plus one other Physics credit at or above the 2000 level not including classes listed below.

3000 level: PHYC 3160.03 or 3200.03, plus 2.5 other physics credits at the 3000 level or above.

#### Other required classes:

MATH 1000.03/1010.03 and either MATH 2001.03/2002.03 or MATH 2480.03/2490.03

**Note:** The degree requirement of "Minimum of six (6), maximum of nine (9) credits in the major subject beyond the 1000-level" cannot include any of the following: PHYC 2450.06, 3402.03, 4020.03.

### BSc Major in Physics

(Example only, other possibilities exist):

#### Departmental Requirements

##### Courses required in major:

- 1000 level:** PHYC 1100.06 or 1300.06  
**2000 level:** PHYC 2000.03, 2005.03, 2010.03, 2015.03  
**3000 level:** PHYC 3160.03 or 3200.03, plus 1.5 other physics credits at the 3000 level or above.

##### Other required classes:

MATH 1000.03/1010.03; and either MATH 2001.03/2002.03 or MATH 2480.03/2490.03.

**Note:** The degree requirement of "Minimum of four (4), maximum of eight (8) credits in the major subject beyond the 1000-level" cannot include any of the following: PHYC 2450.06, 3402.03, 4020.03.

### BSc Major in Physics, with Diploma in Engineering

The physics content of this programme might be as follows:

- Year 1:** PHYC 1100.06  
**Year 2:** PHYC 2000.03, 2005.03, 2010.03, 2015.03  
**Year 3:** PHYC 3160.03 or 3200.03, plus 1.5 physics electives.

For the remainder of the programme, consult the Engineering Department.

### BSc with a Minor in Business

The BSc Honours in Physics with Minor in Business and the BSc Advanced Major in Physics with Minor in Business are four year degree programmes which combine physics with classes in business. The requirements of the Minor are five full credits of the twenty credits and should include COMM 1000.03, 1501.03, 2101.03, 2301.03 and 2401.03. One of the five credits should be at the 3000 or 4000 level.

Application for admission must be made to the department and the School of Business Administration on the forms available from the Registrar's Office. Students should apply before registering for their second year.

### Co-operative Education Programme in Physics

The Co-operative Education Programme provides physics students with an integrated pattern of academic study and supervised work-terms in industry, government laboratories and institutes, etc. The programme enables students to obtain an appreciation of the work place. The work-term experience gives students an opportunity to orient themselves at an early stage towards practical applications of their newly acquired skills and knowledge, and adds to their motivation for academic study.

### Admission to the Programme

Admission to the programme should be sought before entering the second year of study. Entry to the programme requires a first-year average over all subjects of at least B, and in physics of at least B+. Admission requirements and other information can be found in this Calendar in the section entitled "Co-operative Education in Science" Co-operative Education programmes are arranged for both Honours and Advanced Major students.

The academic requirements for the co-operative programmes are the same as for the traditional programme. In addition, Co-op students participate in SCIE 8700.00, a non-credit Co-op seminar programme. Students must register for this class and for each work-term class (e.g. PHYC 8891.00).

The five-year programme consists of eight academic terms and four supervised work-terms.

#### Further Information

Further information can be obtained by contacting either the Programme Coordinator Co-operative Education Programme in Physics, Department of Physics, Dalhousie University, Halifax, Nova Scotia B3H 3J5, (tel (902) 494-2337), or Science Co-operative Education, Dalhousie University, Student Union Building, Room 404, 6136 University Avenue, Halifax, Nova Scotia B3H 4J2 (tel. (902) 494-2044).

### Honours Co-op in Physics

#### Departmental Requirements

Same as for the regular Honours in Physics as above with the addition of the following:

- Four supervised work-terms: PHYC 8891.00, 8892.00, 8893.00, 8894.00
- Co-op Seminar: SCIE 8700.00

#### Suggested Programme

##### Year 1:

**Terms A and B:** PHYC 1100.06; CHEM 1010.06 or equivalent, MATH 1000.03/1010.03, 2 credits of elective one must be a full-credit writing class, COMP 1400.03/1410.03 is also recommended

##### Year 2:

**Term A:** PHYC 2000.03, 2005.03; MATH 2001.03, 2030.03 or 2480.03; SCIE 8700.00; technical elective (MATH 2300.03 recommended)

**Term B:** PHYC 8891.00 (Workterm I)

**Summer:** social science elective (full-credit), elective (MATH 2060.03 recommended)

##### Year 3:

**Term A:** PHYC 8892.00 (Workterm II)

**Term B:** PHYC 2010.03, 2015.03; MATH 2002.03, 2040.03 or 2490.03; elective

**Summer:** PHYC 8893.00 (Workterm III)

##### Year 4:

**Term A:** PHYC 3000.03, 3140.03, 3200.03; MATH 3110.03; elective (PHYC 3250.03 or MATH 3260.03 recommended)

**Term B:** PHYC 3010.03, 3090.03, 3210.03; MATH 3120.03; elective (PHYC 3440.03 recommended)

Summer: PHYC 8894.00 (Workterm IV)

**Year 5:**

Terms A and B: PHYC 4000.03, 4151.03, 4150.03, 4100.03, 4800.03, 1 credit worth of 4000-level physics electives, 1.5 credits of technical electives

**Advanced Major Co-op in Physics**

**Departmental Requirements**

Same as for the regular Advanced Major in Physics as above with the addition of the following:

- Four supervised work-terms: PHYC 8891.00, 8892.00, 8893.00, 8894.00
- Co-op Seminar: SCIE 8700.00

**Suggested Programme**

**Year 1:**

Terms A and B: PHYC 1100.06 or 1300.06; MATH 1000.03/1010.03; 3 credits of electives one of which must be a full-credit writing; COMP 1400.03/1410.03 are also recommended

**Year 2:**

Term A: PHYC 2000.03, 2005.03; MATH 2001.03 or 2480.03; SCIE 8700.00; 0.5 credit technical elective (MATH 2300.03 recommended); 0.5 credit elective

Term B: PHYC 8891.00 (Workterm I)

Summer: 1.5 credits of electives (MATH 1060.03 recommended)

**Year 3:**

Term A: PHYC 8892.00 (Workterm II)

Term B: PHYC 2010.03, 2015.03; MATH 2002.03 or 2490.03; 1 credit of elective classes

Summer: PHYC 8893.00 (Workterm III)

**Year 4:**

Term A: PHYC 3000.03 or 3340.03, 3160.03 or 3200.03; MATH 3110.03; 1 credit of electives (PHYC 3250.03 or MATH 3260.03, and PHYC 3140.03 are recommended)

Term B: PHYC 3170.03, 3610.03, 1.5 credits of electives (PHYC 3010.03 recommended)

Summer: PHYC 8894.00 (Workterm IV)

**Year 5:**

Terms A and B: 2.5 credits of applied electives (PHYC 2240.03, 2250.03, 3440.03, 4000.03 and 4250.03 are recommended)

**Earth System Science**

Classes in Physics can form part of an integrated programme in Earth System Science. For more information, see the Earth System Science section of this calendar. Interested students are encouraged to consult with the Undergraduate Advisor.

**Geophysics**

For those interested in Geophysics, refer to classes EARTH 2050.03, 3140.03, 4270.03, 4280.03, and 4290.03, listed under Earth Sciences.

**Diploma in Meteorology**

Please note: Applications are being accepted for the Diploma in Meteorology for the 1996-97 academic year. Please contact the Registrar's Office for further details.

**Diploma Requirements**

**Required classes**

PHYC 4500.03/4510.03, 4520.03, 4530.03, 4540.03/4550.03

OCEA 4411.03/4412.03, 4120.03, 4515.03

- One approved elective
- Required GPA for graduation - 1.70
- Total credits required - 5

For admission into this programme, which has a limited enrolment, a general BSc degree in Physics or other appropriate subject is required. A strong background in Physics and Mathematics is necessary, and classes taken should also include Statistics and Computing Science. For students enrolled in a BSc programme at Dalhousie, the following classes are recommended: PHYC 1100.06, 2000.03, 2005.03, 2010.03, 2015.03, 3170.03; MATH 1000.03/1010.03, 2000.03, 2030.03/2040.03, 2060.03/2080.03, 3110.03/3120.03; and COMP 1400.03/1410.03.

After completion of the Diploma programme, students are eligible for admission into a graduate programme in Atmospheric Science at Dalhousie.

**Classes Offered in Physics**

Classes marked \* are not offered every year. Please consult the timetable on registration to determine if this class is offered.

**PHYC 1000.06R: Survey of Physics.** A survey of physics is not normally accepted as a prerequisite to advanced classes in physics. It is designed for students in arts and science who want to be exposed to a wide range of topics in physics. Topics covered include motion, force, momentum, energy, heat electricity and magnetism, waves, light, relativity, quantum theory and atomic radiations, the atomic nucleus and nuclear reactions, astrophysics and cosmology.

This class requires a reasonable background of high school mathematics, i.e. algebra, trigonometry, geometry, but not calculus. Problem sets are assigned each week, for which help may be obtained in a scheduled afternoon tutorial hour and through the Physics Resource Centre at other times. Since this class has no lab, some medical and dental schools may not accept it as a required physics class.

**Instructor:** C. G. White  
**Format:** Lectures 3 hours, tutorial 1 hour  
**Prerequisite:** Familiarity with algebra, graphs and trigonometry

**Exclusion:** Credit will be given for only one of PHYC 1000.06, 1100.06, 1280.03/1290.03, or 1300.06

**PHYC 1100.06R: Introduction to Physics.** Primarily for students interested in the physical sciences. Students beginning this class should be familiar with algebra, graphs and trigonometry, and should be taking calculus (MATH 1000.03/1010.03) concurrently. The class concentrates on three main areas: mechanics, oscillations and waves, electricity and magnetism. As far as possible, the basic ideas are introduced through in-class demonstrations, enabling students to relate the verbal and mathematical descriptions to events

in the real world. In addition, students are able to explore the physical world via labs. Note: Section 02 is for Engineering students only.

**Instructors:** M. Calkin, D. Goble, D. Labrie, R. March, A. Simpson  
**Format:** Lecture 3 hours, lab 3 hours (number of labs = 13)

**Prerequisites:** Students should have a background in Physics equivalent to the Nova Scotia XII level.

**Exclusion:** Credit will be given for only one of PHYC 1000.06, 1100.06, 1280.03/1290.03, or 1300.06

**PHYC 1280.03A/1290.03B: Introduction to Physics.** These two half classes are, as a pair, equivalent to PHYC 1100.06. They are available ONLY to accommodate special circumstances; permission from the Department is required.

**Exclusion:** Credit will be given for only one of PHYC 1000.06, 1100.06, 1280.03/1290.03, or 1300.06

**PHYC 1300.06R: Physics In and Around You.** An introduction to physics for students in biology, and those preparing for medicine, dentistry and allied 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 & torques are related to muscles and joints, electricity to cellular activity, fluids to blood circulation, etc.

**Instructor:** G. F. O. Langstroth  
**Format:** Lecture 3 hours, lab 3 hours

**Prerequisite:** Students beginning this class should be familiar with algebra trigonometry and algebraic equations.

**Exclusion:** Credit will be given for only one of PHYC 1000.06, 1100.06, 1280.03/1290.03, or 1300.06

**PHYC 1450.06R: Astronomy: The Evolving Universe.** This class meets the science distribution requirements for B.A. students. The class does not count as a prerequisite for any other science class. Algebra and geometry are used only when helpful. Both the universe and our understanding of it are evolving. The aim of this class is the development of a coherent, though temporary and incomplete, view of the astronomical universe, a view where both familiar elements and strange each have their places. Topics include "naked eye" astronomy; nature and properties of Sun and stars; stellar evolution from gas cloud to black hole; cosmology - the origin and fate of the universe; the solar system.

**Instructor:** W. Zukauskas  
**Format:** Lecture 3 hours

**Exclusion:** Credit will be given for only one of PHYC 1450.06 and 2450.06.

**PHYC 2000.03A: Oscillations and Waves.** Topics discussed include the description of sinusoidal oscillations, vibrations of different physical systems, resonance, standing waves, wave synthesis, travelling waves, interference and diffraction.

**Instructor:** T.W. Craig  
**Format:** Lecture 3 hours, lab 3 hours

**Prerequisites:** PHYC 1100.06 or SCIE 1500.30, a 1000-level calculus class, or permission of the instructor.

**PHYC 2005.03A: Mechanics and Relativity.** Topics include kinematics in rectangular and polar coordinates, application of Newton's laws, momentum and varying mass systems, work and energy, angular momentum and fixed axis rotation, rigid body motion, non-inertial systems, relativistic kinematics, relativistic momentum and energy.

**Instructor:** M.G. Calkin  
**Format:** Lecture 3 hours, tutorial 3 hours  
**Prerequisites:** PHYC 1100.06 or SCIE 1500.30, a 1000-level calculus class, or permission of the instructor.

**PHYC 2010.03B: Electricity and Magnetism.** This class begins by studying electrostatics, electric fields and electric potential, then conductors in static fields, energy storage and capacitance. Magnetic fields and forces, electromagnetic induction and Maxwell's equations are discussed.

**Instructor:** T.W. Craig  
**Format:** Lecture 3 hours, lab 3 hours  
**Prerequisites:** PHYC 1100.06 or SCIE 1500.30 (PHYC 2000.03 and PHYC 2005.03 recommended), and a 1000 level calculus class

**PHYC 2015.03B: 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 Schrodinger equation is applied to one-dimensional examples. The concept of tunnelling is used to explain field emission, alpha decay, and the scanning tunnelling microscope. Applications of modern physics are discussed and illustrated through the tutorial sessions.

**Instructor:** R. March  
**Format:** Lecture 3 hours, tutorial 3 hours  
**Prerequisite:** PHYC 1100.06 or SCIE 1500.30 (PHYC 2000.03 and PHYC 2005.03 recommended) and a 1000 level calculus class

**\*PHYC 2240.03A: Intermediate Physics for Medicine and Biology I.** This class will apply first-year knowledge of physics and mathematics to the understanding of some physical principles of physiological and biological systems. It will cover both applications of physics and instrumentation for the measurement of physiological properties. Topics include: basic thermodynamics, transport through membranes, electrophysiology, and the principles of electrical measurement techniques such as the electrocardiogram.

**Instructor:** G.F.O. Langstroth  
**Format:** Lecture 3 hours  
**Prerequisites:** PHYC 1100.06 or 1300.06; MATH 1000.03/1010.03; or SCIE 1500.30; or permission of the instructor.

\* Offered in alternate years beginning in 1996-97.

**\*PHYC 2250.03B: Intermediate Physics for Medicine and Biology II.** This class follows the

same approach as PHYC 2240.03, but with rather different emphasis. It focuses on the nature of different forms of radiation and their interactions with living organisms. Particular attention is given to imaging techniques for the examination of internal organs, and the resulting effects of radiation. Topics may include ultrasound, nuclear medicine, X-ray tomography, magnetic resonance imaging, and exposure to ultraviolet and nuclear radiation.

Instructor: G.F.O. Langstroth  
 Format: Lecture 3 hours  
 Prerequisite: PHYC 2240.03 or permission of the instructor.

\*Offered in alternate years beginning in 1996-97.

**PHYC 2450.06R: Astronomy.** An introduction to astronomy for science students. Topics discussed include: the observation and exploration of the planets, the origin and evolution of stars (including white dwarfs, pulsars, quasars, black holes), the structure of galaxies, and cosmology.

Instructor: P.H. Reynolds  
 Format: Lecture 3 hours  
 Prerequisite: One first-year science class  
 Exclusion: Credit will be given for only one of PHYC 1450.06 and 2450.06.

**PHYC 2700.03B: The Atmosphere.** See class description for OCEA 3000.03 in the Oceanography section of this calendar.

**SCIE 3000.06R: Science Fundamentals.** See class description in Science, Interdisciplinary section of this calendar.

**PHYC 3000.03A: Experimental Physics I.** This class comprises PHYC 3340.03A plus a lab dealing with the measurement of a fundamental constant. The class introduces the student to electronics and measuring techniques. The student will design an experiment, do the measurements, and produce a report.

Additional registration for PHYC 3340.03A is not necessary.

Instructor: A.M. Simpson (lectures), G. Stroink (labs)  
 Format: Lecture 3 hours, lab 6 hours  
 Prerequisites: PHYC 2000.03, 2005.03, 2010.03 and 2015.03.

**PHYC 3010.03B: Experimental Physics II.** Designed to give the students a chance to do non-set experiments and thereby encounter and solve the problems of experimentation.

Original approaches by the students are encouraged. As the number of experiments is small (three) students should achieve a real understanding of a few physical phenomena. Lecture topics include a survey of experimental techniques as encountered in the different areas of physics.

Instructor: G. Stroink  
 Format: Lecture 3 hours, lab 3 hours  
 Prerequisite: PHYC 3000.03

**PHYC 3090.03A or B: 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: M. G. Calkin  
 Format: Lecture 3 hours  
 Prerequisite: MATH 2001.03/2002.03 or MATH 2480.03/2490.03

**PHYC 3140.03A: Quantum Physics I.** The determination and interpretation of solutions to the one-dimensional Schrödinger equation is illustrated by simple examples. Dirac notation and the abstract formalism of quantum mechanics is introduced. The three-dimensional Schrödinger equation is discussed with special emphasis on the hydrogen atom. Electron spin is introduced.

Instructor: M.G. Calkin  
 Format: Lecture 3 hours  
 Prerequisite: MATH 2000.06 or equivalent; PHYC 2015.03

**\*PHYC 3160.03A: Topics in Physics.** An introduction to thermodynamics and statistical mechanics.

Instructor: B.L. Blackford  
 Format: Lecture 3 hours  
 Prerequisite: PHYC 2005.03, 2010.03  
 Exclusion: Credit will not be given for PHYC 3160.03 and either of PHYC 3200.03 or 3210.03.

**PHYC 3170.03B: Topics in Physics.** This class continues the application of quantum principles to various areas of modern physics begun in PHYC 2015.03. Quantum principles will be applied to atoms, molecules, solids and nuclei. Special topics will include lasers and X-ray diffraction, as well as topics in solid state physics, such as semiconductors, superconductors and superconducting devices.

Instructor: M.H. Jericho  
 Format: Lecture 3 hours  
 Prerequisite: PHYC 2015.03

**PHYC 3200.03A: Thermodynamics.** An introduction to the basic concepts and laws of classical thermodynamics. Topics include equations of state, heat engines, thermodynamic functions, and phase equilibrium. An introduction to statistical mechanics may be included.

Instructor: P. Chylek  
 Format: Lecture 3 hours  
 Prerequisites: Some knowledge of partial derivatives, e.g., MATH 2001.03/2002.03 or 2480.03/2490.03

**PHYC 3210.03B: 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: H.J. Kreuzer  
 Prerequisites: PHYC 3200.03 or equivalent; MATH 2001.03/2002.03 or 2480.03/2490.03

**PHYC 3250.03A or B: Computational Methods in Physics.** Topics include an overview of numerical analysis, the use of symbolic computation packages with applications to the modelling of physical phenomena, and the treatment of experimental or theoretical data. Prior experience with computer programming languages is an advantage.

Instructor: B.L. Blackford  
 Format: Lecture/lab 3 hours  
 Prerequisite: Completion of a second-year programme in physics, including MATH 2001.03/2002.03 or

2480.03/2490.03, or permission of the instructor.

**PHYC 3340.03A: 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.  
**Instructor:** B.E. Paton  
**Format:** Lecture 3 hours, lab 2 hours  
**Prerequisites:** PHYC 2010.03; or ENGI 2230.03

**PHYC 3440.03A or B: Optics.** Topics are selected from areas such as electromagnetic theory, interaction of light with matter, propagation of light, geometrical optics, polarization, interference, and diffraction.  
**Instructor:** S.T. Nugent  
**Format:** Lecture 3 hours  
**Prerequisites:** PHYC 2010.03; MATH 2001.03/2002.03 or 2480.03/2490.03; the student should be familiar with vector analysis, Maxwell's equations, and the use of complex exponential functions.

**PHYC 3810.03B: Microcomputers and the Real World.** Subject material: measurement theory, modern sensors, microcomputer architecture, 68000 family of computers, software simulation of digital electronic circuits, assembly & labVIEW programming, interfacing techniques including serial, parallel, Centronics, RS232 and IEEE.  
**Instructor:** B. E. Paton  
**Format:** Lecture 3 hours, computer lab 3 hours  
**Prerequisites:** PHYC 2000.03/2010.03  
**Cross-listing:** COMP 3810.03

**PHYC 4000.03A or B: Advanced Lab.** This is a physics laboratory class in which students work largely on their own initiative. The student may select experiments from the fields of optics, acoustics, solid state devices, low temperature physics and other fields of contemporary interest. Detailed laboratory reports on the experiments are required and students are expected to demonstrate a good grasp of underlying physical principles.  
**Instructor:** M. H. Jericho  
**Format:** Lab 6 hours  
**Prerequisites:** Fourth-year standing in physics or permission from the instructor.

**\*PHYC 4020.03B: Special Topics in the History and Philosophy of Science.**  
**Instructor:** R. Ravindra  
**Format:** Seminar 3 hours  
**Prerequisites:** Third-year standing or above  
**Cross-listing:** COMR 3532.03/3533.03

\*This class is not given every year.

**PHYC 4100.03A or B: Electrodynamics.** Topics include the wave equation and solutions, waves at metallic boundaries, the inhomogeneous wave equation, radiation from moving charges, scattering and dispersion.  
**Instructor:** D.A. Tindall  
**Format:** Lecture 3 hours  
**Prerequisites:** PHYC 2010.03, 4160.03; MATH 3110.03/3120.03  
**Cross-listing:** PHYC 5100.03

**PHYC 4151.03A: Quantum Physics II.** This class is a continuation of PHYC 3140.03. Topics include: time-independent perturbation theory, the variational principle, the WKB approximation, time-dependent perturbation theory, scattering.  
**Instructor:** D.E. Goble  
**Format:** Lecture 3 hours  
**Prerequisite:** PHYC 3140.03  
**Cross-listing:** PHYC 5151.03

**PHYC 4152.03B: Quantum Physics III.** Selected topics from: angular momentum and tensor operators, many-body problem, symmetry and invariance, path integral approach and relativistic quantum mechanics.  
**Instructor:** D. Kiang  
**Format:** Lecture 3 hours  
**Prerequisites:** PHYC 4151.03  
**Cross-listing:** PHYC 5152.03

**PHYC 4160.03A: Mathematical Methods of Physics.** Topics discussed include: complex variable theory, Fourier and Laplace transform techniques, special functions, partial differential equations.  
**Instructor:** J. G. Cordes  
**Format:** Lecture 3 hours  
**Prerequisites:** MATH 3110.03/3120.03, or permission of instructor.  
**Cross-listing:** PHYC 5160.03

**PHYC 4170.03B: Topics in Mathematical Physics.** This class is a continuation of PHYC 4160.03 and deals with special topics in mathematical physics selected from areas such as the Green's function technique for solving ordinary and partial differential equations, scattering theory and phase shift analysis, diffraction theory, group theory, tensor analysis, and general relativity.  
**Instructor:** J. G. Cordes  
**Format:** Lecture 3 hours  
**Prerequisite:** PHYC 4160.03 or permission of instructor  
**Cross-listing:** PHYC 5170.03

**PHYC 4180.03A or B: Nuclear and Particle Physics.** This is an introductory class in nuclear physics. Topics discussed include: nucleon-nucleon interactions, nuclear structure, gamma transitions, alpha decay, beta decay, nuclear reactions and elementary particle physics.  
**Instructor:** R.A. Dunlap  
**Format:** Lecture 3 hours  
**Prerequisite:** PHYC 3140.03  
**Cross-listing:** PHYC 5180.03

**\*PHYC 4220.03A: Microcomputer-Based Instrumentation.** Subject material: instrument design, analog to digital and digital to analog techniques, custom interfacing to sensors, algorithms, parallel and serial output data links, software testing and debugging, hardware testing and debugging, research project.

\*This class is not offered every year.

**Instructor:** B. E. Paton  
**Format:** Lecture 3 hours  
**Prerequisite:** PHYC 3810.03  
**Cross-listing:** PHYC 5220.03

**PHYC 4230.03A or B: Introduction to Solid State Physics.** An introduction to the basic concepts of solid state physics which are related to the periodic nature of the crystalline lattice. Topics include crystal structure, X-ray

diffraction, phonons and lattice vibrations, the free electron theory of metals, and energy bands.

Instructor: S. Payne  
 Format: Lecture 3 hours  
 Prerequisite: PHYC 3140.03 or permission of instructor  
 Cross-listing: PHYC 5230.03

**PHYC 4311.03A/4312.03B: Fluid Mechanics I/II.** See class description for OCEA 4311.03/4312.03, in the Oceanography section of this calendar.

**\*PHYC 4411.03A: Atmospheric Dynamics I.** See class description for OCEA 4411.03 in the Oceanography section of this calendar.

**\*PHYC 4412.03B: Atmospheric Dynamics II.** See class description for OCEA 4412.03 in the Oceanography section of this calendar.

**\*PHYC 4460.03A or B: Optics.** A continuation of PHYC 3440.03, dealing with coherence, polarization, scattering by matter, the electromagnetic properties of matter, including crystals, reflection, refraction and double refraction.

Format: Lecture 3 hours  
 Prerequisites: PHYC 3440.03; registration requires prior departmental consent

**PHYC 4480.03A or B: Applied Group Theory.** See class description for MATH 3320.03 in the Mathematics section of this calendar.

**PHYC 4500.03A: Atmospheric Physics I.** Main topics covered in this class are atmospheric thermodynamics and atmospheric radiation.

Instructor: D.F. Goble  
 Format: Lecture 3 hours  
 Prerequisites: At least one 3rd year physics class, preferably thermodynamics

Cross-listing: OCEA 4500.03/5500.03, PHYC 5500.03

**PHYC 4510.03B: Atmospheric Physics II.** The major topic covered in this class is cloud physics. Other topics include atmospheric optics, atmospheric acoustics, lightning and radar techniques.

Instructor: D.F. Goble  
 Format: Lecture 3 hours  
 Prerequisite: PHYC 4500.03  
 Cross-listing: OCEA 4510.03/5510.03, PHYC 5510.03

**PHYC 4520.03A: Introduction to Atmospheric Science.** This class provides the student with an understanding of the 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: W. Hyde  
 Format: Lecture 3 hours  
 Prerequisite: Permission of instructor  
 Cross-listing: OCEA 4520.03/5520.03, PHYC 5520.03

**PHYC 4530.03B: Introduction to Radiation and Climate.** This class provides the student with an understanding of the origin, composition and thermal structure of the atmosphere and of radiative transfer through clear and cloudy atmospheres. There will be some discussion of the general atmospheric circulation, radiative

transfer at the ocean surface, and climate change.

Instructor: I. Folkens  
 Format: Lecture 3 hours  
 Prerequisite: Permission of instructor  
 Cross-listing: OCEA 4530.03/5530.03, PHYC 5530.03

**PHYC 4540.03A: Synoptic Meteorology I.** This class introduces principles and techniques of meteorological analysis, diagnosis of weather systems and prognosis of system motion and development. A brief review is presented of meteorological instrumentation, observational procedures, codes and analysis techniques essential to the study of the main subject matter. Atmospheric systems and processes are carried out during the tutorial-laboratory period.

Instructor: S. Miller  
 Format: Lecture 2 hours, tutorial-lab 3 hours

Prerequisite: At least one third-year physics class

Cross-listing: OCEA 4541.03/5541.03, PHYC 5540.03

**PHYC 4550.03B: Synoptic Meteorology II.** This class extends the analysis and diagnosis of atmospheric dynamics and weather processes introduced in PHYC 4540.03. Modern statistical and computer methods and satellite techniques are discussed. Case studies of atmospheric systems and processes are carried out during the tutorial-laboratory period.

Instructor: S. Miller  
 Format: Lecture 2 hours, tutorial-lab 3 hours

Prerequisite: PHYC 4540.03

Cross-listing: OCEA 4550.03/5550.03, PHYC 5550.03

**\*PHYC 4650.03A or B: Relativity and Cosmology.** 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.

Instructor: TBA  
 Format: Lecture 3 hours  
 Prerequisite: MATH 3050.06 or permission of instructor

Cross-listing: MATH 4650.03/5650.03, PHYC 5650.03

\*This class is not given every year.

**PHYC 4800.03R: Research Project.** All honours students will undertake a research project under the direction of an individual faculty advisor. Permission of the coordinator is required if this advisor is not a member of the Physics department. Interim progress reports and a formal final report are required. The class grade will be based on an evaluation of the reports.

Coordinator: G. Stroink, D.A. Tindall  
 Format: Independent research, typically 3 hours/week

Prerequisite: Honours student

**SCIE 8700.00A or B: Co-op Seminar.** See class description in the Co-operative Education in Science section of this calendar

PHYC 8891.00: Co-op Work-Term I

PHYC 8892.00: Co-op Work-Term II

PHYC 8893.00: Co-op Work-Term III

PHYC 8894.00: Co-op Work-Term IV

### Graduate Studies

The Department of Physics provides classes of study leading to MSc and PhD degrees.

Areas of research include: solid state, geophysics, medical physics, low energy nuclear physics, low temperature physics, theoretical physics, atmospheric physics and oceanography. Consult the Graduate Studies Calendar, or contact the Graduate Co-ordinator for the Physics Department.



# Physiology and Biophysics

**Location:** Sir Charles Tupper Building,  
3rd Floor, Halifax, N.S. B3H  
4H7  
**Telephone:** (902) 494-3517

## Head of Department

A.S. French

## Professors Emeritus

B. Issekutz, Jr., MD (Szeged), Dr Med (Bud)  
E. MacLeod, MD (Dal)  
J.C. Szerb, MD (Munich), FRCP(C)

## Professors

J.A. Armour, BSc (McG), MD (Western), PhD  
(Loyola)  
R.P. Croll, BSc (Tufts), PhD (McG)  
A. Fine, AB (Harvard), VDM, PhD (Penn)  
A.S. French, MSc, PhD (Essex)  
D. Guernsey, BA (Lehigh), MS (Bridgeport),  
PhD (Hawaii), Major appointment - Dept. of  
Pathology  
B.M. Horacek, MSc(Eng) (Prague), PhD (Dal),  
Graduate Studies Coordinator  
M. Horackova, MSc, PhD (Prague)  
G.A. Klassen, MD (UBC), FRCP(C), Major  
appointment - Dept. of Medicine  
L. Makrides, BPT, MCSP (Saak), MSc (Ottawa),  
PhD (McM), Major appointment - School of  
Physiotherapy  
T.F. McDonald, BSc (Alta), PhD (Dal), DIC  
(Imperial College)  
I.A. Meinertzhagen, BSc (Aberdeen), PhD (St.  
Andrews), Major appointment - Dept. of  
Psychology, Interim Director Neuroscience  
Institute  
W.H. Moger, BS (Cornell), PhD (Calif)  
M.R. Oulton, BA (Acadia), PhD (Dal), Major  
appointment - Dept. of Obstetrics/Gynecology  
D. Pelzer, MD (Heidelberg)  
D. Rasmussen, BA (Colo C), MA, PhD (Dal)  
W.G. Tatton, BSc, MD (Alta), PhD (Toronto)  
M. Wilkinson, BSc (Southampton), PhD (Lond),  
Major appointment - Dept. of  
Obstetrics/Gynecology  
H. Wolf, Dipl Ing (Munich), PhD (Dal)  
A.Y.K. Wong, BSc, MSc, PhD (Dal)

## Associate Professors

R.E. Brown, BSc (Victoria), MA, PhD (Dal),  
Major appointment - Dept. of Psychology  
J.D. Dudar, BSc, MSc (Alta), PhD (Dal)  
D.J. Hirsch, MD (Dal), Major appointment -  
Dept. of Medicine  
J.G. Holland, BSc, MD (Dal), joint appointment -  
Dept. of Medicine  
C.L. Kozey, BPE (UNB), MSc (Waterloo), PhD  
(Dal), major appointment in School of  
Physiotherapy  
M.G. Murphy, BSc, MSc, PhD (Dal)  
P.R. Murphy, MSc, PhD (Dal)  
N. Morgunov, BSc, MSc, PhD (Tor)  
S. Pelzer, BSc, MSc, PhD (Freiburg)

R. Rittmaster, BA (Brown), MD (Tufts Med  
Sch), major appointment Dept. of Medicine  
G. Stroink, PhD (McG), Major appointment -  
Dept. of Physics

## Assistant Professors

B. Chauhan, PhD (Wales), Major appointment -  
Dept. of Medicine  
M. Gardner, MD (Dal), FRCP (C), FACC, Major  
appointment - Dept. of Medicine  
K. Landymore, BSc, MD, PhD (Dal), Major  
appointment - Dept. of Obstetrics/Gynecology  
E. Smits, BSc (OT) (UWO), MSc, PhD (Queen's),  
Major appointment - School of Occupational  
Therapy

## Adjunct Professors

B. Hanna, BSc (UBC), MDCM, PhD (McG),  
Major appointment - Dept. of Pediatrics, Rush  
Medical Center, Chicago  
S. Martin, BA (MSVU), MSc (Alta), PhD  
(Calgary), Major appointment, Professor and  
Chair, Dept. of Biology, Mount St. Vincent  
University

## Lecturer

S.P. Handa, MD (Punjab), FRCP(C), FACP

## Instructor

C. Couture, BA (Dal)

## Introduction

The Department of Physiology and Biophysics offers a wide range of undergraduate and graduate classes in addition to those restricted to students in the faculties of Medicine and Dentistry. The Department does not offer a specific Bachelor's degree programme (see the Graduate Studies Calendar for details on the Master and Doctorate degree programmes).

The classes listed below are aimed at providing the student with an understanding of the functioning of the human body. The broad survey courses (1010.06, 2030.06, 4403.06) are pitched at different levels. This meets the needs of students who require a specific level for their particular programme or for entry into a further degree programme. Students who are not in the Faculty of Health Professions are generally placed in the 4403.06 class. The Distance Education class C1000.06 is open to all students. Students wishing to enrol in other specialized classes require permission from the Course Director or Department Head.

Students who have previously taken biology, chemistry, physics and similar will be best equipped to study physiology.

## Classes Offered

**Note:** Students in the Faculty of Arts and Social Sciences or the Faculty of Science must attain permission from the Faculty to enrol in Physiology and Biophysics classes. This permission must be in writing, and presented to the Registrar's Office upon registration for the classes.

**PHYL C1000.06R: Human Physiology.** A full-credit distance education class equivalent to PHYL 1010.06 (a requirement of the Dalhousie BScN and other Health Professions degrees).

The class is based on a selected textbook and study guide supported by an extensive student-friendly package including a step-by-step guide, learning objectives, supplementary material, mail-in assignments, and videotape laboratories. The class is normally given in the Regular session (Sept - Apr), as well as in the Spring session (May - June). More flexible schedules can be considered. Distance Education classes have an additional, non-refundable, fee of \$100 over and above the listed tuition fees.

**Prerequisite:** Intro classes in Biology, Chemistry and Physics. Permission of the instructor is required.  
**Cross-listing:** BIOL 3077.06

**PHYL 1010.06R: Human Physiology.** This is an introductory physiology class directed mainly at health professional students. The functions of body organs and body systems and the integration of functions in the whole organism are studied.

**Director:** J. Dudar  
**Format:** Lecture 3 hours, supplemented with tutorials

**Prerequisite:** Students from faculties other than health professions must get permission from their respective deans to have this class credited to their programme

**PHYL 2030.06R: Human Physiology.** The function of organs and body systems is presented through lectures and laboratory work. Special emphasis is on the integration of function in the whole organism. A medium-level class directed at Health Professions students.

**Director:** K. Landymore  
**Format:** Lecture/tutorial 10 hours, 4 labs

**Prerequisite:** Two classes from Biology, Physics, Chemistry

**Co-requisite:** ANAT 2170.06

**PHYL 3110.03A: Neurophysiology.** The student is provided with the principles of neurophysiology. Current concepts of the organization and function of the mammalian nervous system are surveyed. The class is mainly directed at Physiotherapy and Occupational Therapy students.

**Director:** R. Croll  
**Format:** Lecture/tutorial 4 hours

**Prerequisites:** PHYL 1010.06 or 2030.06, ANAT 2100.03

**PHYL 3120.03A or B: Exercise Physiology.** The student is given a thorough understanding of skeletal muscle physiology and insight into the short and long term response to work. The material is related to normal and pathological conditions. This class is mainly directed at Physiotherapy and Occupational Therapy students.

**Director:** H. Wolf  
**Format:** Lecture/lab 4 hours  
**Prerequisite:** PHYL 1010.06 or 2030.06

**PHYL 4403.06R: Human Physiology.** A higher-level class that provides comprehensive, in-depth coverage of specific organ systems in the human body.

**Director:** N. Morgunov (Physiology and Biophysics)

**Format:** Lecture 3 hours, tutorial 1 hour

# School of Physiotherapy

**Location:** 5869 University Avenue Forrest Building, 4th Floor Halifax, N.S. B3H 3J5  
**Telephone:** (902) 494-2524  
**Fax:** (902) 494-1941

## Director

L. Makrides, MCSP, BPT (Sask), MSc (Ottawa), PhD (McM)

## Faculty Advisors

A. Fenety (Academic Co-ordinator)  
 G. Wainwright (Academic Clinical Co-ordinator)

## Academic Staff

### Professors

D.A. Egan, MCSP, DipTP, MSc (Western), PhD (Curtin)  
 L. Makrides, MCSP, BPT (Sask), MSc (Ottawa), PhD (McM)  
 G.I. Turnbull, MCSP, DipTP, BPT (Man), MA (Dal), PhD (Rhodes)  
 J.M. Walker, Certs. Phys. Ther. (N.Z.), DipTP, BPT, MA (Man), PhD (McM)

### Associate Professors

C.L. Kozey, BPE (UNB) MSc (Waterloo), PhD (Dal)

### Assistant Professors

M. Earl, BSc (Kin) (Waterloo), BSc (PT) (Western), MSc (Waterloo), PhD (Waterloo)  
 A. Fenety, BSc (UNB), DipPT (Man), MScPT (Alberta), PhD (Dal)  
 M. MacKay-Lyons, BSc (PT) (Tor), MScPT (USC)

### Lecturer

G. Wainwright, BSR (UBC)

### Honorary Appointments

L. Holt, BS, MS (Springfield Col.), PhD (S. Ill.), Associate Professor  
 K.C.W. Hill, MCSP, DipTP, MSc (Dal), Associate Professor  
 T.J. Murray, MD, FRCP (C) Professor, Department of Medicine  
 C.A. Putnam, BPE (Man), MS (Wash), PhD (Iowa), Associate Professor  
 W.D. Stanish, MD, FRCS (C), Associate Professor, Department of Surgery

### Cross Appointments

M. Earl, BSc (Kin) (Waterloo), BSc (PT) (Western), MSc, PhD (Waterloo), School of Recreation, Physical and Health Education  
 C.L. Kozey, BPE (UNB), MSc (Waterloo), PhD (Dal), Associate Professor, Department of Physiology and Biophysics; School of Recreation, Physical and Health Education  
 L. Makrides, MCSP, BPT (Sask), MSc (Ottawa), PhD (McM), School of Recreation, Physical, & Health Education; Professor, Department of

Physiology and Biophysics, Community Health and Epidemiology

G.I. Turnbull, MCSP, DipTP, BPT (Man), MA (Dal), PhD (Rhodes), Associate Professor, School of Recreation, Physical and Health Education

J.M. Walker, Certs. Phys. Ther. (N.Z.), DipTP, BPT, MA (Man), PhD (McM), Associate Professor, Department of Anatomy, Faculty of Medicine

## Special Lecturers

J. Brien, BSc (PT) (Dal)  
 C. Carr, BSc (PT) (Dal) ACSM (Exercise Specialist)  
 W. Levy, DipPT (Dal)  
 M. O'Brien, BSc (PT) (Dal)  
 D. O'Leary, BSc (PT) (Dal), CCSP

## Adjunct Associate Professor

C. Keim, MSc (Physiol) Sask, BSc (PT) Sask

## Provincial Clinical Co-ordinators

J. O'Dea, BSc (PT) (McG) Newfoundland  
 M. Jardine, BSc (PT) (McG) PEI

## Regional Facilities Associated with the Clinical Education Programme

### Nova Scotia

Aberdeen Hospital, New Glasgow  
 All Saint's Springhill Hospital, Springhill  
 Canadian Back Institute, Halifax  
 Canadian Forces Hospital, Halifax  
 Cape Breton Regional Hospital  
 Cobequid Multi-Service Centre, Lr. Sackville  
 Colchester Regional Hospital, Truro  
 CPRC, Halifax  
 Dartmouth General Hospital, Dartmouth  
 Fisherman's Memorial Hospital, Lunenburg  
 Glace Bay Integrated Health Care, Glace Bay  
 Highland View Regional Hospital, Ashcroft  
 IWK Hospital, Halifax  
 Northside Harbour View Hospital, Sydney Mines  
 Northwood Care Centre Inc., Halifax  
 Physiotherapy Atlantic, Halifax  
 Queen Elizabeth II Health Sciences Centre, Hfx.  
 Queen's County Hospital, Liverpool  
 Regional Residential Services, Dartmouth  
 Soldiers Memorial Hospital, Middleton  
 South Shore Regional Hospital, Bridgewater  
 Southend Physiotherapy Clinic, Halifax  
 St. Martha's Hospital, Antigonish  
 St. Vincent Guest House, Halifax  
 Sutherland Harris Memorial  
 Valley Regional Hospital, Kentville  
 Yarmouth Regional Health Centre, Yarmouth

### New Brunswick

Region 1 (Southeast) Hospital Corporation  
 Moncton City Hospital, Moncton

Region 1 (Beausejour) Hospital Corporation  
 Georges L. Dumont Hospital, Moncton  
 Stella Maris De Kent Hospital,  
 Ste.-Anne-de-Kent

Region 2 Hospital Corporation  
 Charlotte County Hospital, St. Stephen

Fundy Hospital Association, Black's Harbour  
 Saint John Regional Hospital, Saint John  
 St. Josephs Hospital, Saint John  
 Sussex Health Centre, Sussex

**Region 3 Hospital Corporation**  
 Carleton Memorial Hospital, Woodstock  
 Dr. Everett Chalmers Hospital, Fredericton  
 Hotel Dieu St. Joseph, Perth Andover  
 Oromocto Public Hospital, Oromocto  
 Queens North Health Complex Inc., Minto  
 Stan Cassidy Centre for Rehabilitation

**Region 4 Hospital Corporation**  
 Edmundston Regional Hospital, Edmundston  
 Grand Falls General Hospital, Grand Falls

**Region 5 Hospital Corporation**  
 Campbellton Regional Hospital, Campbellton

**Region 6 Hospital Corporation (Reseau Sante  
 Nor'est Health Network)**  
 Bathurst Regional Hospital, Bathurst  
 Hospital Enfant-Jesus, Caraquet  
 Lameque Hospital, Lameque  
 Tracadie Hospital, Tracadie

**Region 7 Hospital Corporation**  
 Hotel Dieu Hospital, Miramichi City (Chatham)  
 Miramichi Hospital, Miramichi City (Newcastle)

The New Brunswick Extra Mural Hospital  
 Workplace Health and Safety and  
 Compensation Commission, Saint John

**Newfoundland**

Avalon Health Care Institution Board,  
 Carbonear  
 Aware Physiotherapy Clinic, Cornerbrook  
 Burin Peninsula Health Care Centre, Burin  
 Capt. Wm. Jackman Memorial Hosp., Labrador  
 City  
 Central Newfoundland Health Care, Grand Falls  
 Children's Rehabilitation Centre, St. John's  
 Dr. Charles A. Janeway Child Health Centre, St.  
 John's  
 Dr. Charles L. LeGrow Health Centre,  
 Fort-Aux-Basques  
 Dr. G.B. Cross Memorial Hospital, Clarenville  
 General Hospital, St. John's  
 Grace General Hospital, St. John's  
 Green Bay Health Care Centre, Springdale  
 Hoyles-Escasoni Complex, St. John's  
 James Paton Memorial Hospital, Gander  
 Melville Hospital, Goose Bay  
 Physiotherapy Associates, St. John's  
 Sir Thomas Roddick Hospital, Stephenville  
 St. Clare's Mercy Hospital, St. John's  
 St. John's Regional- Community Health, St.  
 John's  
 Therapeutic Services, St. John's  
 Western Memorial Hospital, Corner Brook

**Prince Edward Island**  
 Kings County Memorial Hospital, Montague  
 Prince County Hospital, Summerside  
 Queen Elizabeth Hospital, Charlottetown  
 Summerside Physiotherapy Clinic, Summerside

Western Hospital - Alberton Community  
 Hospital, O'Leary

**Overseas Facilities Affiliated with  
 Clinical Education Programme**

Queen's College, Glasgow, Scotland  
 Queen Margaret College, Edinburgh, Scotland  
 University of Ulster, Jordanstown, Ireland  
 Karolinska Institute, Sweden

**Introduction**

The School of Physiotherapy was established in 1963. A two-year programme leading to a Diploma in Physiotherapy was offered by Dalhousie, the course of study being followed by a compulsory five-month internship period prior to eligibility for licence to practise physiotherapy. This Diploma programme was terminated at the end of the 1976-77 academic year. In 1975 the Senate of Dalhousie approved the implementation of a four-year programme leading to a Bachelor's Degree. The BSc (Physiotherapy) degree which replaced the Diploma programme comprises a general Arts and Science first-year with required subjects followed by three professional years of study as outlined. During this course of study clinical training is undertaken. In addition to the major commitment to graduate academically and clinically, highly qualified physiotherapists, the school offers non-credit workshops and seminars as part of a continuing education programme for graduates in Physiotherapy.

**Affiliated Institutions**

At present clinical instruction and practice during the course of study is undertaken with the guidance of clinical instructors in a variety placements including clinics in Newfoundland, New Brunswick, Nova Scotia and P.E.I. See preceding list for affiliated institutions. Clinical experience is also obtained in other centres across Canada and in the U.K.

**Field Experience**

Throughout the course of study students learn to apply their academic knowledge in a variety of situations. During the summer following the second year of study a compulsory brief period of orientation is undertaken to familiarize the students with the practise of physiotherapy. During all clinical placements, students are engaged in clinical practice under the guidance of clinical instructors. During these clinical placements the student's performance is evaluated by the staff of the Physiotherapy Department in which they are practising and students must maintain a satisfactory level of performance together with demonstrated suitability to pursue a career in Physiotherapy. A compulsory period of clinical practice between the third and fourth years offers the student the opportunity to obtain experience across Canada and in Britain. The students choose specific placements from amongst clinical facilities associated with Dalhousie's School of Physiotherapy.

Clinical practice is also a requirement of the fourth year of study.

**Career Opportunities**

The profession of Physiotherapy (or Physical Therapy) offers a varied, interesting and worthwhile career to both men and women in a variety of settings. Upon graduation, traditionally most Physiotherapists have worked in hospital-based departments rotating through various areas of interest prior to becoming more deeply involved in any specific area. Increasingly, opportunities are available in rehabilitation centres, extended care units, special schools, or with local government agencies, industrial health units, sports clubs and private clinics. Alternatively, experienced physiotherapists may operate a private practice. Interested persons can pursue Graduate Degrees in related areas leading to careers in teaching and/or research. Dalhousie offers a graduate programme (MSc) in Physiotherapy. As well, there are appointments for graduate work in Physiotherapy in other Canadian Universities.

**License to Practise Physiotherapy**

Physiotherapists practising in Canada must be licensed with the appropriate Provincial Licensing Body. The school itself has no jurisdiction in matters related to licensing, and Dalhousie University cannot accept responsibility for changes in licensing regulations which may occur from time to time.

The Canadian Physiotherapy Association (CPA), the national professional organization, recommends minimum academic and clinical curriculum content for membership. The degree course at Dalhousie University is designed to fulfil the present requirements by the time the students graduate. Currently, membership or eligibility for membership in the CPA entitles the Physiotherapist to apply for Provincial licensing through the appropriate provincial body. A Physiotherapy National Examination was implemented in 1993. Graduates are strongly advised to seek further information and clarification from the College of Physiotherapists of Nova Scotia.

**Students' Society**

The Physiotherapy Students' Society gives incentive to the students to participate in school, campus and community activities and to participate in both local and national professional activities.

**Association Membership**

Information regarding membership in the various Physiotherapy Associations can be obtained from the following sources: The Canadian Physiotherapy Association (890 Yonge St., 9th Floor, Toronto, Ontario, M4W 3P4); The Chartered Society of Physiotherapy (14 Bedford Row, London, WC1R 4ED, England); The American Physical Therapy Association (1111 North Fairfax St., Alexandria, Virginia, 22314, U.S.A.); The World Confederation of Physical Therapy, Secretary General (16/19 Eastcastle Street, London, W1N 7PA, England); The Canadian University

Service Overseas, (CUSO) (151 Slater Street, Ottawa, Ontario, K1P 5H5).

**School of Physiotherapy Regulations**

1. All students are required to observe the University regulations and Academic Regulations as described in this Calendar.
2. Regular and punctual attendance at classes is required of all students. When the work of a student becomes unsatisfactory or if attendance is irregular, the student may be required to withdraw from the School.
3. Promotion each year is contingent upon satisfactory academic and clinical performance.
4. Students whose clinical performance is unsatisfactory will be required to withdraw from the School.
5. Except in special circumstances students may not carry a course load in excess of the normal load as set down in the calendar of the School of Physiotherapy.
6. Students are normally required to take a full course load as prescribed by the School in order to complete the requirements for the degree. In special circumstances, and with the permission of the Committee on Studies, a student may undertake a reduced course load. In such cases the requirements for the degree must be completed within six years of initial registration.

Students who fail a class on two occasions are not permitted to repeat the class and thus must withdraw from the School of Physiotherapy.

**Failed Year**

The student is considered to have failed the year if the student has failed to meet the required GPA for that year. See University Regulations 19.1 and 20.2.

**Credit Hours**

Each full class is assigned a value of six credit hours, and each half class is assigned a value of three credit hours except where otherwise stated.

**Grading System**

In classes where professional skill acquisition and competence are required (PHYT 2102.06, 2041.03, 2500.00, 3000.03, 3010.04, 3020.03, 3030.04, 3055.03, 3065.03, 3500.00, 4070.03, 4071.03, 4072.03, 4073.03, 4074.03, 4500.06), the minimum passing grade will be a C. For classes which have distinct sections (PHYT 3020.03, 4070.03, 4072.03), each section must be passed with a minimum grade of C. In all other classes the passing grade is D.

**Grade Point Average Requirements**

The grade point average system is described in the Academic Regulations. School regulations relating to GPA apply to students whose initial registration in the School was in the Fall of 1990 or earlier (consult calendar of appropriate year).

## Voluntary Withdrawal

Students who voluntarily withdraw from the School of Physiotherapy, having satisfactorily completed classes toward the BSc (Physiotherapy) degree, with the intention of returning at a later date are advised that re-acceptance is contingent upon there being an available place.

## Appeal

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. A copy may be obtained from the School office. See Academic Regulation 26.2.

## Degree Programmes

### BSc (Physiotherapy) Degree Programme

The programme for the BSc (Physiotherapy) Degree is composed of a minimum of four years of study at University.

## Academic Requirements

### First-Year

During this year students are registered in the College of Arts and Science at Dalhousie or in an equivalent course of study at another University. Applicants are advised that a minimum C standing in each prerequisite class (Dalhousie or equivalent) is required for consideration for admission into the School of Physiotherapy. An overall average of at least 70% is required. Possession of the minimum standing does not, however, guarantee admission owing to the competition for the limited number of places in the programme.

### College of Arts and Science

The required course of study includes five full classes, or their equivalent, comprising two science classes (Physics plus Chemistry or Biology), one social science class (Psychology, or Sociology and Social Anthropology), Statistics (1060.03) and 1½ electives (one credit (1.0) must fulfil a writing requirement). All prerequisite classes must be completed by the end of the normal academic year preceding the year of anticipated admission to the School of Physiotherapy.

**Year 1:** The pre-requisite classes at Dalhousie University are as follows: Physics plus Chemistry or Biology. Acceptable classes are: CHEM 1010.06, 1020.06, 1030.06, 1040.06; BIOL 1000.06 or 1001.06; PHYC 1100.06 or 1300.06. One class from Psychology or Sociology and Social Anthropology. Acceptable Dalhousie University classes are PSYO 1000.06 or 1010.06 or 1500.06; SOSA 1000.06 or 1050.06 or 1100.06 or 1200.06. Statistics 1060.03 plus 1½ electives (one credit (1.0) must fulfil a writing requirement). Students studying at Universities other than Dalhousie are requested to ensure that the pre-requisite classes they are taking are equivalent to the classes listed above by contacting the Registrar's Office. CPR

(Cardiopulmonary Resuscitation) Certification must be completed by the end of Year 2.

**Second, Third and Fourth Years:** Students must obtain a minimum GPA of 2.00 in each of the final three years of study and an overall final GPA of at least 2.00. Additionally, promotion to the fourth year of study is contingent upon a satisfactory clinical report with regard to the summer clinical placement between the third and fourth years of study (PHYT 3500.00).

## Faculty of Health Professions Required Classes

**Year II:** PHYL 2030.06; ANAT 2100.03, 2170.06, 2160.03; PHYT 2022.03, 2041.03, 2051.03, 2070.02, 2080.01, 2102.06, 2500.00, five-week summer clinical orientation.

**Year III:** PHYT 2022.03, 3000.03, 3010.04, 3020.03, 3030.04, 3055.03, 3065.04; PHYL 3110.03, 3120.03; PSYO 2220.03; three hours of electives; PHYT 3500.00; KINE 123003.

**Year IV:** PHYT 4022.03, 4070.03, 4071.03, 4072.03, 4073.03, 4074.03, 4500.00; COMM 1000.03; Faculty of Health Professions electives (3 hours) or PHYT 4075.03; six hours of electives.

### Electives

All electives must be approved by the School of Physiotherapy. The required fourth-year elective is expected to be beyond the 1000 level and must be taken in the Fall Term.

Students who have successfully completed, prior to admission, classes equivalent to the required classes in the programme of study may apply for transfer credit through the Office of the Registrar.

### Clinical Practicum

After the second year, students engage in a five-week clinical orientation (May/Aug). Throughout the third and fourth years, students engage in clinical practice under the guidance of clinical instructors. A compulsory full-time period of clinical practice is undertaken for approximately fifteen weeks between the third and fourth years (PHYT 3500.00). A compulsory period of clinical practice of 10 weeks (PHYT 4500.00) is a requirement of fourth-year. Students will be assigned clinical placements throughout the Atlantic provinces and across Canada. The cost of travel and lodging are the responsibility of the student. In New Brunswick, a nominal stipend may be provided. Students must successfully complete all clinical placements in the sequence outlined herein. Students must have settled all financial obligations to the University prior to undertaking any period of clinical practice.

## Classes Offered

### Year II Required Classes

**PHYL 2030.06R: Human Physiology.** See class description in the Physiology and Biophysics section of this calendar.

**PHYT 2022.03A or B: Research Methods.** This class is designed to enable students to be critical consumers of health care research. Research

methodology for critical review of the literature is covered. Formerly PHYT 4021.03.

Instructor: J.M. Walker  
 Format: Lecture 3 hours  
 Prerequisite: An approved class in statistics

**PHYT 2041.03B Therapeutic Exercise.** This class will provide students with the opportunity to begin applying knowledge of anatomy and principles of exercise physiology and kinesiology in designing programmes of therapeutic exercise. Basic techniques of joint mobilization, strengthening, endurance training and hydrotherapy will be introduced and incorporated into the development of exercise programmes appropriate for specific case scenarios.

Instructor: M. MacKay-Lyons  
 Format: Lecture/tutorial 3 hours, lab 3 hours

Prerequisite: PHYT 2051.03  
 Co-requisite: ANAT 2170.06, PHYT 2102.06

**PHYT 2051.03A: Kinesiology.** This class will provide the student with the basic concepts associated with the study of human movement. The emphasis will be on the mechanical and physiological factors affecting normal human movements, although clinical examples are used to stress important concepts.

Instructor: C.L. Kozey  
 Format: Lecture 3 hours, lab  
 Co-requisites: ANAT 2170.06

**PHYT 2102.06R: Clinical Foundations in Physiotherapy.** This class will give students the opportunity to acquire the knowledge and develop the skills and competencies needed to begin their clinical placements. The class is divided into five sections: Professional Issues, Communication and Professional Decorum, Basic Clinical Skills, Introduction to Electrotherapy, and Clinical Measurement. Emphasis is on assisting students to critically analyze clinical scenarios and case studies to foster independent clinical reasoning.

Instructor: M. MacKay-Lyons  
 Format: Lecture/tutorial 3 hours, lab 3 hours

Co-requisite: ANAT 2170.06

**ANAT 2170.06R: Gross Anatomy.** The gross structure of the human body is studied region by region through the use of lectures, dissection and demonstrations in Radiological Anatomy.

Instructor: TBA  
 Format: Lecture/lab 7 hours  
 Prerequisite: Admission to School

**PHYT 2070.02A or B: Microbiology.** An introductory class in Microbiology offered by the Department of Microbiology and Immunology within the Faculty of Medicine. See class description for MICR 2020.03 in the Microbiology and Immunology section of this calendar.

Instructor: Staff  
 Co-requisites: PHYL 2030.06, PHYT 2061.03, ANAT 2170.06

Cross-listing: MICR 2020.03

**PHYT 2080.01A: Pathology.** An introductory class in Pathology offered by the Department of Pathology within the Faculty of Medicine. Consult department for further details.

Instructor: Staff  
 Format: Lecture 1 hr

**ANAT 2100.03B: Neuroanatomy.** A class in Neuroanatomy offered by the Department of Anatomy and Neurobiology. See class description in the Anatomy and Neurobiology section of this calendar.

Instructor: D. Hopkins  
 Format: Lecture/lab 3 hours  
 Prerequisite: ANAT 2160.03  
 Co-requisite: ANAT 2170.06

**ANAT 2160.03A: Human Histology.** A histology class for physiotherapy students covering cells, tissues, and selected organs.

Instructor: H. Dickson  
 Format: Lecture 2 hours/lab 3 hours  
 Co-requisite: ANAT 2170.06

**PHYT 2500.00: Clinical Practice.** This class will prepare the student for clinical practice and provide a clinical practice experience at the end of Year II. The student will be introduced to the practice of physiotherapy and provided with an opportunity to initially observe and then to implement basic physiotherapy assessment and treatment skills. The class will aid the student in the development of professional conduct and interpersonal relationships with staff and patients. The student will be exposed to the practice of physiotherapy as one element of Health Care in the Facilities. The last day to withdraw for this class, without a 'W', is five (5) days after commencement of placement.

Instructor: G. Wainwright  
 Format: Minimum 1 class per month, one five-week clinical placement is undertaken either in May or August  
 Prerequisite: Successful completion of the Year II, Academic Programme

### Year III Required Classes

**KINE 1230.03: Human Growth & Development.** See class description in the Recreation, Physical and Health Education section of this calendar.

**PHYT 2022.03A or B: Research Methods.** This class is designed to enable students to be critical consumers of health care research. Research methodology for critical review of the literature is covered. Formerly PHYT 4021.03.

Instructor: J.M. Walker  
 Format: Lecture 3 hours  
 Prerequisite: An approved class in statistics

**PHYT 3000.03R: Assessment.** This class presents the student with both theory and practice in the physiotherapeutic aspects of the clinical assessment of musculoskeletal disorders.

Instructor: D. Egan  
 Format: Lecture/lab 5 hours  
 Prerequisite: Successful completion of the Year II, BSc(PT) course of study and 4 weeks of clinical orientation

**PHYT 3010.04R: Clinical Therapeutics I - Orthopaedic Conditions.** This class will provide the student with an overview of common orthopaedic conditions and their medical/surgical and physiotherapeutic management.

Instructor: A. Fenety  
 Format: Lecture, lab, seminar

**Prerequisite:** Successful completion of the Year II BSc(PT) course of study and 4 weeks of clinical orientation

**PHYT 3020.03A or B: Clinical Therapeutics III - Rheumatology/ Amputees.** This class is designed to prepare the student for the understanding and physiotherapeutic management of patients with rheumatoid disease and the rehabilitative needs of patients with amputations.

**Instructors:** J.M. Walker, W. Levy

**Format:** Lecture/lab 5 hours

**Prerequisite:** Successful completion of the Year II BSc(PT) course of study and 4 weeks of clinical orientation

**PHYT 3030.04A or B: Clinical Therapeutics IV - Neurological Conditions.** This class provides the student with a foundation of knowledge and specialized techniques to employ in the physiotherapy assessment and management of clients with disorders of the nervous system.

**Instructor:** G. Turnbull

**Format:** Lecture 3 hours, lab 6 hours

**Prerequisite:** Successful completion of the Year II BSc(PT) course of study and 4 weeks of clinical orientation

**PHYT 3055.03A or B: Respiratory Conditions.** The purpose of this class is to enable the student to acquire the knowledge and skills necessary for the assessment and management of patients with respiratory conditions. At the completion of the class the student will be able to outline the pathophysiology of major respiratory conditions, apply knowledge of normal and abnormal lung physiology to assessment and treatment plan, and effectively carry out and evaluate the treatment of a respiratory patient.

**Format:** Lecture/tutorial 3 hours, lab 2 hours

**Prerequisite:** Successful completion of Year II BSc (PT) programme of study and clinical practice.

**PHYT 3065.04A or B: Electrophysical Agents.** This class provides the student with the skills and knowledge to apply electrophysical modalities appropriately. A variety of electromagnetic and physical agents will be introduced as potential interventions for nerve and muscle stimulation, thermal effects, and/or photochemical effects. The applied physics and physiological effects of each modality will be used as the basis for developing safe and effective application techniques.

**Instructor:** M. Earl

**Format:** Lecture/tutorial 2 hours, lab 3 hours

**Prerequisites:** Successful completion of the Year II BSc(PT) course of study and 4 weeks of clinical practicum.

**PHYL 3110.03A or B: Neurophysiology.** See class description in the Physiology and Biophysics section of this calendar.

**PHYL 3120.03A or B: Exercise Physiology.** See class description in the Physiology and Biophysics section of this calendar.

**PHYT 3500.00: Clinical Practice.** This class will prepare the student for clinical practice and provide clinical practice experience at the end of Year III. The student will be given the opportunity in a clinical setting, to apply the knowledge and skills which s/he acquired in the academic setting; to practice a problem-solving approach, thus justifying the assessment and treatment methods chosen; to acquire additional clinical skills which may not have been addresses in the academic setting; to experience the application of institutional procedures and policies; to develop appropriate professional attitudes and behaviours; to develop effective written and verbal communication skills with clinical personnel and patient/clients. The last day to withdraw from this class, without a 'W', is five (5) days after commencement of placement.

**Instructor:** G. Wainwright

**Format:** Minimum 1 class per month; one 5-week placement in each of the three practice areas: Orthopaedics, Neurology, Respiratory.

**Prerequisite:** Successful completion of Year III Academic Programme

**PSYO 2220.03B: Abnormal Behaviour.** See class description in the Psychology section of this calendar.

### Year IV Required Classes

**COMM 1000.03: Introduction to Business.** See class description in the Commerce section of this calendar.

**PHYT 4022.03R: Research Methods.** This class familiarizes students with the research process through the undertaking of a research project.

**Co-ordinator:** J.M. Walker; faculty advisors

**Format:** Few scheduled sessions, work with faculty advisor.

**Prerequisite:** PHYT 2022.03

**PHYT 4070.03A or B: Clinical Therapeutics V - Part I.** The purpose of this class is to further develop the ability to formulate and implement a reasoned physiotherapy management plan for patients with a variety of musculoskeletal problems. The class will focus on spinal and peripheral joint disorders and aims to develop expertise in patient assessment and management in specific areas by the expansion of knowledge and skills related to etiology, mechanisms, pathophysiology, treatment and other health care procedures.

**Instructor:** D. Egan

**Format:** Lecture 4 hours, lab 2 hours

**Prerequisites:** Successful completion of Year III BSc(PT) programme of study and clinical practicums

**PHYT 4071.03A or B: Clinical Therapeutics V - Part II.** This class builds on knowledge and experience gained in PHYT 3030.04. The purpose of this class is to further develop the ability to formulate and implement a reasoned physiotherapy management plan, in the specific area of neurology. The class aims to further develop expertise in patient assessment and management in these areas by expansion of knowledge and skills related to etiology, mechanisms pathophysiology, assessment, treatment and other health care procedures.



**Instructors:** G. Turnbull  
**Format:** Lecture 2 hours, lab 3 hours  
**Prerequisite:** Successful completion of Year III BSc(PT) programme of study and clinical practicums

**PHYT 4072.03A or B: Clinical Therapeutics V - Part III.** The purpose of this class is to further develop the ability to formulate and implement a reasoned physiotherapy management plan for patients with paediatric and geriatric problems. The class aims to further develop expertise in patient assessment and management by expansion of knowledge and skills related to etiology, pathophysiology, ergonomics, treatment, and other health care procedures.

**Instructor:** J.M. Walker  
**Format:** Lecture/seminar 4 hours, lab 2 hours

**Prerequisites:** Successful completion of Year III BSc (PT) programme of study and clinical practicums

**PHYT 4073.03A or B: Cardiac Rehabilitation Part IV.** This class will introduce the students to the assessment and management of participants in a cardiac rehabilitation setting. At the completion of the class, students will be able to describe the pathophysiology of Coronary Heart Disease, interpret a progressive incremental exercise test, design an appropriate exercise and risk factor modification programme, evaluate the cardiovascular response to exercise and conditioning and apply scientific principles in the management of patients with Coronary Heart Disease. Emphasis will be placed on the practical application of knowledge through clinical case studies.

**Instructor:** L. Makrides  
**Format:** Lecture 2 hours, lab 2 hours  
**Prerequisite:** Successful completion of Year III BSc (PT) programme of study and clinical practice

**PHYT 4074.03R: Multi-problem Seminar.** This class provides an opportunity for students to develop clinical problem solving and case management skills. Seminar discussions will address the therapeutic management of clinical cases incorporating a variety of physical, social, emotional and ethical concerns for patients across the life cycle.

**Co-ordinator:** L. Makrides, M. Earl  
**Format:** Tutorial/seminar 3 hours  
**Prerequisite:** Successful completion of the Year III BSc (PT) of study and clinical practicums

**PHYT 4075.03A or B: Directed Study.** Under the guidance of a member of Faculty of the School of Physiotherapy a student may undertake a detailed study related to the theory or practice of physiotherapy or associated topics. A variety of subjects ranging from detailed literature surveys to more clinically oriented areas are available to the students; evaluation is based upon the collection and presentation of the material.

**Coordinator:** D. Egan  
**Format:** Independent study- no scheduled hours  
**Restriction:** Restricted to 4th year physiotherapy students

**PHYT 4500.06R: Clinical Practice.** This class will prepare the student for clinical practice and provide clinical practice experience during and at the end of Year IV. The student will gain experience in clinical procedures, interpersonal relationships with staff and patients/clients and develop appropriate professional attitudes and behaviours. The student will have the opportunity in a clinical setting to integrate and apply knowledge and skills acquired in the academic setting; to develop and enhance previously acquired clinical capabilities in complex situations; to acquire additional necessary clinical capabilities which may not have been addressed in the academic setting; to resolve clinical problems and justify the assessment and treatment methods chosen. The last day to withdraw from this class, without a 'W', is five (5) days after commencement of placement.

**Instructor:** G. Wainwright  
**Format:** Minimum 1 class per month 2 five-week placements with the emphasis on community based practice. Clinical areas will include geriatrics, paediatrics, private practice, cardiac rehabilitation, home care, industry or any area that builds upon the Year III experiences.  
**Prerequisite:** Successful completion of Year IV Academic Programme

**Elective Classes**

**HLTH 3000.03B: An Interdisciplinary Approach to Health Promotion.** See class description in Health Professions, Interdisciplinary section of this calendar.

**HLTH 4900.03A/4910.03B: Interdisciplinary Approach to Gerontology.** See class descriptions in the Health Professions, Interdisciplinary section of this calendar.

**PHYT 3070.03A/3080.03B: Directed Study.** Under the guidance of a member of Faculty of the School of Physiotherapy a student may undertake a detailed study related to the theory or practice of physiotherapy or associated topics. A variety of subjects ranging from detailed literature surveys to more clinically oriented areas are available to the students; evaluation is based upon the collection and presentation of the material.

**Co-ordinator:** D. Egan  
**Format:** Independent study - no scheduled hours  
**Restriction:** Restricted to third- and fourth-year physiotherapy students

**PHYT 3090.03B: Interdisciplinary Class in Human Nutrition.** See class description for NURS 4800.03 in the Nursing section of this calendar.

# Political Science

**Location:** Arts and Administration  
Building, 3rd Floor, Halifax, N.S.  
**Telephone:** (902) 494-2396  
**Fax:** (902) 494-3825

## Undergraduate Advisors

**Honours:**  
Denis Stairs (494-6604)  
**Majors and Advanced Majors:**  
Frank Harvey (494-6605)  
David Black (494-6638)

## Chair

David M. Cameron (494-6626)

## Professors Emeriti

J.M. Beck, BA (Acadia), MA, PhD (Tor), LLD (Dal), LLD (St FX), LLD (RMC), FRSC  
E.M. Borgese, OC, DipMus (Zurich), LHD (MSVU)  
D. Braybrooke, BA (Harv), MA, PhD (Corn), FRSC  
J.G. Bays, OC, BA (Tor), AM, PhD (Col), FRSC

## Professors

P.C. Aucott, BA (SMU), MA (Dal), PhD (Queen's), McCulloch Professor in Political Science  
H. Bakvis, BA (Queen's), MA, PhD (UBC)  
R. Boardman, BSc, PhD (Lond)  
D.M. Cameron, BA (Queen's), MA, MPhil, PhD (Tor)  
D.W. Middlemiss, BA, MA, PhD (Tor)  
T.M. Shaw, BA (Sussex), MA (East Africa, Prin.), PhD (Prin), (Director, Centre for Foreign Policy Studies)  
D.W. Stairs, BA (Dal), MA (Oxon), PhD (Tor) FRSC  
G.R. Winham, BA (Bowdoin), Dip. in Int. Law (Yale), PhD (NorthCar), (Eric Dennis Memorial Professor of Government and Political Science)

## Associate Professors

J. Smith, BA (McM), MA, PhD (Dal)  
R.C. Finbow, BA (Dal), MA (York), MSc, PhD (London)

## Assistant Professors

D.R. Black, BA (Trent), MA, PhD (Dal)  
K. Fierbeck, BA (Alta), MA (York), PhD (Cantab)  
F. Harvey, BA, MA, PhD (McGill)

## Research Associate

F.W. Crickard, BA, MA (Dal), (R-Adm., Ret'd)

## What is Political Science?

Politics has been described as "Who Gets What, When, How, Why" in society. The study of politics, or Political Science, is one of the oldest academic disciplines known to humankind. In Ancient Greece political philosophers concerned themselves with creating a good society, and balancing justice

with order. Today Political Scientists still study these matters, but the discipline has grown to encompass many aspects of government, such as parliaments, electoral processes and constitutions; or external relations, including issues of war, peace and poverty.

Political Science is important to society because, in an age of complex government, an educated citizenry is the best safeguard for democracy. Political Science is valuable for individuals who want to know more about the values, laws, institutions and policy mechanisms that govern their lives in society, and as well, the differences between their system of government and those in other countries. Beyond this, Political Science is an especially useful preparation for students who wish to pursue careers in teaching, law, public service or business.

Dalhousie University's approach to Political Science is a blend of traditional and modern analysis. The Department offers work in classical political philosophers; and most classes emphasize government structure and policy making, including domestic public administration and foreign policy. Other classes deal with political behaviour such as public opinion or interest group activity. Classes in modern research methods, including quantitative analysis, are also offered.

The admission requirements for Political Science are listed under the Faculty of Arts and Social Sciences. There are no additional requirements for Political Science beyond those of the Faculty.

Students majoring in Political Science are encouraged to seek advice from Professors David Black and Frank Harvey, Coordinators of Major Programmes in developing a programme of studies. Students taking an Honours Degree should seek advice from Professor Katherine Fierbeck, Honours Coordinator. Professor Robert Boardman is the Coordinator of Graduate Studies.

## For General Interest

Students who have not yet decided on a major, or are looking for an elective in Political Science, are advised to take one of the Introductory classes. These are POLI 1100.06 (various sections), and POLI 1103.06 (which fulfils the writing class requirement). There are no prerequisites for these classes. Each also fulfils the introductory class requirement for Major, Advanced Major, and Honours programmes in Political Science.

## Degree Programmes

Students concentrating in Political Science may take a major programme, advanced major, or honours programme. The degree requirements are spelled out in University and Faculty Regulations, and in department regulations outlined below. The specific classes to be taken in each individual programme are chosen in consultation with the relevant faculty adviser from the Department. Undergraduate programmes may emphasize one of the sub-fields of Political Science (Canadian Government and Politics, Comparative Government and Politics, Political Theory and

Methodology, and International Politics and Foreign Policy) or may consist of a general selection of classes from the Department's offerings.

**Honours Programme**

An honours programme normally consists of a first-year level class and not less than nine nor more than eleven additional classes in Political Science. Although nine to eleven classes represents the range allowed under the general university regulations, the Department recommends quite strongly that the normal honours programme consist of nine classes past the first-year class, including the honours essay. The intent of this recommendation is to encourage our honours students to take supporting class work in related disciplines.

Any exceptions to the requirements stipulated below can only be obtained through written petition to the Undergraduate Committee, which reserves the authority to determine admission into the Honours programme in these cases.

**Core Classes**

For the purpose of the honours programme the Department has designated five second-year classes as honours core classes. These core classes represent the political science sub-fields of Canadian politics, comparative politics, political philosophy (two classes) and international politics. The core classes by area are as follows:

Canadian politics: POLI 2200.06: Canadian Government and Politics

Comparative politics: POLI 2300.06: Comparative Politics

Political philosophy: POLI 2400.06: Foundations of Political Thought I or POLI 2401.06: Foundations of Political Thought II

International relations: POLI 2500.06: World Politics

**Departmental Requirements**

**Classes required in Honours:**

- 2000 level: Three core classes, one of which must be either POLI 2400.06 or 2401.06; plus four other Political Science credits at or above the 2000 level not including those listed below
- 3000 level: POLI 3492.03 and 3493.03
- 4000 level: POLI 4600.06

To gain admittance into the Honours programme, students must have:

- i) a B average in their last ten credits
- ii) a B+ average in a group of four Political Science classes, which must include:
  - 2 core classes (one of which is POLI 2400.06 or 2401.06)
  - POLI 3492.03 and 3493.03
  - one full credit at the 3000-level in Political Science

Students should sign into the Honours programme at the end of their third year.

The core class requirements are designed (1) to give breadth to the honours programme,

(2) to provide all honours students with a grounding in the normative questions of the discipline as well as the foundations of empirical inquiry, and (3) to expose prospective honours students to the various sub-fields that may be chosen for emphasis in individual programmes.

Overall, these requirements leave a minimum of two optional credits, which may be taken at the second, third or fourth-year levels.

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.

**Combined Honours**

(Please be sure to read the FASS requirements for the Combined Honours Programme listed in the Degree Requirements section of this Calendar)

Several of the more common combined honours programmes are: Political Science and Philosophy; Political Science and History; Political Science and Economics; Political Science and Sociology; and Political Science and International Development Studies. Students interested in taking any of these combined honours programmes or in discussing other possible programmes should consult initially with the Honours Supervisor.

To obtain a Combined Honours, with an emphasis upon Political Science, students must have

- i) two core classes in Political Science, one of which is POLI 2400.06 or 2401.06 (note that the prerequisite for these classes is an introductory class in Political Science);
- ii) a methods class in one of the two fields (i.e., POLI 3492.03 and 3493.03, or a Methods class in another field);
- iii) at least two full credits at an advanced level in Political Science (in addition to 3492.03 and 3493.03); and
- iv) POLI 4600.06

To gain admittance into the Combined Honours programme, with an emphasis upon Political Science, students must have a B+ average in a group of three Political Science classes comprised of two core classes (one of which is 2400.06 or 2401.06) 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

- i) one core class in Political Science (note that the prerequisite for core classes is an introductory class in Political Science);

- ii) one credit in a methods class (either in Political Science or in another field);
- iii) one full credit in Political Science at an advanced level; and
- iv) one other Political Science class beyond the 1000-level.

To gain admittance into the Combined Honours programme, 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.

**Advanced Major Programme**

The Advanced Major Programme offers the opportunity for students to design a more focused study within a specific subfield of Political Science. The Advanced Major Programme is a 20 credit course: students must have a minimum of seven and a maximum of ten Political Science courses in total; three of these classes must be beyond the 2000-level.

**Departmental Requirements**

Classes required in Advanced Major:

- 1000 level: POLI 1100.06 or 1103.06
- 2000/
- 3000 level: two full-credits at the 2000 level, four additional credits in Political Science of which at least three must be at or above the 2000 level

Other required classes:

ENGL 1000.06 or King's Foundation Year Programme

Other requirements:

- one full-credit in a second language, normally French;
- one half-credit in quantitative analysis or research methods, in consultation with the Department advisor;
- the equivalent of one full-credit introductory class in each of at least two of the following subjects: Economics, History, Philosophy, Sociology and Social Anthropology, and Psychology.

**Major Programme**

**Departmental Requirements**

at least four, but not more than eight, classes in political science at the 2000 level or above

Classes required in Major:

- 1000 level: one full-credit introductory class
- 2000 level: at least two full classes from among the second-year level offerings and these classes should be selected from at least two sub-fields
- 3000 level: at least two additional full classes should be taken from third-year level offerings

**Summer School Classes**

The Department normally offers one of the introductory classes and at least one second-year class in the summer sessions. For details, see the University's summer school calendar.

**Classes Offered**

Class descriptions are listed under five headings:

- 1) Introductory
- 2) Canadian Government and Politics
- 3) Comparative Government and Politics
- 4) Political Theory and Methodology
- 5) International Politics and Foreign Policy

The first digit of each class number thus indicates year, or level, of class. Except for 1000-level classes, the second digit denotes the sub-field within which the class is listed.

No student may take more than one first-year class but some second-year classes require no prerequisite. The prerequisites listed with each class are intended to show the sort of preparation the instructor anticipates. A student will usually take one second-year class in a field before taking a 3000-level class in the same field. Students without the appropriate 2000-level may obtain admission to 3000-level classes only with special permission of the instructors of those classes.

Classes marked \* are not offered every year. Please note that some classes listed may not be offered in 1996-97. Classes listed as "A or B" may be taught in either the first or second term. For final listings check with the Department office or the current timetable on registration.

**(1) Introductory**

There are usually two or three sections of POLI 1100.06, each a full-year class taught by a different instructor. The topics vary a little from section to section and from year to year. POLI 1103.06 has a content similar to POLI 1100.06.

**POLI 1100.06R: Section 1, Introduction to Government and Politics.** Designed to develop a basic understanding of government and politics in liberal democratic states, but with the major emphasis on Canada, the class examines the concept of democratic government, the role and structure of governmental institutions, political mechanisms and processes, concepts and ideologies, and comparisons with alternative regimes.

Instructor: Staff  
Format: Lecture 3 hours

**POLI 1100.06R: Section 2, Introduction to Government and Politics.** This class introduces the basic institutions of government, the processes of politics and the social environment which influences them. Different ideologies and competing interpretations of democratic government are discussed in the second term. The nature and distribution of political power will be a principal theme, as students are helped to understand the fundamental debates within the discipline.


Instructor: Staff  
Format: Lecture 3 hours

**POLI 1100.06R: Section 3, Introduction to Government and Politics.** This class is designed as a general introduction to Political Science and its main subfields. The class begins with an introduction to basic concepts such as politics and power, nation and state. Students then examine comparative political analysis of

national politics and institutions in different countries, and international issues like war, diplomacy, international organizations and global inequalities. The second term focuses on Canadian politics, constitutional reform, federalism and regionalism, Quebec, elections and party systems, public opinion and political culture. The class closes with an introduction to political theory, through discussion of major traditional and contemporary ideologies.

Instructor: D. Black, R. Finbow  
Format: Lecture 3 hours

**POLI 1103.06R: Introduction to Government and Politics.** The approach and format in POLI 1103.06 is similar to that in POLI 1100.06 above. This class is also designed, however, to serve as the Department's designated Writing Class.

Instructor: Staff  
Format:  Writing Requirement, lecture 3 hours

## (2) Canadian

**POLI 2200.06R: Canadian Government and Politics.** The class examines the nature of Confederation in 1867, the original Constitution, and its evolution through convention, amendment, and judicial review, culminating in the changes effected through the Constitution Act of 1982. Attention then turns to the institutions of government, including cabinet, parliament, and the convention of responsible government. The first term concludes with a brief discussion of aboriginal self-government. The second term begins with consideration of federalism and Canada's regional identities, followed by an examination of intergovernmental relations. The remainder of the term is taken up with the study of the principal political processes and mechanisms of Canadian politics, including political parties, elections and voting behaviour, interest groups and, finally, the role of the media, polling and public opinion. Approved with Canadian Studies.

Instructors: D.M. Cameron, H. Bakvis  
Format: Lecture 3 hours  
Prerequisites: Introductory Political Science class

**\*POLI 3205.03A or B: Canadian Political Thought.** The class examines enduring controversies in Canadian politics. Examples include: the nature of Canadian federalism; partisanship and party government; parliamentary versus republican institutions; religion and politics. These controversies are examined as they have been articulated in speeches, pamphlets and articles by people active in public life. Approved with Canadian Studies.

Instructor: J. Smith  
Format: Seminar 2 hours  
Prerequisite: POLI 2200.06  
Cross-listing: POLI 5205.03

**POLI 3206.03A or B: 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.

Instructor: J. Smith

Format: Seminar 2 hours  
Prerequisite: POLI 2200.06  
Cross-listing: POLI 5206.03

**\*POLI 3212.03A or B: The Politics and Government of Nova Scotia.** (Not offered in 1996-97)

**\*POLI 3214.03A or B: Quebec Politics.** This class is an examination of the historical, sociological, linguistic, cultural and political position of modern Quebec within Confederation. It will draw on a wide range of sources, including film, theatre, literature and music as well as the standard texts. A knowledge of spoken and written French would be helpful.

Instructor: Staff  
Format: Seminar 2 hours  
Prerequisite: POLI 2200.06  
Cross-listing: POLI 5214.03

**\*POLI 3216.03A or B: Local and Regional Government.** The unique character of municipal government is examined in terms of its historical evolution and present structure and operation. Special attention is given to city government and to recent reforms at the regional and metropolitan level. Approved with Canadian Studies.

Instructor: D.M. Cameron  
Format: Lecture and discussion 2 hours  
Prerequisite: POLI 2200.06 or equivalent  
Cross-listing: POLI 5216.03, PUAD 6400.03

**\*POLI 3220.03A or B: Intergovernmental Relations in Canada.** The territorial division of political power and the relations that have developed between governments are considered, with emphasis on the impact on policy outcomes. Approved with Canadian Studies.

Instructor: H. Bakvis  
Format: Seminar 2 hours  
Prerequisite: POLI 2200.06 or instructor's permission  
Cross-listing: POLI 5220.03, PUAD 6750.03

**\*POLI 3224.03A or B: Canadian Political Parties.** The Canadian party system, viewed as an integral part of the entire political system, presents a number of interesting questions for exploration, such as the alleged fickleness of voters, the role of party leaders, and the manner in which parties contribute to Canadian democracy. The particular themes emphasised will vary from year to year. Approved with Canadian Studies.

Instructor: H. Bakvis  
Format: Lecture and discussion 2 hours  
Prerequisite: POLI 2200.06 or instructor's permission. Students will find it helpful to have some background in statistics or methodology, such as POLI 3494.06.  
Cross-listing: POLI 5224.03

**\*POLI 3233.03A or B: Canadian Political Economy.** This seminar class, for graduates and senior undergraduates, will survey the major themes and perspectives in the literature on Canadian political economy. It will introduce the traditional staples and metropolitan approaches. It will survey modern perspectives including liberal Keynesian and neo-classical, socialist and neo-Marxist, elitist and

feminist perspectives. The nature of Canada's economic development, the role of the state, and the relative importance of commercial, industrial, resource and service sectors will be examined. Canada's imperial and continental relationships, the debate over free trade, economic nationalism, and Canada's place in a global economy will also be analyzed. Other topics include women, industrial relations and unions, economic elites, native and immigrant communities, and the impact of economic forces on national unity.

**Instructor:** R. Finbow  
**Format:** Seminar 2 hours  
**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 3235.03A or B: Regional Political Economy in Canada.** The class surveys the interaction between politics and economics in Canada with emphasis on the question of regional development. It will canvass competing explanations for differences in economic development among Canada's regions with special emphasis on Maritime economic problems, highlighting both the political sources of regional disparities and continuing efforts to rectify them. Distinctive Western, Quebec and Ontario concerns will also be covered. Seminars, for graduates and senior undergraduates, will feature student presentations and research projects. Approved with Canadian Studies.

**Instructor:** R. Finbow  
**Format:** Seminar 2 hours  
**Prerequisites:** Open to graduate students and senior undergraduates, who have completed classes on Canadian politics, or permission of the instructor.

**Cross-listing:** POLI 5235.03

**\*POLI 3245.03A or B: The Judicial System and Canadian Government.** (Not offered in 1996-97)

**\*POLI 3250.06R: Canadian Public Administration.** This class examines the organization and management of the executive-bureaucratic structures of government for the formulation and management of public policy and public services. It considers the design and operation of the cabinet system and ministerial portfolios; relations between ministers and the career public service; policy and budgetary processes; and, the structural designs of departments, agencies, crown corporations and regulatory commissions. A major focus will be the effects of the new public management on public administration, as governments in Canada, as elsewhere, seek to cope with budgetary restraints, increased demands for quality services and public participation, and greater effectiveness in securing results. Approved with Canadian Studies.

**Instructor:** P. Aucoin  
**Format:** Lecture and discussion 2 hours  
**Prerequisite:** POLI 2200.06R or instructor's permission

**\*POLI 4228.03B: Interest Groups: Function and Management.** This class will attempt a systematic examination of the function and management of interest groups in Canada and, to a lesser extent, other western countries. It will begin by considering the functions such groups perform for their supporters on the one hand and, on the other, the role they play in (1) maintaining political systems; (2) securing and modifying public policy, and (3) implementing programmes. It will explore the ways in which their structures and behaviour patterns vary according to the resources of the groups themselves, the nature of their concerns and the demands of the political/ bureaucratic systems in which they operate. An important feature of the class will be a discussion of the internal management of groups. This discussion will include a review of how membership is secured and retained how group resources are obtained and applied; the role of professional staff in developing group positions and in interacting between the interest group and government officials. In conclusion the class will examine the role of interest groups in policy processes and the relationship between that role and the prospects for democracy in western politics. Approved with Canadian Studies.

**Instructor:** Staff  
**Format:** Seminar 2 hours  
**Prerequisite:** POLI 2200.06 or instructor's permission

**Cross-listing:** POLI 5228.03, PUAD 6505.03

**\*POLI 4240.03A: Policy Formulation in Canada.** A comprehensive examination of the three critical questions in the study of policy formulation in Canada: 1) The function of the state; 2) The question of why governments develop policies; and 3) The means by which governments authoritatively develop policies. The discussion links these variables with a macro level analysis of the scholarly approach to decision-making. The emergence of tension resulting from the development of superindustrial society and from regionalism in the Canadian community provides policy problems on which the general theoretical analysis is hinged. Approved with Canadian Studies.

**Instructor:** P. Brown  
**Format:** Seminar 2 hours  
**Prerequisite:** Open to Honours students in their fourth year and to graduate students.

**Cross-listing:** POLI 5240.03, PUAD 5120.03

**\*POLI 4241.03B: 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.

**Instructor:** Staff  
**Format:** Seminar 2 hours  
**Prerequisite:** POLI 4240.03 or instructor's permission

**Cross-listing:** POLI 5241.03, PUAD 5121.03

## (3) Comparative

**POLI 2300.06R: Comparative Politics.** This class introduces students to the methodology and scope of comparative politics, including analysis of political institutions and behaviour. General overviews and selected case studies are provided for liberal democracies, post-communist, newly industrializing and least developed countries. Topics include theories of the state, political culture and socialization, electoral and party systems, interest groups, ethnic and regional cleavages, gender politics, policy outcomes and system performance, political participation and leadership and contemporary challenges and changes. Group presentations are used for student exploration of these themes.

**Instructor:** D. Black, R. Finbow  
**Format:** Lecture/discussion 3 hours  
**Prerequisites:** Introductory political science class or instructor's permission

**\*POLI 3302.03A or B: Comparative Development Administration.** Some analytical and normative issues of public administration in developing countries are examined including the scope of development administration as a sub-field of public administration; public sector organization and management including public services, public enterprises, decentralisation and rural development, financial systems, human resource management, aspects of state economic management with Japanese and South Korean case studies; and institutional aspects of aid administration with CIDA and World Bank cases.

**Instructor:** D. Black  
**Format:** Seminar 2 hours  
**Prerequisite:** POLI 2300.06 or equivalent or instructor's permission

**Cross-listing:** POLI 5302.03, PUAD 6780.03

**\*POLI 3303.03A: Human Rights and Politics.** (Not offered in 1996-97)

**\*POLI 3304.03A or B: Comparative Federalism.** A seminar class which examines the theory and practice of federalism within a comparative framework. The actual federations discussed depends in part on student interest but usually includes both established federal nations and those moving in that direction.

**Instructor:** H. Bakvis  
**Format:** Seminar 2 hours  
**Prerequisite:** POLI 2200.06 or POLI 2300.06 or instructor's permission

**Cross-listing:** POLI 5304.03, PUAD 6755.03

**\*POLI 3311.03A or B: 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.

**Instructor:** D. Black  
**Format:** Seminar  
**Prerequisite:** POLI 2300.06 or permission of instructor

**\*POLI 3315.03A or B: African Politics.** The diversity of states, politics, economy and society in post-colonial sub-Saharan African 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 liberalisation, women and development, drought and ecology, AIDS and health.

**Instructor:** D. Black  
**Format:** Seminar 2 hours  
**Prerequisite:** POLI 2300.06 or equivalent or instructor's permission  
**Cross-listing:** POLI 5315.03

**\*POLI 3360.03A or B: Politics in Latin America.** (Not offered in 1996-97)

**\*POLI 3379.06R: 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.

**Instructor:** J. Smith  
**Format:** Seminar 2 hours  
**Prerequisites:** POLI 2200.06 or POLI 2300.06 or instructor's consent

**Cross-listing:** POLI 5379.03

## (4) Theory and Methodology

**POLI 2400.06R: Foundations of Political Thought I: Order, Knowledge and Natural Law.** This class introduces students to political philosophy, the first (and arguably the most important) branch of the modern discipline of political science. Hobbes is the only author examined in both classes. The class may be taken for credit before, after, or concurrently with the other class. Either POLI 2400.06 or 2401.06 satisfies the minimum requirement in political philosophy for an Honours degree in Political Science.

Selections from some of the most well-known texts in the history of western political thought, including Plato's *Republic*, Aristotle's *Politics*, and Hobbes' *Leviathan*, will be examined critically in order to understand the central place that order, knowledge, and natural law have played in the development of the modern study of politics.

**Instructor:** Staff  
**Format:** Lecture 2 hours  
**Prerequisite:** POLI 1100.06, 1103.06, FYP, or any introductory Philosophy class

**Cross-listing:** PHIL 2270.06

**POLI 2401.06R: Foundations of Political Thought II: Rights, Rationality and Democracy.** This class introduces students to political philosophy, the first (and arguably the most important) branch of the modern discipline of political science. Hobbes is the only author examined in both classes. The class may be taken for credit before, after, or concurrently with the other class. Either POLI

2400.06 or POLI 2401.06 satisfies the minimum requirement in political philosophy for an Honours degree in Political Science.

An overview of early modern and modern political thought, this class examines the bases of political obligation and the political requirements of justice. While the class surveys the works of political theorists from Hobbes up to the present day, the emphasis is upon the normative issues underlying many of today's political debates.

**Instructor:** K. Fierbeck  
**Format:** Lecture 2 hours  
**Prerequisite:** POLI 1100.06, 1103.06, FYP, or any introductory Philosophy class

**Cross-listing:** PHIL 2070.06

**\*POLI 3427.03A or B: Women in Western Political Thought.** The role of women in political life has been vilified, praised or ignored by major thinkers. Pertinent texts will be read along with interpretations by modern feminists in order to assess why the formal political enfranchisement of women has not resulted in greater substantial equality.

**Instructor:** Staff  
**Format:** Lecture and discussion 2 hours  
**Prerequisite:** POLI 2400.06/PHIL 2270.06 or POLI 2401.06/PHIL 2070.06, or instructor's permission

**Exclusion:** POLI 2327.03  
**Cross-listing:** WOST 3600.03

**\*POLI 3430.03A or B: The Political Philosophy of Plato.** It has been said that the history of western political philosophy merely constitutes footnotes to Plato. This seminar examines a number of problems posed for scholars in interpreting Plato's work. The main focus is a close critical reading of one or more of Plato's 'political' dialogues, but we shall also place Plato in his historical context, with regard to classical Greek political thought in general, and Plato's great student Aristotle in particular.

**Instructor:** Staff  
**Format:** Seminar 2 hours  
**Prerequisite:** POLI 2400.06 or 2401.06 or instructor's consent

**Cross-listing:** POLI 5430.03

**\*POLI 3431.03A or B: The Political Imagination in Literature.** After having looked at how the study of literature both complements and supplements the social scientific approach to understanding politics, the seminar will analyze the implicit and explicit treatment of a number of political themes in a list of works by both modern and classical novelists and playwrights.

**Instructor:** Staff  
**Format:** Writing Intensive, seminar 2 hours  
**Prerequisite:** POLI 2400.06 or POLI 2401.06, or instructor's permission

**Cross-listing:** POLI 5431.03

**\*POLI 3435.03A or B: Machiavellian Politics.** (not offered in 1996-97)

**\*POLI 3445.03A or B: Entitlement and Property.** How is the ownership of property justified philosophically? Beginning with the early modern theorists' accounts of private property, this seminar examines how the concept of "entitlement to property" has been

influenced by the development of economic theory, democratic ideals, and contemporary political and economic relations.

**Instructor:** K. Fierbeck  
**Format:** Seminar 2 hours  
**Prerequisite:** POLI 2400.06 or POLI 2401.06 or instructor's consent  
**Cross-listing:** POLI 5445.03

**\*POLI 3475.03A or B: Democratic Theory.**

Democracy is an essential component of legitimacy for all western states: few would be inclined to assert their "undemocratic" nature. But what are the *essential* characteristics of democracy; and to what extent must modern democratic theory remain grounded in nineteenth-century western liberal thought? While this class has a predominantly *theoretical* orientation, it will include an examination of the relations between democratic theory and economic production/redistribution; as well as an investigation into how democratic theory can be developed in non-western political contexts.

**Instructor:** K. Fierbeck  
**Format:** Seminar 2 hours  
**Prerequisite:** POLI 2400.06 or POLI 2401.06 or instructor's consent  
**Cross-listing:** POLI 5475.03

**POLI 3492.03A: Political Inquiry I: Statistical Analysis.** This class covers topics related to research design, data gathering and aggregate data analysis, and computer programming using SESS. A particular substantive issue unifies discussion of the various methods of analysis, and a research project in that issue utilizes the use of some of the tools of analysis discussed in the class.

**Instructor:** F. Harvey  
**Format:** Lecture/discussion/lab  
**Prerequisite:** Introductory Political Science class or instructor's permission.

**Co-requisite:** POLI 3493.03 (political science honours students only)  
**Exclusion:** POLI 2494.06, 3494.06

**POLI 3493.03B: Political Inquiry II: Philosophy of the Social Sciences.** A variety of methods employed in contemporary political analysis to explain political events are analyzed critically, including consideration of the general question of the requirements of explanation in political science. Causal explanation and problems in the development and verification of social scientific theory are emphasized.

**Instructor:** K. Fierbeck  
**Format:** Lecture/discussion  
**Prerequisite:** Introductory Political Science class or instructor's permission.

**Co-requisite:** POLI 3492.03 (political science honours students only)

**Exclusion:** POLI 2494.06, 3494.06

**\*POLI 4479.03A or B: 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.

**Instructor:** Staff  
**Format:** Seminar 2 hours



**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 4480.03A or B: 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.

**Instructor:** Staff  
**Format:** Seminar 2 hours  
**Prerequisite:** Permission of the instructor  
**Cross-listing:** PHIL 4480.03/5480.03, ECON 4448.03/5448.03, POLI 5480.03

**\*POLI 4496.03A or B: Philosophy of the Social Sciences.** This class will identify three active sides of social science - naturalistic, interpretative, critical. It will consider how, in method and sorts of questions, inquiries on the critical side reduce to a mixture of activities on the other two. It will then explore in detail the intimate relations between naturalistic and interpretative inquiries.

**Instructor:** Staff  
**Format:** Seminar 2 hours  
**Prerequisite:** Permission of the instructor  
**Cross-listing:** PHIL 2510.03

### (5) International

**POLI 2500.06R: World Politics.** To provide a framework for analysis and understanding of contemporary international events, this class deals with the variety of "actors" in world political (principally but not exclusively states), and examines some concepts in the field.

**Instructor:** F. Harvey  
**Format:** Lecture and discussion 2 hours  
**Prerequisite:** Introductory Political Science class or instructor's permission.

**POLI 2510.06R: Canadian External Relations.** A general survey of Canadian foreign and defence policies and of the processes by which these policies are made. Some of the persistent pressures and constraints which Canadian policy makers are forced to take into account are examined.

**Instructor:** D.W. Stairs  
**Format:** Lecture and discussion 3 hours  
**Prerequisite:** Introductory class in Political Science of instructor's permission.

**POLI 2512.06R: Canadian-American Relations.** A survey of issues and problems in the conduct of Canada-US relations, together with an analysis of their origins and of the diplomatic and other policy instruments that have been used in responding to them. The premises (and the fate) of various manifestations of Canadian nationalism - in foreign policy, economic policy, cultural policy, and so on - will be carefully considered, along with the effect on the Canada-US relationship of contemporary processes of "globalization".

**Instructor:** D.W. Stairs  
**Format:** Lecture

**\*POLI 3525.03A or B: 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 teams throughout North America (and possibly Europe). As they attempt to implement policy initiatives and work in teams to resolve international disputes, students will confront foreign policy issues in a context that provides an authenticity of experience. The objective is to enable students to create and test organizational skills, understand the interdependence of international issues, appreciate cultural differences and approaches to world problems, and use computers for multinational communications.

**Instructor:** F. Harvey  
**Format:** Seminar 2 hours  
**Prerequisite:** POLI 2500.06 or 3531.03

**\*POLI 3531.03A or B: 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.

**Instructor:** Staff  
**Format:** Seminar 2 hours  
**Prerequisite:** Class in international politics or instructor's permission  
**Cross-listing:** POLI 5351.03

**\*POLI 3535.03A or B: The New International Division of Labour.** This seminar provides an overview of the global political economy in the current post-Bretton Woods and -Cold War period. It treats the New International Division of Labour/Power from several theoretical and political perspectives, from comparative foreign policy to feminism. Issues addressed include: the Newly Industrialising Countries, the Middle Powers and the Fourth World; new functionalism; popular participation; and alternative futures.

**Instructor:** T. Shaw  
**Format:** Seminar 2 hours  
**Prerequisite:** Class in international politics or instructor's permission.  
**Cross-listing:** POLI 5535.03

**\*POLI 3537.06R: Management and Conservation of Marine Resources.** This is an intensive programme on the problems of managing the multiple uses of the Exclusive Economic Zone. It covers the New Law of the Sea and its many implications for politics and management, the social, economic and technical aspects of managing living resources, non-living resources, shipping, ports and harbours, coastal management and the protection of the environment; national legislation and required institutional infrastructure, regional cooperation and cooperation with international institutions.

**Instructor:** E.M. Borgese  
**Format:** Seminar 2 hours

**Prerequisite:** Class in international politics or instructor's permission. Offered as a summer class only: consult instructor.

**\*POLI 3540.03A or B: Foreign Policy in the Third World.** This seminar offers a comparative perspective on the political economy of foreign policy in Africa, Asia, the Middle East, and South America at the end of the twentieth century. Its focus is how such state and non-state actors in the South relate to the New International Divisions of Labour and Power given the demise of both Bretton Woods and Cold War global regimes. In addition to selective case studies of both large and small states - from Brazil, India, Indonesia, and Nigeria to Botswana, Jamaica, Kuwait, and Singapore - it treats formal and informal external relations, from regional inter-governmental institutions to non-governmental coalitions. It also examines new forms of regional conflict and cooperation, including guerrilla struggles and civil societies. It emphasises the incidence and impact of structural adjustment programmes and conditionalities along with the emergence of "new" issues such as debt, democracy, ecology, gender, refugees, and technology. A range of alternative approaches is identified and evaluated appropriate to the contemporary period of revisionism.

**Instructor:** T.M. Shaw  
**Format:** Seminar 2 hours  
**Prerequisite:** Class in international politics or instructor's permission

**Cross-listing:** POLI 5540.03

**\*POLI 3544.03A or B: Political Economy of Southern Africa.** An introduction to the comparative politics, economic structures and international relations of Southern Africa, which provides a study of regional political economy with both empirical and theoretical significance. The primary focus is on regional conflict and change, especially on transformation and reaction, given the contemporary global context.

**Instructor:** T. Shaw  
**Format:** Lecture/seminar 2 hours  
**Prerequisite:** Class in international politics or instructor's permission.

**Cross-listing:** POLI 5544.03

**\*POLI 3550.03A or B: Japanese Foreign Policy.** This class focuses on the course of Japan's foreign policy since 1945, and the factors that have shaped its approaches to regional and international issues. Topics are studied in the contexts of Japanese history, cultural traditions, its economy, and domestic politics.

**Instructor:** R. Boardman  
**Format:** Lecture/seminar 2 hours  
**Prerequisite:** Class in international politics or instructor's permission

**\*POLI 3570.06R: Canadian Foreign Policy.** The seminar examines post-World War II Canadian foreign policy in three parts: (1) a detailed analysis of major policy developments, using the case-study approach; (2) an investigation of selected recurrent and contemporary themes, issues, and problems, and (3) an investigation of the general factors that may help to "explain" the form and content of Canadian foreign policy, with particular reference to the

institutions and processes through which policy decisions are made. The primary emphasis is on politico-security issues, although other subjects are also considered.

**Instructor:** D. Stairs  
**Format:** Writing Intensive, seminar 2 hours

**Prerequisite:** Class in international politics, Canadian politics, or Canadian history in the 20th century, or with the permission of the instructor. Restricted to students in their third or fourth years.

**Cross-listing:** POLI 5570.06

**\*POLI 3571.06R: Strategy and Canadian Defence Policy.** This seminar examines post-World War II Canadian defence policy in three parts: 1. An analysis of important cases of policy development. 2. An investigation of certain persistent themes and current issues (e.g., Canada-U.S. defence relations; defence funding; weapons procurement; the role of women in the forces; civil-military relations, etc.) 3. An assessment of the major determinants of policy and prescriptions for the future.

**Instructor:** D. Middlemiss  
**Format:** Seminar 2 hours  
**Prerequisite:** Class in international politics or instructor's permission

**Cross-listing:** POLI 5571.06

**\*POLI 3574.03A or B: American Foreign Policy.** Why Americans make the kind of foreign policy they do and the decision process and relevant methodologies for examining decision strategy are examined. Students develop an ability to explain foreign policy decisions of the United States.

**Instructor:** G. Winham  
**Format:** Seminar 2 hours  
**Prerequisite:** Class in international politics, US politics or history, or instructor's consent

**Exclusion:** POLI 3572.06

**Cross-listing:** POLI 5574.03

**\*POLI 3575.03A or B: 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.

**Instructor:** D.W. Middlemiss  
**Format:** Seminar 2 hours  
**Prerequisite:** Class in international relations or defence policy, or with instructor's permission.

**Cross-listing:** POLI 5575.03

**\*POLI 3581.03A or B: Diplomacy and Negotiation.** This class examines the practice of diplomatic negotiation in international relations. Attention is directed towards historical development and change in diplomatic practice, and to the nature and role of negotiation in the contemporary international system. Various examples of diplomatic negotiations are studied, ranging from bilateral negotiations such as nuclear arms talks or the Canada-US Free Trade Agreement, to multilateral negotiations such as the UN Conference of the Law of the Sea or GATT

negotiations. Students are expected to participate in a simulation exercise and to prepare a term paper on a selected case of international negotiation.

Instructor: G. Winham  
 Format: Seminar 2 hours  
 Prerequisite: class in international politics or instructor's consent  
 Cross-listing: POLI 5581.03

\*POLI 3585.03A or B: Politics of the Environment. Environmental issues have become increasingly important on international agendas. In this class, political analysis of these questions is grounded in a global ecological perspective. The topics for discussion include acid rain and other problems in the relations between advanced industrialized countries; the role of international institutions and international law in promoting environmental conservation; the environmental dimension of international development; and the politics of the transnational environmental movement.

Instructor: R. Boardman  
 Format: Seminar 2 hours  
 Prerequisite: A class in international politics or foreign policy, or instructor's permission.  
 Cross-listing: POLI 5585.03

\*POLI 3589.03A or B: The Politics of the Sea. 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.

Instructor: Staff  
 Format: Seminar 2 hours  
 Prerequisite: Preference is given to graduate students, although mature students from other relevant disciplines are welcome.  
 Cross-listing: POLI 5589.03

\*POLI 3591.03A or B: Comparative Maritime Strategies and Oceans Policy. With enormous maritime responsibilities, spread over an area that is beyond the national ability to regulate, the domestic and international forces affecting maritime security and oceans policy require continuing study and discussion in Canada. The following are among the topics to be covered in the class: the military dimensions of oceans, including comparative naval strategies, proliferation of naval weaponry, arms control, and disarmament, conflict resolution and other collective/cooperative security arrangements; the role of international law at sea; the use of rules of engagement as a means of exercising political control. Students will be expected to participate in one or more simulation exercises throughout the class.

Instructor: P. Haydon/F. Crickard  
 Format: Lecture/seminar 2 hours

\*POLI 3596.03A or B: Theories of War and Peace. This class examines critically a broad range of theories of the causes, persistence, and termination of war.

Instructor: F. Harvey  
 Format: Seminar 2 hours  
 Prerequisite: Class in international politics or instructor's permission  
 Cross-listing: POLI 5596.03

POLI 4636.03 A or B: 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.

Instructor: D. Stairs  
 Format: Seminar  
 Restriction: Restricted to students in their fourth year  
 Cross-listing: POLI 5636.03

POLI 3601.06R: Readings in Political Science. A full-year reading class, taught only by special arrangement between individual students and individual instructors.

Instructor: Staff  
 Cross-listing: POLI 5601.06

POLI 3602.03A or B: Readings in Political Science. A one-term reading class, taught only by special arrangement between individual students and individual instructors.

Instructor: Staff  
 Cross-listing: POLI 5602.03

POLI 3603.03A or B: Readings in Political Science. A one-term reading class, taught only by special arrangement between individual students and individual instructors.

Instructor: Staff  
 Cross-listing: POLI 5603.03

POLI 4600.06R: Honours Essay. Political Science undergraduates in the Honours programme are required to attend the Honours seminar as scheduled. This seminar is designed as a research seminar for Honours students.

Instructor: D.W. Stairs, Honours Co-ordinator.  
 Restriction: Restricted to Political Science Honours students in their final year.

# Psychology

Location: Life Sciences Centre  
 Telephone: (902) 494-3417  
 FAX: (902) 494-6585

## Chairperson of Department

R.E. Brown

## Student Advisors

To be put in touch with an advisor, go to the Information Desk in Room 3263 of the Psychology Department, or phone (902) 494-3417.

## Honours Advisor

J.W. Clark (494-3434)  
 D.P. Phillips (494-2383)  
 V.M. LoLordo (494-3441)

## Professor Emeritus

W.K. Honig, BA (Swathmore), PhD (Duke)

## Professors

R.E. Brown, BSc (Victoria), MA, PhD (Dal)  
 P.J. Dunham, BA (DePauw), MA, PhD (Missouri)  
 J.C. Fentress, BA (Amherst), PhD (Cantab)  
 R.M. Klein, BA (SUNY), MA, PhD (Oregon),  
 Graduate Program Coordinator  
 V.M. LoLordo, AB (Brown), PhD (Penn)  
 P. McGrath, BA, MA (Saskatchewan), PhD (Queen's), Clinical Program Coordinator  
 L.A. Meinertzhagen, BSc (Aberdeen), PhD (St. Andrews)  
 D.E. Mitchell, BSc, MAppSc (Melb), PhD (Berkeley)  
 S. Nakajima, BA (Chiba), MA (Wash), PhD (McG)  
 D.P. Phillips, BSc, PhD (Monash)  
 H. Robertson, MSc (Western), PhD (Cantab),  
 Major appointment in Pharmacology  
 B. Kusak, BA (Tor), PhD (Berkeley)  
 S. Shaw, BSc (Lond), PhD (St. Andrews)  
 W.G. Tatton, BSc, MD (Alta), PhD (Tor), Killam  
 Chair in Neuroscience  
 M.G. Yoon, BS (Seoul), PhD (Berkeley)

## Associate Professors

J. Barresi, BSc (Brown), MA (S. Calif), PhD (Wisc)  
 J.W. Clark, BA, MA (McG), PhD (Queen's)  
 J.F. Connolly, AB (Holy Cross), MA (Saskatchewan), PhD (London)  
 R. Croll, BSc (Tufts), PhD (McG), Major  
 appointment in Physiology/Biophysics  
 B. Earhard, BA, MA, PhD (Tor)  
 G.A. Finley, BSc, MD (Dal), Major appointment  
 in Anaesthesiology  
 R. Lyons, BA (Dal), MEd (St.FX), PhD (Oregon),  
 Major appointment in School of Recreation,  
 Physical and Health Education  
 J. McClone, BA, MA, PhD (Western)  
 B.R. Moore, AB (Emory), PhD (Stan)  
 C. Moore, BA, PhD (Cantab), Undergraduate  
 Programme Coordinator  
 M. Ozier, BA, MA, PhD (Tor)

K. Semba, BEd, MA (Tokyo), PhD (Rutgers),  
 Major appointment in Anatomy and  
 Neurobiology  
 M. Sullivan, MA, PhD (Concordia)

## Assistant Professors

S. Adamo, BA (Tor), PhD (McG)  
 K. Davidson, BA (Queen's), MAsc, PhD (Waterloo)  
 P. McMullen, MSc (Tor), PhD (Waterloo)  
 D. Santor, BA (Western), PhD (McG)  
 S. Stewart, BSc (Dal), PhD (McG)

## Senior Instructor

R.S. Hoffman, BA (Colo C), MA (Dal)

## Instructor

J. Leary, BSc (Dal), MSc (MUN), PhD (Adelaide)

## Honorary Adjunct Professors

J. Backman, MA, PhD (Carleton), Psych/IWK  
 C. Bilsbury, BSc, PhD (Liverpool), Psych/Camp Hill  
 S.E. Bryson, BA (Guelph), PhD (McG),  
 Psych/York  
 J.M. Byrne, MA, PhD (Kansas), Psych/IWK  
 V.M. Catano, BSc (Drexel), MSc, PhD (Lehigh),  
 Psych/Saint Mary's  
 H. Chipuer, BA (Saak), MA (Tor), PhD (Penn State),  
 Psych/Saint Mary's  
 A.I. Cohen, BA (McG), MA, PhD (Queen's),  
 Psych/UPEI  
 C. Ellsworth, MA, PhD (Queen's), Psych/IWK  
 G.A. Eskes, BA, PhD (Berkeley), Psych/VG  
 J. Fisk, BSc, MA, PhD (Western), Psych/Camp Hill  
 C. Harvey-Clark, BSc (Victoria), DVM (Western  
 College of Vet. Medicine), Dalhousie Director  
 of Animal Care  
 J. Howes, BA (Dal), MA, PhD (Western),  
 Psych/Camp Hill  
 M. Leiter, BA (Duke), MA (Vanderbilt), PhD (Oregon),  
 Psych/Acadia  
 G.W. MacDonald, BA (St. FX), MA, PhD (Windsor),  
 Psych/IWK  
 C.C. Mate-Kole, BSc (Bruner), PhD (Leicester)  
 P. McCormick, BSc (Dal), MA, PhD (Waterloo),  
 Psych/St.FX  
 P. McLeod, BSc (Mt.A.), MSc (MUN), PhD (Dal),  
 Psych/Acadia  
 J. McNulty, BA, MA, PhD (Tor)  
 P. O'Neill, MSc, PhD (Yale), Psych/Acadia  
 G. Pretty, BSc, MSc (Acadia), PhD (Western),  
 Psych/Saint Mary's  
 K.E. Renner, BS (Penn), MA, PhD (Northwestern),  
 Psych/Carleton  
 P. Ritvo, MA (Calif State), PhD (Cal Sch Prof Psy),  
 Psychology/Psychiatry/Toronto Hospital  
 R.S. Rodger, MA (Edin), PhD (Queen's Belfast)  
 M. Schwartz, BSc (McG), MA, PhD (Waterloo),  
 Psych/VG  
 D. Symons, BSc (McM), MA, PhD (Western),  
 Psych/Acadia  
 S. Symons, BSc (Dal), MA, PhD (Western),  
 Psych/Acadia  
 T.M. Vallis, BSc (Dal), MA, PhD (Western),  
 Psych/Camp Hill

**Honorary Research Associate**

B. Doane, BA (Princeton), MD, MA (Dal), PhD (McG), Psych/VG

**Postdoctoral Fellows**

R. Barnett, PhD (SUNY, Binghamton), Killam Postdoctoral Fellow

C. Beaver, PhD (Dal)

D. Cantoni, PhD (Univ. Lausanne)

B. Chen, PhD (Okayama Univ)

G. Scott, PhD (Nottingham)

A. Stuart, PhD (Dal)

X.-J. Sun, PhD (Univ. de Paris, Sud)

**Research Associates**

K.G. Bina, PhD (Dal)

K. Briand, PhD (Dal)

M. Guido, PhD (Univ. Nac. Córdoba)

A. Fröhlich, Diplom, Dr. rer. Nat. (Freie Universität Berlin), MSVU

V. Kumar, PhD (Banaras Hindu Univ.)

E. Pyza, PhD (Jagiellonian Univ.), Inst. of Zoology, Jagiellonian Univ.

S.-W. Ying, MSc (Tianjin Medical College)

**Introduction**

Psychology is an experimental science; its purpose is to discover the conditions which control the activities of animals and people, to measure these conditions and the responses they produce, and to use this knowledge to invent ways of predicting behaviour and changing it. It is a subject for inventive but also scientifically rigorous people, better suited to those who want to find out for themselves than to those who want to be told what to believe.

Psychology at Dalhousie treats behaviour as a natural phenomenon, and in that sense shares much with the other life sciences. Today, for example, the boundary that historically has separated psychology from zoology, physiology, or even cellular biology has begun to blur. On the other hand, important ties are being made to such disciplines as anthropology and sociology. The student will find that the diverse subject matter includes three major levels of analysis: the organism, the organism's biological machinery, and the broader social-environmental context in which particular behaviour patterns are expressed. Meaningful integration of these diverse levels and forms of analysis is an intellectual challenge of major proportions. Similarly, the time perspectives of immediate causation, development, evolution, and function all contribute to the modern approach to behavioural science; each must be evaluated in relation to the others.

**General Interest Classes**

Non-majors are encouraged to enrol in Psychology 1000.06, 1010.06 or 1500.06 and all 2nd year classes. Major and Honours students in Psychology are given preference for PSYO 2000.03 and 2500.03. In all classes for which Psychology 1000.06, 1010.06 or 1500.06 is a prerequisite, a minimum grade of B-, in the 1000-level class, is required to be admitted to the upper-level Psychology class.

**Laboratories**

Several classes include a laboratory component, and there are two types of laboratories used. One type is a research laboratory in which students will conduct research, collect data and write reports on the results of the research. All major and honours students must take the second-year research laboratory class (PSYO 2000.03) and at least one third-year research laboratory class (full-year for honours students.)

The second type of laboratory is a proficiency or skills laboratory, which usually involves additional work in computer exercises related to the lecture material and class readings.

**Enrolment Limitations**

Lecture classes are limited by room size and, in the case of introductory classes, by the number of sections offered. Additional size restrictions are imposed on laboratory classes because of equipment limitations and the much closer supervision required. Size limitations on second- and third-year laboratory classes are specified under the listings for those classes. Major and honours students are required to take second-year prerequisites for at least two third-year laboratory classes. Laboratory classes fill rapidly, and not all laboratory classes are offered every year.

**Degree Programmes**

The department offers the 15- and 20-credit BA or BSc Major degrees, and the BA or BSc Honours degree. While these programmes are described below, a more detailed and up-to-date description is available from the Psychology Information Desk in a pamphlet titled "A Student's Guide to Psychology Classes".

NOTE: Students who major in Psychology cannot use cross-listed Neuroscience classes for their minor or as electives.

**BA or BSc with Honours in Psychology**

Students enrolled in the honours programme must take at least nine and no more than eleven full credits beyond the introductory level in their area of concentration. Requirements for the Honours Degree in Psychology are listed below.

It is recommended that students in this programme take 2000.03 and 2500.03 and as many classes from the core programme (see the requirement below) as possible in the second year. Honours students are advised to complete Psychology 3500.06 prior to the fourth year. 4000-level seminars may be taken in the third and fourth years. 2000- or 3000-level classes may be taken at any time provided that the student meets the necessary prerequisites.

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). If you would like to be admitted to the honours programme or if you need advice in planning your programme, see an Honours Advisor. The

Psychology Department also offers a BSc honours degree in Neuroscience, described elsewhere in this calendar.

**Departmental Requirements**

**Classes required in Honours:**

- 1000 level: PSYO 1000.06 or 1010.06 or 1500.06 with a grade of "B-" or better
- 2000 level: PSYO 2000.03 (with a grade of B or better), 2500.03 plus four more classes at 2000 level. Of those four, no more than two may be taken in a single year from any one of the following groups:
  - A. 2170.03, 2270.03, 2370.03, 2470.03\*, 2570.03\*
  - B. 2080.03\*, 2090.03\*, 2220.03\*, 2280.03
  - C. 2130.03\*, 2150.03\*, 2190.03\*
  - D. 2140.03\*, 2160.03\*, 2460.03

\* These classes are prerequisites for 3000-level research laboratory classes. Major students must take at least two of those prerequisites in their second year, and those prerequisites must be selected from more than one of the groupings.

- 3000 level: PSYO 3500.06 plus two 3000-level credits, one of which is a full lab class from the following: 3040.06, 3051.03, 3082.03, 3091.03, 3122.03, 3130.06, 3160.03, 3775.03
- 4000 level: PSYO 4500.06 plus one credit from the 4th year seminars, 4000 to 4440.

One other credit at or above the 3000 level.

Qualifying Exam.

**Combined Honours**

It is possible for students to take an honours degree combining psychology with a related arts or science subject. In such a combined honours programme the student must take eleven full credits beyond the 1000-level in two areas of specialization, with not more than seven full credits in either area. The student in the combined honours programme normally writes a thesis (or the equivalent) in the elective major area in which the majority of classes are taken. Any student intending to take a combined honours degree should consult with the two respective departments to arrange programme details.

**Major in Psychology, BA or BSc**

The required classes for students who intend to major in psychology are listed below. Although there is considerable freedom of choice, the prospective major should plan carefully and obtain advice from one of the student advisors. At the Psychology Information Desk the student can be put in touch with an advisor.

**Math Requirement for BA**

Students majoring in Psychology with a BA degree are required to complete a half credit in Statistics (STAT 1060.03). Refer to the Student's Guide to Psychology Classes, available at the Psychology department.

**Departmental Requirements**

**Classes required in Advanced Major:**

- 1000 level: PSYO 1000.06 or 1010.06 or 1500.06 with a grade of "B-" or better
- 2000 level: PSYO 2000.03 plus 1.5 other credits at the 2000 level. Of those 1.5, no more than two may be taken in a single year from any one of the following groups:
  - A. 2170.03, 2270.03, 2370.03, 2470.03\*, 2570.03\*
  - B. 2080.03\*, 2090.03\*, 2220.03\*, 2280.03
  - C. 2130.03\*, 2150.03\*, 2190.03\*
  - D. 2140.03\*, 2160.03\*, 2460.03

\* These classes are prerequisites for 3000-level research laboratory classes.

Major students must take at least two of those prerequisites in their second year, and those prerequisites must be selected from more than one of the groupings.

- 3000 level: Four credits at or above the 3000 level of which one must be a lab class from the following: 3040.06, 3051.03, 3082.03, 3091.03, 3122.03, 3130.06, 3160.06, 3775.03

**Departmental Requirements**

**Classes required in Major:**

- 1000 level: PSYO 1000.06 or 1010.06 or 1500.06 with a grade of "B-" or better
- 2000 level: PSYO 2000.03 plus 1.5 other credits at 2000 level. No more than two of these may be taken in a single year from any one of the following groups:
  - A. 2170.03, 2270.03, 2370.03, 2470.03\*, 2570.03\*
  - B. 2080.03\*, 2090.03\*, 2220.03\*, 2280.03
  - C. 2130.03\*, 2150.03\*, 2190.03\*
  - D. 2140.03\*, 2160.03\*, 2460.03

\* These classes are prerequisites for 3000-level research laboratory classes. Major students must take at least two of those prerequisites in their second year, and those prerequisites must be selected from more than one of the groupings.

- 3000 level: Two credits at the 3000 level of which one must be a lab class from the following: 3040.06, 3051.03, 3082.03, 3091.03, 3122.03, 3130.06, 3160.06, 3775.03

**Other Programmes**

A variety of other programmes is available in cooperation with other departments. These programmes are designed to meet the needs of students whose specific interests may lie in areas other than those covered by the major and honours programmes offered by the department. Interested students should contact Dr. C. Moore for further information.

**Repeating Classes**

Students may repeat a class in which they have earned a passing grade only with written

permission from the department. Refer to Regulation 19.4 (Academic Regulations section of this calendar) for further information.

## Classes Offered

Not all of the classes listed below are offered every year. Please consult the current timetable on registration to determine if a class is offered. Classes marked A or B are half-credit classes, normally offered in one term only, not both.

**PSYO 1000.06R: Introduction to Psychology.** Students interested in the biological and social bases of behaviour in both humans and animals may complete the class with an understanding of how the senses work and of how, for instance, we learn to see; of the different kinds of memory, how they operate, and how they are affected by disorders of the brain; of the way in which hereditary and environmental factors interlock to produce these complex sequences of behaviour which distinguish one species from another; of the way in which children learn their native language; of how the form of an animal society can be predicted from a knowledge of a limited number of ecological facts. PSYO 1000 meets three hours a week for lectures. The grade is based on a number of examinations given at intervals throughout the year.

Instructor: Staff  
Format: Lecture 3 hours

**PSYO 1010.06R: Introduction to Psychology.** The content of PSYO 1010.06 is similar to that of PSYO 1000.06 but the manner of teaching is different. This class involves written work and is most suitable for students who are able to work on their own. In PSYO 1010.06 there are no lectures, but students meet individually with a tutor to discuss the material and have their quizzes assessed. The textbook and accompanying notes are divided into a number of units. Students prepare answers to a number of questions that are given with each unit. When they feel they have mastered the content of a unit, they write a quiz consisting of two short answer questions they have seen in advance. Then they review and discuss their quiz with their tutor. If the student's answer is judged to contain all the essential information in a clear and concise form, he or she proceeds to the next unit. If the tutor judges the student's knowledge of the unit to be inadequate, he or she must take another quiz on the same material. The student must pass a quiz in a unit before he or she can proceed to the next unit. The grade for the class is based entirely on the number of units the student completes within scheduled time limits during the academic year (for example, in 1994-95, 17 of 26 units for a D, 26 of 26 for an A). Students must meet their tutors during the scheduled class time.

A handout giving more information about this class can be picked up at the reception desk in the Psychology Department.

Instructor: Staff  
Format: Tutorial 2-3 hours

**PSYO 1500.06R: Introduction to Psychology.** The content of PSYO 1500.06 is similar to that of regular PSYO 1000.06 classes. The major difference is that there are in-class laboratories

in PSYO 1500.06. The purpose of these labs is to familiarize students with the methods of studying behavioural processes in an objective way. Students will serve as subjects in classroom studies to discover how perception and memory can be studied in a scientific manner. It is expected that one laboratory project will be written up each term. The demands imposed on students in PSYO 1500.06 will be comparable to that imposed in other introductory psychology classes.

Instructor: S. Nakajima  
Format: Lecture 3 hours

**PSYO 2000.03A: Methods in Experimental Psychology.** An introduction to the methodological tools research psychologists use to study behaviour. Emphasis is placed on experimental design and the legitimacy of inferences derived from experimental results. Lectures proceed from a discussion of the general problems of using the scientific method in studying behaviour to a more specific examination of the analytic procedures commonly employed to investigate human and animal behaviour. Students conduct and analyze in written reports a series of experiments in the laboratory that illustrate important concepts discussed in class. Students taking PSYO 2000.03 must attend the first lecture session. Due to enrolment limitations, preference will be given to students majoring in Psychology or Neuroscience, unless space is available after the first class.

Instructors: P. Dunham, R. Hoffman and J. Leary

Format: Writing Intensive, lecture 2 hours, lab 2 hours

Prerequisite: A grade of B- or better in PSYO 1000.06 or 1010.06 or 1500.06

**PSYO 2080.03A or B: Social Psychology.** Some major issues in social psychology are introduced through a critical analysis of theories and research in which the actions of individuals are seen as products of their social context. Both the lectures and the textbook are intended to promote a close and sceptical evaluation of our knowledge of our obedience and rebellion, our affections and hostilities, our willingness to help and injure, our attempts to explain ourselves and others, our erotic orientations and gender roles. Questions on such matters are given to the students to work on out of class and the examinations are composed of some of those questions.

Instructor: M. Sullivan  
Format: Lecture 3 hours  
Prerequisite: PSYO 1000.06 or 1010.06 or 1500.06 (with a grade of B- or better)

**PSYO 2090.03A or B: Developmental Psychology.** People change with age. This class examines the changes that occur in humans from conception through adolescence. Biological, social, cognitive, and linguistic aspects of development are considered. Theory, research, and practical implications are integrated throughout the class.

Instructor: J. Fentress  
Format: Lecture 3 hours  
Prerequisite: PSYO 1000.06 or 1010.06 or 1500.06 (with a grade of B- or better)

**PSYO 2130.03A or B: 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:** B. Earhard

**Format:** Lecture 3 hours

**Prerequisite:** PSYO 1000.06 or 1010.06 or 1500.06 (with a grade of B- or better)

**Cross-listing:** NESC 2130.03

**PSYO 2140.03A or B: Learning.** 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, logical 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:** V. LoLordo

**Format:** Lecture 3 hours

**Prerequisite:** PSYO 1000.06 or 1010.06 or 1500.06 (with a grade of B- or better)

**Cross-listing:** NESC 2140.03

**PSYO 2150.03A or B: Perceptual Processes.** Perception deals with the way in which our senses provide us with information about our environment. This class focuses on the process by which sensory experiences are coded, how they are interpreted by the nervous system, and how experience modifies perception.

**Instructor:** D.E. Mitchell, S.R. Shaw

**Format:** Lecture 3 hours

**Prerequisite:** PSYO 1000.06 or 1010.06 or 1500.06 (with a grade of B- or better) or BIOL 1000.06

**Cross-listing:** NESC 2150.03

**PSYO 2160.03A or B: Animal Behaviour.** An examination of the natural and, to a lesser extent, the laboratory behaviour of several intensively-studied groups of animals. Foraging and communication, predation and defense, sex and aggression, homing and migration are studied as they occur in such organisms as bees and ants, moths, bats, various birds, and chimpanzees.

**Instructor:** B.R. Moore

**Format:** Lecture 3 hours

**Prerequisite:** PSYO 1000.06 or 1010.06 or 1500.06 (with a grade of B- or better) or BIOL 1000.06

**Cross-listing:** NESC 2160.03

**PSYO 2170.03A or B: Hormones and Behaviour.** An introduction to the endocrinological bases of mammalian social behaviour. Emphasis is on the mechanisms by which the hormones of the hypothalamus, pituitary gland, gonads and adrenal gland control 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; the pineal gland; neuro-transmitters; pheromones; crowding and social stress.

**Instructor:** R.E. Brown

**Format:** Lecture 3 hours

**Prerequisite:** PSYO 1000.06 or 1010.06 or 1500.06 (with a grade of B- or better) or BIOL 1000.06.

**Cross-listing:** NESC 2170.03

**PSYO 2190.03A or B: Language and the Brain.** An introduction to the processes in the use of language by human beings. The main topics are: 1) the structure of the language; 2) the function of language; 3) the process of comprehension; 4) the process of production; 5) acquisition of language; and 6) language disorders and brain damages.

**Instructor:** M. Yoon

**Format:** Lecture 3 hours

**Prerequisite:** PSYO 1000.06 or 1010.06 or 1500.06 (with a grade of B- or better)

**Cross-listing:** NESC 2190.03

**PSYO 2220.03A or B: 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:** J. Connolly

**Format:** Lecture 3 hours

**Prerequisites:** PSYO 1000.06 or 1010.06 or 1600.06 (with a grade of B- or better)

**Exclusion:** Credit will not be given for both PSYO 2220.03 and PSYO 3121.03.

**PSYO 2270.03A or B: Human Neuropsychology.** This class explores not only normal but also abnormal brain function, as revealed by the consequences of trauma, disease, and surgical intervention. Aphasia, epilepsy, the role of brain chemicals in behaviour, cerebral asymmetry, and localization of brain function are examples of the topics covered.

**Instructor:** M. Ozier

**Format:** Lecture 3 hours



**Prerequisite:** PSYO 1000.06 or 1010.06 or 1500.06 (with a grade of B- or better)

**Cross-listing:** NESC 2270.03

**PSYO 2280.03A or B: Personality.** In this class a person is treated as a unified whole. Personality deals with questions such as: Is a science of persons possible? What forms can it take? Are there types of personalities, or is each individual's personality unique? Is an individual's life history an expression of his or her personality, or is personality description merely a summary statement of behaviour whose cause lies elsewhere?

**Instructor:** J. Barresi

**Format:** Lecture 3 hours

**Prerequisite:** PSYO 1000.06 or 1010.06 or 1500.06 (with a grade of B- or better)

**PSYO 2370.03A or B: 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. Nakajima

**Format:** Lecture 3 hours

**Prerequisite:** PSYO 1000.06 or 1010.06 or 1500.06 (with a grade of B- or better)

**Cross-listing:** NESC 2370.03

**PSYO 2460.03A or B: Adaptive Behaviour.** Adaptation between organisms and their environments is a common theme that can be used to link research in the behavioural and biological sciences. In this class three basic issues are addressed: (1) How do we evaluate the balance among internal and external events that define adaptive behaviour? (2) How do we separate individual properties of adaptive control systems while also determining rules by which these properties fit together? (3) How do genetic substrates and developmental events combine to set the boundaries of adaptive performance? Answers to these questions rest upon the dual tendencies for adaptive systems to be both interactive and self-organized. Underlying issues here are examined with current data from behavioural and biological disciplines, in which different specific adaptations, different levels of organization and different time frames of operation are compared.

**Instructor:** J. Pentress

**Format:** Lecture 3 hours

**Prerequisite:** PSYO 1000.06 or 1010.06 or 1500.06 (with a grade of B- or better) or BIOL 1000.06

**PSYO 2470.03A: Introduction to Neuroscience I. Brain Systems.** This lecture class is intended to provide an introduction to the gross structures and functions of the brain. The class treats the brain as a set of neural systems, each with relatively well-defined anatomical substrates and functional roles. The class examines each neural system one at a time, exploring its anatomical architecture, connections and function. These systems may include the peripheral nerves, the mechanisms

of sensation and motor control, the cranial nerves, the brainstem, cerebral cortex and cerebellum. For each of the neural systems, the class examines some of the clinical consequences of injury or pathology.

Introduction is also provided to recent advances in brain imaging and brain chemistry. This class does not cover cellular or molecular mechanisms of brain function in any detail; students wishing explicit instruction in those fields should see the Calendar entries for "Introduction to Neuroscience II. Cellular Neurobiology" and/or "Molecular Neuroscience", respectively.

**Instructor:** D. Mitchell, D. Phillips, W. Tatton

**Format:** Lecture 3 hours

**Prerequisite:** PSYO 1000.06 or 1010.06 or 1500.06 (with a grade of B- or better) or BIOL 1000.06

**Exclusion:** Credit will not be given for both PSYO/NESC 2071.03 and PSYO/NESC 2470.03.

**Cross-listing:** NESC 2470.03

**PSYO 2500.03B: Contemporary Research Problems in Psychology.** As a continuation of PSYO 2000.03, this class introduces prospective honours students to the design, execution and analysis of independent research. Each student works with a supervisor on a one to one basis preparing a research project which the student then conducts. The lecture periods are devoted to an introduction to the design and statistical analysis of experiments. In the lab meetings, the student will give oral reports on the proposed research. At the end of the class formal oral reports will be given in an all-day conference for the entire class. A formal written report on the research is submitted at the end of the term.

This class is a preparatory class for students planning to do an Honours degree in psychology, and admission will be restricted to students whose academic record indicates an ability to perform at the Honours level. No one will be admitted until they have completed PSYO 2000.03 with a grade of B or better; a high level of performance in other Psychology classes along with an overall average of B+ (GPA 3.30) will normally be expected.

#### SIGNATURE REQUIRED

**Instructor:** J. Leary, R. Hoffman

**Format:** Lecture 2 hours, lab 2 hours

**Prerequisite:** PSYO 2000.03, with grade of B or better and permission of the instructor

**PSYO 2570.03A or B: Introduction to Neuroscience II. Cellular Neurobiology.** Building on the knowledge of holistic aspects of brain function gained in PSYO 2470.03, this class explores the neuronal basis of activity in all nervous systems. Starting with an analysis of the structure of neurons, the function of nerve cells will be explored with respect to the ionic and molecular basis of resting potentials and of electrical activity in nerve cells; synaptic transmission; the release and postsynaptic action of synaptic transmitters; aspects of the neurochemistry of synaptic transmitters and of drug action; and glial cells. Cellular phenomena relevant to neurological dysfunction will be discussed.

**Instructor:** I.A. Meinertzhagen, S.R. Shaw

**Format:** Lecture 3 hours  
**Prerequisites:** PSYO/NESC 2470.03 or instructor's consent  
**Exclusion:** Credit will not be given for both PSYO/NESC 2072.03 and PSYO/NESC 2570.03  
**Cross-listing:** NESC 2570.03

**PSYO 3000.06R: Independent Research in Modern Psychology.** Primarily for honours students wishing further experience and understanding of psychological research. A student in the class chooses a faculty member who serves as an advisor throughout the academic year, and under whose supervision independent research is conducted. Before registering for this class, a student must provide the instructor of the class with a letter from the faculty member who has agreed to supervise the course of study. Class approval will not be given until this is done.

**SIGNATURE REQUIRED**

**Instructor:** D. Mitchell  
**Format:** Lab 4 hours  
**Prerequisites:** PSYO 2000.03 and previous or concurrent enrolment in two other 3000-level classes; and instructor's consent  
**Cross-listing:** NESC 3000.06

**PSYO 3010.06R: 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 the material assigned to PSYO 1010.06 at a level which enables him or her to instruct introductory students in individual tutorials. The class is designed primarily for honours students, and prospective students are advised to consult the instructor in the spring of the preceding year.

**SIGNATURE REQUIRED**

**Instructor:** Staff  
**Format:** Lecture 2 hours, tutorial 3 hours  
**Prerequisite:** PSYO 2000.03, advanced classes in psychology and instructor's consent

**PSYO 3040.06R: Learning and Motivation.** An examination in detail of selected topics within the field of learning and conditioning. The emphasis is on identification and clarification of fundamental processes, their boundaries, biological significance and evolutionary history.

**Instructor:** B.R. Moore  
**Format:** Lecture 3 hours, research lab 2 hours  
**Prerequisite:** PSYO 2000.03 and PSYO/NESC 2140.03

**PSYO 3051.03A or B: Sensory Neuroscience I. Vision.** Because our visual perceptions are rich, varied and with few exceptions, arise quickly, fluently 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:** D. Mitchell  
**Format:** Lecture 3 hours, lab 2 hours  
**Prerequisite:** PSYO 2000.03, and PSYO/NESC 2150.03 or 2470.03  
**Cross-listing:** NESC 3051.03  
**Exclusion:** Credit will not be given for both PSYO/NESC 3050.06 and PSYO/NESC 3051.03.

**PSYO 3052.03A or B: Sensory Neuroscience II. Hearing and Speech.** Hearing and speech are two behavioural capacities of fundamental importance to normal human communication. This lecture class is designed to provide a basic understanding of the peripheral and central neural mechanisms of hearing, and of some psychological and physiological processes involved in speech production and speech perception. The class is intended for those students anticipating more advanced training in neural mechanisms of hearing, speech science, human communication disorders and/or audiology. The class emphasizes normal hearing and speech mechanisms, but will address pathology where evidence from pathological subjects is pertinent to understanding normal function. **Class content:** introductory acoustics; structure and function of the outer and middle ears; structure and function of the cochlea; hair cell physiology and sensory transduction; coding of simple and complex sounds in the auditory nerve; sound localization mechanisms as an example of the correspondence between the physical properties of the stimulus, neural sensitivity and behavioural performance; theories of speech production; theories of speech perception; acoustic and linguistic contributions to speech perception.

**Instructor:** D. Phillips  
**Format:** Lecture 3 hours  
**Prerequisites:** PSYO 2000.03, PSYO/NESC 2150.03 or 3051.03; PSYO/NESC 2470.03 is strongly recommended  
**Exclusion:** Credit will not be given for both PSYO/NESC 3150.03 and PSYO/NESC 3052.03  
**Cross-listing:** NESC 3052.03

**PSYO 3075.03A or B: Physiological Psychology.** In Physiological Psychology we study current theory and research about the relation between brain function and behaviour. More specifically, the focus is upon the psychological consequences of physiological events in the nervous system. Among the topics included might be selections concerning brain processes underlying: hunger and thirst, sexuality and reproduction, arousal and attention, memory systems, movement and motor control, tactile senses and pain perception, states of consciousness, emotion and stress, speech and language.

**Instructor:** M. Ozier  
**Format:** Lecture 3 hours

**Prerequisite:** PSYO 2000.03 and one of PSYO/NESC 2470.03, 2270.03, 2370.03

**Cross-listing:** NESC 3075.03

**PSYO 3082.03A or B: Experimental Social Psychology.** The primary goal of this class is to develop students' skill level in empirical analysis in social psychology. We examine how the tools of science can be used to help us understand more about social thinking and social behaviour. The class is primarily a skills class; in other words, emphasizing active student learning rather than didactic teaching. Students will be required to complete two research projects during the term. The projects will involve testing subjects, coding data, computer data analysis, and report writing. Familiarity with computer-based statistical analysis and text processing is strongly recommended.

**Instructor:** M. Sullivan

**Format:** Lecture 1 hour, research lab 2 hours

**Prerequisites:** PSYO 2000.03 and 2080.03

**PSYO 3091.03A or B: 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:** C. Moore

**Format:** Lecture 2 hours, research lab 1 hour

**Prerequisite:** PSYO 2000.03 and 2090.03

**PSYO 3092.03A or B: 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:** C. Moore

**Format:** Lecture 3 hours

**Prerequisites:** PSYO 2000.03 and 2090.03

**PSYO 3122.03A or B: Methods in Experimental Clinical Psychology.** This class focuses on the methods used in the experimental study of abnormal human behaviour. Students learn how to conduct research on topics in applied clinical psychology. Lectures proceed from a discussion of the general problems of using the scientific method in studying abnormal behaviour, to a more specific examination of the analytic procedures commonly employed to investigate topics in clinical psychology. Students conduct a series of research projects in the laboratory by serving both as subjects and experimenters. These studies will illustrate some of the important concepts discussed in class. Students are required to analyze the results of these studies in written lab reports. Due to enrolment limitations, this class will be limited to students majoring in Psychology, unless space is available after the first class.

**Instructor:** S. Stewart

**Format:** Lecture 2 hours; lab 2 hours

**Prerequisite:** PSYO 2000.03 and 2220.03 or instructor's consent

**PSYO 3129.03A or B: Childhood Psychopathology.** This class examines a wide range of behaviour disorders in children (e.g., reading disability, autism, attention deficit disorder). The goal is to gain a better understanding of the nature of these disorders by exploring empirical findings from both the social and physical sciences. Discussion will focus on problems of definition, and the relative merits of different theoretical accounts. Data on therapeutic outcome and ethical issues regarding intervention will also be considered.

**Instructor:** P. McGrath

**Format:** Lecture 3 hours, proficiency lab

**Prerequisites:** PSYO 2000.03 and 2220.03

**PSYO 3130.06R: Cognitive Psychology.** Cognitive psychology deals with how we gain information about the world, how such information is represented and transformed as knowledge, how it is stored and how that knowledge is used to direct our attention and behaviour. It involves the processes of perception, memory, attention and thinking. This class focuses not only on what is known about human cognition, but also on techniques cognitive scientists have developed to discover this knowledge.

**Instructor:** P. McMullen

**Format:** Lecture 2 hours, research lab 2 hours

**Prerequisites:** PSYO 2000.03 and either PSYO/NESC 2130.03, 2150.03, 2270.03 or instructor's consent

**Cross-listing:** NESC 3130.06R

**PSYO 3160.06R: Ethology.** Ethology is the biological study of behaviour. It uses psychology, genetics, physiology, ecology and evolutionary theory to solve problems in the development, function and causation of behaviour across all animal species. These diverse approaches to the study of animal behaviour are presented in naturalistic and experimental situations. In laboratory exercises qualitative and quantitative records of behaviour are made in the field and in the laboratory. There are several group research projects (first term) and an individual research project (second term).

**Instructor:** J. Fentress

**Format:** Lecture 2 hours, research lab 2 hours

**Prerequisites:** PSYO 2000.03 and PSYO/NESC 2160.03, or BIOL 1000.06 and instructor's consent

**Cross-listing:** NESC 3160.06

**PSYO 3197.03A or B: Human Communication.** An introduction to the cognitive and social processes of communication among human beings by the use of language or other symbols as abstract mental tools. The main topics are: (1) the nature of linguistic signs; (2) mental representation; (3) deixis; (4) implicature; (5) presupposition; (6) speech acts; and (7) structure of conversation.

**Instructor:** M. Yoon

**Format:** Lecture 3 hours

**Prerequisite:** PSYO 2000.03 and PSYO/NESC 2190.03 or 2130.03

**PSYO 3220.03A or B: Clinical Psychology.** An introduction to the use of psychological principles to define, assess and treat abnormal human behaviour. Topics covered include: the nature and history of clinical psychology; training in clinical psychology; research methods; psychological functions and dysfunctions; assessment methods; and intervention techniques. The functions of clinical psychologists in various settings such as general hospitals, mental health clinics, industry and the justice system are presented. Attention is given to issues of diagnosis from both psychiatric and psychological perspectives. Assessment of personality as well as intellectual and neuropsychological functioning is discussed. Intervention techniques such as behavioural and cognitive therapies are examined. The emphasis of the class is on the experimental psychology foundations upon which clinical psychology rests; experimentally verified assessment and intervention procedures are given particular attention. Different theoretical orientation to abnormal behaviour (e.g. the medical model and the behavioural/psychological model) are examined.

**Instructor:** S. Stewart  
**Format:** Lecture 3 hours  
**Prerequisite:** PSYO 2000.03 and 2220.03  
**Exclusion:** Credit will not be given for both PSYO 2120.03 and PSYO 3220.03.

**PSYO 3260.03A or B: Biological Rhythms.** The temporal structure of animal and human physiology is governed by both homeostatic mechanisms and by a system of biological clocks. These internal clocks generate rhythms with various periods in virtually every physiological and behavioural system. Daily (circadian) clocks are the most prominent; they generate rhythms in sleep, reproduction, intellectual performance and many other functions. This class examines the nature of these biological clocks and their physiological substrates, with an emphasis on the neural mechanisms involved in rhythm generation and synchronization in a variety of species. It also explores the hypothesized role of circadian mechanisms in sleep disorders, jet lag and depression.

**Instructor:** B. Rusak  
**Format:** Lecture 3 hours  
**Prerequisite:** PSYO 2000.03, or BIOL 1000.06  
**Cross-listing:** NESC 3260.03

**PSYO 3270.03A or B: Developmental Neuroscience.** This class introduces students who are already familiar with the structural organization and functional properties of the mature nervous system to aspects of neural development, especially at the cellular level. The first part of the class will link the early events of neural development to general embryonic development. Cell determination, pattern regulation, cell production, cell-lineage analysis, and neuronal differentiation, movement and migration will be discussed. Special attention will then be given to later developmental events such as neuronal growth cones, cell death, growth factors, neuron-neuron interactions and synapse formation using invertebrate and vertebrate examples.

**Instructor:** M. Yoon  
**Format:** Lecture 3 hours  
**Prerequisite:** PSYO 2000.03 and PSYO/NESC 2470.03 and 2570.03  
**Cross-listing:** NESC 3270.03

**PSYO 3370.03A or B: Neuroscience Laboratory I.** The two classes 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, within which the exact distribution of experimental approaches may vary from year to year according to availability of equipment and material, and numbers enrolled. Usually, electrical recording methods from several types of preparation are emphasized in 3370.03, while detailed neuroanatomically-based approaches are favoured in 3371.03. Regularly scheduled labs with students working in groups of 2 or 3 under supervision are supplemented by occasional lectures, in both classes. Students become familiar with electrical recording and stimulation methods and related techniques, currently using both sensory and motor system preparations. Neuroanatomical analysis is introduced by way of techniques usually selected from the following: Golgi impregnation of neurones, immunocytochemistry, dye-tracing of connections, and electronmicroscopy of the visual system or central nervous system. Lab II (3371.03) usually runs in the second term for selected, advanced students, building upon foundations laid in 3370.03 but using different practical approaches.

#### SIGNATURE REQUIRED

**Instructor:** S.R. Shaw  
**Format:** Lab 3 hours  
**Prerequisites:** PSYO 2000.03 and PSYO/NESC 2470.03 and 2570.03, or 3270.03, and instructor's consent  
**Cross-listing:** NESC 3370.03

**PSYO 3371.03A or B: Neuroscience Laboratory II.** For a description of this neuroscience lab class, see the entry under 3370.03 above; usually, 3371.03 is coordinated closely with 3370.03.

**Instructor:** I.A. Meinertzhagen  
**Format:** Lab 3 hours  
**Prerequisites:** PSYO/NESC 3370.03 and instructor's consent  
**Cross-listing:** NESC 3371.03

**PSYO 3390.03A or B: Cognitive Development.** In this class we trace the development of the child's knowledge from birth to adolescence. Piaget's theory provides the background for the study of recent progress in our understanding of children's concepts of the physical world.  
**Instructor:** Staff  
**Format:** Lecture 3 hours  
**Prerequisites:** PSYO 2000.03 and 2090.03 or instructor's consent

**PSYO 3500.06R: Statistical Methods in Psychology.** This class is primarily intended for honours students, but other students may be admitted with the consent of the instructor. This class is designed to enable students to understand parametric and nonparametric statistical procedures and their descriptive and inferential application to behavioural research. In addition, students learn to execute computer

programmes for data organization and analysis. Class work includes lecture, seminar, and statistical/computer assignments.

Instructor: Staff  
 Format: Lecture 2 hours, skills lab 2 hours  
 Prerequisite: PSYO 2000.03 and 2500.03, and instructor's consent

**PSYO 3580.06R: History of Psychology.** In writings dating from antiquity to the early years of the 20th century, we explore the understanding of such abiding sources of our curiosity as individual, racial and sexual differences, the distinctions between man and animal, the sources of odd actions, the nature of the brain and of vision.

Instructor: J.W. Clark  
 Format: Seminar 3 hours  
 Prerequisite: PSYO 2000.03 or instructor's consent

**PSYO 3760.03A or B: Neuroethology.** Neuroethology is the study of the neural bases of animal behaviour. The class will emphasize cellular approaches toward understanding the integrative mechanisms of the nervous system which underlie complex behaviours. Feature detectors, command systems and motor programme generators will be examined in depth using examples from vertebrate preparations. Cellular bases of higher order functions such as motivation, learning and choice will be explored if time permits.

Instructor: Staff  
 Format: Lecture 3 hours  
 Prerequisites: PSYO 2000.03 and PSYO/NESC 2160.03 or 2447.03 or BIOL 2020.03 or instructor's consent

Cross-listing: NESC 3760.03

**PSYO 3770.03A or B: Behavioural Neuroscience.** Behavioural neuroscience concerns itself with the neural mechanisms underlying a variety of behavioural phenomena. Its subject matter includes the neural mechanisms controlling a variety of regulatory and motivational systems, including: feeding, drinking, reward, sexual and parental behaviour, temperature regulation, sleep and waking, motor and sensory system function, learning and other forms of behavioural plasticity, memory, and the physiological mechanisms underlying behavioural disorders. Students should be familiar with experimental research methods, and have some background in biological or neural aspects of psychology.

Instructor: B. Rusak  
 Format: Lecture 3 hours  
 Prerequisite: PSYO 2000.03, and PSYO/NESC 2470.03  
 Exclusion: Credit will not be given for PSYO/NESC 3070.06 or 3071.06 and 3770.03.

Cross-listing: NESC 3770.03

**PSYO 3775.03A or B: 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.

Instructor: B. Rusak  
 Format: Lab 3+ hours  
 Prerequisite: PSYO/NESC 3770.03 and instructor's consent  
 Exclusion: Credit will not be given for both PSYO/NESC 3070.06 and 3775.03

Cross-listing: NESC 3775.03

**PSYO 3970.03A or B: Molecular Neuroscience.** This class will continue ideas introduced in PSYO 2570.03 on the molecular basis of neuronal function and of the role of gene expression in the functioning and development of the nervous system. We will introduce the role of G-proteins and their receptors in neuronal signalling, and of second messengers in neuronal function and development. We will extend into areas of neuronal development, especially of gene regulation in the nervous system, transcription and transcription factors, as well as the molecular control of neural development, especially through the control of cell differentiation and the outgrowth of axons in the nervous system and the specificity of their connections, and neuron-target interactions, especially through the role of trophic factors.

Instructor: I.A. Meinertzhagen  
 Format: Lecture 3 hours  
 Prerequisite: PSYO/NESC 2570.03  
 Cross-listing: NESC 3970.03

#### 4000-Level Seminars

These seminars (4000-4440) are intended for 3rd and 4th year honours students. Third-year students are eligible provided they obtain permission from the instructor, and the needs of all the fourth-year honours students are met. The topics covered in these classes vary from year to year. Consult the department for the specific class descriptions.

**PSYO 4000.03A or B: Senior Seminar.** This class is an individually tailored reading or study class. It is designed to allow a student to focus on a particular issue, or set of related issues, that are not part of the regular programme. Students may register for this class if they can find a staff member who is prepared to supervise the course of study. Before attempting to register for this class, a student must provide the chairperson of the Undergraduate Programme Committee with: (a) a one page description of the proposed course of study, (b) a letter from a staff member agreeing to supervise the programme outlined. A copy of the completed project, and a mark, must be submitted to the Undergraduate Programme Committee chairperson by 15/Dec or 15/Apr.

#### SIGNATURE REQUIRED

Instructor: Staff  
 Format: 2 hours  
 Cross-listing: NESC 4000.03

**PSYO 4001.03A or B: Contemporary Issues in Psychology.**

Instructor: Staff  
 Format: 2 hours

**PSYO 4040.03A or B: Learning Applications in Clinical and Social Psychology.**

Instructor: Staff  
 Format: 2 hours

**PSYO 4050.03A or B: Topics in Perception.** See class description for NESC 4050.06 in the Neuroscience section of this calendar.

**PSYO 4070.03B: Neuroscience Seminar.**

Instructor: Staff  
 Format: 2 hours  
 Prerequisites: PSYO 2470.03, 2570.03 or 3270.03, or instructor's consent  
 Cross-listing: NESC 4070.03, ANAT 5070.03

**PSYO 4080.03A or B: Topics in Social Psychology and Personality.**

Instructor: Staff  
 Format: 2 hours

**PSYO 4090.03A or B: Development of Social Behaviour.**

Instructor: Staff  
 Format: 2 hours

**PSYO 4120.03A or B: Topics in Clinical Psychology.**

Instructor: Staff  
 Format: 2 hours

**PSYO 4130.03A or B: Topics in Human Information Processing.**

Instructor: Staff  
 Format: 2 hours

**PSYO 4140.03A or B: Animal Learning Topics.**

Instructor: Staff  
 Format: 2 hours

**PSYO 4160.03A or B: Topics in Behavioural Biology.**

Instructor: Staff  
 Format: Writing Intensive 2 hours  
 Cross-listing: NESC 4160.03

**PSYO 4230.03A or B: Human Performance Topics.**

Instructor: Staff  
 Format: 2 hours

**PSYO 4440.03A or B: Topics in Infant Development.**

Instructor: Staff  
 Format: 2 hours

**PSYO 4500.06B: Honours Thesis.** The purpose is to acquaint the student with a current experimental problem and the related research procedures in experimental psychology. Each student works with a staff member who advises the student about research in the area of interest, and closely supervises an original research project carried out by the student. The students meet together occasionally throughout the year to describe their proposed research and their progress. Each student must submit a formal written report of the completed research in APA style. The final grade is based upon the originality and skill displayed in executing the project, with emphasis upon the submitted report and an oral presentation.

Instructor: J.W. Clark and Staff  
 Restriction: Restricted to honours students in their graduating year  
 Cross-listing: NESC 4500.06

# School of Public Administration

Location: 6th Floor, 6152 Coburg Road  
Halifax, N.S. B3H 3J5  
Tel: (902) 494-3742  
Fax: (902) 494-7023

## Director of the School

A. Marguerite Cassin

## Undergraduate Advisor

A. Marguerite Cassin

## Faculty

### Professors

Peter Aucoin, BA (SMU), MA (Dal), PhD (Queen's)  
Herman Bakvis, BA (Queen's), MA, PhD (UBC)  
M.P. Brown, BA (Mt.A.), MA (DAL), PhD (Tor)  
J.D. McNiven, MA, PhD (Mich)  
D.H. Poel, BA (Calvin), MA (W. Mich), PhD (Iowa)

### Associate Professors

F.K. Siddiq (Associate Director & Graduate Co-ordinator), BA, MA (Dhaka), PhD (Dal)

### Assistant Professors

A.M. Cassin, BA (Man), MA (UBC), PhD (Tor)

### Adjunct Professors

A. O'Brien, BSc, LLD (Dal)  
A.P. Pross, BA, MA (Qu), PhD (Tor)  
T. Regan, BA (Tor), MA, PhD (Duke),  
(Department of Sociology, Acadia University)

### Special Lecturers

R. Carroll, BBA, BEd (St. FX), MBA (Dal), CGA  
C. McQueen, BSc (Tor), MA (Queen's), MPA (Dal)

## Introduction

The School of Public Administration prepares students for careers in government agencies, public corporations, social service agencies, and para-public organizations. It imparts a knowledge of the substance and processes of public policy and of the machinery of government. It provides an appreciation of, and training in, the techniques of political and economic analysis and evaluation. It develops a capacity for financial and personnel management. It fosters professional attitudes appropriate to public service.

The School's aim is to promote effective, efficient and accountable management - management of government and management in government. Public managers today must grapple with both new and traditional problems. The public demands economy, effectiveness, efficiency and accountability from the public service. To meet these demands, public managers require an appreciation of, and

broad professional training in, the most up-to-date, administrative practices and methods.

These needs are addressed through two graduate programmes - the MPA and the GDPA - and the undergraduate Diploma in Public Administration. All three programmes are interdisciplinary in nature and are built around the principle that, though administration is a general, or generic, process, the environment of the public sector is so distinct that public administration should be treated as a field worthy of study in its own right.

## The Diploma in Public Administration (DPA Programme)

The DPA is intended primarily for public servants who do not have an undergraduate degree. The programme consists of undergraduate classes designed to provide a general introduction to the structure and organization of government and the principles of public administration.

### Requirements (1 year)

- Total credits required - 5
- Required GPA for graduation - 1.70
- Required classes
  - POLI 2200.06
  - COMM 1101.03/1102.03 or POLI 3494.06
  - COMM 2301.03, 2302.03
  - PUAD 2249.03, 2250.03
  - 1 elective approved by the school

The School is presently looking at revamping the course requirements for the Diploma in Public Administration. Over the past few years students have been having difficulty registering in some of the required classes and therefore it has been necessary to structure students' programmes around classes that are available. By revamping the programme we hope to eliminate this problem.

## Classes Offered

**PUAD 2249.03A: Organization Theory for Public Administration.** This class introduces students to the study and practice of public administration by way of an examination of the structure, design and behaviour of the complex organizational systems through and within which public administration is practised. It outlines the principal theoretical issues inherent in public administration insofar as the administration of public affairs relates to the ways in which governments are organized, and organize themselves, to perform their multiple and varied functions. The class focuses on public administration but it also draws upon literature that encompasses both private and public administration with relevant comparisons and differences considered where appropriate. In so doing, it acknowledges not only the degree to which organizational theories themselves are generic to all forms of administration but also the phenomena of non-profit organizations in the private sector and commercial enterprises in the public sector.

The example, illustrations and cases used for the consideration of actual organization structure, design and behaviour are drawn primarily from the Canadian experience of public administration at all three levels of government.

Instructor: H. Bakvis  
Format: Seminar 2 hours

**PUAD 2250.03B: Management in the Public Sector.** This class is designed for undergraduate students in Public Administration, Commerce, Political Science and the Health Professions who require an introduction to the principles and methods used in the operation of government organizations. The class introduces the student to the management of Canadian government organizations at the federal, provincial and municipal levels. Students are shown how managers in departments work within a framework of government-wide policies of personnel and financial management. In order to understand those policies the class reviews the recent development of public sector management in Canada and then looks in detail at the processes of personnel and financial management.

Instructor: P. Brown  
Format: Seminar 2 hours

opportunity to qualify for admission to the GDPA and MPA degrees. Individuals with a minimum of 10 years work experience in an administrative position who have (1) completed a full year of university study and (2) achieved a professional designation (e.g., the Certificate in Municipal Administration from Henson College) can be considered.

Successful completion of the Diploma, with an average grade of B+ and with no grade below B-, may constitute a basis for a recommendation from the School for admission to the Faculty of Graduate Studies.

Individuals interested in enrolling in the Special Diploma Programme should consult the School before filing applications and should include with their applications a resume and a statement of their reasons for wishing to undertake the programme.

## Application Procedure

Application forms are available from the Office the Registrar of Dalhousie University. Applications should be submitted as early as possible, and not later than June 1 in the academic year in which studies are to commence.

Further information on the Diploma or other programmes of the School of Public Administration may be obtained from: Administrative Secretary, School of Public Administration, Dalhousie University, Halifax, Nova Scotia, B3H 3J5, (902) 494-3742.

## Part-time Study

Students may complete the Diploma through part-time study at the rate of not more than two credits during the academic year. One further credit can be taken in each summer session.

## Credits

Normally, four of the five credits in the programme must be taken at Dalhousie University and at least three of the five credits after the student has registered in the programme.

Classes taken for the Diploma may be credited toward a Bachelor's degree, but a student must complete at least five of the subjects required for the degree after the awarding of the Diploma.

## The Special Diploma Programme

The Special Diploma programme is a course of studies which give students who do not satisfy the general requirements for admission to the Faculty of Graduate Studies an



# Recreation, Physical & Health Education

Location: 6230 South Street, Halifax, N.S.  
B3H 3J5  
Telephone: (902) 494-2152  
FAX: (902) 494-5120

## Academic Staff

### Director and Associate Professor

T.L. Maloney, BPE, BEd (Alta), MA (Western), PhD (Alta)

### Professor Emeritus

E.G. Belzer Jr., BS (West Chester State Coll), MS (Maryland), PhD (Illinois)

### Professors

R.F. Beazley, BA, BEd (Acadia), BPE (McM), MPE (Dal), EdD (Tennessee)

L.B. Holt, BS, MS (Springfield Col.), PhD (Southern Illinois)

B. Keddy, BScN (MSVU), MA, PhD (Dal), RN, major appointment in the School of Nursing

L. Makrides, MCSP, BPT (Sask), MSC (Ottawa), PhD (MCM), Major appointment in school of Physiotherapy

K. Najrudeam NCSP, BPT (Sask), MSc (Ottawa), PhD (McM), major appointment in the School of Physiotherapy

A. Richards, Dip. PE (Carnegie School of Phys Ed, England), Teach. Cert. (Trent Park Col), MSc (Dal), EdD (Colorado)

J.F. Singleton, BA (Waterloo), MS (Penn State), PhD (Maryland)

A.J. Young, BS (West Chester State Col), MS, PhD (Maryland)

### Associate Professors

P.D. Campagna, BPHE (Windsor), BEd (Queen's), MEd (SUNY), PhD (Alberta)

G.C.B. Elder, DipEdAdv (St. Mary's Col., U London), MEd (Georgia Southern), PhD (McM)

N.M. Ipson, BA, MS, PhD (Brigham Young)

N.H. Kemp, DLC (Loughborough Col., England), BS(PE), MS (Oregon)

R.L. Kirby, MD (Dal), FRCP(C), major appointment in the Department of Medicine

C.L. Kozey, BPE (UNB), MSc (Waterloo), PhD (Dal), major appointment in the School of Physiotherapy

E. Lambie, BSc(Home Ec) (Acadia), MPH(Nutrition) (Mich), Pdt, major appointment in the School of Nursing

R.F. Lyons, BA (Dal), MEd (Xavier), PhD (Oregon)

L.A. MacGregor, BPE (Dal), MS (Illinois), Co-ordinator of the Field Experience Program in Physical Education

T.L. Maloney, BPE, BEd (Alberta), MA (Western), PhD (Alberta)

J.F. McCabe, BPE, BA (UNB), MSc, EdD (Tenn)

L.L. McIntyre, MD, MHS (Tor), FRCP(C), Dean of the Faculty of Health Professions

C.A. Putnam, BPE (Man), MS (Wash), PhD (Iowa), Graduate Associate Director

P.D. Richards, Teach. Cert. (Trent Park Col), Laban Arts of Movement Centre Certificate (England), MA (Colorado)

C.A. Savoy, BPE (UNB), EdM (Boston), PhD (Tenn)

L.J. Verabioff, BA BPHIE (Queen's), MS (Michigan), PhD (Ohio State), Undergraduate Associate Director

### Assistant Professors

L.J. Barnes, BPE, MSc (Dal)

C.D. Hood, BPE (Calgary), MS, PhD (Illinois)

C.R. Mangham, BEd, MA (UBC), PhD (Oregon)

D.P. McGuire, BA (Wright State), MA (Cincinnati)

J.A. Scott, BPE (Calgary), MS (Oregon), Co-ordinator of the Activity Programme in Physical Education

A.D. Yarr, BPE, MPE (UBC)

### Special Lecturers

H.C. Baillem, BPE (UNB), MSc (Dal)

R.J. Hoyle, BA, MA (Cambridge), MSc (Dal)

K.D.R. Travers, BScHE, MAHEc (MSVU), PhD (Dal), Pdt, major appointment at Mount Saint Vincent University

G.I. Turnbull, BPT (Manitoba), MA (Dal), PhD (Rhodes [South Africa]), major appointment in the School of Physiotherapy

### Purposes of the School

The mission of the School is to develop leaders and scholars who can generate, disseminate and apply knowledge that helps to maintain and enhance health. It does this by: engaging in research related to well-being; preparing leaders in education, scholarship, and social action to maintain and enhance well-being; and by playing an educational and advocacy role, within and beyond the University, to affect social change that maintains and enhances well-being. This mission provides the foundation for degree programmes in Health Education, Kinesiology and Recreation/Leisure Studies at both the undergraduate and graduate levels. While each degree programme is described below, the School is considering several curriculum change that may take effect in September of 1996. Prospective students should consult the School if concerned about potential changes.

Information about the graduate programmes in Health Education, Kinesiology, and Leisure Studies is available in the Faculty of Graduate Studies calendar.

### Limited Enrolment

All programmes offered by the School of Recreation, Physical and Health Education have enrolment limits. Applicants should refer to Table II in the FEBS section of this calendar, or consult with the School.

## School of Recreation, Health, & Physical Education Regulations

1. All students must observe the University and Academic Regulations described in this Calendar.

2. All students must attend the classes of their prescribed course regularly and punctually. When the work of a student becomes unsatisfactory or attendance is irregular, the student may be required to discontinue the class concerned.

### 3. Grade Point Average Requirements

The grade point average system is described in the Academic Regulations. School regulations relating to GPA apply to students whose initial registration in the School was in the Fall of 1990 or earlier (consult the calendar of the appropriate year).

4. Students expecting to receive a BSc (Kinesiology) degree with honours are required to maintain a GPA of 3.00 or better over the last 3 years and all grades counting toward an honours degree must be C or better.

### 5. Supplemental Examinations

The School of Recreation, Physical and Health Education does not offer supplemental examinations in any of its programmes.

### 6. Academic Appeals Procedures

#### 6.1 Appeals to Programme Area Committee on Studies:

In each of the programmes in the School of Recreation, Physical and Health Education (Health Education, Physical Education and Kinesiology, Leisure Studies) a Committee on 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 of the appropriate programme area committee on studies, who will convene a meeting of the Committee.

The student has the right to appear before the Committee on Studies and he/she should notify the appropriate 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 programme Committee on Studies shall be conveyed to the student, in writing, by the Undergraduate Associate Director immediately 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 School Committee on Studies, as identified below.

This appeal must be presented to the Director of the School within 30 days of notification from the Undergraduate Associate Director that the appeal at the programme level was denied.

If the student's appeal is upheld the matter need go no further and implementation is carried out by the Undergraduate Associate Director.

#### 6.2 Appeals to the Committee on Studies of the School of Recreation, Physical and Health Education:

In the case of the School/Faculty regulations, the student is responsible for presenting the case to the Committee on Studies of the School of Recreation, Physical and Health Education.

As noted above it is the responsibility of the student to forward the necessary documentation to the School Committee on Studies when the appeal is initiated by the student. Otherwise, it is the responsibility of the Undergraduate Associate Director.

As Chair of the School Committee on Studies, the Director will inform the student of his/her right to appear before the Committee. The student will also be informed of his/her right to be represented by an advocate of his/her choice. The decision of the School Committee on Studies shall be conveyed in writing to the student by the Director immediately after the conclusion of the appeal. If the student's appeal is denied this notification shall include information about procedures to appeal to the Committee on Studies of the Faculty of Health Professions (see Academic Regulation 26.2). 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.

If the student's appeal is supported the matter need go no further and implementation is carried out by the Director of the School.

### 7. Student Advisory Programmes

Although many classes are compulsory in the School's programme, considerable latitude exists for the development and extension of individual interests. To help in planning a total personal programme each student is assigned an adviser from the teaching staff. Advisers can help students to select classes, avoid common pitfalls, choose activities, interpret regulations and solve various types of problems. Although students are responsible for their own programmes and for maintaining high academic standards, they should consult their adviser regularly and whenever problems may occur.

### 8. Student Exchange Programme

A reciprocal exchange programme operates between the School and Chelsea School of Physical Education, Sports Science, Dance and Leisure, University of Brighton, Eastborne Campus, England. Students of good academic ability may apply to participate in this study opportunity in their second or third year. The School has been involved with one-for-one exchange programmes since 1972.

Contact the School of Recreation, Physical and Health Education for further information.

## Bachelor of Science (Health Education)

### Admission Criteria

See Admission Requirements section of this calendar.

### Course of Study Overview

The Bachelor of Science in Health Education is a four year degree programme. The goal of health education is to promote, maintain or improve individual, family and community health through educational processes.

The responsibilities of health educators include: assessing health education needs; planning, conducting and evaluating health education programmes; coordinating health education activities and resources; promoting health education throughout the community; and professional development.

The BSc (HE) programme guides students in attaining: 1. knowledge, attitudes and practices conducive to a healthy lifestyle, 2. professional preparation for a career in school or community health education, and 3. academic preparation for advanced study and research in health education or health-related fields.

### Employment and Further Study

Graduates of the BSc (HE) programme are qualified for employment with government departments, health agencies, health and fitness centres, health promotion businesses, industries, medical care centres, professional organizations, schools and senior citizens' centres.

Some graduates qualify to pursue further study in fields such as business administration, education, health administration, health education, health promotion, medicine, nursing, public relations and other areas concerned with health promotion.

### Description of the Programme

BSc (Health Education) students earn their degrees by completing at least 120 credit hours of studies. They major in Community Health Education.

As of 1995 the School of Recreation, Physical and Health Education no longer admits students to Health Education. Students entering their third year of study in the fall of 1996 will continue with the integrated programme as outlined below. All Education classes will be offered through the Department of Education at Mount St. Vincent University.

The School of Recreation, Physical and Health Education requires those majoring in Health Education to minor in another subject that is applicable to a subject taught in the public schools. There are several ways to meet this Divisional requirement, and further information is available from the Division. In all cases, meeting the requirements for a "teaching minor" involves classes outside the Faculty of Health Professions.

Graduates who majored in School Health Education qualify for a Nova Scotia Teacher's Certificate (Level 5). Nova Scotia's officials have reciprocal agreements with counterparts in several other provinces to recognize teachers' certificates, thus improving the job mobility of teachers within Canada. Because Dalhousie University is one of the few institutions in Canada where school health education

specialists are prepared, these agreements have special importance for these BSc (Health Education) graduates.

The School requires Community Health Education majors to choose between two minor areas of concentration: Administration & Evaluation or Lifestyles Education. Community Health Education majors meet the School's requirements by taking a variety of classes that take them beyond the Faculty of Health Professions' boundaries. All new students' first year programme should include: HEED 1395.02, 1495.02 and 1595.02; Introduction to Anatomy; Introduction to Biology or Physiology; Introduction to Psychology and Introductory Sociology; a full-year Humanities class; KINE 1230.03. Students eligible for transfer credit for any of these classes may consider enrolling in other required classes such as HEED 2250.03 (see prerequisite), 2350.03 or a Health Education elective such as HEED 2204.03. Other course considerations should be approved by the student's academic advisor.

Class selection in subsequent years will be made in consultation with the student's academic advisor once the student's major and minor area of study have been determined.

Beginning in the fall term of 1994, Health Education students are required to obtain basic level certification in first aid and cardiopulmonary resuscitation as a degree requirement prior to graduation. (See academic advisor for details).

Failure to pass HEED 4493.09 or HEED 4495.15 may result in a student being required to take additional classes to make up for academic or skill level inadequacies prior to re-enrolling in those classes.

A student who wishes to take classes in Health Education as a non-major must apply as a special student in Health Professions, for a one-year period. This status is approved by the Director of the School of Recreation, Physical and Health Education in consultation with the Undergraduate Associate Director. Under this arrangement students may take up to three, 3-credit-hour classes.

### Health Education Classes Offered

**HEED 1163.03: Biostatistics and Epidemiology.** This class provides an understanding of epidemiology, the basic science of preventive medicine and public health. The student is introduced to such concepts as the "epidemiological method" and its application to the study of the distribution and dynamics of disease in a population. By means of a problem solving approach, the class helps to provide some of the basic tools necessary to study the occurrence of disease in order to determine such issues as the severity of an outbreak, agents of the disease, and risk factors and causation.

**Instructor:** Staff  
**Format:** Lecture, 3 hours  
**Restriction:** Restricted to Outpost and Community Health Nurses

**HEED 1395.02: Introduction to Health Education.** This class will examine the fundamental concepts, terminology, issues and skills associated with health education as a

process and as a profession. Emphasis will be placed on how health education relates to existing health and social policies, health promotion, prevention and treatment. Students will begin to develop a personal and professional philosophy of health and health education.

**Instructor:** Staff  
**Format:** Lecture/discussion 3 hours per week for the first 2/3 of the Fall term (Sept-Nov).

**Restriction:** Restricted to Health Education majors

**Skills Seminar for First Year Students:** An introduction to some fundamental professional and academic skills is provided for one hour following each class in HEED 1395.02 and HEED 1495.02 throughout the Fall term. These are non-credit sessions.

**Instructor:** L. Barnes  
**Restriction:** Restricted to Health Education majors

**HEED 1495.02: Fundamentals of School Health Education.** Taught November - February.

Through readings, presentations and discussions, students learn about the major components of the school health programme, including health services, provision of a healthful environment and school health instruction. Writing skills are emphasized. In addition to the regular classroom meetings, the class includes a concurrent series of seminars.

**Instructor:** L. Barnes  
**Format:** Lecture/ discussion/ seminar 3 hours per week for the last 1/3 of the Fall term and the first 1/3 of the Spring term November - February

**Restriction:** Restricted to Health Education majors

**HEED 1995.02: Fundamentals of Community Health Education.** Taught February - April.

Students become familiar with the role of a community health educator. Topics include needs assessment, programme planning and evaluation. Skills stressed in HEED 1395.02 and HEED 1495.02 will continue to be developed. In addition to the regular classroom meetings, the class includes a concurrent series of seminars and a community health education field experience. The community health education field experience occurs for two weeks following the University's spring examination period.

**Instructor:** Staff  
**Format:** Lecture/ discussion/ seminar/ field experience 4 hours per week in the last 2/3 of the Spring term February - April, plus the Spring field experience.

**Restriction:** Restricted to Health Education majors

**HEED 2204.03: Consumer and Environmental Studies.** This class introduces students to factors that cause changes in the environment and consequently affect health. The concepts of ecology and consumerism are examined and students are expected to apply these in their personal environments. The consumer's role and responsibilities in relation to personal health status are pursued.

**Instructor:** Staff  
**Format:** Lecture/discussion 3 hours

**HEED 2250.03: Interdisciplinary Course in Human Nutrition.** See class description for NURS 4800.03, in the Nursing section of this calendar.

**HEED 2425.03: Group Dynamics.** Group dynamics, including leadership, decision making, group goals, communication, controversy, creativity, conflict, use of power, cohesion, group norms and problem solving, comprise the content of this class. The approach to learning is experiential. The potential of students will be utilized and each one is expected to function as a teacher and helper, as well as a learner.

**Instructor:** Staff  
**Format:** Seminar 3 hours

**HEED 2950.03: Drug Use in Society.** International, national and regional issues of promotion, prevention, treatment and legislation of drug use are examined. Recreational, over-the-counter, and some prescription drugs will be considered.

**Instructor:** C.R. Mangham  
**Format:** Lecture, 3 hours

**HLTH 3000.03B: An Interdisciplinary Approach to Health Promotion.** See class description in Health Professions, Interdisciplinary section of this calendar.

**HLTH 3001.03B: Drug Issues: An Interdisciplinary Perspective.** See class description in Health Professions, Interdisciplinary section of this calendar.

**HEED 3225.03: Mental Health.** Concepts and issues of mental health (biological, psychological and sociological) are explored through an examination of related theories, research, writings and practices. Emphasis is placed on mental health promotion, but mental illness and its treatment is included. Additional information is provided about the role of community mental health organizations and agencies. Some experiential techniques are used to demonstrate the function of self-awareness and interpersonal communication in mental health.

**Instructor:** D. McGuire  
**Format:** Seminar, 3 hours  
**Prerequisite:** PSYO 1000.06 or 1010.06; KINE 1230.03; or permission of instructor

**HEED 3351.03: Injury Prevention and Safety Education.** Students are introduced to the concept of safety, causes and effects of injuries, and strategies for reducing same through safety education. Specific study of injuries, their causes and preventive measures and programs is preceded by a review of definitions of health, health promotion/education, and safety education. This is a professionally oriented class in which students are asked to obtain data that focuses on injuries and subsequently, design programmes to reduce the number and effect of injuries. In doing so, consideration must be given to programmes and materials already in existence.

**Instructor:** L. Maloney  
**Format:** Lecture/discussion 3 hours.

## 366 Recreation, Physical & Health Education

**Restriction:** Restricted to School of Recreation, Physical and Health Education students, limited space for other students may be made available.

**HEED 3401.03: Selected Communicable Diseases.** Interactions among people, their environment, and the causal agents of communicable diseases are explored. Specific communicable diseases are examined in order to discuss the role of health education in disease prevention.

**Instructor:** L. Barnes  
**Format:** Lecture/discussion 3 hours.  
Offered in alternate years beginning in 1997-98.

**Prerequisite:** MICR 1100.03 and BIOL 1000.06  
**Restriction:** Restricted to students in their third or final year

**HEED 3402.03: Selected Chronic Degenerative Diseases.** This class explores the epidemiology of various chronic diseases and the broader social and health issues surrounding them. The class emphasizes preventable illness and includes a health promotion perspective. Some of the specific topics to be covered are chosen by the students.

**Instructor:** Staff  
**Format:** Lecture/discussion 3 hours.  
Offered in alternate years beginning in 1996-97

**Prerequisite:** BIOL 1000.06 or an introductory genetics class  
**Restriction:** Restricted to students in their third or final year

**HEED 4395.03: Community Health Education Planning.** Issues and methods involved in the process of community health education planning are studied. Community analysis, goal and objective setting, developing education strategies and programme implementation and evaluation techniques constitute the components of planning covered in this class.

**Instructor:** G. Mangham  
**Format:** Seminar 3 hours  
**Prerequisites:** HEED 1395.02, 1495.02, 1595.02  
**Restriction:** Restricted to Health Education majors in their third or final year

**HEED 4412.03A or B: Human Sexuality.** This class is concerned with the biological, cultural, ethnic, ethical, legal, historical, psychological, religious and semantic aspects of human sexuality. Four themes are threaded throughout the class: diversity in gender roles and in sexuality attitudes, behaviour and customs; critical thinking; making responsible decisions; and sexual health. The class is designed to support the positive integration of sexuality into the lives of individuals and to foster the prevention of sexuality-related problems, at all stages of life.

**Instructor:** R. Beazley  
**Format:** Lecture/discussion 3 hours

**HEED 4493.09: School Health Education Field Placement.** During the first 10 weeks of the Spring term (January-March) students will intern in school settings on a full-time basis. During the concluding three weeks of the term, seminars will be conducted on campus and in community settings. They provide a forum for

presenting information, sharing ideas and concerns, evaluating internships and preparing to find a job.

**Instructor:** L. Barnes  
**Format:** Field Placement/seminar  
**Prerequisite:** HEED 4494.03  
**Restriction:** Restricted to Health Education majors in their final year

**HEED 4494.03B: School Health Education Planning.** Planning for school health education is the focus of this class. Planning includes: clarifying one's point of view about school health education, assessing needs and structuring content, organizing the health instruction program, stating goals and objectives, developing teaching strategies, assembling resources and designing evaluation techniques.

**Instructor:** R. Beazley  
**Format:** Lecture/discussion 3 hours  
**Prerequisites:** HEED 1395.02, HEED 1495.02, and HEED 1595.02

**Restriction:** Restricted to Health Education majors

**HEED 4495.15: Health Education Internship.** During the first 10 weeks of the class, students will intern in school or community health education settings on a full-time basis. Details about the internships are contained in the Internship Programme Handbook. During the concluding three weeks of the term, seminars will be conducted on campus and in community settings. They provide a forum for presenting information, sharing ideas and concerns, evaluating internships and preparing to find a job.

**Instructor:** D. McGuire  
**Format:** Field placement/seminar  
**Prerequisites:** HEED 3395.03 or HEED 4494.03  
**Restriction:** Restricted to Health Education majors in their final year

**HEED 4496.03: Methods and Materials for Elementary School Health Education.** Students examine and develop various health education materials designed for the elementary grades. Resource material and teaching strategies are discussed in connection with drug education, diseases, mental health, consumer health, dental health, family living, safety education, personal hygiene or other emerging topics. Emphasis is on identifying local resources and developing materials.

**Instructor:** L. Barnes  
**Format:** 3 hours per week  
**Prerequisites:** 12 credit hours in health content or public school teaching experience in a health-related area, or instructor's consent.

**Restriction:** Restricted to students in their third or final year of a teacher education program.

**HEED 4497.03: Methods and Materials for Junior High School Health Education.** Students become acquainted with a range of teaching methods and procedures used in junior high school health education. Resource material is discussed and developed in topic areas such as drug education, communicable and chronic diseases, aging, mental health, consumer and environmental health, family

living and human sexuality, health counselling and guidance. Emphasis is on the use of local resources and materials.

**Instructor:** L. Barnes  
**Format:** 3 hours  
**Prerequisite:** 12 credit hours in health content or public school teaching experience in a health-related area, or instructor's consent.  
**Restriction:** Restricted to students in their third or final year of a teacher education program.

**HLTH 4900.03A/4910.03B: An Interdisciplinary Approach to Gerontology.** See class description in Health Professions, Interdisciplinary section of this calendar.

**HEED 4800.06R/4801.03A/4802.03B: Directed Studies in Health Education.** The purpose of the directed study is to allow students to develop an area of specialization with library, laboratory or field research under the tutelage of an appropriate faculty member.

**Instructor:** Staff  
**Format:** Tutorial 3 or 6 hours  
**Prerequisites:** 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

**Note:** Students may not take more than a total of 6 credit hours of directed studies.

## Bachelor of Science (Kinesiology)

### Course of Study

The BSc programme in Kinesiology is designed to provide students with an opportunity for the scientific study of human movement. Emphasis of study is primarily in exercise physiology, biomechanics and motor performance. As part of their course work, students take science classes that will supplement their kinesiology classes in the three areas of emphasis. Generally, these science classes will be in the areas of biology, psychology, mathematics, chemistry or physics. For example, a student can complete a BSc programme in Kinesiology with an emphasis in exercise physiology and biology, as these are complementary areas of study. Other complementary areas are motor performance and psychology, biomechanics and mathematics/physics.

Both a general and honours programme are offered. Generally, it is possible to switch between the general and honours programmes. However, honours standing is achieved by students who satisfy the degree requirements with a cumulative GPA of 3.00 or higher. Students should refer to the honours programme description below for more detail.

Students receiving an honours degree must also complete an honours seminar and thesis in the fourth year.

### Four Year Bachelor of Science (Kinesiology) General Programme

<b>First Year</b>	<b>Credit Hours</b>
ANAT 1020.03 .....	3

PHYL 1010.06 or 2030.06 .....	6
KINE 1230.03 .....	3
KINE 1104.03 .....	3
STAT 1060.03 .....	3

or  
 COMP 1000.03 or 1400.03.....3  
 2 Electives only from the following:..... 12

BIOL 1000.06	
CHEM 1010.06 or 1040.06	
MATH 1000.03/1010.03	
PHYC 1100.06 or 1300.06	
PSYO 1000.06 or 1010.06	
<b>Total</b> .....	<b>30</b>

Second Year	Credit Hours
KINE 2310.03.....	3
KINE 2320.03.....	3
KINE 2330.03.....	3
KINE 2465.03.....	3
Science Elective.....	6
Arts and Social Science or Science Elective.....	6
Open Elective <sup>1</sup> .....	6
<b>Total</b> .....	<b>30</b>

Third and Fourth Years 2	Credit Hours
(select 30 credit hours each year)	
7 Classes from List A .....	21
2 Classes from List B .....	6
Arts & Social Science or Science Elective 3.....	6
Science Elective 3.....	6
Open Elective 1 <sup>3</sup> .....	12
3 Classes from PHSE/HHEED/LEIS list.....	9
<b>Total</b> .....	<b>60</b>

<sup>1</sup>Electives may be chosen from the Faculties of Arts and Social Sciences, Science, Health Professions, Management and Medicine. Biology 1000 is strongly recommended.

<sup>2</sup>Third and Fourth Year curricula are listed together to permit flexibility in scheduling classes available in alternate years.

<sup>3</sup>Electives must be at the 2000 level or above.

**List A (Select 7)**

KINE 3476.03
KINE 4414.03
KINE 4416.03
KINE 4419.03
KINE 4424.06
KINE 4426.06
KINE 4440.03
KINE 4466.03
KINE 4476.03
KINE 4800.06/4801.03/4802.03 (if GPA is more than 3.00)
LEIS 3480.03 or MATH 1060.03
PHSE 4410.03

**List B (Select 2)**

PHSE 4497.03
LEIS 2110.03
LEIS 2127.03
LEIS 2326.03
LEIS 3157.03
LEIS 3491.03
LEIS 4363.03
LEIS 4494.03
HLTH 4900.03

**PHSE/HHEED/LEIS List (Select 3)**

PHSE 2220.03
--------------

PHSE 2384.03  
 PHSE 4475.03  
 HEED 2250.03  
 HEED 3351.03  
 HEED 4425.03  
 HLTH 3000.03  
 HLTH 3001.03  
 HLTH 4900.03  
 HLTH 4910.03  
 LEIS 2361.03  
 LEIS 3361.03  
 LEIS 4426.03  
 LEIS 4492.03

LEIS 3480.03  
 COMP 1400.03  
 Required 2-year total from  
 above list .....21  
 Science Electives<sup>1</sup> .....12  
 Open Electives<sup>1</sup> .....27  
 Total .....60

KINE 8880.00 Honours Research and Thesis

<sup>1</sup>Electives must be at the 2000 level or above

## Transfer Students: BSc (Kinesiology)

Students who transfer and have completed two of the five science electives in the first year of the Kinesiology General Program may register in the second year programme for transfer students. All other students should seek advice from their academic advisor before registering for any classes.

The second year program requirements for transfer students is as follows:

ANAT 1020.03 .....3  
 KINE 1230.03 .....3  
 KINE 2310.03 .....3  
 KINE 2320.03 .....3  
 KINE 2330.03 .....3  
 KINE 2465.03 .....3  
 PHYL 1010.06 or 2030.06 .....6  
 Open Elective<sup>1</sup> .....6  
 Total .....30

<sup>1</sup>Electives may be chosen from the Faculties of Arts, Science, Health Professions, Management Studies and Medicine. BIOL 1000.06 is strongly recommended.

The third and fourth year programmes for transfer students are the same as those outlined previously.

## Four Year Bachelor of Science (Kinesiology) Honours Programme

Students who wish to complete the Honours Programme may apply at the end of their third year of study. To be admitted into the programme students must have fulfilled the following requirements:

1. completed a minimum of 6 credit hours in mathematics;
2. completed a minimum of 6 science electives, 2 of which must be above the 1000 level;
3. obtained a GPA of 3.0 based on the previous two years of academic work;
4. completed KINE 4440.03 with a minimum of B-

Application is made through the Undergraduate Associate Director by April 1st.

Third and Fourth Years Credit Hours

(select 30 credits each year)

KINE 3476.03  
 KINE 4414.03  
 KINE 4416.03  
 KINE 4419.03  
 KINE 4424.06  
 KINE 4440.03  
 KINE 4466.03  
 KINE 4476.03  
 KINE 4800.06/4801.03/4802.03

## Classes Offered - BSc (Kinesiology) Programme

ANAT 1020.03: Basic Human Anatomy. See class description in Anatomy section of this calendar.

PHYL 1010.06: Human Physiology. See class description in Physiology and Biophysics section of this calendar.

PHYL 2030.06: Human Physiology. See class description in Physiology and Biophysics section of this calendar.

KINE 1104.03: Introduction to 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 the 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 between 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.

Instructor: G. Elder  
 Restriction: Restricted to Recreation, Physical and Health Education students. Others by special permission with priority to Health Professions students.

KINE 1230.03: Human Growth & Development. A study of factors influencing human growth and development from birth to maturity, as revealed by observational and experimental studies.

Instructor: N. Kemp  
 Format: Lecture 3 hours  
 Restriction: Restricted to Recreation, Physical and Health Education students. Others by special permission with priority to Health Professions students.

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.

Instructor: G. Elder  
 Format: Lecture/lab 3 hours  
 Prerequisites: ANAT 1020.03 and PHYL 1010.06 or PHYL 2030.06

**Restriction:** Restricted to Recreation, Physical and Health Education students. Others by special permission with priority to Health Professions students.

**KINE 2320.03: Applied Anatomy and Kinesiology.** Emphasis is on the anatomical and kinesiological foundations of human movement. Neuro-anatomical and musculo-skeletal structures are explored in order to establish the understandings necessary for accurate analysis of human activity.

**Instructor:** L. Holt

**Format:** Lecture/lab 3 hours

**Prerequisites:** ANAT 1020.03 and PHYL 1010.06 or PHYL 2030.06

**Restriction:** Restricted to Recreation, Physical and Health Education students. Others by special permission with priority to Health Professions students.

**KINE 2330.03: Motor Control & Learning.** This class deals with efficiency in completing movements to achieve a desired goal. It involves systematic changes in perception of the environment, decisions about what movements to make, as well as changes in how these movements are carried out. This class covers what is known about these processes as well as how this information can be applied.

**Instructor:** J. McCabe

**Format:** Lecture/lab 3 hours

**Restriction:** Restricted to Recreation, Physical and Health Education students. Others by special permission with priority to Health Professions students.

**KINE 2465.03: Biomechanical Analysis.** The purpose of this class is to introduce students to the area of biomechanics in human motion analysis. Students will be exposed to the concepts of kinematic and kinetic analysis of motion, as well as muscle forces and moments of force as applied to the human system.

Examples used in class will be taken from the areas of skill performance, rehabilitation and ergonomics. In addition to providing students with a basis for applied applications, the class will also provide a solid base for those students wishing to pursue further study in the field of biomechanics.

**Instructor:** Staff

**Format:** Lecture 3 hours, lab 2 hours

**Prerequisite:** First year Physics is highly recommended.

**Restriction:** Restricted to Recreation, Physical and Health Education students. Others by special permission 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 programmes to increase productivity and to reduce injuries.

**Instructor:** J. McCabe

**Format:** Lecture/fieldwork

**Prerequisite:** KINE 2330.03

**KINE 4414.03: Physical Fitness Assessment & Programme Design.** Evaluation of various methods of physical fitness assessment, designing fitness programmes for diverse populations and identifying motivational techniques with emphasis on the areas of cardiovascular fitness, weight reduction, pre- and post-natal programmes and the elderly. In addition, laboratory work teaches the techniques of administering various fitness tests.

**Instructor:** P. Campagna

**Format:** Lecture/lab 3 hours

**Prerequisite:** KINE 2310.03

**KINE 4416.03: Neuromuscular Principles of Movement.** The objectives of this class are to develop an understanding of the neuromuscular system in terms of its structure at both the macro and micro levels, the central and peripheral mechanisms involved in regulating and controlling the recruitment of muscles, and the properties of the individual motor units. There will be a focus on how these mechanisms adapt with training and disuse, the factors which determine maximal strength and power, and the causes of muscle fatigue.

Finally, the changes that occur in muscle in response to injury and disease will be examined.

**Instructor:** G. Elder

**Format:** Lecture 3 hours

**Prerequisite:** KINE 2310.03

**KINE 4419.03: Physiological Bases of Sport.** Human physiological adaptation to varying levels of exercise will be examined and the conditioning elements key to various sports analysed. The biological prerequisites for the attainment of the highest levels of athletic performance will be reviewed in concert with the appropriate application of scientific principles of training. Attention will be given to effective training design. The relationship of the body's oxygen transport and energy systems to performance enhancement will form a major emphasis, together with consideration of the role of ergogenic, environmental, age, gender and other factors affecting physical performance.

**Instructor:** N. Kemp

**Format:** Active learning

**Prerequisite:** KINE 2310.03 or equivalent

**KINE 4424.06: Advanced Fitness Assessment, Exercise Prescription and Lifestyle Counselling.** The objective of this class is to provide the student with advanced techniques to assess physical fitness, design physical activity/exercise programmes and lifestyle counselling skills. In addition, this class will satisfy the student to write the Canadian Society for Exercise Physiology's national Certified Fitness Appraiser examination.

**Instructor:** P. Campagna

**Format:** Lecture/Lab

**Prerequisite:** PHYL 1010.06 or 2030.06; ANAT 1020.03; KINE 2310.03, 4414.03 4419.03; Standard Test of Fitness Appraiser (STFA), CPR.

**Recommended:** In addition to the prerequisites there are a number of classes that are highly recommended: KINE 1230.03, PHYL 4410.03, HBED 2250.03 and LEIS 3362.03.



## 370 Recreation, Physical & Health Education

**KINE 4440.03: Seminar - Research Interpretation and Undergraduate Paper.** For those who plan to pursue graduate studies, the application of the processes of science to the field are discussed in a series of lectures to introduce the student to the language and methods of science in general. The assignments lead to the proposing and conducting of a small investigation appropriate to student interests which is written in the format of a journal appropriate to the question addressed. Selected studies are presented to the class.

Instructor: Staff  
Format: Lecture/Discussion/Lab 3 hours

**KINE 4466.03: Advanced Biomechanics.** This class takes a quantitative approach to understanding human movement, muscle function and the structure of biological tissue from a mechanical perspective. Concepts presented in the class will be illustrated with examples taken from the areas of sport, exercise, sports medicine, clinical biomechanics, rehabilitation and ergonomics. Students will be introduced to several techniques used in biomechanics research.

Instructor: C. Putnam  
Format: Lecture/lab 3 hours  
Prerequisite: KIN 2465.03

**KINE 4476.03: Skilled Performance.** This class is concerned with some of the many factors related to skilled motor performance; the efficient and consistent attainment of predetermined movement goals. To a great extent this class will focus on characterizing expertise at various levels of skillfulness rather than the acquisition of motor skill. In addition, some of the concepts related to expertise and skillfulness will only minimally involve movement activities.

Instructor: J. McCabe  
Format: Lecture 3 hours  
Prerequisite: KINE 2330.03

**KINE 4800.06R/4801.03A or B or R/4802.03A or B or R: Directed Studies in Kinesiology.** Senior undergraduate students develop an area of specialization under the direction of a faculty member.

Instructor: Staff  
Format: experimental research (laboratory experiment) or other research study, 3 hrs

Prerequisites: 1. third- or fourth-year status; 2. a GPA of 3.00 plus a "B" grade or better in an upper level class in the area in which the research will be conducted (e.g. biomechanics, exercise physiology, motor behaviour); 3. Research Methods; 4. Statistics; consent of instructor and Undergraduate Associate Director. Intention to register for a Directed Study should be confirmed with the undergraduate secretary by April 1st of the preceding academic year.

Format II: literature research, 3 credit hours  
Prerequisites: the same as those for experimental research directed studies described under Format

I above except that classes in research methods and statistics are not required.

**NOTE:** Students may not take more than a total of 6 credit hours of experimental research or literature research directed studies.

**KINE 8880.00: Honours Research & Thesis.** The Honours Programme requires the completion of an extra credit beyond the required 120 credit hours for the BSc (Kinesiology) degree. This credit will be obtained through the presentation of a research paper. The method by which this additional credit is obtained is referred to as the Honours Qualifying Examination. A pass/fail grading system will be used.

Students who wish to meet this requirement must meet the same prerequisites as those for Format I, experimental research, for Directed Studies (KINE 4800.06/4801.03/4802.03 above).

### Five Year Combined Bachelor of Physical Education/ Bachelor of Education Degree

As of 1995 the School of Recreation, Physical and Health Education no longer admits students to this programme. Students entering their third year of study in the fall of 1996 will continue with the integrated programme as outlined below. All Education classes will be offered through the Department of Education at Mount Saint Vincent University.

Students who are continuing in the programme will be governed by the calendar issued for the year in which they entered the programme.

### Classes of Instruction - BPE/BE D Programme

**PHSE 2220.03: Measurement & Evaluation in Physical Education.** An introduction to the fundamentals involved in measurement and evaluation, including writing objectives, designing and administering tests, organizing and analyzing test results. Tests used to measure physical fitness, specific motor skills and health knowledge are investigated.

Instructor: Staff  
Format: Lecture/lab 3 hours

**PHSE 2384.03: Physical Activity for Disabled Persons.** The etiology and effects of the more prevalent disabling conditions form the bases of strategies for teaching, coaching and rehabilitating those affected. Emphasis is placed on the physical components of disability and the adaptation of the environment and equipment to facilitate learning of ADL skills and sport. A practicum is required.

Instructor: L. Holt  
Format: Lecture 3 hours  
Prerequisite: KINE 2320.03 or consent of instructor

**PHSE 3398.06: Practical Studies Secondary.** This class is designed for students who wish to specialize in secondary physical education. Students completing the class will have practised basic skills for teaching team,

individual, dual and fitness activities. Analysis of teacher behaviour and practice in using a variety of teaching styles receive emphasis. Visits to schools are included. Four weeks of full-time student teaching are included at the end of the spring term.

Instructor: L. Verabioff  
 Format: Lecture/lab/field work 6 hours  
 Prerequisite: PHSE 2295.03  
 Restriction: Limited to BPE/BED students only

**PHSE 3402.06: Elementary Physical Education.**

This class is designed for students who wish to specialize in elementary physical education. Special projects with young children are developed by the class. Class includes field trips to innovative school, preschool and community organization programmes. Four weeks of full-time student teaching are included at the end of the spring term

Instructor: L. MacGregor  
 Format: Lecture/lab, 6 hours  
 Prerequisite: PHSE 2295.03  
 Restriction: Limited to BPE/BED students only

**PHSE 4250.03: Organization & Administration of Physical Education & Recreation.** This class focuses on the administrative and planning processes involved in the development and implementation of recreation and leisure programmes in both community and public school settings. Students will have the opportunity to apply and test programming principles through practical experiences in planning, organizing, and administering special events.

Instructor: C. Savoy  
 Format: Lecture, 3 hours

**PHSE 4395.03: Curriculum Planning and Development.** An introduction to basic curriculum theory and programme development principles. Developing a curriculum philosophy, objectives, course and unit plan and programme evaluation are covered. Appropriate field work is included.

Instructor: A. Yarr  
 Format: Lecture/field work, 3 hours  
 Prerequisite: PHSE 3398.06 or PHSE 3402.06 or permission of instructor

**PHSE 4410.03: Care and Prevention of Athletic Injuries.** The class offers a fundamental understanding of the maintenance of health (personal hygiene, nutrition, prevention of common ailments and injuries). More specifically it will deal with first aid, sports injuries, their prevention and treatment. Students will acquire practical skills in taping techniques and cardiopulmonary resuscitation.

Instructor: Staff  
 Format: Lecture/lab, 3 hours

**PHSE 4475.03: Psychology of Sport and Physical Activity.** This class offers an awareness and understanding of the phenomena involved in mental preparation in sport and physical activity. It will systematically analyze, investigate and assess psychological skills, attributes and preparation in these areas and their applications in other environments. Emphasis will also be placed upon personal experience and practical application.

Instructor: C. Savoy  
 Format: Lecture, 3 hours  
 Prerequisite: KINE 2330.03 or permission of instructor

**PHSE 4496.12: Teaching Practicum in Physical Education.** During the fall term students are placed in schools for full-time student teaching. Students are required to obtain experience in applying basic teaching skills as well as becoming familiar with how schools are organized and administered. Being able to analyze teacher behaviour to provide assistance to fellow students is also expected. CPR/First Aid certification is a required part of this class. Students will also be required to attend a Leadership Outdoor Camp in the early fall. In addition, as future professionals, students will be expected to attend the annual professional conference for the Teachers Association for Physical Education. Seminars will be scheduled on a weekly basis to provide opportunities to share student teaching experiences and to discuss topics of relevant interest.

Instructor: L. MacGregor  
 Format: Seminar/field work 12 hours  
 Prerequisite: PHSE 3398.06 or PHSE 3402.06  
 Restriction: Limited to BPE/BED students only

**PHSE 4497.03: Philosophy for Physical Educators.** An introduction to "thinking with concepts" provides a foundation for choice analysis in a seminar presentation. An introduction to existentialism is presented, with emphasis on choice, freedom and responsibility.

Instructor: A. Yarr  
 Format: Lecture 3 hours

**HLTH 4900.03A/4910.03B: An Interdisciplinary Approach to Gerontology.** For class description see Health Professions, Interdisciplinary section of this calendar.

**PHSE 4800.06R/4801.03A or B/4802.03A or B: Directed Studies in Physical Education.** Senior undergraduate students develop an area of specialization under the direction of a faculty member.

Instructors: Staff  
 Format: 3 or 6 hours  
 Prerequisites: third- or fourth-year status; a GPA of at least 3.00 a "B" grade in an earlier class in the area in which the project will be conducted (where appropriate); consent of instructor and Division Head. Intention to register for a Directed Study should be confirmed with the divisional secretary by April 1st of the preceding academic year. Students may not take more than a total of 6 credit hours of directed studies.

## Bachelor of Recreation

**Program Description** The focus of the Bachelor of Recreation degree is recreation administration. The objectives of the program are as follows:

## 372 Recreation, Physical & Health Education

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 in leisure studies, including an understanding of research methods and statistics;
3. to provide the student with the necessary skills and knowledge for entry into the roles of leadership, advocacy, consultancy and education in recreation and leisure services;
4. to provide the student with the opportunity to design a specific interest area within recreation administration. These specializations will be based on student interest, market demand and availability of appropriate classes. Examples include: therapeutic recreation, experiential education, arts administration, sport administration, commercial recreation, tourism, municipal administration and leisure counselling. The program of studies is developed in consultation with the student's advisor.
5. to provide the necessary background to enable students to pursue graduate work in leisure studies, management studies or the social sciences and humanities;

### Bachelor of Recreation Programme of Study

The minimum requirement for entry into the Bachelor of Recreation programme is successful completion of one year university with a GPA of 2.30 or higher. First year students interested in the Bachelor of Recreation programmes should consider the following classes:

First Year	Credit Hours
PSYO 1000.06, 1010.06 or 1050.06 or equivalent .....	6
SOSA 1000.06 or 1200.06 or equivalent .....	6
POLI 1100.06 or ECON 1100.06 or equivalent .....	6
Electives .....	12
<b>Total .....</b>	<b>30</b>

**NOTE A:** One of the above classes must be a writing class.

Students need to complete the above classes prior to graduation. Students may be accepted to the Bachelor of Recreation programme after successfully completing one year of university with a grade point average of 2.30 without some of the above pre-requisites. The student should recognize that this would require a longer period to complete the requirements for the Bachelor of Recreation degree.

Many of the classes outlined below have laboratory experiences which may involve some additional costs. Please consult the undergraduate secretary for more information.

Second Year	Credit Hours
LEIS 2110.03 .....	3
LEIS 2126.03* .....	3
LEIS 2127.03 .....	3
LEIS 2326.03 .....	3
LEIS 2361.03 .....	3
LEIS 2382.03 .....	3

LEIS 2384.03 .....	3
Electives .....	9
<b>Total .....</b>	<b>30</b>

\* LEIS 2126.03 requires students to attend a residential camp. The purpose of the camp is to orient students to the BRec program at Dalhousie and to the field of recreation and leisure services. Detailed information on the dates, location and costs associated with the camp is available from the Leisure Studies Division, School of Recreation, Physical and Health Education.

Third Year	Credit Hours
LEIS 3296.03 .....	3
LEIS 3360.03 .....	3
LEIS 3361.03 .....	3
LEIS 3362.03 .....	3
LEIS 3420.03 .....	3
LEIS 3480.03 .....	3
Leisure Studies OR Other Electives .....	12
<b>Total .....</b>	<b>30</b>

Fourth Year	Credit Hours
LEIS 4495.03 .....	3
LEIS 4497.03 .....	12
At least 3 of the following: .....	9
LEIS 3157.03*	
LEIS 4361.03*	
LEIS 4362.03**	
LEIS 4363.03*	
LEIS 4426.03**	
LEIS 4482.03**	
LEIS 4492.03*	
LEIS 4494.03	
Electives .....	6
<b>Total .....</b>	<b>30</b>

**NOTE A:** A minimum of 24 credit hours of electives must be taken outside of the school. A minimum of 12 credit hours of electives must be taken within the designated area of concentration.

**NOTE B:** The internship placement is only offered in the winter term. The prerequisite for this is a minimum of two years of study within the Recreation programme.

\*Offered alternate years beginning 1997-98

\*\*Offered alternate years beginning 1996-97

### Classes Offered - BRec Program

#### A. Recreation Theory Classes

**LEIS 2110.03: History of Leisure.** This class aims to make students familiar with the historical roots of the leisure pursuits of humankind. Sport, dance and recreation in ancient and primitive societies are explained and critically analyzed as are activities in early civilizations.

Instructor: A. Young  
Format: Lecture 3 hours

**LEIS 2126.03A: Introduction to Leisure Studies.** An understanding of the place and potential of leisure in Canadian life is essential if we are to move beyond the conviction that only labour is to be valued. This foundation class introduces leisure forms and concepts including play, sport, culture and social leisure. It provides an overview of leisure service

delivery and issues related to access to meaningful leisure opportunities. Opportunities for increasing writing skills, library utilization, verbal expression and computer skills are provided. A practicum is included.

**Instructor:** J. Singleton  
**Format:** Lecture/required lab experience 3 hours  
**Restriction:** Restricted to Bachelor of Recreation Students

**LEIS 2127.03: Psycho-Social Theory and Leisure.** This class will provide an introductory analysis of leisure in modern society from sociological and social psychological perspectives. The role of leisure in the everyday life of individuals will be discussed in terms of social relationships, social interaction and theories of attitude and motivation, 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 topics such as the influence of modern technology, the commercialization of leisure, the influence of social institutions and of the mass media.

**Instructor:** C. Hood  
**Format:** Lecture 3 hours  
**Prerequisite:** SOSA 1000.06 or 1200.06; and PSYO 1000.06

**LEIS 2326.03: Leisure and the Arts.** This class will introduce the student to the fine and performing arts and their relationship to leisure. The changing role of art in society will be discussed, as will such concepts as: the nature of art; the creator, art object and audience connection; and artistic activities as work or leisure.

**Instructor:** P. Richards  
**Format:** Lecture 3 hours

**LEIS 2361.03B: Recreation Administration I - Introduction to Recreation Administration & Program Planning.** An introductory class in administrative processes, management theories and the planning and designing of recreational programs and leisure experiences.

**Instructor:** Staff  
**Format:** Lecture 3 hours

**LEIS 2382.03: Adventure-Based Experiential Education.** Outdoor education in one form or another is included as an integral part of most recreational programs. However, there are values of outdoor adventure activities which go beyond the usual rationale for recreation programs. These include personal development, citizenship training, leadership development and community service. This class will explore some of the educational philosophies which rely on an experiential base. Included will be an opportunity for hands-on experiences in developing, planning and evaluating an adventure-based program which has potential beyond the traditional recreation outcomes. A practicum will be included.

**Instructor:** A. Richards  
**Format:** Lecture 3 hours

**LEIS 2384.03: Leisure and Special Populations.** An introduction of current philosophy, issues and practices relating to leisure opportunities for persons who, due to physical, mental and social conditions, have difficulty gaining access

to community services. An analysis of leisure behaviours, barriers and needs will be provided through the classroom and a practicum.

**Instructor:** R. Lyons  
**Format:** Lecture 3 hours

**LEIS 3157.03: History of Dance.** This class traces the development of dance in Western Civilization. The changing role of dance in society will be discussed, as will its relationship to the other arts. Sample dances from the different periods of history will be taught to illustrate the changing styles and patterns of dance.

**Instructor:** P. Richards  
**Format:** Lecture 3 hours  
**Cross-listing:** MUSC 3361.03

**LEIS 3296.03: Leadership and Small Group Dynamics.** This class will focus primarily on the function of leadership and the process of small group dynamics as applied to the recreation professional. Emphasis will be placed on the achievement of individual and group goals in recreation settings. In addition, effective leadership of individuals and groups within a community, through direct experience and observation, will be emphasized.

**Instructor:** Staff  
**Format:** Lecture 3 hours  
**Prerequisite:** LEIS 2126.03 or consent of instructor

**LEIS 3360.03: Analysis of Leisure Delivery.** The organization and delivery of leisure in Nova Scotia and Canada are examined with an emphasis on identifying consumer needs. The effectiveness of the leisure service agencies, i.e., government, public non-profit and commercial, will be examined, using a case study approach. The impact of the macroenvironment, political, social, physical and economic, will also be analysed.

**Instructor:** Staff  
**Format:** Lecture 3 hours  
**Prerequisite:** LEIS 3361.03 or consent of the instructor

**LEIS 3361.03: Recreation Administration II - Facility & Personnel Management.** This class is designed to provide insight into the organizational structure and governance in leisure service agencies, address the process and functions of personnel management, and review trends in facilities design, development and maintenance.

**Instructor:** N. Ipson  
**Format:** Lecture 3 hours  
**Prerequisite:** LEIS 2361.03

**LEIS 3362.03: Recreation Administration III - Fiscal Management & Marketing.** This class is designed as a fundamental analysis of the budget process and to provide insight into innovative fiscal management, marketing and privatization.

**Instructor:** N. Ipson  
**Format:** Lecture, 3 hours  
**Prerequisite:** LEIS 3361.03

**LEIS 3420.03: Introduction to Research Methods.** The purpose of this class is to give students a basic understanding of the logic and goals of social science research. The class will focus on factors that need to be taken into account in designing or evaluating research studies. Both qualitative and quantitative

## 374 Recreation, Physical & Health Education

methods will be discussed with an emphasis on interview and survey research and on evaluation research.

Instructor: Staff

Format: Lecture 3 hours

**LEIS 3480.03: Introduction to Statistics.** This class will provide an introduction to basic statistical concepts through the use of practical examples. Both descriptive and inferential statistics will be reviewed, with emphasis on the analysis and interpretation.

Instructor: A. Young

Format: Lecture 3 hours

**LEIS 4361.03: Sport Administration.** The administration of sport at the national, provincial, community and club level will be examined. Critical to this overview will be an in-depth consideration of the administration of amateur sport in Nova Scotia and the role of government, sport governing bodies and educational institutions. Major issues confronting amateur sport at the national and international levels, such as commercialization, marketing and sponsorship in sport, will also be examined.

Instructor: Staff

Format: Lecture 3 hours, offered alternate years

**LEIS 4362.03: Park Management & Natural Resource Development.** Basic issues in park management and natural resource development are examined with a focus on planning, design, development and maintenance of the outdoor environment for leisure activity.

Instructor: Staff

Format: Lecture 3 hours

Prerequisite: LEIS 2126.03 and LEIS 2361.03 or consent of the instructor

**LEIS 4363.03: Arts Administration.** This class will focus on current issues in the arts, arts boards, financial management in the arts, negotiating and writing contracts, and marketing the arts. Issues involved in presenting performances will also be studied.

Instructor: Staff

Format: Lecture 3 hours, offered alternate years

Prerequisite: LEIS 2326.03, 3361.03 and 3362.03 or consent of the instructor

**LEIS 4426.03: Leisure Enhancement: Ill and Disabled Persons.** This class provides students with an understanding of disabling conditions and their leisure implications. It provides instruction in leisure facilitation techniques such as assessment procedures, task analysis, activity analysis and other program enhancement strategies through classroom lectures and a practicum.

Instructor: C. Hood

Format: Lecture 3 hours offered alternate years

Prerequisite: LEIS 2384.03 or consent of the instructor

**LEIS 4482.03: An Experiential Approach to Youth Development.** Youth as a sector of society and as a stage in human development is of great significance in the study of leisure. Particularly relevant is the issue of unemployment and underemployment which has created a number of problems such as low

self-worth, alcohol abuse, teenage suicide, etc. There are programs being developed to address these problems, many of which are experientially based, e.g., Outward Bound, study service, service learning and national service. This class will study the phenomenon of youth development in the light of experiential educational approaches. During the class there will be an expectation that the students will meet and interact with a variety of youth. Practicum included.

Instructor: A. Richards

Format: Lecture 3 hours offered alternate years

Prerequisite: LEIS 2382.03 or consent of the instructor

**LEIS 4492.03: Leisure Counselling & Education.** Simply defined, leisure counselling is a helping process which facilitates interpretive, affective and/or behavioral changes in others toward the attainment of their leisure well being. This class will provide students with a basic introduction to leisure counselling and education. It will include an historical perspective, definitions, philosophies, models, issues and an exposure to the education and counselling techniques.

Instructor: R. Lyons

Format: Lecture 3 hours, offered alternate years

Prerequisite: LEIS 1126.06 and LEIS 2127.03 or consent of the instructor

**LEIS 4494.03: Canadian Sport History.** This class analyzes the historical antecedents of sport in Canadian life from a Nova Scotian perspective. Sports such as football, basketball and track and field are discussed, as well as sport heroes and issues including the historical role of women and minority groups in sport.

Instructor: A. Young

Format: Lecture 3 hours

Prerequisite: LEIS 2110.03 or consent of the instructor

**LEIS 4495.03: Leisure Issues Seminar.** This senior level class covers a broad range of issues facing leisure studies and the recreation profession. Students have the opportunity of gaining in-depth knowledge through dialogue about and investigation of selected issues.

Instructor: Staff

Format: Seminar 3 hours

Prerequisite: LEIS 3296.03, 3360.03, 3420.03 and 3480.03, or the consent of the instructor

Restriction: Restricted to Bachelor of Recreation students

**LEIS 4497.12: Internship in Recreation Administration.** This class is an extended to professional development placement during the Spring term and usually occurs during the final year of study. It requires a special investigative project in conjunction with the placement agency.

Instructor: Staff

Format: Placement 12 weeks Spring term

Restriction: Restricted BRec students in their final year.

**HLTH 4900.03A/4910.03B: An Interdisciplinary Approach to Gerontology.** See class description in Health Professions, Interdisciplinary section of this calendar.

LEIS 4800.06R/4801.03A or B or R/4802.03A or B or R: Directed Studies in Leisure Studies. Senior undergraduate students develop an area of specialization under the direction of a faculty member.

**Instructors:** Staff  
**Format:** Library survey or other research study 3 or 6 hours

**Prerequisites:** Fourth year status, a GPA of at least 3.00, a "B" grade in an earlier class in the area in which the project will be conducted (where applicable), consent of advisor, consent of faculty. Intention to register for a Directed Study should be confirmed with the divisional secretary by April 1st of the preceding academic year. Students may not take more than a total of 6 credit hours of directed studies.

**B. Required Arts and Science Classes**

**SOSA 1000.06, 1100.06 or 1200.06: An Introductory Sociology or Social Anthropology Class.** For class description please refer to the Sociology and Social Anthropology Department entry in this calendar.

**PSYO 1000.06: Introduction to Psychology.** For class description please refer to the Psychology Department entry in this calendar.

**POLI 1100.06: Introduction to Political Science.** For class description please refer to the Political Science Department entry in this calendar.

OR

**ECON 1100.06: Introduction to Economics.** For class description please refer to the Economics Department entry in this calendar.

**Electives**

Classes may be taken as electives across divisions with permission from the student's advisor. Classes are described under the program in which they are designated, i.e., Health Education (HEED), Kinesiology (KINE), Leisure Studies (LEIS) and Physical Education (PHSE).

# Russian Studies

Location: 1376 LeMarchant Street Halifax,  
N.S., B3H 3J5.  
Telephone: (902) 494-3473  
Fax: (902) 494-1997

## Chair

N.G.O. Pereira

## Undergraduate Advisor

I. Vitins (494-6923)

## Professor

N.G.O. Pereira, BA (Williams), MA, PhD (UC Berkeley)

## Associate Professor

I. Vitins; BA (Mich), PhD (UC Berkeley)

## Assistant Professors

J.A. Barnstead, BA (Oakland), AM (Harvard)

D. MacFadyen, PhD (UCLA)

M. Glazov, Kandidat (Moscow)

## Introduction

The Russian Studies Department offers classes in Russian language, literature, culture and history. Since Russia plays a crucial role in today's world and makes important contributions in a wide variety of scientific, technical, and humanistic fields, knowledge of its linguistic and cultural backgrounds can prove advantageous in many areas of study. Recent radical shifts in the country have significantly widened opportunities for using Russian in business, law, science, and government.

In the language classes emphasis is placed on gaining a thorough grasp of Russian grammar combined with practical competence in speaking, reading, and writing. Sections are small and intensive. Classroom work is supplemented by computer-assisted language learning programmes and audio-visual materials at the Learning Laboratory. Study of Russian literature begins with a general survey intended for first- or second-year students, followed by monograph, period, and genre classes. Literature classes are generally offered in both English and Russian in order to give as many students as possible from other disciplines the opportunity to become acquainted with this important part of Russian life.

Classes in Russian culture and civilization are intended to introduce students to art, architecture, music, religion, and other areas of Russian life which are necessary to understand the language and literature. Films, guest speakers, and evenings of Russian poetry are scheduled periodically. The Dalhousie Association of Russian Students organizes a variety of events throughout the year.

Major or honours students may, with the approval of the Russian Studies Department, take up to one semester (5 full credits) of work at a University in Russia and receive credit at

Dalhousie. Qualified students are urged to participate in the Intensive Russian Programme, founded by Dalhousie, which enables Canadian students to study for a semester at St. Petersburg State University.

## Degree Programmes

Classes in the Russian Studies Department are open to students either (1) as electives in any degree programme; (2) as constituents of a major or honours degree in Russian; or (3) with classes in another discipline forming part of a combined honours degree.

## Honours in Russian Studies

### Departmental requirements:

#### Classes required in Honours:

- |             |   |
|-------------|---|
| 1000 level: | RUSS 1000.06  |
| 2000 level: | RUSS 2002.03, 2003.03, 2051.03 and 2052.03, plus 5 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 RUSS 3002.03 and 3003.03   |
| 4000 level: | RUSS 4000.06  |

#### Other required classes:

½ class in Russian History (normally RUSS 2022.03 and/or 2023.03).

Honours Thesis.

## Advanced Major in Russian Studies

### Departmental requirements:

#### Classes required in Advanced Major:

- |             |   |
|-------------|---|
| 1000 level: | RUSS 1000.06  |
| 2000 level: | Three credits at or above the 2000 level including RUSS 2002.03, 2003.03, 2051.03 and 2052.03 |
| 3000 level: | Three credits at or above the 3000 level, one being RUSS 3002.03 and 3003.03                  |
| 4000 level: | Russian 4000.06   |

#### Other required classes:

½ class in Russian History (normally RUSS 2022.03 and/or 2023.03).

## Major in Russian Studies

### Departmental Requirements

#### Classes required in Major:

- |             |  |
|-------------|--|
| 1000 level: | RUSS 1000.06   |
| 2000 level: | RUSS 2002.03, 2003.03, 2051.03, and 2052.03                                |
| 3000 level: | Two credits at or above the 3000 level, one being RUSS 3002.03 and 3003.03 |

## Classes Offered

### Classes in Language

RUSS 1000.06R: 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.  
 Format: Instruction/drill 4 hours

**RUSS 2002.03A: Intermediate Russian I.** A continuation of RUSS 1000.06. Oral and reading skills and a further knowledge of grammar are developed through study and discussion of Russian texts.  
 Format: Instruction/drill 6 hours  
 Prerequisite: C+ in Russian 1000.06 or permission of instructor

**RUSS 2003.03B: Intermediate Russian II.** A continuation of RUSS 2002.03.  
 Format: Instruction/drill 6 hours  
 Prerequisite: RUSS 2002.03 or equivalent  
 Exclusion: RUSS 2000.06

**RUSS 2029.03A: Conversation.** Development of conversational skills and vocabulary building.  
 Format: Conversation practice  
 Prerequisite: RUSS 1000.06 and concurrent enrolment in RUSS 2002.03 or permission of instructor.  
 Exclusion: RUSS 2001.06

**RUSS 3002.03A: Advanced Russian I.** Conducted in Russian. Following a thorough review, this class concentrates on expanding all aspects of the student's knowledge of Russian grammar. Texts are read extensively and intensively. Discussion and compositions are based on the assigned readings.  
 Format: Lecture/discussion 5 hours  
 Prerequisite: RUSS 2000.06 or equivalent  
 Exclusion: RUSS 3000.06

**RUSS 3003.03B: Advanced Russian II.** A continuation of RUSS 3002.03.  
 Format: Lecture/discussion 5 hours  
 Prerequisite: RUSS 3002.03 or equivalent  
 Exclusion: RUSS 3000.06

**RUSS 3029.03A: Conversation.** Development of conversational skills and vocabulary building.  
 Format: Conversation practice  
 Prerequisite: Student must be enrolled in the 3rd year grammar class or must have permission of instructor.  
 Exclusion: RUSS 3010.06

The following B term classes are offered in Russian only as part of the Department's Intensive Russian Programme.

**RUSS 3010.06B: Grammar.** (see listing under Intensive Russian Programme).

**RUSS 3031.03B: Conversation and Phonetics.** (see listing under Intensive Russian Programme).

**RUSS 3032.03B: Translation.** (See listing under Intensive Russian Programme.)

**RUSS 3050.03B: Literature: Reading and Analysis.** (See listing under Intensive Russian Programme.)

**RUSS 4000.06R: The Structure of Contemporary Standard Russian.** Required for honours candidates. Conducted in Russian. 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.

Format: Lecture/discussion 3 hours  
 Prerequisite: RUSS 3000.06 or permission of the instructor

### Classes in Literature, Culture and History

Note: Classes marked \* are not offered every year. Please consult the current timetable on registration to determine if these classes are offered.

\***RUSS 1020.03A or B: Russian Culture and Civilization under the Tsars.** Conducted in English. The class traces developments in the Russian arts: painting, sculpture, theatre and music. Religious and secular ideas are also discussed.  
 Format: Lecture/discussion 2 hours

**RUSS 1070.03A or B: Modern Russian Culture and Civilization.** Conducted in English. The cultural and political history of 20th century Russia.  
 Format: Lecture/discussion 2 hours

**RUSS 2022.03A or B: Imperial Russia.** Equivalent to the first half of HIST 2020.06. Chronologically covers the imperial period of Russian history, from Peter the Great to the Revolution of 1917.  
 Format: Lecture/discussion  
 Exclusion: May not be taken by students who have completed HIST 2020.06, RUSS 2021.06

**RUSS 2023.03A or B: Soviet Russia.** Equivalent to the second half of HIST 2020.06. Chronologically covers the Soviet period of Russian history, from 1917 to Gorbachev.  
 Format: Lecture/discussion  
 Exclusion: May not be taken by students who have completed HIST 2020.06 or RUSS 2021.06

**RUSS 2051.03A or B: Survey of Russian Literature.** Conducted in English with section in Russian for majors. Required for majors and honours candidates. An overview of Russian literature from its beginnings through Tolstoy.  
 Format:  Writing Requirement (when taken in combination with RUSS 2052.03), lecture and discussion 3 hours  
 Exclusion: RUSS 2050.06

**RUSS 2052.03A or B: Survey of Russian Literature.** Conducted in English with section in Russian for majors. Required for majors and honours candidates. An overview of Russian literature from Chekhov to the present.  
 Format:  Writing Requirement (when taken in combination with RUSS 2051.03), lecture and discussion 3 hours  
 Exclusion: RUSS 2050.06

\***RUSS 2061.03A or B: Russian Modernism.** Conducted in English. A study of trends in literature and the arts at the turn of the century. Known as "The Silver Age", this is one of the most innovative and dynamic periods in Russian culture.  
 Format: Lecture/discussion 2 hours  
 Exclusion: RUSS 2340.03

\***RUSS 2062.03A or B: Literature of Revolution - The 1920s in Russian Literature.** Conducted in English. A study of experiment and



submission during one of the most exciting, diverse, and frustrating periods in Russian letters. "Socialist realism" was not yet official doctrine; innovation in literature was tolerated. Writers openly pondered the role of the individual and culture in the new collective society. Close reading and discussion of texts by Pasternak, Babel, Zamyatin, Olesha, Pilnyak, Zoshchenko, and Bulgakov.

Format: Lecture/discussion 2 hours  
Exclusion: RUSS 3250.03

\*RUSS 2070.03A or B: 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*. Writers read include Pasternak, Solzhenitsyn, N. Mandelstam, Rasputin, Trifonov.

Format: Lecture/discussion 2 hours

\*RUSS 2191.03A or B: Survey of Russian Theatre. Conducted in English with a section in Russian for majors. An overview of Russian writing for the theatre, with emphasis on the nineteenth and twentieth centuries. Plays examined include those of Pushkin, Griboedov, Gogol', Ostrovsky, Turgenev, Sukhovo-Kobylin, Chekhov, Gorkii, Andreev, Bulgakov, Shvarts and Aitmatov.

Format: Lecture/discussion 2 hours

\*RUSS 2270.03A or B: 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 focusses on the portrayal of several literary heroines and discusses their impact on both the literary imagination and society.

Format: Lecture/discussion 2 hours

\*RUSS 2500.03A or B: Tolstoy. Conducted in English. An introduction to the work of this enigmatic spiritual giant of Russian literature. Reading includes *War and Peace*, *Anna Karenina*, and *Resurrection*.

Format: Lecture/discussion 3 hours

\*RUSS 2600.03A or B: Russian Satire and Humour. Conducted in English. Russian satirical and humorous literature written within the last two centuries. Russian satire and humour have made a great contribution to the world's treasures in this genre.

Format: Lecture/discussion 2 hours

\*RUSS 2750.03A or B: Dostoevsky and the Russian Idea. Conducted in English. Dostoevsky's novels are of the highest importance in understanding the fate of Russia and the thoughts of other great Russian authors and thinkers. *Crime and Punishment* and *The Brothers Karamazov* are taken as the basis for discussion. The works of I. Turgenev and Lev Tolstoy are discussed together with the ideas of such great Russian philosophers as V. Solovyev and N. Berdyaev.

Format: Lecture/discussion 2 hours

\*RUSS 2760.03A or B: Dostoevsky and Western Literature. Conducted in English. With all his love for Russia, Dostoevsky treasured the West and its literature. It is impossible to understand Dostoevsky and his main novels, including *The Idiot* and *The Devils*, without *Hamlet* by Shakespeare, *Don*

*Quixote* by Cervantes, *Faust* by Goethe, some plays by F. Schiller, etc. The class traces the influence of Western ideas on Dostoevsky and his influence on such Western thinkers as Nietzsche and Freud.

Format: Lecture/discussion 2 hours

RUSS 3090.03A: 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.

Instructor: N.G.O. Pereira

Format: Seminar 2 hours

Prerequisite: Reading knowledge of Russian and some Russian history

Recommended: RUSS 1000.06, 2nd year Russian, part of the Fall Intensive Russian Programme

Cross-listing: HIST 3090.03

RUSS 3092.03A or B: Russian Topics. Topics to be studied and researched will vary from year to year. They may include the sources of Bolshevism/Leninism, the doctrine of peaceful coexistence, the position of national minorities, the role of literature (official and *samizdat*) and the press, the Cult of Personality, Khrushchev's "Thaw", Brezhnev, Gorbachev, and Yeltsin.

Instructor: N.G.O. Pereira

Format: Seminar 2 hours

Prerequisite: One 2000-level class in history

Recommended: HIST 2020.06 or RUSS

2022.03/2023.03

Cross-listing: HIST 3092.03

RUSS 3096.03A or B: The History of Ideas in Russia: From Official Nationality to Solzhenitsyn's Neo-Slavophilism. This class examines some of the main currents in Russian intellectual history from the middle of the nineteenth century through the 1990s. Topics include classical Slavophilism and early Westernism, Populism and Nihilism, Anarchism, Marxism, Leninism, Socialist Realism, anti-Stalinism, Glasnost, neo-Westernism (Sakharov), and neo-Slavophilism (Solzhenitsyn).

Instructor: N.G.O. Pereira

Format: Lecture/discussion

Recommended: HIST 2020.03 or RUSS

2022.03/2023.03

Cross-listing: HIST 3096.03

\*RUSS 3102.03A or B: Pushkin and his Age. Conducted in English with section in Russian for majors. A close study of the poetry and prose of Russia's greatest poet, and other writers of the "Golden Age of Russian Poetry." Works to be read will include the major narrative poems, *Eugene Onegin*, the "Little Tragedies," *Boris Godunov*, *The Belkin Tales*, as well as the poetry of Baratynskii, Batiushkov, Del'vig, and Lzzykov. No knowledge of Russian is required.

Format: Lecture/discussion

Exclusion: RUSS 2100.03

RUSS 3121.03A: 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.

Instructor: Staff

**Format:** Lecture/discussion 3 hours  
**Prerequisite:** Two years of Russian  
**Exclusion:** RUSS 3120.03

**RUSS 3122.03A: 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.

**Instructor:** Staff  
**Format:** Lecture/discussion 3 hours  
**Prerequisite:** Two years of Russian  
**Exclusion:** RUSS 3120.03

**\*RUSS 3520.03A or B: Chekhov and Turgenev.** Conducted in English. Close analysis and discussion of the major works of Turgenev, sensitive portrayer of socio-political and psychological issues of the second half of the nineteenth century in Russia, and Chekhov, unequaled short-story writer and radical innovator in modern theatre.

**Format:** Lecture/discussion 3 hours  
**RUSS 3800.03A or B: Gogol and His Tradition.** Author of "Overcoat," "Nose," "Taras Bulba, Dead Souls, Gogol has been proclaimed "a pathological liar and honest anatomist of the soul, jejune jokester and tragic poet, realist and fantasist". An in-depth study of this major writer.

**Format:** Lecture/discussion 3 hours  
**\*RUSS 4240.03A or B: Theories of Literature.** Conducted in English. This class surveys Russian thought about literature from mediaeval times to the end of the nineteenth century, then concentrates on a more detailed study of twentieth century theories. Emphasis is on the complex interrelationships of modern Russian theories of literature with their Western counterparts, e.g. Formalism and American "New Criticism". Topics treated include Formalism, early Marxist criticism, Socialist Realism, Structuralism, Tartu School of semiotics and Bakhtin. Student discussions and papers apply the principles of a given school to practical criticism of works of their choice, demonstrating the strengths and weaknesses of each theory.

**Format:** Lecture/discussion 2 hours  
**Exclusion:** RUSS 2240.03

**\*RUSS 4302.03A or B: 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

**RUSS 4950.03A or B, RUSS 4960.03A or B, RUSS 4990.06R: Russian 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. Past topics have included Old Church Slavonic, the historical phonology and morphology of Russian, and Russian symbolism. Students who wish to register for a specific programme should consult the chair of the Department.

**Prerequisite:** Permission of the Instructor

## Intensive Russian Programme

### Coordinator

N.G.O. Pereira (494-3354)

### Assistant to the Coordinator

W. Hebb (494-3679)

### Introduction

The Intensive Russian Programme (the first of its kind in Canada), is an inter-disciplinary course of instruction which allows students to undertake intensive study of the Russian language both here and in Russia at St. Petersburg University. This programme is offered at the third-year level of language study for students who have successfully (mark of "B") completed two years of Russian or its equivalent. Students at Dalhousie must enrol in a third-year intensive Fall preparatory session prior to going to Russia.

If students from elsewhere wish to join the third-year programme only in Russia, they may do so after successful completion of application requirements.

### Classes at Dalhousie

(September to December)

Students are required to take:

- RUSS 3002.03A: Grammar;
- RUSS 3029.03A: Conversation;
- RUSS 3121.03A: 19th Century Russian Prose and Poetry  
or
- RUSS 3122.03A: 20th Century Russian Prose and Poetry;
- RUSS 3090.03A: Russian Society Today;
- one additional A-term class in History or Russian Literature.

### Classes at St. Petersburg State University

(January to May)

**RUSS 3010.06B: Grammar.** Intensive study of the finer points of Russian grammar. Topics include verbs of motion, aspect, impersonal constructions, government and agreement, and other themes. This is a six-credit hour class.

**RUSS 3031.03B: Conversation.** 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.

**RUSS 3032.03B: Translation.** Work on translation of literary, business and journalistic texts.

**RUSS 3035.03B: Literature: Reading and Analysis.** Reading and analysis of literary texts.

# Science, Interdisciplinary

**SCIE 1000.06R: Introduction to Environmental Studies.** The intention of this full-credit class is to provide students with an entry-level introduction to the scope and importance of environmental issues that affect us at the local, regional, national and global levels. The class content will consist of introductory material on basic sciences (biology, earth sciences, atmospheric science and oceanography) and will follow with three groups of environmental issues; (i) the human population and sociocultural patterns, (ii) sustainability and use of renewable and non-renewable natural resources, and (iii) environmental degradation caused by pollution and disturbance. The class will be multi-disciplinary in nature, with specialists dealing with issues that reflect their particular expertise. However, this class will also build upon the connections among specific disciplines. The instructional format will involve two lectures per week. Grading will be by examination at the end of each module (about 4-6 exams each term).

Instructors: O. Hertzman, staff

**SCIE 3000.06R: Science Fundamentals.** SCIE 3000.06 is an interdisciplinary class for Honours students in the Faculty of Science. It stresses the motivations, skills, methodologies, and responsibilities of scientists, provides extensive formal instruction and practice in the written and oral presentation of scientific material, and promotes common bonds among scientists facing the complex problems of the future.

The class material covers three broad areas:

Scientific History, Philosophy, and Methodology consisting of *Our Roots: A Brief History of Science*; *Major Scientific Revolutions*; *The Scientific Method*; *Experimental Design and Execution*; *Comparison of Scientific Methodologies*; *Logic: Inductive and Deductive Reasoning*; *Methods of Handling and Interpreting Numerical Data*

*Scientific Communication Skills* dealing with *Awareness of the Scientific Literature*; *Library, Set Theory, Database Searching Skills*; *Communication of Scientific Results I: Scientific and Technical Writing*; *Communication of Scientific Results II: Oral Presentations*; *Maintaining Competence after Graduation*; *Journals, Conferences, Exchanges, Electronic Bulletin Boards*

*Scientific Politics and Practicalities* in which we discuss *Research Environments*; *Government, Private Sector, University*; *Scientific Drives: Curiosity, Necessity, Money, Fame*; *Basic vs. Applied Research*; *Research Costs*; *Funding of Scientific Research in Canada*; *Grants vs. Contracts*; *Science and Technology: Patents and Technology Transfer*; *Science in the Service of People*; *Social Responsibilities of Scientists*; *Ethical Issues for Scientists*; *Working with People, Animals, Data*; *Major Scientific Questions of Today*

Instructors for this class are experts from a wide range of disciplines, both from within the university and outside. For further information, contact the co-ordinator.

Format: Writing Intensive, lecture 3 hours  
Instructors: D.B. Clarke and others  
Restriction: Third- and fourth-year Honours students in the Faculty of Science

**SCIE 4000.03B: The History of Modern Science.** Science became separated from general knowledge about 1500 and the early 19th century. It has proved to be a remarkably powerful cultural force from the time of the first Scientific Revolution of the 17th century until our own times. This class examines the ways that science and scientists have given us knowledge of the natural world from the time of Copernicus to the development of evolutionary theory and relativistic physics in the 19th and 20th centuries. It is intended for students interested in interdisciplinary knowledge who are prepared for extensive reading.

Instructor: E. L. Mills  
Format: Lecture 3 hours  
Cross-listings: BIOL 3402.03, HIST 3072.03

**SCIE 4001.03B: History of Marine Sciences.** This class outlines the major developments leading to the present state of knowledge in biological, chemical, physical and geological science of the ocean. Events and changes are related to their cultural and social contexts. It asks how scientific facts, institutional developments, and social influences have affected acquisition of knowledge about the oceans.

Instructor: E.L. Mills  
Format: Lecture 3 hours  
Cross-listings: BIOL 4664.03, OCEA 4331.03/5331.03

**SCIE 8700.00: Science Co-op Seminar.** This seminar is designed to introduce the science co-operative education student to aspects of career development in preparation for their first work placement. Topic areas include: resume writing, interview skills, employment law, preparation of written reports, work safety skills, and conflict management.

Format: Seminar 2 hours  
Instructors: C. Cottingham and others  
Restriction: Restricted to students enrolled in the Science Co-operative Education Programme

The following classes address the subject matter in an interdisciplinary manner. Consult department listings for full descriptions.

BIOL 3601.03A: Nature Conservation

CHEM 3303.03A or B: Materials Science

COMP 1000.03A or B: Microcomputer Applications

ECON 2250.06R: Applied Development Economics

ECON 3338.03A: Introductory Econometrics I

MATH 1001.03A/1002.03B: Mathematics for Liberal Arts Students

MATH 2600.03A or B: Theory of Interest

# The Maritime School of Social Work

**Location:** 6414 Coburg Road (at Oxford Street), Halifax, N.S. B3H 3J5  
**Telephone:** (902) 494-3760

## Programme Information

Jarret Denamore, Admissions Coordinator

## Academic Staff

### Associate Professor and Director

J. Gilroy, BA (Dal), MSW (King's), MA (Tor)

### Professors

R.W. Carlson, BA, MSW (Penn) PhD (Chicago)

F.C. Wien, BA (Queen's), MA, PhD (Cornell)

### Associate Professors

G. Fitzgerald, BA (Dal), MSW (King's)

J. Gilroy, BA (Dal), MSW (King's), MA (Tor)

R. O'Day, BA (UBC), MA, PhD (Michigan)

### Assistant Professors

J.B. Duplisea, BA, MSW (MtA)

J. Graveline, BSW (Calgary), MSW (Manitoba)

J.R. Harbison, BA, BSS (Dublin, Trinity College),  
Grad. Dip. SW (Edinburgh), PhD (Tor)

M. MacDonald, BA (St.FX), BJ (Carleton), MSW  
(Dal)

R. Neal, BA, BSW (McM), MA (OISE/UofT)

B.K. Richard, BA (MtA), MSW (Dal)

A. Sexton, BA (Honours) (St. Thomas), MSW  
(Dal)

W. Thomas-Bernard, BA (MSVU), MSW (Dal)

### Lecturers

C. Campbell, BSc (King's), BEd, SpecEd  
(Acadia), MSW (Carleton)

S. Nasser, BA, BSW (McG), MSW, MPM (Minn)

### Sessional Lecturers 1995-96

C. Hinchey, BSc, MSW (Tor)

P. Kerans, BA (Loyola), MA (St. Louis), STL  
(Innstruck), DRS (Strasbourg)

C. Lambert, BA, MA (Goddard), BSW, MSW  
(McG)

F. O'Hara, BA (St. Thomas), MSW (Dal)

M. Peers, BA (Western), MSW, LLD (Dal)

R.J. Williams, BSc (Alta), MSW, LLB (Dal)

### Honorary Appointments

D. Moore, Dip. Social Studies (London), BA,  
MA (Dal), PhD (Boston U)

D. Williams, AB (Chico), MSW (Calif Berkeley),  
PhD (Brandeis)

R. Williams, BA (Acadia), MA (Tor), DEd (OISE)

### Field Instructors 1994-95

J. Andres

N. Beck

M. Boone

M. Bordage

K. Bortolotto-Freeman

R. Caines

I. Carter

M. Cheney

B. Clarke

R. Crawford

R. Crowell

R. Deveau

A. Doucet

N. Doucet

S. Drysdale

J. Dunbar

M.B. Floyd

P. Forrestall

S. Gagnon

S. Gibson

C. Gillett

D. Graham

R. Gray

Y. Hansen

P. Helwig

S. Howard

N. Hunter

K. Jennex

W. Johnson

P. Josey

A. Kane

P. Lappin

C. LePage

R. Lewis

J. MacKeen

M.A. MacKinnon-Rodriguez

T. Mawhinney

D. McDonnell

K. McMillan

M. Merlin

M. Miller

F. Milley

S. Mitchell

S. Mooring

H. Muinonen

B. Peters

Y. Raczkowski

J. Rogers

E. Ryan

T. Saulnier

A. Smith

S. Suffron

L. Thomas

A. Wassef

J. Webb

B. Weber

L. Wentzell

J. Wharry

L. Lucas White

L. Wilson

J. Zinck

## Introduction

The Maritime School of Social Work was founded in 1941 to meet a need for professionally educated social workers in the Atlantic region. The School amalgamated with Dalhousie University in 1969. It has since become one of eight constituent parts of the

**Faculty of Health Professions.** The undergraduate programme leading to the Bachelor of Social Work degree was introduced in the late 1970's to provide basic professional education in Social Work. General classes in the humanities and social sciences, and more specialized classes in social policy, professional values, and practice methods equip students with knowledge and skills essential to employment in a wide range of human services. Critical analyses of human behaviour and social environment provide a foundation for the development of skills for assisting people to cope more effectively with problems and for supporting broader social change.

The School also offers a Master's degree programme for advanced, specialized study in Social Work practice, and a Continuing Education programme of thematic provincial workshops.

Both the undergraduate and graduate programmes are accredited by the Canadian Association of Schools of Social Work.

## Maritime School of Social Work Regulations

All students are required to observe the University and Academic Regulations as described in this calendar.

### 1. Grade Point Average Requirements

The University grade point average system is described in the Academic Regulations section of this calendar. Faculty of Health Professions and School grading regulations for students actively registered in the BSW programme since the Fall of 1990 or earlier may be found in the calendar for the appropriate year of entry.

### 2. Grade Requirements for Social Work Classes

A student must obtain at least a C grade in each Social Work class for that class to be counted as a credit for the BSW degree. A student who earns a grade of less than C in a Social Work class but is otherwise still eligible to continue in the programme must repeat the class until a grade of at least C is attained. Social Work classes are all classes taken under BSW study other than those designated as general admission credits.

### 3. Grading Requirements for Field Instruction Classes

Field Practice classes SLWK 3020.06 and SLWK 4020.15/ 4030.12 are graded on a pass/fail system. A student must obtain a passing grade in each Field Practice class in order to be eligible to proceed in the programme.

### 4. Required Withdrawal

A student who fails to meet sessional GPA standards as defined in the Academic Regulations section of this calendar must withdraw from the School. As well a student who fails a repeated class (academic or field work) must normally withdraw from the School.

### 5. Required Withdrawal on the Grounds of Unsuitability

The MSSW acting through its BSW Programme Committee and its Director may require a student to withdraw if judged to be unsuitable in aptitude and fitness for the profession of Social Work. Because of the nature of the study and practice of Social Work, which places clients in a position of special trust in relation to social workers and social work, certain impairments or some types of conduct, unbecoming to a member of the social work profession may be grounds for dismissal, or suspension. Aptitude and fitness for the profession of Social Work, as determined by the BSW Programme Committee, are requirements for continuation in the programme.

The following list of examples illustrates the criteria used to assess unsuitability in aptitude and fitness. This list should not be considered to exclude other such behaviours:

- i) conviction of criminal activity (e.g. assault, sexual assault, fraud and drug trafficking).
- ii) persistent substance abuse (e.g. alcoholism, drug addiction, use of illegal drugs).
- iii) any medical condition which affects an individual's ability to perform as a social worker if that condition is chronic and/or recurring and affects judgment.
- iv) unethical behaviour (i.e. see N.S.A.S.W. Code of Ethics, 1994).

The BSW Committee determines whether the student is fit for the study and practice of Social Work. The principles of confidentiality, natural justice and due process are observed in all committee deliberations.

### 6. Readmission After Voluntary Withdrawal

Students in good standing who have withdrawn from the programme for one to three years and who wish to be reinstated are required to submit a new application form, to be returned with a letter to the Chairperson, BSW Committee, requesting re-entry to resume their BSW degree studies.

Students who have not registered in the programme for three years or more and who wish to be reinstated are required to reapply, normally by the March 1st 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 programme. Former students who have less than the five general admissions credits, which are now required on entry, must complete these before reapplying. (See Admissions Requirements - MSSW section elsewhere in the Calendar.)

Because of the relation of the BSW programme to the attainment of professional qualifications, each application is evaluated separately by the BSW Committee, and the student informed by letter of its decision. Due to the competitive nature of the enrolment process, readmission of students is not guaranteed. Programme requirements for reaccepted students may be adjusted effective from the date of readmission.

## 7. 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.

## 8. Duration of Undergraduate Study

Students are normally required to complete the BSW degree within 10 years of their first registration (see Duration of Undergraduate Studies, Regulation 17).

## 9. Workload Regular Academic Year

Five (5) full credit classes per academic year (except in the first year where 5 1/2 credits are permitted) shall be regarded as constituting a normal workload for a full-time student, and may not be exceeded without written permission from the Committee on Studies of the Maritime School of Social Work. Written permission is also required if the planned workload in any term would amount to six half-credit classes (i.e. 3 full credits). In addition to the regular timetable, labs or workshops may be offered throughout the fall/winter terms.

For Spring/Summer Session workload see Academic Regulation 4.2.

## Bachelor of Social Work Degree Programme

### Admission

The BSW programme requires three years of full time study for persons entering with the minimum academic prerequisite of five general non-social work credits completed at a GPA of 2.70 or B- average. Persons holding an undergraduate degree on entry which provides suitable preparation for the study of Social Work normally may complete the programme in two full-time years or the equivalent on a part-time basis.

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 process. Equal consideration is given to part-time and full-time applications. Information on recommended academic preparation, and information on admissions and application procedures is contained in the Admissions Requirements - Maritime School of Social Work section, near the front of this calendar.

### Students in Other Degree Programmes

Students enrolled in Dalhousie degree programmes that accept Social Work credits as electives may take SLWK 3011.03, 3012.03, 3081.03, 3082.03 and 3090.03 with prior permission of their major department and the School. All other classes are normally restricted.

### Special Students "Non-Degree"

Social Work classes are not available to special "non-degree" students, with the exception of agency field instructors and other qualified social work professionals who are able

to satisfy normal admission requirements. Permission of the BSW chairperson is also required.

### Audit by Agency Field Instructors

The MSSW permits Agency Field Instructors to audit Social Work classes. Prior permission of the instructor concerned is required. In order for the audit to show on a University transcript, the agency field instructor must abide by the audit and fee regulations as outlined in the Academic Regulations, Audit of Classes section of this calendar.

### Programme Objectives

The BSW programme is designed to enable students to develop a range of basic general skills and theoretical perspectives that are adaptable to a variety of social work job settings. Although a focus of study includes the people, the communities and the service network of the Maritime provinces, graduates are qualified to practice social work throughout Canada and elsewhere. Opportunity for the interaction of theory with practice is provided in two supervised field placements, one early in the curriculum and one towards the end of the programme.

Students learn to integrate values, theory and practice skills through development of:

- Ability to assess their learning needs, and to draw wider implications from their practice and life experiences.
- Understanding and appreciation of a wide range of social work roles and interventive methods.
- Understanding of both the psychological and socio-economic forces which impinge on clients' lives.
- Critical, well-founded awareness of the probable impact of various interventions on clients.
- Ability to implement a variety of interventive skills.
- Ability to judge which interventive methods are appropriate in each concrete situation.
- Ability to understand and deal with the policies and administrative structures which affect the delivery of social services.

### Relationship to the MSW Programme

The BSW provides the academic prerequisite for graduate study in Social Work. Admission to the MSW programme normally necessitates that the candidate have a BSW degree followed by two years of postbaccalaureate social work experience in the area of preferred graduate study concentration.

### Full-time and Part-time Studies

A full-time programme of study usually consists of either 5 credits (i.e. 30 credit hours) or 5.5 credits (33 credit hours) during the regular Fall/Winter session.

Part-time study may consist of 5 to 3 credits (i.e. 3 to 18 credit hours) during the Fall/Winter session.

Required academic classes are generally scheduled in the late afternoon or evening. Daytime sections for the three Social Work

practice classes are also available. Students are required to undertake two field placements during regular daytime working hours.

### Curriculum Requirements

The BSW degree programme consists of 15 Social Work credits. The latter are reduced by the amount of transfer credit and/or competency credit for which the student may be eligible. Maximum credit from all outside sources is limited by the regulation that any student with a previous degree is required to complete a minimum of six credits under Dalhousie instruction, and that any student without a degree is required to complete a minimum of seven and one-half credits under Dalhousie instruction.

Students generally fit into either a two-year, three-year or partial three-year BSW programme, as follows:

#### Two-Year or 10-Credit Programme

Entrants with a previous undergraduate degree and a cumulative GPA of 2.70, (or average of B- minimum or 65%) are required to complete 10 Social Work credits (i.e. 60 credit hours), consisting of:

- a) Six **compulsory** credits as follows:
  - SLWK 2000.06R: Introduction to Social Work Practice (1 credit)
  - SLWK 3020.06R: Field Instruction I (1 credit)
  - SLWK 3030.06R: Foundation of Social Work Practice (1 credit)
  - SLWK 4010.06R: Advanced Social Work Practice (1 credit)
  - SLWK 4030.12R: Field Instruction II (2 credits); and
- b) Four **core** credits, from the following group, to be determined after the assignment of transfer credit during registration week:
  - SLWK 2010.03A or B: An Introduction to Community Development (½ credit)
  - SLWK 3011.03A: Perspectives on Social Welfare Policy I (½ credit)
  - SLWK 3012.03B: Perspectives on Social Welfare Policy II (½ credit)
  - SLWK 3040.06R: People in Society (1 credit)
  - SLWK 3050.03A or B: Social History of Atlantic Canada (½ credit)
  - SLWK 3070.03A or B: Social Service Delivery Analysis (½ credit)
  - SLWK 3081.03A: Science and Testing of Practice I (½ credit)
  - SLWK 3082.03B: Science and Testing of Practice II (½ credit)
  - SLWK 3090.03A or B: Social Statistics (½ credit)
  - SLWK 3100.03A or B: Political Economy of Social Welfare in Canada (½ credit)
  - SLWK 3220.03A or B: Cross-Cultural Issues and Social Work Practice (½ credit)

#### Three-Year or 15-Credit Programme

Entrants with 5 eligible general academic credits and a cumulative GPA of 2.70 (or B- or 65%) are required to complete 15 Social Work credits (i.e. 90 credit hours), consisting of:

- a) Six **compulsory** credits, as above;
- b) Six **core** credits, as listed above; and
- c) Three **elective** credits, as listed below.

Entrants with more than 5 and less than 15 eligible academic credits may receive a limited number of transfer credits according to established BSW policy. Such students complete a partial three-year programme, whereby the number of required Social Work credits is reduced by the number of approved transfer credits, which together total 15 credits (e.g., 1.5 transfer credits reduce the required Social Work content to 13.5 credits). As a general rule, transfer credits eliminate free elective content first and Social Work core content last.

**Social Work in a Special Field of Practice Elective:** (½ credit) Usually an elective offered by the School to provide in-depth study of unmet needs and emerging social work roles in a specific field of practice.

**Social Problem Electives:** (1 credit or 2 x ½ credits) May be Social Work electives, or electives offered by other Departments or Schools, to provide in-depth study of contemporary social problem issues. Examples of social problem electives are: Child Welfare, Deviancy, Women's Issues.

**Free Electives** (1½ credits or 3 x ½ credits). Free electives may be chosen from any subject area, including Social Work.

#### Sequencing of Class Credits

All students accepted into the programme are expected to commence their Social Work credits during the regular academic session which begins in September.

It is the policy of the BSW Committee that:

- i) SLWK 2000.06R: Introduction to Social Work Practice - is the first class to be completed by part-time students;
- ii) SLWK 2000.06R: Introduction to Social Work Practice - is completed prior to the commencement of SLWK 4010.06: Advanced Social Work Practice;
- iii) SLWK 2010.03A or B: An Introduction to Community Development. is included in the first five credits of the students programme; and that
- iv) SLWK 3020.06: Field Instruction I, is completed prior to the commencement of SLWK 4030.12: Field Instruction II.

The sequencing of course work is otherwise largely dependent on each student's needs within the following guidelines:

- i) Students are advised to take SLWK 4010.06: Advanced Social Work Practice after SLWK 3030.06: Foundations of Social Work Practice.
- ii) SLWK 4030.12R: Field Instruction II - should be taken at the end of a student's programme.

Full-time students in the two-year programme complete SLWK 2000.06, and 3030.06 in year 1 and SLWK 4010.06 in year 2;

full-time students in the three-year programme complete SLWK 2000.06 in year 1, SLWK 3030.06 in year 2, and SLWK 4010.06 in year 3.

### New Student Advising Sessions

New students are assisted in planning their classes by curriculum advisors from the School who meet with each student during the initial stage of the scheduled Fall registration week. Decisions about which Social Work classes each student will require after the assignment of transfer credit are available at this time. The possible assignment of competency credits to be earned in the coming months is also discussed during this session. The advising session is mandatory for all new students and recommended for all returning students.

### Faculty Advisors

Each student is assigned a faculty advisor for ongoing consultation concerning any issues or concerns that may arise throughout the year. For new students, the faculty advisor is the instructor of their SLWK 2000.06 class. For students enrolled in SLWK 4030.12: Field Instruction II - the faculty field instructor also serves as the faculty advisor.

### Competency Credit

Credit for competency allows certain new students the opportunity to receive credit for various types of non-formal learning, provided that they are able to demonstrate its relevancy to the content of the BSW programme.

To be eligible, the student needs at least 24 consecutive months of full-time paid or unpaid employment in the human services, or equivalent, prior to acceptance. The number of competency credits for which the student may apply is limited both by the amount of transfer credit that he/she has on entry and by the type of previous work experience. A minimum of .5 credit to a maximum of 2 credits is possible. Eligibility is determined by the credit for competency coordinator.

New students may apply for competency credit no later than September 30th of the year of their first registration in the BSW programme. To be eligible, part-time students must be registered in SLWK 2000.06R: Introduction to Social Work. A fee equal to half the regular fee for a .5 credit class is submitted to the competency credit co-ordinator with each topic undertaken.

Competency credits successfully completed reduce the number of classes in the BSW curriculum that the student would otherwise be required to take.

### Transfer Credit

Transfer credit is assessed on an individual basis according to established School policy. It is the student's responsibility if requested to provide class outlines and other documentation required by the School for the purpose of determining eligibility. The student's choice of classes in the first year is dependent upon the assignment of transfer credit.

### Classes Offered

**SLWK 2000.06R: Introduction to Social Work Practice. (compulsory)** As the first practice class in the BSW programme, this class offers students a beginning examination of topics and issues that will be examined in greater depth in other classes during their BSW studies. The overall goal of the class is to facilitate the development of a social work practice which is (a) grounded in an understanding of power and oppression, and (b) understands that the experience of social work varies depending upon the age, gender, race, ethnicity, sexual orientation, class and ability of clients and workers.

**Instructor:** C. Campbell  
**Format:** Lecture/discussion 2 ½ hours per week, workshop 15 hours per term  
**Restriction:** Restricted to Social Work students

**SLWK 2010.03A or B: An Introduction to Community Development.** 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, guest speakers and case studies, this class will discuss various elements of the change process and examine specific change strategies.

**Instructor:** C. Campbell  
**Format:** Lecture/discussion 2½ hrs  
**Pre/Co-requisite:** SLWK 2000.06  
**Restriction:** Restricted to Social Work students

**SLWK 3011.03A: Perspectives on Social Welfare Policy I.** This class provides a survey of the history of social welfare in Canada, with a focus on historical debates which shed light on present-day issues.

**Instructor:** M. MacDonald  
**Format:** Lecture/group discussions

**SLWK 3012.03B: 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 of contemporary debates.

**Instructor:** M. MacDonald  
**Format:** Lecture/group discussions

**SLWK 3030.06R: Foundations of Social Work Practice. (compulsory)** Topics include a review of some of the major theories of human behaviour, and application of structural/feminist theory to a set of core practice skills.

**Instructors:** B.K. Richard, J. Duplisea  
**Format:** Lectures, small and large group discussions, student presentations, role plays

**Pre/Co-requisite:** SLWK 2000.06  
**Restriction:** Restricted to Social Work students

**SLWK 3040.03A or B: People in Society. (not offered in 1996-97)**

**SLWK 3050.03A or B: Social History of Atlantic Canada.** An analysis of the peoples who settled the region, the problems they have



facéd and their reactions to them are presented, with a focus that gives historical perspective to contemporary social problems.

Instructor: R. Neal  
 Format: Seminar 2½ hours  
 Restriction: Restricted to Social Work students

**SLWK 3070.03A or B: Social Service Delivery Analysis.** (Not offered in 1996-97). 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.

Instructor: TBA  
 Format: Lecture/small groups  
 Substitute: A Social Work in a Special Field of Practice elective or an interdisciplinary class related to social work practice can be substituted for this class.

Restriction: Restricted to Social Work students

**SLWK 3081.03A: Science and the Testing of Practice I.** The use of research in social work practice is explored considering systematic ways in which practice can be evaluated. Use of single-subject designs, structured assessments, well-defined databases and other forms of systematic inquiry are considered. The role such research might play in developing practice assumptions is discussed.

Instructor: R. O'Day, R. Carlson  
 Format: Discussion/group projects 2 ½ hours

Restriction: Restricted to Social Work students except by permission of the instructor

**SLWK 3082.03B: Science and the Testing of Practice II.** The use of research to increase understanding of social programmes and social problems is the focus of this class. Consideration is given to the nature of the scientific method and commonly used approaches to such research. The interrelationship between theory, research and practice is explored. Particular attention is given to biases frequently encountered in the use and non-use of research in planning and implementing social programmes.

Instructors: R. O'Day, R. Carlson  
 Format: Discussion/group projects 2½ hours

Restriction: Restricted to Social Work students except by permission of the instructor

**SLWK 3090.03A or B: Social Statistics.** (not offered in 1996-97 regular session). This class develops an understanding of major basic statistical tools which facilitate interpretation of data derived from social work-related data bases or research. The ability to apply basic forms of analysis to the description of samples, and the ability to draw inferences from samples to populations are provided. Applications rather than mathematical derivations are examined in exploring the practical significance and limitations of statistics. Concepts explicated

are: prediction, models, level of measurement, probability, inference, and quantification. Statistics developed include: measures of central location, dispersion, regression, association, confidence intervals, and selected tests of significance with emphasis on multivariate applications.

Instructor: R. Carlson  
 Format: Lecture

**SLWK 3100.03A or B: Political Economy of Social Welfare in Canada.** This class offers an introduction to the analysis of structural oppression along the axes of class, gender, race and ability, especially the tension between universality as a policy goal and respect for diversity. Specific attention is focused on strategies of affirmative action, pay equity, discriminatory harassment and licensure.

Instructors: M. MacDonald  
 Format: Lecture/small groups  
 Prerequisite: SLWK 3012.03  
 Restriction: Restricted to Social Work students

**SLWK 3220.03A or B: Cross-Cultural Issues and Social Work Practice.** This core class provides an opportunity to: critically examine theoretical frameworks for viewing minority racial, ethnic and cultural groups in society; examine personal values as they relate to the above groups; develop skills in working effectively with minority groups, and understand social policies as they relate to minority groups.

Instructor: J. Graveline  
 Format: Seminar 2½ hours  
 Restriction: Restricted to Social Work students

**SLWK 4010.06R: Advanced Social Work Practice.** (compulsory) Social Work practice problems are critically examined from a regional, feminist-structural perspective for the purpose of developing analytical and practical skills in preparation for professional practice.

Instructor: W. Thomas-Bernard, staff  
 Format: Lecture/small groups 2½ hours  
 Prerequisite: SLWK 1000.09, SLWK 3020.06, SLWK 3030.06 (recommended)

Restriction: Restricted to Social Work students

## Equipment

Throughout the programme of study, some development of computer skills will be included. Social Work students are expected to make use of the computer labs and related resources which include assistance in getting started, available on the main Dalhousie campus. Computers for student use are located in the School's library building. Assistance in getting started is available on request.

All students should have access to a portable tape recorder for use in field instruction. Students may be expected to have the use of a car in order to do their field placements.

## Field Instruction

All part-time and full-time students are required to undertake the two field placements (SLWK 3020.06 and 4030.12) during regular working hours. The field component of the

programme is organized and supervised by the Maritime School of Social Work faculty. There is provision for seminars, workshops and consultations in order to assist the students with testing content from academic classes. Content necessary to a specific field of practice is introduced as required, including such topics as law and social work, housing policy, and employment policy and practice.

**SLWK 3020.06R: Field Instruction I (compulsory)** This initial field placement provides an opportunity for beginning social work practice under supervision of agency personnel in liaison with School faculty. The student develops beginning competencies in direct practice situations, working with individuals and small groups. Use of agency and community resources, policies and services are studied. Approximate length 200 hours. Students must indicate their intent to register for Field I to the Field Co-ordinator by the following dates:

- October 1 for registration in January
- January 1 for registration in the spring/summer terms
- March 1 for registration in September or January of their second or subsequent year(s).

Field I should be completed early in the student's programme.

**Restriction:** Restricted to Social Work students

**SLWK 4030.12: Field Instruction II (compulsory)** The major field placement offers a faculty-supervised opportunity for the development of counselling, social change and community action skills sufficient for responsible entry into practice upon graduation. The student becomes increasingly proficient in service situations requiring counselling, and can recognize the need for influencing policy, programme or process within the place of field practice in order to carry out professional responsibilities in the community.

The student must develop a proposal to be submitted to the School and to be approved by the Field Coordinator prior to beginning the practicum. The Field II proposal must be submitted by the following deadline dates:

- March 1 for registration during either term of the regular academic session (Fall/Winter)
- January 1 for registration in the Spring term

Field placements requested in the spring/summer session are dependent upon the availability of faculty and field instructors.

Students who are working in non-social work positions must make arrangements early in their programme to be able to complete their 200-hour Field I placement and their 500-hour Field II placement. The student would normally be expected to request leaves of absence from his/her regular non-social work position. A Field manual is available to aid the student in preparing for the placement, as well as outlining the expectations for satisfactory completion of the practicum.

The Field II practicum is done at or near the end of a student's programme. Minimum of 500 hours. Proposals should be sent to: Field II Coordinator, Maritime School of Social Work, Dalhousie University, Halifax, N.S. B3H 3J5.

**Restriction:** Restricted to Social Work students

### Credits for Competency

**SLWK 2500.03: (A) Learning Through General Work Experience (½ credit)**

**SLWK 2510.03: (B) Self Analysis and Personal Development (½ credit)**

**SLWK 2520.03: (C) Specific Social Work Skills (½ credit)**

**SLWK 2530.03: (D) Non-credit Structured Learning Experiences (½ credit)**

**SLWK 2540.03: (E) Knowledge of Special Field of Practice (½ credit)**

Eligible students complete A, and no more than three of B, C, D and E.

Students taking SLWK 2000.06 who are eligible to apply for an exemption from Field I are required to complete topics A and C.

### Social Work in a Special Field of Practice Electives

Two elective classes, one in each term, are offered each year from the following:

**SLWK 3170.03A or B: Feminist Counselling**  
Cross-listing: WOST 3855.03

**SLWK 3180.03A or B: Family Counselling**

**SLWK 3200.03A or B: Law and Social Work**

**SLWK 3210.03A or B: Social Work in the Medical Field**

**SLWK 3230.03A or B: Women and Social Change**

Cross-listing: WOST 3850.03

**SLWK 3250.03A or B: Social Work in Corrections**

**SLWK 3260.03A or B: Social Work in Industry**

**SLWK 3270.03A or B: Social Work in Addictions**

**SLWK 3280.03A or B: Social Planning: Theory and Applications**

**SLWK 3290.03A or B: Counselling in Social Work Practice**

**SLWK 3300.03A or B: Independent Study**

**SLWK 3310.03A or B: Rural Social Work**

**SLWK 3320.03A or B: Social Work and the Aging**

**SLWK 3340.03A or B: Social Work with Exceptional Children**

**SLWK 3350.03A or B: Social Work with Groups**

**SLWK 3370.03A or B: Child Welfare**

# Sociology and Social Anthropology

**Location:** South-East Corner of South and Seymour Streets, Halifax, N.S.  
**Telephone:** (902) 494-6593  
**Fax:** (902) 494-2897

## Chair

J.G. Morgan (494-2069)

## Undergraduate Advisor

J. Stolzman (494-6759)

## Professors

R.A. Apostle, BA (Simon Fraser), MA, PhD (Calif)  
 J.H. Barkow, AB (Brooklyn), AM, PhD (Chi)  
 M.E. Binkley, BA, MA, PhD (Tor)  
 D.H. Clairmont, BA, MA (McM), PhD (Wash U), McCulloch Professor in Sociology and Social Anthropology  
 H.V. Gamberg, BA (Brandeis), A.M., PhD (Princ)  
 V. Thiessen, BA (Man), MA, PhD (Wis)

## Associate Professors

F.M. Butler, BA, MA, PhD (Tor)  
 D.H. Elliott, BA (Yale), PhD (Pitt)  
 T.J. Li, BA, PhD (Cantab)  
 V.P. Miller, BA (Calif), MA, PhD (Calif)  
 J.G. Morgan, BA (Nott), MA (McM), DPhil (Oxon)  
 C.J. Murphy, BA (St. FX), MA (Dal), PhD (Tor)  
 J. Stolzman, BA (Ore), MS (Fla), PhD (Ore)

## Assistant Professors

P.T. Gardiner Barber, BA, MA (Auck), PhD (Tor)  
 P.G. Clark, BA, MA (McM), PhD (UBC)  
 D. Findlay, BA, BSW, MA, PhD (McM)  
 J. Jarman, BA, MA (Tor), PhD (Cantab)

## Lecturer

L. DuBois, BA (McG), MA (New School for Social Research)

## Adjunct Professors

F.G. Cohen, BA (Harv/Rad), MEd (Harv), PhD (Minn)  
 M.M. Cohen, Jr., BA (Mich), DMD (Tufts), MSD, PhD (Minn)  
 R.C. Kaill, BA (Dal), BD, MA (Tor), PhD (McG)  
 L. Kasdan, MA, PhD (Chi)  
 D. Looker, BA (Carl), MA (Wat), PhD (McM)  
 J.J. Mangalam, BSc, MSc (Punjab), PhD (Cornell)  
 B. Raymond, MA (Calif), PhD (Chi)

## Research Associates

A.F. Davis, BA (St. Mary's), MA (Man), PhD (Tor)  
 A.G. Thomson, BA, BEd, MA (Dal), PhD (Cantab)

## Introduction

Social Anthropology and Sociology are related and overlapping disciplines. Although in some universities they are found in separate departments, this Department and many of its

classes blur the distinction between them and emphasize the areas of overlap. The Department is committed to a programme which stresses the areas of convergence between the two disciplines.

Sociology and Social Anthropology provide an academic training which is rigorous and cosmopolitan. Students develop research skills along with a general intellectual preparation which stands them in good stead for graduate work in the disciplines or for a broad range of professions such as law, medicine, social work or journalism.

## 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.

## Social Anthropology

Anthropology is composed of four subfields, social/cultural, archaeological, biological, and linguistic. The strength of our programme is the concentration upon Social Anthropology, the area most complementary to Sociology. Social Anthropology, with its emphases on global context, continuity and change, questions of human and group identity, and views on human nature, may focus on local cultures or entire civilizations. For example, some Social Anthropologists study historical and contemporary conditions of indigenous groups, tribal or peasant societies, others conduct their research within industrial societies. Our programme provides the opportunity for students to become conversant with the comparative cultural implications of modern societies such as different forms of family and kinship practices, changing gender relations, the organization of work, law and social injustice, medicine and health, religion, and political economy. How do people in different places and times react, resist, and adapt to change?

## Degree Programmes

The department's BA degree programme is offered as a 15 credit major or a 20 credit advanced major in Sociology and Social Anthropology. The BA honours degree is offered through more specialized programmes of study in Sociology or in Social Anthropology. Dalhousie graduates wishing to upgrade from a 15 credit major may complete an additional five credits to be awarded the Advanced Major Certificate or the Honours Certificate. An honours degree is normally the required preparation for graduate study.

All Bachelors degree programmes are governed by the general Requirements for Degrees set out in the University Calendar, in addition to the departmental requirements stated below.

See "Degree Requirements" section for complete details.

Note: Revisions to the requirements for all degree programmes were made in 1994. Students who registered in the honours programme before 1994 should consult the Undergraduate Advisor about changes to their programme to meet new requirements. Majors and honours students who have already taken any one of the previously required classes SOSA 2010.03, SOSA 2240.03, SOSA 2250.03, SOSA 2011.0, are exempted from the 2000 level requirements stated below.

**Note:**

- a) No more than one credit may be obtained for introductory classes from SOSA 1000.06, 1100.06, 1200.06.
- b) For purposes of gaining entry to 2000 and 3000 level SOSA classes, King's Foundation Year satisfies the introductory class prerequisite.
- c) If they so elect, King's Foundation Year students may also obtain credit for one introductory class from SOSA 1000.06, 1100.06, or 1200.06.
- d) Students may obtain credit for both SOSA 2001.06 and 2002.06, and those proposing to apply to the honours programme are particularly encouraged to acquire a foundation in both disciplines.

**Honours BA Programme**

Students with a grade point average of B (GPA 3.00) or better are encouraged to consider applying for the honours programme. They should consult with the Department's Undergraduate Advisor, 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 programme of study with a concentration in Social Anthropology or Sociology meeting the general Faculty requirements and the specific requirements for each programme as set out below. The honours thesis paper is produced for the class SOSA 4500.06 (Sociology) or SOSA 4000.06 (Social Anthropology). This fulfils the College of Arts and Science Honours Qualifying Examination requirement. Students with the honours concentration Sociology may not declare Social Anthropology as their minor subject; students with the honours concentration Social Anthropology may not declare Sociology as their minor subject. Combined and unconcentrated honours programmes may be arranged in consultation with the Undergraduate Advisor and the other departments concerned. See College of Arts and Science Regulations 1.3 for general information and requirements.

Note: Basic computer literacy is required of all honours students and can be acquired through special modules. These modules will include such topics as: SPSS, E-Mail, News Groups,

Nova Net/Socio Files, WordPerfect, etc. Consult the undergraduate advisor for details on lab times and arrangements. Beginning in 1996-97 this requirement shall be monitored via a non-credit class, SOSA 0300.00.

**Departmental requirements:**

**Classes required in Concentrated Honours in Social Anthropology:**

- 1000 level: One of: SOSA 1000.06, 1100.06, 1200.06, or King's Foundation Year Programme.
- 2000 level: Either SOSA 2001.06 or 2002.06; as well as at least one additional 2000 level credit.
- 3000 level: SOSA 0300.00, 3400.03, 3402.03, 3403.03
- 4000 level: SOSA 4003.03, 4000.06, and a minimum of one additional SOSA 4000-level seminar (.5 credit).

In total a minimum of nine (9) and a maximum of eleven (11) SOSA credits beyond the 1000 level are required.

**Classes required in Concentrated Honours in Sociology:**

- 1000 level: One of: SOSA 1000.06, 1100.06, 1200.06, or King's Foundation Year Programme.
- 2000 level: Either SOSA 2001.06 or 2002.06; as well as at least one additional 2000 level credit.
- 3000 level: SOSA 0300.00, 3402.03, 3403.03, 3401.03, 3405.03
- 4000 level: SOSA 4003.03 or 4001.03, 4500.06, and a minimum of one additional SOSA 4000-level seminar (.5 credit).

In total a minimum of nine (9) and a maximum of eleven (11) SOSA credits beyond the 1000 level are required.

Note: Students considering graduate work in Sociology are strongly advised to take SOSA 4002.03: Social Statistics, since statistical competence is often required as a component of graduate social science programmes.

**Honours Certificate in Sociology or Social Anthropology**

This programme permits Dalhousie graduates to undertake an additional five credits upgrading their qualifications from Major to Honours. Students must meet the usual conditions for admission to honours, and complete the full set of Honours requirements in either Sociology or Social Anthropology. Interested students should consult the Undergraduate Advisor.

**Advanced Major in Sociology and Social Anthropology**

**Departmental requirements:**

**Classes required in Advanced Major:**

- 1000 level: One of: SOSA 1000.06, 1100.06, 1200.06, or King's Foundation Year Programme.

## 390 Sociology and Social Anthropology

**2000 level:** Either SOSA 2001.06 or 2002.06; as well as at least one additional 2000 level credit.

**3000/4000 level:** Total of three full SOSA credits

In total a minimum of 6 and a maximum of 9 SOSA credits beyond the 1000 level are required.

### Advanced Double Major Degree

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.

**1000 level:** One of: SOSA 1000.06, 1100.06, 1200.06, or King's Foundation Year Programme

**2000 level:** Either SOSA 2001.06 or 2002.06; as well as at least one additional 2000 level credit.

**3000/4000 level:** Total of two full SOSA credits

### Advanced Major Certificate

This programme permits Dalhousie graduates to undertake an additional year of study upgrading their qualifications from Major to Advanced Major. Students must meet the full set of Advanced Major requirements.

### Major in Sociology and Social Anthropology

#### Departmental Requirements

##### Classes required in Major:

**1000 level:** One of: SOSA 1000.06, 1100.06, 1200.06, or King's Foundation Year Programme.

**2000 level:** Either SOSA 2001.06 or 2002.06; as well as 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.

### Interdisciplinary Studies

The department cooperates with other departments in the Faculty to offer three interdisciplinary programmes. Some classes are cross listed. Students interested in these programmes may like to consider double advanced major or combined honours degrees, with Sociology and Social Anthropology as a component. Consult the Undergraduate Advisor for details of the following programmes:

Canadian Studies (Major)

International Development Studies (Major and Honours)

Women's Studies (Major and Honours)

### Classes Offered

Some classes listed may not be offered in a given academic year. Consult the timetable for details. Where pre-requisites apply, students requesting exceptions must obtain permission directly from the instructor involved.

**SOSA 1000.06R: Culture and Society.** An introduction to the comparative study of human society from the parallel perspectives of Sociology and Social Anthropology.

**Format:** Lecture 3 hours

**Exclusion:** SOSA 1100.06 and 1200.06

**SOSA 1100.06R: Introduction to Anthropology.** This class introduces students to all subfields of anthropology while emphasizing the socio-cultural. Topics considered include: the variety of human cultures and societies and how they are organized and function, the relationship between ecology and culture, human evolution, nonhuman primate behaviour, principles of archaeology, and the study of languages around the world as they relate to the cultures of which they are part.

**Format:** Lecture 3 hours

**Exclusion:** SOSA 1000.06 and 1200.06

**SOSA 1200.06R: Introduction to Sociology.** This class introduces students to basic sociological concepts, the logic of social inquiry, and major theoretical and methodological issues in the field. Substantive class contents may include the study of culture, socialization, deviance, social organizations, institutions, social roles, and demography. Emphasis is on the study of modern industrial societies with special attention given to Canadian society.

**Format:** Lecture 3 hours

**Exclusion:** SOSA 1000.06 and 1100.06

#### 2000 Level Classes

**SOSA 2001.06R: 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.

**Format:** Lecture 3 hours

**Prerequisite:** One of SOSA 1000.06, 1100.06 or 1200.06

**SOSA 2002.06R: The Sociological Perspective: Thinking and Doing Sociology.** Sociologists are interested in understanding the social world. They do not rely on preconceived ideas alone to enrich this understanding, but see the need to conduct studies, carry out investigations, make observations, analyze findings, formulate ideas, and construct theories and interpretations about what they find. This class looks at the ways sociologists go about their work. What are some of the dominant ways of thinking current in sociology today? What are the relationships between such ways of thinking and what are seen as questions to investigate? How do sociologists do their research? What are social surveys, interviews, theories, sociological ideas? What is distinctive about a sociological way of looking at a problem?

**Format:** Lecture 3 hours

**Prerequisite:** One of SOSA 1000.06, 1100.06 or 1200.06

**SOSA 2003.06R: Focus on the Social: the Everyday World Examined.** This class subjects

the everyday social world to scrutiny. Students learn to examine one particular aspect of everyday life from the perspective of sociology and social anthropology, and in the process acquire a foundation in the discipline as well as knowledge about the topic under investigation. Where the timetable indicates the class will be offered, students should check with the Department for information about the specific focus of the class that year.

**Format:** Lecture 3 hours  
**Prerequisite:** SOSA 100.06, 1100.06 or 1200.06

**SOSA 2004.03A or B: Current Controversies in the Analysis of the Social World.** This class will examine a specific, typically controversial, aspect of social life from varying perspectives within sociology and social anthropology. The topic to be debated will be dictated by current events and/or recent developments within one or both of these two disciplines. The designated issue would normally be one not currently covered in other SOSA class offerings. Students should consult the Department for details when the class appears in the timetable.

**Format:** Lecture 3 hours  
**Prerequisite:** SOSA 1000.06, 1100.06 or 1200.06

**SOSA 2161.06R: Tinker, Tailor, Soldier: Divisions of Labour in a Changing World.** Work is a fundamental aspect of all human societies and a key aspect to the development of social inequalities, be they based on gender, class, ethnicity, or cultural difference. Work has been seen as a main component of an individual's identity, but what do we mean by work? Against a backdrop of international and historical patterns, this class considers the changing nature of work and occupations. Topics which may be covered include: agrarian societies; home based labour; work patterns in family life; labour migration and citizenship; international divisions of labour; shifts in occupational structures such as shop floors, typing pools, or professions; managerial and union strategies; the relationship between education and employment; and, how occupational status, employment, and unemployment limit or enhance a person's political power.

**Format:** Lecture 3 hours  
**Prerequisite:** One of SOSA 1000.06, 1100.06 or 1200.06

**Exclusion:** SOSA 2160.03  
**Cross-listing:** WOST 2400.06

**SOSA 2180.06R: Sociology of Crime and Criminal Justice.** How much crime is there? Why is it increasing? Are criminals different? Can we control or prevent crime? Criminology attempts to answer these questions through the social scientific study of crime and criminal justice as a social phenomena. This course introduces students to a broad variety of critical thinking, research and descriptive material on thematic issues such as the social causes of crime (e.g. poverty, culture, power, socialization), different types of crime (e.g. public, private and corporate), the structure and impact of the criminal justice system (e.g. police, courts and corrections) and public policy options and debates (e.g., capital punishment, Young Offenders Act, decriminalizing of drugs and prostitution). This class provides a general understanding of the sociology of crime and

criminal justice and a sound basis for further study in the area of social order and human justice.

**Format:** Lecture 3 hours  
**Prerequisite:** One of SOSA 1000.06, 1100.06 or 1200.06  
**Exclusion:** SOSA 2181.03, 2182.03

**SOSA 2190.06R: 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: culture and difference; sexuality and reproduction; labour; gender politics, power relations and political discourse; and gender in the global political economy.

**Format:** Lecture 3 hours  
**Prerequisite:** One of SOSA 1000.06, 1100.06 or 1200.06  
**Cross-listing:** WOST 2800.06

**SOSA 2200.06R: The Family in Comparative Perspective.** This class examines the family as a cultural, political and economic institution. It questions the familiar. What is the family? Is it universal? How have families changed? Why are families so diverse? why do people marry? Why do they have children? Why is a woman's work never done? Is the family in a state of crisis? Adopting a comparative perspective, and using concepts from anthropology and sociology, the class addresses these questions in a global context, drawing upon data and examples from Canada and around the world.

**Format:** Lecture 3 hours  
**Prerequisite:** One of SOSA 1000.06, 1100.06 or 1200.06

**SOSA 2221.06R: Society and the Self.** Groups influence individuals and individuals react to these influences. This is the field of Social Psychology. The processes involved in such person-group relationships are explored in a number of different settings, such as the family, mental hospitals, and universities. The class will focus on a critical review of research and theorizing.

**Format:** Lecture 3 hours  
**Prerequisite:** One of SOSA 1000.06, 1100.06 or 1200.06  
**Exclusion:** SOSA 2220.03

**SOSA 2291.06R: Goblins, Ghosts, Gods and Gurus.** Societies and groups within societies differ in terms of what their members believe, how people view the world and their places in it, the sources of knowledge, attitudes towards the supernatural and the sacred, the status and authority of different sorts of knowledge and what it all means. What makes religion different from science? What makes them similar? What is common sense? What are magic and witchcraft? What are the relations between beliefs and actions? What is the status of religious authority and power? What are altered states of consciousness? What are religious groups all about? Why do people belong to them, join them, leave them? What is involved in conversion and commitment? This class

considers such questions drawing on a wide variety of societies, cultures and groups, western and non-western.

Format: Lecture 3 hours

Prerequisite: One of SOSA 1000.06, 1100.06 or 1200.06

Exclusion: SOSA 2290.03

**SOSA 2300.06R: 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.

Format: Lecture 3 hours

Prerequisite: One of SOSA 1000.06, 1100.06 or 1200.06

**SOSA 2400.06R: Health and Illness Across Cultures.** Every culture has its own concepts of health and nutrition, its own treatments and practices. The strengths and weaknesses of our own system grow clearer when medical anthropologists compare it with that of other societies. This class's specific topics vary from year to year but always include: native theories of the etiology of illness, transcultural versus culture-specific disease syndromes, pregnancy and childbirth in other cultures and our own; senescence and death viewed cross-culturally, the conflict between traditional medical systems and the Western physician and hospital, patients' expectations and the medical subculture, the physician as secular priest, and food and nutrition across cultures.

Format: Lecture 3 hours

Prerequisite: One of SOSA 1000.06, 1100.06 or 1200.06

**SOSA 2501.06R: Sociology of Health and Illness.** An introduction to sociological analyses of health, illness, and health care. Class topics include the experience of illness, socioeconomic and cultural variations in patterns of illness, social behaviour and its effects on health, the social production of health and illness, occupational hazards, the relationship between mental and physical health, the organization of health care, hospital and community care, health care workers, inequalities in health and health care.

Format: Lecture 3 hours

Prerequisite: One of SOSA 1000.06, 1100.06 or 1200.06

Exclusion: SOSA 2500.03

### 3000 Level Classes

**SOSA 0900.00: Computer Literacy for Sociologists and Social Anthropologists.** The Department requires all its honours students, preferably during the third year of study, to acquire and demonstrate basic computer literacy. An instructional manual and corresponding computer modules have been developed for this purpose. Training sessions in the departmental computer lab will be conducted at different times in September. Each session can accommodate up to 10 learners. Majors and advanced majors may also enrol in one of these sessions if space is available.

Format: Computer lab

Prerequisite: Requirement for all Honours students in Social Anthropology or Sociology.

**SOSA 3002.03A or B: Native Peoples of Canada.** This class uses an ecological perspective to describe the cultures and peoples occupying Canada at the time Europeans came to this continent. As time permits, some ethnohistory and the situation of contemporary Native peoples is also discussed. Films will be used to supplement lectures and readings.

Format: Lecture 2-3 hours

Prerequisite: One of SOSA 1000.06, 1100.06 or 1200.06

Exclusion: SOSA 2350.03

**SOSA 3003.03A or B: Native Peoples of the United States.** This class uses an ecological perspective to describe the cultures and peoples occupying the United States at the time Europeans first came to this continent. As time permits, some ethnohistory and the situation of contemporary Native peoples is also discussed. Films will supplement lectures and readings.

Format: Lecture 2-3 hours

Prerequisite: One of SOSA 1000.06, 1100.06 or 1200.06

Exclusion: SOSA 2360.03

**SOSA 3005.03A or B: Approaches to Post Industrial Society.** The current structure of complex industrial societies is a matter of widespread debate in the social sciences. As manufacturing sectors in North America and Europe shed workers, and businesses on the Pacific Rim begin to compete on world markets, we are reconsidering our basic assumptions about industrial systems. Major topics in this class will include theories of post-industrialism and advanced capitalism; the contemporary corporation and the future of trade unionism. The role of the state is also highlighted.

Format: Lecture

Prerequisite: One of SOSA 1000.06, 1100.06 or 1200.06

Exclusion: SOSA 2140.03, SOSA 2141.03

**SOSA 3006.03A or B: Comparative Perspectives on Gender and Work.** This seminar 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 1000.06, 1100.06 or 1200.06

Exclusion: SOSA 2140.03, SOSA 2141.03

**SOSA 3008.03A or B: Canadian Society and Politics.** This class about the nature of Canadian society has as its focus the study of structures and events which shape social and political organization in Canada. There is not only one way to understand Canadian society: generations of historians, political scientists and

economists have provided valuable insights as to why Canadians have believed or acted or voted in one way or another. Sociology has helped to understand Canada in terms of contexts and conditions of life which have shaped the evolution of society as we know it. The class explores issues, events, discontents and groups which have produced the recurrent themes that underlie social life in Canada.

Approved with Canadian Studies.

Format: Lecture 2-3 hours  
Prerequisite: One of SOSA 1000.06, 1100.06 or 1200.06

Exclusion: SOSA 2110.06

**SOSA 3011.03A or B: Political Sociology.** The focus of this class is upon the study of politics and political structures. The study of power is central to understanding social organization, the challenge to the survival of national societies is to manage the development of their economies and the distribution of power among competing interest groups. The class examines the role of power and political cohesion in Western societies as they relate to social inequality, ethnicity and regionalism. The class also explores political transformation as a social process in terms of the place of social conflict, social movements, the political interest groups and voting trends as components of national development and change.

Format: Lecture 2-3 hours  
Prerequisite: One of SOSA 1000.06, 1100.06 or 1200.06

Exclusion: SOSA 2170.03

**SOSA 3012.03A or B: Social Stratification.** Aspects of social inequality in modern industrial society are explored. The formation of classes, status groups, and organized political expressions is considered. Questions of the distribution of power and wealth in society, the existence of power elites or governing classes, the impact of bureaucracy on class relations, the extent to which major economic inequalities have been reduced in this century, and problems of the mobility of individuals and groups through the stratification systems are analyzed. Theoretical discussions in the class are largely concerned with the ideas of Karl Marx and Max Weber, but attention is also paid to contemporary theoretical approaches to stratification.

Format: Lecture 2-3 hours  
Prerequisite: One of SOSA 1000.06, 1100.06 or 1200.06

Exclusion: SOSA 2040.06

**SOSA 3013.03A or B: Religion in Contemporary Society.** Religion is alive and well in society today; some religious organizations are in decline but others appear to be flourishing. How can these tendencies be accounted for? Do we live in a secular age or is that just a flip expression? What does religion mean to people in contemporary society? Is there a search going on for spiritual growth, spiritual awareness, spiritual expression? If so, what forms does this search take? What can we learn by thinking about religion sociologically? What are the trends in religion telling us about the character of late twentieth century society?

Format: Lecture 2-3 hours  
Prerequisite: One of SOSA 1000.06, 1100.06 or 1200.06

**SOSA 3014.03A or B: Rethinking Culture and Class.** Critical cultural studies has become a vigorous focus of interdisciplinary scholarship drawing on the fields of history, anthropology, sociology, geography, and literary criticism. Researchers in all of these areas are reconsidering the significance of symbolic aspects of social life and how the collective experiencing of cultural forms is related to changes in capitalism and modernity. For example, what is the significance of popular music in different class, gender, and ethnic contexts? How do commitments to kin and community relate to expressions of culture and class consciousness? Are boundaries between work and leisure mutable in terms of class, gender and ethnic processes?

Format: Lecture 2-3 hours  
Prerequisites: One of SOSA 1000.06, 1100.06 or 1200.06

**SOSA 3031.03A or B: Social Problems and Social Policy.** This class focuses on the nature of social problems and social policy in advanced industrial societies. It adopts a social movement perspective, exploring the processes whereby agitation on behalf of undesirable but remedial social conditions leads to changes in social policy. Among the areas treated in depth are crime prevention, the quality of work life, race relations, deviance, and poverty and inequality.

Format: Lecture 2-3 hours  
Prerequisite: One of SOSA 1000.06, 1100.06 or 1200.06

Exclusion: SOSA 3030.06

**SOSA 3060.03A or B: 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.

Format: Lecture 2-3 hours  
Prerequisite: One of SOSA 1000.06, 1100.06 or 1200.06; or IDS 2000.06

Cross-listing: SOSA 5306.03

**SOSA 3070.06R: Human Nature and Anthropology.** Can anthropologists explain why we feel sexual jealousy or why we tend to follow a dominant leader in times of stress? Can the evolutionary theories explaining why we have fingerprints and flat nails explain our behavioral traits? This class reviews theory and data on the evolution of human mind and culture in order to construct a theory of human nature. Its perspective and contents include much of what some have categorized as "human sociobiology," "Darwinian anthropology," and "Darwinian psychology."

Format: Lecture 2-3 hours  
Prerequisite: One of SOSA 1000.06, 1100.06 or 1200.06; or an introductory class in Psychology or Biology

Cross-listing: SOSA 5070.06

**SOSA 3081.03A or B: Sociolinguistics.** This seminar considers the relation of language and culture in both western and non-western societies. Topics covered may vary from year to year but usually include: the origin of language,



## 394 Sociology and Social Anthropology

language acquisition, class differences in spoken language, bilingualism, diglossia, dialects, language and world view, linguistic relativism, and language change.

Format: Lecture 2-3 hours

Prerequisite: One of SOSA 1000.06, 1100.06 or 1200.06

Exclusion: SOSA 3080.06

**SOSA 3091.03A or B: Sociology of Culture.**

This class deals with the symbolic aspects of social activity. The class will examine major contributions to this field by intellectuals from the western industrial systems. This overview will include consideration of works by Lyotard, Lasch, Harvey and Shields. We will also look at the ongoing debates regarding popular culture, and the new interest in theories of postmodernity.

Format: Lecture 2-3 hours

Prerequisite: One of SOSA 1000.06, 1100.06 or 1200.06

Exclusion: SOSA 3090.06

**SOSA 3100.03A or B: Feminist Perspectives in Anthropology and Sociology: Current Debates.**

This class examines more recent critical debates in feminist theories. Readings map out new theoretical agendas and/or provide critical reflection on previous priorities in feminist scholarship. Relevant current issues include re-conceptualizing patriarchy; re-working dualistic models; work, domestic labour and sexuality debates; sexism, racism, class; rethinking kinship and reproduction; feminism, culture, and political economy; post-modernism, voice, difference; beyond colonialism and imperialism; beyond women as victims; resistance; and feminist research and praxis.

Format: Lecture 2-3 hours

Prerequisite: SOSA 2190.06/WOST 2800.06, or permission of the instructor.

Cross-listing: WOST 3805.03

**SOSA 3120.03A or B: Social Conflict.** This class introduces students to the various analytical perspectives sociologists have employed to understand the patterning and consequences of conflict in society. In this regard particular attention is devoted to the functional, coercion, and Marxian theories of conflict. This class is also concerned with conflict in contemporary society, with special reference to patterns of conflict and change in Canada.

Format: Lecture 2-3 hours

Prerequisite: One of SOSA 1000.06, 1100.06 or 1200.06.

Cross-listing: SOSA 5120.03

**SOSA 3135.03A or B: 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 2-3 hours

Prerequisite: One of SOSA 1000.06, 1100.06 or 1200.06

Cross-listing: SOSA 5135.03

**SOSA 3141.03A or B: Sociology of Mental Disorders.** Mental disorders as both a social and sociological problem. Social factors in the definition, incidence, etiology, and treatment of mental disorders are examined. Societal views toward and responses to so-called mental illness are reviewed and analyzed from a sociological perspective. Other topics include the social role of the mental patient and the development of mental health policy in Canada.

Format: Lecture 2-3 hours

Prerequisite: One of SOSA 1000.06, 1100.06 or 1200.06

Exclusion: SOSA 3140.06

**SOSA 3145.03A or B: Gender and Health.** The class focuses upon 3 major areas in the relationship between gender and health: (a) the relationships among gender stereotypes and food, sexuality and body image, dieting and health; (b) reproduction and child care including birth control, menstruation, menopause, reproductive technology, child care and child health; (c) health care and health care workers - an analysis of caring, both paid and unpaid. Topics include sexual inequality in health care, health policy, family relationships and health care responsibilities.

Format: Lecture 2-3 hours

Prerequisite: One of SOSA 1000.06, 1100.06 or 1200.06

Cross-listing: WOST 3800.03, SOSA 5145.03

**SOSA 3147.03A or B: Social Gerontology.** A general introduction to social gerontology, in which emphasis will be placed upon the historical and philosophical development of the study of aging in Canada, theories of aging, current social and economic programmes for the elderly both in Canada and to some extent cross-culturally, and various pertinent social-psychological aspects of the aging process. The class familiarizes students with some of the problems people experience as a consequence of aging in Canadian society and provides an understanding of the socio-economic factors relevant to these problems.

Format: Lecture 3 hours

Prerequisite: One of SOSA 1000.06, 1100.06 or 1200.06

Exclusion: SOSA 2060.03

Cross-listing: HLTH 4900.03

**SOSA 3150.03A or B: Sociology and Anthropology of the Body.** This class will consist of a micro-sociological examination of the human body as a socio-cultural construction. Topics include: bodily self image, cultural definitions of physical attractiveness, stigmatization, proxemic behaviour, non-verbal communications, body hygiene and pollution taboos, and cultural aspects of human reproduction and sexuality. Special attention will be paid to class, gender and ethnicity and their relationship to body politics.

Format: Lecture 2-3 hours

Prerequisite: One of SOSA 1000.06, 1100.06 or 1200.06

**SOSA 3180.03A or B: Issues in the Study of Society.** This seminar consists of an intensive examination of a selected substantive issue within Sociology and/or Social Anthropology. Since the specific topic or research problem

which receives special treatment will differ from year to year, students are advised to consult the department prior to registration.

**Format:** Lecture 2-3 hours  
**Prerequisite:** One of SOSA 1000.06, 1100.06 or 1200.06

**Cross-listing:** SOSA 5180.03

**SOSA 3185.03A or B: Issues in the Study of Native Peoples of North America.** This seminar is concerned with the historical background of the Native-European situation in North America and with issues arising from this background. Students will research issues which are significant to themselves and important to Native groups. Topics covered may vary from year to year, but will normally include a combination of historical issues such as culture change and contemporary issues such as land claims, self-determination and government policy, and social conditions of Natives.

**Format:** Lecture 2-3 hours  
**Prerequisite:** One of SOSA 1000.06, 1100.06 or 1200.06

**Exclusion:** SOSA 3186.06

**Cross-listing:** SOSA 5185.03

**SOSA 3190.03A or B: Social Movements.** The general topic of unstructured group activity encompasses phenomena traditionally classified as collective behaviour incidents, as well as reformist and revolutionary social movements. Although there is considerable overlap, the collective behaviour literature tends to focus on relatively brief and spontaneous activities, such as panics, disasters, and crazes, while work on social movements examines relatively more organized and enduring group activities which still fall outside the realm of normal institutions. This class investigates problems emerging from both areas of concern. Emphasis is given to relevant Canadian materials.

**Format:** Lecture 2-3 hours  
**Prerequisite:** One of SOSA 1000.06, 1100.06 or 1200.06

**Cross-listing:** SOSA 5190.03

**SOSA 3205.03A or B: Ethnicity, Nationalism, and Race.** This class begins with a consideration of the concepts of ethnic group and race, and proceeds to a view of ethnic group formation and change. Next, systems of ethnic stratification are surveyed. The class concludes with the study of policies concerning ethnic relations, ethnic nationalist movements, and problems of race and ethnic relations. Both Canadian and comparative data, particularly from developing countries, are included.

**Format:** Lecture 2-3 hours  
**Prerequisite:** One of SOSA 1000.06, 1100.06 or 1200.06

**Cross-listing:** SOSA 5205.03

**SOSA 3211.03A or B: 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.

**Format:** Lecture 2-3 hours  
**Prerequisite:** One of SOSA 1000.06, 1100.06 or 1200.06; or INTD 2000.06

**Exclusion:** SOSA 3210.06

**Cross-listing:** SOSA 5211.03

**SOSA 3220.03A or B: 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 2-3 hours  
**Prerequisite:** One of SOSA 1000.06, 1100.06 or 1200.06

**Cross-listing:** ENVI 5180.03, SOSA 5220.03

**SOSA 3231.03A or B: Psychological Anthropology.** The class examines the overlap between psychology and anthropology. Topics include: culture and personality, culture and mental health, psychiatry in other cultures, cross-cultural differences in learning, and the evolution of human psychological characteristics.

**Format:** Lecture 2-3 hours  
**Prerequisites:** One of SOSA 1000.06, 1100.06 or 1200.06

**Exclusion:** SOSA 2230.06, 3230.06

**SOSA 3245.03A or B: Women and Aging.** As women grow older, the experience of aging is difficult. This class will explore the issues related to socio-economic factors that are major determinants of the well-being of aging women. Topics will include: aging as a process; menopause; violence against older women; older women and housing; self-image and sexuality; health and the aging woman; and older women and poverty.

**Format:** Lecture 2-3 hours  
**Prerequisites:** One of SOSA 1000.06, 1100.06 or 1200.06; or two classes in Women's Studies

**Cross-listing:** WOST 3810.03, NURS 4370.03, SOSA 5245.03

**SOSA 3250.03A or B: Sociology of Science.** Science involves human thought and human organization, socially generated and transmitted knowledge, social communities. It is a social institution. This seminar raises questions about science as a social phenomenon. How is science constructed; how, and why, are some activities and ideas defined as scientific in contrast to others which are not; how does the scientific community operate as a social community; what are the patterns of influence and authority in such communities, how is knowledge "established", how do scientific disciplines arise?

**Format:** Lecture 2-3 hours  
**Prerequisite:** One of SOSA 1000.06, 1100.06 or 1200.06

**Cross-listing:** SOSA 5250.03

## 396 Sociology and Social Anthropology

**SOSA 3275.03A or B: 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.

**Format:** Lecture 2-3 hours

**Prerequisite:** One of SOSA 1000.06, 1100.06 or 1200.06

**Cross-listing:** SOSA 5275.03

**SOSA 3281.03A or B: 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.

**Format:** Lecture 2-3 hours

**Prerequisite:** One of SOSA 1000.06, 1100.06 or 1200.06.

**Exclusion:** SOSA 3280.06

**SOSA 3286.03A or B: Sociology of Criminal Law.** The increasingly expansive and powerful role of criminal law in the maintenance of social order in Canadian society makes it an important topic of study. The law is examined as a social institution, influenced by socio-political forces and used as a instrument of social control and change. Emphasis is placed on the production of "criminal justice" through the criminal courts system by focusing on the role, responsibilities and negotiated interactions of the various actors in the court process (the accused, victims, defence council, crown prosecutor and the judge). In addition to gaining a realistic understanding of the limits and possibilities of criminal law, students will be engaged in recent debates about law reform (gender justice, sentencing controversies, victims and offender rights etc.).

**Format:** Lecture 2-3 hours

**Prerequisite:** One of SOSA 1000.06, 1100.06 or 1200.06

**Exclusion:** SOSA 3285.06

**SOSA 3295.03A or B: Society and the Police.** The police play an increasingly powerful role in the maintenance of social order in contemporary Canadian society. This class introduces students to sociological theory and research on: (a) the role of police in social development and social control; (b) the historical and political development of public policing; (c) the nature and structure of police work; (d) control and accountability and (e) selected issues in policing such as, policing the family, minorities and the police, community based policing and police discretion.

**Format:** Lecture 2-3 hours

**Prerequisite:** One of SOSA 1000.06, 1100.06 or 1200.06

**Cross-listing:** SOSA 5295.03

**SOSA 3310.03A: 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.

**Format:** Lecture and Seminar

**Prerequisite:** Second-year Arts and/or Science class

**Cross-listed:** International Development Studies

**SOSA 3400.03A or B: History of Anthropological Theory.** This class considers the foundations and development of social anthropology. Major theoretical schools and the work of prominent anthropologists in those schools are considered, including Cultural Evolution, Historical Particularism, Functionalism, Culture and Personality, Structuralism, Symbolism, Cultural Materialism, and the directions in which contemporary sociocultural anthropology point.

**Format:** Lecture 2-3 hours

**Prerequisite:** One of SOSA 1000.06, 1100.06 or 1200.06; and SOSA 2001.06 or 2002.06

**Exclusion:** SOSA 2250.03

**SOSA 3401.03A or B: History of Sociological Thought.** Towards the middle of the nineteenth century a novel way of thinking about human existence began to emerge. Primacy was given to the understanding that humans are social beings, their lives and thoughts bounded and patterned by their social environments. This approach formed the basis for a new discipline of analysis eventually named Sociology. This class considers some of the main ideas of the earlier contributors to the new way of thinking: Comte, Marx, Durkheim, Weber, Simmel, Mead, Mannheim and, more recently, Parsons and Schutz. Modern sociology rests largely on the intellectual legacy of these thinkers. They raise questions and formulate answers to them which remain relevant to the sociological enterprise today.

**Format:** Lecture 2-3 hours

**Prerequisite:** One of SOSA 1000.06, 1100.06 or 1200.06; and SOSA 2001.06 or 2002.06

**SOSA 3402.03A or B: 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.

**Format:** Lecture 2-3 hours, lab as required

**Prerequisite:** One of SOSA 1000.06, 1100.06 or 1200.06.; and SOSA 2001.06 or 2002.06

**Exclusion:** SOSA 2011.03

**SOSA 3403.03A or B: 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 2-3 hours, lab as required

**Prerequisite:** One of SOSA 1000.06, 1100.06 or 1200.06; and SOSA 2001.06 or 2002.06.

**SOSA 3405.03A or B: Contemporary Social Theory.** A variety of approaches constitute theory in contemporary sociology. Among them are those called functionalist, interactionist, ethnomethodological, formal, structuralist, critical, feminist, and those based on processes of social exchange. This class considers the contributions of approaches such as these 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?

**Format:** Lecture 2-3 hours  
**Prerequisite:** One of SOSA 1000.06, 1100.06 or 1200.06; and SOSA 2001.06 or 2002.06

**4000 level Classes**

**SOSA 4000.06R: Honours Seminar in Social Anthropology.** The seminar provides an opportunity for students to engage in sustained investigative scholarship requiring an independent research initiative, while requiring them to locate their special topic within a broader set of theoretical and methodological debates in the discipline. The first term is devoted to general seminar discussions. The second term is devoted to students' research and writing activities in preparing the required essay for honours' graduation, and class time is used for students to make "in progress" reports and presentations about their chosen topics. There will be no restriction on topic and no assignment of topics by the instructor. This class carries two separate credits, a "class" credit and an "honours" credit (a University requirement for all honours students SOSA 5550.00).

**Format:** Seminar 2-3 hours  
**Prerequisite:** Honours registration in Social Anthropology or permission of the instructor

**SOSA 4001.03A or B: Survey Methods.** This class will examine techniques and issues in survey methods. Topics covered will include sampling designs, questionnaire construction, measurement theory, data collection, and pre-tests. As well, this class provides instruction in the organization and presentation of quantitative data, including graphs, charts, and tables using computer software such as SPSS. Depending on the instructor, practical experience in survey methods is provided through secondary analysis of an existing data set, or through a class project.

**Format:** Seminar 2-3 hours  
**Prerequisite:** SOSA 3402.03  
**Exclusion:** SOSA 3115.03

**SOSA 4002.03A or B: Social Statistics.** This class develops statistical approaches to social science data, focusing on correlation/regression analysis. Beyond developing a basic competence in statistical analysis, the class stresses the creative process of constructing solid scholarly arguments using statistical principles, as well as uncovering artifacts which weaken them. In lieu of a term paper, weekly assignments are given using existing social science data which provides students the

opportunity to participate in this process. The class includes both lectures, in which the logic of statistical reasoning is presented, and laboratories, in which statistical techniques are applied to social science data using computer software programmes such as SPSS.

**Format:** Lectures/lab 2-3 hours  
**Prerequisite:** One of SOSA 1000.06, 1100.06 or 1200.06; and SOSA 3402.03 and 4001.03

**Exclusion:** SOSA 3415.03

**SOSA 4003.03A or B: Contemporary Perspectives in Ethnography.** Ethnographies and critical writings which grapple with questions of theory and interpretation in a range of contexts - near and far, familiar and strange, local and global - will be examined in this class.

**Format:** Seminar 2-3 hours  
**Prerequisite:** One of SOSA 1000.06, 1100.06 or 1200.06; SOSA 2001.06 or 2002.06; and Honours or

Advanced Major Registration in Sociology or Social Anthropology

**SOSA 4004.03A or B: Issues in Work, Industry and Development.** Consult department for class description.

**Format:** Seminar 2-3 hours  
**Prerequisite:** One of SOSA 1000.06, 1100.06 or 1200.06 and Honours or Advanced Major Registration in Sociology or Social Anthropology

**SOSA 4005.03A or B: Issues in Social Disorder and Human Injustice.** Consult department for class description.

**Format:** Lecture 2-3 hours  
**Prerequisite:** One of SOSA 1000.06, 1100.06 or 1200.06 and Honours or Advanced Major Registration in Sociology or Social Anthropology

**SOSA 4006.03A or B: Issues in Health and Illness.** Consult department for class description.

**Format:** Lecture 2-3 hours  
**Prerequisite:** One of SOSA 1000.06, 1100.06 or 1200.06 and Honours or Advanced Major Registration in Sociology or Social Anthropology

**SOSA 4011.03A or B: Issues in Social Theory.** This seminar consists of an intensive examination of one or more selected bodies of theory, and makes links between theory and current trends in research in sociology and/or social anthropology.

**Format:** Lecture 2-3 hours  
**Prerequisite:** One of SOSA 1000.06, 1100.06 or 1200.06 and Honours or Advanced Major registration in Sociology or Social Anthropology

**SOSA 4012.03A or B: Special Topics in Sociology and Social Anthropology.** This seminar consists of an intensive examination of a selected substantive issue within Sociology and Anthropology. Since the specific topic or research problem which receives special

## 398 Sociology and Social Anthropology

treatment will differ from year to year, students are advised to consult the department prior to registration.

**Format:** Seminar 2-3 hours  
**Prerequisite:** One of SOSA 1000.06, 1100.06 or 1200.06 and Honours or Advanced Major registration in Sociology or Social Anthropology

**Cross-listing:**

Anthropology, permission of the instructor and permission of the Undergraduate Coordinator.  
SOSA 5520.03

**SOSA 4013.03A or B: 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:** Lecture 2-3 hours  
**Prerequisite:** One of SOSA 1000.06, 1100.06 or 1200.06, and Honours or Advanced Major registration in Sociology and Social Anthropology

**SOSA 4500.06R: Honours Seminar in Sociology.** The seminar provides an opportunity for students to engage in sustained investigative scholarship requiring an independent research initiative, while requiring them to locate their special topic within a broader set of theoretical and methodological debates in the discipline. The first term is devoted to general seminar discussions. The second term is devoted to students' research and writing activities in preparing the required essay for honours' graduation, and class time is used for students to make "in progress" reports and presentations about their chosen topics. There will be no restriction on topic and no assignment of topics by the instructor. This class carries two separate credits, a "class" credit and an "honours" credit (a University requirement for all honours students SOSA 5530.00).

**Format:** Seminar 2-3 hours  
**Prerequisite:** Honours registration in Sociology or permission of the instructor

**SOSA 4510.03A or B: 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.

**Cross-listing:** SOSA 5510.03

**SOSA 4520.03A or B: 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

## Spanish

**Location:** 1376 LeMarchant Street Halifax,  
N.S.  
**Telephone:** (902) 494-3679  
**Fac:** (902) 494-1997

### Chair

J.M. Kirk (494-2544)

### Undergraduate Advisor

J.M. Kirk (494-2544)

### Professors

J.M. Kirk, BA (Sheff), MA (Queen's), PHD (UBC)  
A. Ruiz Salvador, BA (Brandeis), AM, PHD  
(Harvard)

### Associate Professors

J.E. Holloway, BA (No Colo), MA (Wyoming),  
PhD (Duke)

### Lecturer

M. Jiménez BA, MA (Sorbonne), MA (New  
School)

## Introduction

After Chinese and English, Spanish is the most widely spoken language in the world. It is the native tongue of well over 300 million people living in 22 countries.

Spanish-speaking nations are making international headlines and students of political science, economics, commerce, sociology, anthropology, literature, history, and other academic disciplines feel increasingly interested in this area of the world. Students from these departments are welcome to take our classes on Spanish and Latin American culture, civilization, history, and politics. These classes are conducted in English, the reading is in translation, and there are no prerequisites.

Knowledge of the Spanish language will be useful to all Canadians seeking careers as members of the foreign service, business, interpreters, translators, teachers, professors, critics, editors, journalists, and many others. Our beginning language class especially emphasizes conversational Spanish.

It is a widely recognized fact that some of the best novels and poetry are coming out of Latin America today, providing stimulating and challenging material for many of our literature classes.

If your tastes and abilities lie in the direction of Spanish or Latin American studies, you should consider the possibility of taking Spanish as an area of concentration in a General Bachelor's degree programme, a Bachelor's degree with Honours in Spanish, or with Honours in Spanish and another subject combined. An undergraduate concentration in Spanish, followed by training in Management Studies, for example, could lead to a variety of possible careers in the Spanish-speaking world in international business and public service.

## The Salamanca Programme at the Colegio de España

The Salamanca Programme is a special inter-disciplinary course of instruction designed to allow Dalhousie students to undertake both an intensive study of the Spanish language and classes in Hispanic culture. In order to participate, students must normally have completed SPAN 2010.03 with at least a standing of 'B'. The programme takes place during the fall, lasts for one term, and is offered at the Colegio de España in Salamanca, Spain. Dalhousie University will grant 2½ or 3 credits to those students who successfully complete their classes in Spain. Enquiries and applications should be addressed to the Coordinator of the Programme.

**Spanish Studies to be taken at the Colegio de España**

SPAN 3100.06A: Advanced Grammar (1 credit)  
SPAN 3120.03A: Spanish Art (½ credit)  
SPAN 3140.03A: Spanish Literature (½ credit)  
SPAN 3160.03A: Spanish History (½ credit)  
SPAN 3180.03A: Spanish Culture (½ credit)

## Spanish Degree Programmes

### Bachelor of Arts with Honours in Spanish

#### Departmental requirements:

**Classes required in Honours:**

**1000 level:** SPAN 1020.06, or equivalent experience  
**2000 level:** SPAN 2000.03, 2010.03 plus 6 other credits at or above the 2000 level  
**3000 level:** SPAN 3020.03, 3030.03, plus one other credit in Spanish at the 3000 level

**Note:** substitutions are acceptable with the advice and consent of the Department.

Honours Thesis.

### Bachelor of Arts with Combined Honours in Spanish and Another Subject

Programmes may be arranged by consultation (as early as possible) with the departments concerned.

#### Notes

- The "other" classes chosen as electives in the programmes outlined above must satisfy general degree requirements.
- Combinations of classes other than those set forth above may be chosen after consultation with the Department Chair.
- 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 (except as he/she may be granted transfer credits in the usual way), must normally take the same total number of classes as other students in the same programme.

**Advanced Major****Departmental requirements:****Classes required in Advanced Major:**

- 1000 level:** SPAN 1020.06, or equivalent experience
- 2000 level:** Three credits at or above the 2000 level and not including classes listed below
- 3000 level:** Three credits at or above the 3000 level

**Major in Spanish****Departmental Requirements****Classes required in Major:**

- 1000 level:** SPAN 1020.06, or equivalent experience
- 2000 level:** Two credits in Spanish at or above the 2000 level
- 3000 level:** Two credits at or above the 3000 level

Programme should consist of at least four (4) full-credit, upper-level classes taken in the second and third year, four of which must be conducted in Spanish. Any student who wishes to deviate from these basic requirements should consult the Department Chair.

**Classes Offered**

Classes marked \* are not offered every year. Please consult the current timetable on registration to determine if this class is offered.

**SPAN 1010.03B: Advanced Beginning Spanish.** For students with some slight prior knowledge of Spanish. Students join, at mid-year, classes of SPAN 1020.06 already in progress.

**Instructor:** Staff  
**Format:** Discussion/conversation 3 hours, lab as needed.

**Prerequisite:** Knowledge of Spanish to the equivalent of first half of SPAN 1020.06

**SPAN 1020.06R: Beginning Spanish.** For students wishing to achieve proficiency in both spoken and written Spanish.

**Instructor:** Staff  
**Format:** Discussion/conversation 3 hours, language lab and computer-assisted language learning techniques as needed

**Prerequisite:** Open to students with no knowledge or only a slight knowledge of Spanish

**\*SPAN 1100.03A or B: Spanish Civilization.** Although it may sound self-evident to Canadian students, this class deals with Spain and the Spaniards. What Spain is and who the Spaniards are, however, may not be that clear-cut for Spaniards themselves. This class is a search for Spain throughout her history (Roman, Arab, Jewish, and Christian Spain), her art, literature, four main languages, and customs. The goal is a clearer picture of one of the most perplexing components of Western Civilization.

**Instructor:** A. Ruiz Salvador

**Format:** Lecture/discussion 2 hours, conducted in English

**Prerequisite:** No prerequisites. Open to students in all departments. No knowledge of Spanish necessary

**\*SPAN 1110.03A or B: Latin American Civilization.** The aim of this class is to provide the non-specialist with a basic understanding of this complex - and fascinating - world area. The first half of the class examines the development of Latin America from pre-Columbian times to the Mexican Revolution. In the second half, by means of a careful study of selected texts, the class examines the way in which the reality of Latin America has shaped a continental cultural identity, producing one of the most dynamic, "readable" world literatures.

**Instructor:** J. Kirk  
**Format:** Lecture/discussion 2 hours, conducted in English.

**Prerequisite:** No prerequisites. Open to students in all departments. No knowledge of Spanish necessary

**SPAN 2000.03A: Intermediate Spanish.** This class continues the work done in SPAN 1010.03 or SPAN 1020.06. Supplementary reading as necessary.

**Instructor:** Staff  
**Format:** Discussion/conversation 3 hours, language lab as needed

**Prerequisite:** Spanish 1020.06, or equivalent

**SPAN 2010.03B: Reading and Conversation.** Emphasis is on perfecting conversational skills as the reading material is discussed in class.

**Instructor:** Staff  
**Format:** Discussion/conversation 3 hours

**Prerequisite:** Spanish 2000.03, or equivalent

**\*SPAN 2069.03A or B: Central America to 1979.** Events in Central America are frequently covered in our media, causing people to believe that "the unrest" there is recent. This class seeks to examine the historical roots of the conflict from the colonial period until the 1970s. The aim of the class is to provide students with a background knowledge of this area, so that they can better understand current developments there.

**Instructor:** J. Kirk  
**Format:** Lecture/discussion 2 hours, conducted in English.

**Prerequisite:** No prerequisite. Open to students in all departments. No knowledge of Spanish necessary

**\*SPAN 2070.03A or B: Area Studies on Mexico and Central America.** Following an examination of the Indian heritage, and the colonial legacy of the conquistadors, the class deals principally with the contemporary period, examining the Mexican Revolution and its aftermath, Petroleum Power, the Somoza dynasty, Nicaragua under the Sandinistas, the U.S. role in the region, the human rights situation in Central America, the current El Salvador crisis, 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:** J. Kirk  
**Format:** Lecture/discussion 2 hours, conducted in English  
**Prerequisite:** No prerequisites. Open to students in all departments. No knowledge of Spanish necessary

**\*SPAN 2080.03A or B: The History of Modern Spain.** This class focusses on four main historical periods: the Republic of 1931, the Civil War (1936-1939), General Franco's Spain (1939-1975), and the post-Franco Restoration of the Monarchy.

**Instructor:** A. Ruiz Salvador  
**Format:** Lecture/discussion 2 hours, conducted in English  
**Prerequisite:** No prerequisites. Open to students in all departments. No knowledge of Spanish necessary

**\*SPAN 2100.03A or B: La Civilización de España.** Recommended to students planning to join the Salamanca Programme at the Colegio de España. This class is an exploration of Spain, one of Europe's most perplexing nations, with references to its history, art, literature, languages, and customs.

**Instructor:** A. Ruiz Salvador  
**Format:** Lecture/discussion 2 hours, conducted in Spanish  
**Prerequisite:** SPAN 2010.03 or equivalent facility in the Spanish language

**\*SPAN 2109.03A or B: Cuba from Colonial Times to 1961.** While many people are aware of the impact of the Cuban Revolution of 1959, few are aware of the kind of society that existed in Cuba beforehand. This class seeks to examine the historical roots of the country from the colonial period until the 1960's, with particular attention being paid to socio-cultural aspects. The objective is to provide students with a background knowledge of this country and its current reality.

**Instructor:** J. Kirk  
**Format:** Lecture/discussion 2 hours, conducted in English  
**Prerequisite:** No prerequisites. Open to students in all departments. No knowledge of Spanish necessary

**\*SPAN 2110.03A or B: The Cuban Cultural Revolution.** Cuba, the only Communist society in the Western Hemisphere, has undergone a dramatic political and economic transformation. The Revolution has also brought about changes in education, the arts, the role of women, race relations, and athletics. The class focuses on the problems and achievements of the Revolution, the peculiarities of Communism in a Caribbean society, and its effect on literature and the arts.

**Instructor:** J. Kirk  
**Format:** Lecture/discussion 2 hours, conducted in English  
**Prerequisites:** No prerequisites. Open to students in all departments

**\*SPAN 2130.03A or B: 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.

**Instructor:** J. Kirk  
**Format:** Lecture/discussion 2 hours, conducted in English

**Prerequisites:** No prerequisites. Open to students in all departments. No knowledge of Spanish necessary

**\*SPAN 2200.03A or B: 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:** Staff  
**Format:** Lecture 2 hours, conducted in Spanish

**Prerequisites:** SPAN 2010.03, or the equivalent, or permission of the instructor

**\*SPAN 2210.03A or B: The Novel of the Mexican Revolution.** The Mexican Revolution (1910-1917) is the first people's revolution of the twentieth century. The prerevolutionary situation, the war, and its aftermath, resulted in some of the finest Latin American novels. This class views these works against the historical and social background of contemporary Mexico.

**Instructor:** J. Kirk  
**Format:** Lecture/discussion 2 hours, conducted in English

**Prerequisites:** No prerequisites. Open to students in all departments. No knowledge of Spanish necessary

**\*SPAN 2230.03A or B: Contemporary Latin American Prose.** This class samples short stories and novels of contemporary prosists from throughout Latin America. Included are works by such outstanding experimental writers as Julio Cortázar, Juan Rulfo, Carlos Fuentes, Alejo Carpentier, García Márquez and José Donoso — authors whose vigorous narrative, technical innovation and synthesis of surrealism, myth, and magical realism evidence not only a "new consciousness" in Latin America, but perhaps a rejuvenation in prose art of global consequence.

**Instructor:** J. Holloway  
**Format:** Lecture/discussion 2 hours, conducted in English

**Prerequisite:** No prerequisites. Open to students in all departments except Spanish. No knowledge of Spanish necessary

**\*SPAN 2240.03A or B: Contemporary Latin American Prose, Part II.** This class is a continuation of SPAN 2230.03, but may be taken independently of it.

**Instructor:** J. Holloway  
**Format:** Lecture/discussion 2 hours, conducted in English

**\*SPAN 2500.03A or B: Introduction to Spanish Literature.** Study of illustrative works.

**Instructor:** A. Ruiz Salvador



## 402 Spanish

- Format:** Lecture/discussion 2 hours, conducted in Spanish
- Prerequisite:** SPAN 2010.03, or equivalent
- \*SPAN 2510.03A or B: Introduction to Latin American Literature.** Study of illustrative works.
- Instructor:** J. Holloway
- Format:** Lecture/discussion 2 hours, conducted in Spanish.
- Prerequisite:** SPAN 2010.03, or equivalent
- \*SPAN 3010.03A or B: Workshop in Advanced Oral Spanish.** This class intends to build vocabulary, increase fluency and enhance the style of spoken Spanish through continued development and intensive use of oral Spanish skills.
- Instructor:** Staff
- Format:** Lecture/discussion 3 hours, conducted in Spanish
- Prerequisite:** SPAN 2010.03, or equivalent
- SPAN 3020A or B: Translation.** Exercises in translation from Spanish to English and from English to Spanish.
- Instructor:** Staff
- Format:** Lecture/discussion 3 hours
- Prerequisite:** SPAN 2010.03, or equivalent
- SPAN 3030.03A or B: Composition.** Training towards accuracy in writing Spanish. Vocabulary-building, free composition.
- Instructor:** Staff
- Format:** Lecture/discussion 3 hours
- Prerequisite:** SPAN 2010.03, or equivalent
- \*SPAN 3040.06R: Radio-Español.** This class integrates all of the aspects of language study (written, oral, and translation skills with conceptual and cultural comprehension) to put into practice the essence of language: communication. As a seminar group, students will receive instruction on the technical and artistic aspects of radio production, and will create in Spanish a half-hour long radio programme of magazine format to be aired on CKDU weekly. This Spanish programme will include news reports and cultural studies of the Spanish-speaking world, interviews with members of the local Spanish-speaking community, editorials, music, local news and weather, etc. Academic areas of focus include not only linguistic skills, but also independent research skills in both English and Spanish sources for the programme's fixed segments.
- Instructor:** M. Jiménez
- Format:** Lecture/discussion 1 hour, radio show ½ hour
- Prerequisite:** Any two of SPAN 3010.03, SPAN 3020.03, and SPAN 3030.03, or permission of the instructor
- \*SPAN 3060.03A or B: Español Avanzado: Puntos Gramaticales Problemáticos.** This class focuses on those particular points of the Spanish language and usage which continue to be difficult for the non-native speaker; i.e., por/para, ser/estar, use of the subjunctive, etc.
- Instructor:** Staff
- Format:** Lecture 3 hours
- Prerequisites:** SPAN 2010.03, or permission of the instructor
- \*SPAN 3070.03A or B: Contemporary Latin American History.** This class examines the underlying structures of Latin America through a consideration of the major political and social trends in the continent. After a brief historical overview it studies both general currents (e.g., the Church's role, militarism's growth, and U.S. influence) and specific developments, such as the Mexican and Cuban Revolutions, Chile under Allende and Pinochet, and the Sandinistas' Nicaragua. This helps the student understand the present-day reality of this important world area.
- Instructor:** J. Kirk
- Format:** Lecture/discussion 2 hours, conducted in English
- Prerequisite:** No prerequisites. Open to students in all departments. No knowledge of Spanish necessary
- \*SPAN 3080.03A or B: Historia de la España Contemporánea.** This class focusses on four main historical periods: the Republic of 1931, the Civil War (1936-1939), General Franco's Spain (1939-1975, and the post-Franco Restoration of the Monarchy.
- Instructor:** A. Ruiz Salvador
- Format:** Lecture/discussion 2 hours, conducted in Spanish
- Prerequisite:** SPAN 2010.03 or equivalent facility in Spanish
- Exclusion:** SPAN 2080.03
- \*SPAN 3215.03A or B: Seminar in Spanish American Literature.** This class studies in depth, selected topics in Spanish American prose and poetry, in their cultural and aesthetic contexts. Areas of special focus include modernismo, creacionismo and the prose of Quiroga and the Regionalist authors, as well as the more recent inheritors of these traditions; Neruda, Vallejo, Paz and novelists of the "Boom" generation.
- Instructor:** J. Holloway
- Format:** Lecture/discussion 2 hours, conducted in Spanish
- Prerequisite:** SPAN 2010.03, or equivalent
- \*SPAN 3225.03A or B: Seminar in Modern Spanish Literature.** This class studies in depth, selected topics in Modern Spanish prose and poetry, in their cultural and aesthetic contexts. The focus of the class falls especially on such figures as Galdos, Leopoldo Alas, and writers of the Generation of '98 such as Baroja, Unamuno, Ortega, Machado and Jiménez.
- Instructor:** A. Ruiz Salvador
- Format:** Lecture/discussion 2 hours, conducted in Spanish
- Prerequisite:** SPAN 2010.03, or equivalent
- \*SPAN 3230.03A or B: Literature of the Spanish Civil War.** A study of representative works.
- Instructor:** A. Ruiz Salvador
- Format:** Lecture/discussion 2 hours, conducted in Spanish
- Prerequisite:** SPAN 2010.03, or equivalent
- \*SPAN 3500.03A or B: Contemporary Spanish Literature.** A study of representative works.
- Instructor:** A. Ruiz Salvador
- Format:** Lecture/discussion 2 hours, conducted in Spanish
- Prerequisite:** SPAN 2010.03, or equivalent
- \*SPAN 3510.03A or B: Contemporary Spanish American Literature.** A study of representative works.
- Instructor:** J. Holloway

**Format:** Lecture/discussion 2 hours, conducted in Spanish

**Prerequisite:** SPAN 2010.03, or equivalent

**\*SPAN 3800.03A or B: Seminar in Spanish Film.** This class provides students with the basic elements of cinematic language and gives them a critical overview of the Spanish film production from the 1930's to the present day. The works of directors such as L. Buñuel, Carlos Saura, Victor Erice, Mario Camus, Pedro Almodóvar, and others are previously viewed by students and discussed in class.

**Instructor:** M. Jiménez

**Format:** Lecture/discussion 2 hours, conducted in Spanish

**Prerequisites:** SPAN 2010.03

**\*SPAN 3810.03A or B: Seminar in Latin American Film.** This class provides the student with the basic elements of cinematic language and gives them a critical overview of Latin American film production emphasizing that of Argentina, Mexico, and Cuba. Films by Leopoldo Torre-Nilsson, Leonardo Favio, A. Ariévarian, M.L. Bemberg, Emilio Fernández, Paul Leduc, Tomas Gutiérrez-Alea, Humberto Soles, and others are previously viewed by the students and discussed in class.

**Instructor:** Maria Jiménez

**Format:** Lecture/discussion 2 hours, conducted in Spanish

**Prerequisites:** SPAN 2010.03

**SPAN 3900.03A or B: Tópicos en Estudios Hispánicos Avanzados.** This class offers the student an opportunity to study aspects of hispanic culture not already included in other language offerings or in literature classes more narrowly defined by period, genre, etc. It takes advantage of special research interests of staff or the unique expertise of visiting faculty to provide instruction in Spanish not regularly available here.

**Instructor:** Staff

**Format:** Lecture 2 hours, conducted in Spanish

**Prerequisite:** SPAN 2010.03, or equivalent, or permission of the instructor

**\*SPAN 3910.03A or B: Tópicos en Estudios Hispánicos Avanzados, Part II.** This class for advanced Spanish students continues study of the nature described in Spanish 3900.03, but is independent of it and may be taken separately from it.

**Instructor:** Staff

**Format:** Lecture 2 hours, conducted in Spanish

**Prerequisite:** SPAN 2010.03, or equivalent, or permission of the instructor

**\*SPAN 3970.03R: Directed Reading in Spanish American Literature**

**\*SPAN 3975.03R: Directed Hispanic Studies**

**\*SPAN 3980.03R: Reading class for majors**

**\*SPAN 3990.03R: Reading class for majors**

**\*SPAN 4040.03A or B: Advanced Style and Syntax**

**Instructor:** Staff

**Format:** Lecture/discussion 2 hours

**Prerequisite:** SPAN 3020.03, or equivalent

**\*SPAN 4500.03A or B: Golden Age Theatre**

**Instructor:** Staff

**Format:** Lecture/discussion 2 hours

**Prerequisite:** SPAN 3020.03, or equivalent

**\*SPAN 4510.03A or B: Golden Age Poetry and Prose**

**Instructor:** Staff

**Format:** Lecture/discussion 2 hours

**Prerequisite:** SPAN 3020.03, or equivalent

**SPAN 4980.03R: Reading class for Honours students**

**\*SPAN 4985.03R: Independent Advanced Hispanic Studies**

**SPAN 4990.03R: Reading class for Honours students**

## Statistics

Location: Chase Building  
Telephone: (902) 494-2572  
FAX: (902) 494-5130

### Chair of the Department

R.P. Gupta

### Director of Division

D.C. Hamilton

### Faculty Advisors

C.A. Field (Undergraduate, 1995-96)

D.C. Hamilton (Undergraduate)

B. Smith (Graduate)

### Professors

C.A. Field, MSc, PhD (Northwestern)

G. Gabor, MSc, PhD (Eotvos)

R.P. Gupta, MSc (Agra), PhD (Delhi)

### Associate Professors

D. Hamilton, MA, PhD (Queens)

K. Thompson, MSc (Manchester), PhD

(Liverpool) - (jointly with Oceanography)

### Assistant Professors

K. Bowen, PhD (Calif)

K.E. Manchester, MSc, PhD (Tor)

B. Smith, MSc (Calgary), PhD (Berkeley)

### Post-Doctoral Fellow

A. Almudevar, PhD (Tor)

### Statistical Consultant

W. Blanchard, MSc (UBC)

Please refer to the entry for the Department of Mathematics, Statistics and Computing Science in this calendar for a full listing of the members of the Department and information on other programmes offered by the Department.

## Degree Programmes

Statistics is the discipline which is concerned with the organization, display and interpretation of data. By a study of the uncertainty inherent in scientific hypotheses, statistics enables us to make inferences about these hypotheses based on observations with error.

There are several honours programmes, a 20-credit advanced major and a 15-credit major programme in Statistics available to students. In addition, a Co-op programme is available. Any student interested in such a course of study should consult the Director of Statistics, Department of Mathematics, Statistics and Computing Science.

Students should consult the "Degree Requirements" section of this calendar for specific regulations.

### Honours in Statistics

The honours programme in Statistics will provide students with a comprehensive knowledge of both theoretical and applied

statistics and will enable students to move easily into challenging employment or graduate work in statistics.

### Departmental Requirements

#### Classes required in Honours:

1000 level: MATH 1000.03/1010.03, STAT 1060.03\*, COMP 1400.03/1410.03\*\*

2000 level: MATH 2001.03, 2002.03; 2030.03/2040.03 or 2135.03; STAT 2060.03, 2080.03\*\*, 2050.03\*\*\*; plus 2 to 6 other half credits in Statistics at or above the 2000 level but not including classes listed below.

3000 level: STAT 3340.03, 3350.03, 3360.03, 3380.03, 3460.03; MATH 3090.03; MATH 3080.03 or 3100.03

4000 level: STAT 4060.06, 4620.03

#### Honours qualifying exam.

\*The requirement to take STAT 1060.03 may be waived for students entering the programme in their second year.

\*\*Some students may take either COMP 1400.03/1410.03 and/or STAT 2050.03, STAT 2080.03 in the first year of their degree programme.

It is recommended that students take STAT 2300.03 and COMP/MATH 3170.03 in either the second or third year of their degree programme.

#### Honours Comprehensive Examination

Prerequisite: Successful completion of the third year Honours Statistics programme. The student will carry out an independent statistical study or act as a major statistical contributor to a research project under the supervision of a faculty member. In addition the student will participate in the Statistical Consulting service through consulting workshops.

### 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.

### Advanced Major in Statistics

#### Departmental Requirements

##### Classes required in Advanced Major:

1000 level: MATH 1000.03/1010.03 or 1500.06, STAT 1060.03\*, COMP 1400.03/1410.03

2000 level: MATH 2001.03, 2002.03, 2030.03/2040.03 or 2135.03; STAT 2060.03, 2080.03, 2050.03

3000 level: STAT 3340.03, 3360.03, 3380.03 or 3350.03, 3460.06 and at least one more credit in Statistics at or above the 3000 level

\*The requirement to take STAT 1060.03 may be waived for students entering the programme in the second year.

Note: Some students may take STAT 2050.03/2080.03, COMP 1400.03/1410.03 in their 1st year, of their degree programme. It is

recommended that students take STAT 2300.03 and MATH 3170.03 in either the second or third year of their degree programme.

## Major in Statistics

### Departmental Requirements

Classes required in major:

- 1000 level: MATH 1000.03/1010.03, STAT 1060.03.  
 2000 level: MATH 2030.03 and 2040.03; STAT 2060.03, 2080.03 and 2050.03  
 3000 level: STAT 3340.03, 3360.03, 3380.03 or 3350.03, 3460.03

Note: Some students may take STAT 2050.03 and/or STAT 2080.03 in the spring term of their 1st year if they have taken STAT 1060.03 in the fall term. Students are also advised to take MATH 2001.03/2002.03, STAT 2300.03 and COMP 1400.03/1410.03 in their 2nd or 3rd year.

### Co-operative Education Programme

The Co-operative education programme integrates a 20-credit programme of 8 academic terms with 4 work-terms of relevant industrial/laboratory employment. The work-terms, each of 4 months duration, are spent in industrial, business, government and laboratory positions. The work experience helps students see the applicability of their training in statistics, mathematics, and computing science and helps them make intelligent career choices. Upon successful completion of the programme the University transcript indicates that the programme was a co-operative one.

Advanced Major students should complete a Co-op degree in 4½ years; Honours Statistics students should expect to take 5 years.

Students interested in a Co-op programme in statistics or a combined programme with statistics should consult the Director of Statistics or the Director of Co-op Education in the Department of Mathematics, Statistics and Computing Science, preferably early in their course of study.

### Honours Co-op in Statistics

Classes required in Honours Co-op:

Same as for the regular Honours in Statistics as above with the addition of the following:

- Four Co-op Workterms: STAT 8891.00, 8892.00, 8893.00, 8894.00
- Co-op Seminar: SCIB 8700.00

### Advanced Major Co-op in Statistics

Classes required in Advanced Major Co-op:

Same as for the regular Advanced Major in Statistics with the addition of the following:

- Four Co-op Workterms: STAT 8891.00, 8892.00, 8893.00, 8894.00
- Co-op Seminar: SCIB 8700.00

More details on the Co-op programme appear under the Co-operative Education in Science entry in this calendar.

## Classes Offered

Credit may not be obtained twice for the same class even if the numbers have been changed.

**STAT 1060.03A or B: 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. Natural sequels for this class are STAT 2080.03, 2050.03 and 2060.03.

Format: Lecture 3 hours, tutorial 1 hour, MLC

Prerequisite: Nova Scotia Mathematics 442 or equivalent

Cross-listing: MATH 1060.03

**STAT 2050.03A or B: 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

**STAT 2060.03A or B: Introduction to Probability and Statistics.** Rigorous introduction to probability and statistical theory. Subject matter is developed systematically beginning with the fundamentals of probability and following with statistical estimation and testing. The interrelationship between probability theory, mathematical statistics and data analysis will be emphasized. Topics covered include elementary probability, random variables, distributions, estimation and hypothesis testing. Estimation and testing are introduced using maximum likelihood and the generalized likelihood ratio. Natural sequels for this class are STAT 2080.03 and 3360.03

Format: Lecture 3 hours, MLC

Prerequisite: MATH 1000.03/1010.03

Cross-listing: MATH 2060.03, BC0N 2060.03

**STAT 2080.03A or B: Statistical Methods for Data Analysis and Inference.** This class introduces a number of techniques for data analysis and inference commonly used in the experimental sciences. The class begins with an introduction to model building in linear models and develops the techniques required for multiple regression. From here we consider analysis of variance, factorial designs, analysis

of covariance using the general techniques for linear models. The last part of the class will include techniques for two and three way tables along with logistic regression. The use of a computer package for carrying out the computations will be an integral part of the class. Students will design and carry out a simple experiment as part of this class. A natural sequel for this class is STAT 3340.03.

Format: Lecture 3 hours, MLC

Prerequisite: STAT 1060.03 or STAT 2060.03

Cross-listing: MATH 2080.03, ECON 2280.03

**STAT 2300.03B: Introduction to Mathematical Modelling Using Algebra.** See class description for MATH 2300.03 in the Mathematics section of this calendar.

**STAT 2600.03A or B: Theory of Interest.** See class description for Math 2600.03 in the Mathematics section of this calendar.

**SCIE 3000.06R: Science Fundamentals.** See class description in Science, Interdisciplinary section of this calendar.

**STAT 3340.03A: Regression and Analysis of Variance.** A thorough treatment of the theory and practice of regression analysis. Topics include: fitting general linear models using matrices, optimality of least squares estimators (Gauss-Markov theorem), inferences, simple and partial correlation, analysis of residuals, case-deletion diagnostics, polynomial regression, transformations, use of indicator variables for analysis of variance and covariance problems, model selection, and an introduction to nonlinear least squares. This class makes extensive use of computer packages.

Format: Lecture 3 hours

Prerequisite: STAT 2080.03, MATH 2030.03 and either MATH 1010.03 or STAT 2060.03

Cross-listing: MATH 3340.03

**STAT 3350.03B: Design of Experiments.** The aim of the class is to develop the fundamental statistical concepts required for designing efficient experiments to answer real questions. The first main subject is unit variation and control. The basic concepts of replication, blocking and randomization are each examined. The second main subject is treatment questions and structure. The ideas of factorial designs, split-plot and incomplete plot designs are presented. We conclude with a look at response surface methodology.

Format: Lecture 3 hours

Prerequisite: STAT 3340.03 or consent of instructor

Cross-listing: MATH 3350.03

**STAT 3360.03A: Probability.** The concepts and application of probability. Topics include the classical discrete and continuous distributions, including the binomial, hypergeometric, multinomial, Poisson, uniform, exponential and normal; definitions and properties of random variables; independence; sums of independent random variables, including the law of large numbers and central limit theorem; conditional probability; and the bivariate normal distribution. Examples will be taken from the natural and physical sciences.

Format: Lecture 3 hours

Prerequisite: STAT 2060.03 and MATH 2001.03

Cross-listing: MATH 3360.03

**STAT 3380.03A or B: 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 3390.03A or B: Statistical Computing.** The class will provide an introduction to the principal computational methods which are important for data analysis. Major analyses usually require extensive computing; hence techniques which ensure the validity and accuracy of the computations are necessary. Topics covered will include, numerical computations, linear models, Monte Carlo methods and random number generators.

Format: Lecture 3 hours

Prerequisite: STAT 2080.03, MATH 2040.03, COMP 1210.03 or 1410.03

Cross-listing: COMP 3390.03

**STAT 3460.03B: Intermediate Statistical Theory.** This class provides an intermediate level coverage of statistical theory to provide a framework for valid inferences from sample data. The methods developed are based on the likelihood function and are discussed from the frequentist, likelihood, and Bayesian approaches. The problems of point estimation, interval estimation and hypothesis testing and the related topics of sampling distributions, sufficiency, and Fisher Information are discussed.

Format: Lecture 3 hours

Prerequisite: STAT 3360.03

Cross-listing: MATH 3460.03

**STAT 4060.06R: Advanced Statistical Theory.** This class is intended to provide a solid basis in statistical theory. The classical theory of estimation and testing provides a starting point. The Rao-Blackwell theory, Cramer-Rao bound, Neyman-Pearson theory and uniformly most powerful tests will be covered. From here, conditioning and invariance will be used to obtain good procedures in more complex situations. The theory will be developed in the context of specific problems including the general linear model.

Format: Lecture 3 hours

Prerequisite: STAT 3460.03

Cross-listing: MATH 4060.06, STAT 5060.06

**STAT 4070.03A or B: Multivariate Distributions.** This class deals with the distribution theory of the observations on more than one variable. Topics covered include: Multivariate Normal Distribution, The Wishart Distribution, Hotelling's T, Distributions Associated with Regression, Canonical Correlations and Discriminant Analysis.

Format: Lecture 3 hours

Prerequisite: STAT 3460.03

**STAT 4090.03A or B: Probability.** The theory of probability in Euclidean space. Topics include measure and integration, probability measures, the definitions and properties of

random variables and distribution functions, convergence concepts, Borel-Cantelli lemmas, laws of large numbers, characteristic functions and central limit theorems, conditional probability and expectation.

**Format:** Lecture 3 hours  
**Prerequisite:** STAT 3360.03 and a third year analysis class, instructor's consent

**Cross-listing:** MATH 4090.03/5090.03, STAT 5090.03

**STAT 4100.03A or B: Survival Analysis.** This class is an introduction to survival analysis methods and will cover both the statistical theory behind the methods, and the application of various techniques. Topics to be discussed include survivorship and hazard functions and their relationship to lifetime distributions and densities; modes of censoring; the Kaplan-Meier estimate of the survivor function; parametric survival time distributions; proportional hazard models and their semi-parametric estimation; accelerated life models, log rank tests, including the Mantel-Haenszel test; and goodness of fit measures.

**Format:** Lecture 3 hours  
**Prerequisite:** STAT 3340.03 and STAT 3460.03, or equivalent

**Cross-listing:** STAT 5100.03

**STAT 4200.03A or B: Nonlinear Regression.** This class is intended to familiarize the student with methods for the design and analysis of experiments using nonlinear regression models. Topics include a review of the geometry of linear regression and its extension to nonlinear regression, numerical methods for finding the least squares estimates, exact and approximate methods for confidence region construction, optimal design for precise parameter estimation, assessing influence, and insights from differential geometry such as curvature measures.

**Format:** Lecture 3 hours  
**Prerequisite:** STAT 3340.03 and 3460.03 or permission of the instructor

**Cross-listing:** STAT 5200.03

**STAT 4350.03A or B: Applied Multivariate Analysis.** The class deals with the stochastic behaviour of several variables in systems where their interdependence is the object of analysis. Greater emphasis is placed on practical application than on mathematical refinement. Topics include classification, cluster analysis, categorized data, analysis of interdependence, structural simplification by transformation or modelling and hypothesis construction and testing.

**Format:** Lecture 3 hours  
**Prerequisite:** STAT 3340.03 and MATH 2135.03 or 2040.03

**Cross-listing:** STAT 5350.03

**STAT 4360.03A or B: Robust Statistics.** Robust Statistics are those which provide protection against violation of assumptions underlying the statistical procedure. We will develop basic concepts including sensitivity, influence and breakdown of estimates and tests. Classical procedures will be evaluated in terms of robustness and alternate techniques developed based on weighted least squares and/or median based generalizations. Starting from the location problem, we will move on to regression

and to multivariate problems by means of robust covariance estimates. We will also consider robust techniques in time series. Some simple programming will be required to implement various procedures.

**Format:** Lecture 3 hours  
**Prerequisite:** STAT 3460.03 and 3340.03  
**Cross-listing:** STAT 5360.03

**STAT 4370.03A or B: 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 4390.03A or B: Time Series Analysis I.** Time series analysis in both the time and frequency domain is introduced. The class is applied and students are required to develop their own computer programmes in the analysis of time series drawn from real problems.

Topics to be discussed include the nature of time series, stationarity, auto and cross covariance functions, the Box-Jenkins approach to model identification and fitting, power and cross spectra and the analysis of linear time-invariant relationships between pairs of series.

**Format:** Lecture 3 hours  
**Prerequisite:** STAT 3340.03, 3460.03, or instructor's consent

**Cross-listing:** OCBA 4210.03/5210.03, STAT 5390.03

**STAT 4400.03A or B: Time Series Analysis II.** This class is concerned with the analysis of multivariate time series, and provides an advanced coverage of the statistical theory behind time series methods. Topics to be covered include theoretical aspects of Box-Jenkins models, Kalman filtering and the state space model, and the frequency domain approach to transfer function estimation.

**Format:** Lecture 3 hours  
**Prerequisite:** STAT 4390.03, 4350.03, or instructor's consent

**Cross-listing:** OCBA 4080.03

**STAT 4410.03A or B: Advanced Topics in Time Series Analysis.** This is an advanced class in the analysis of time series and related stochastic processes. The topics will vary from year to year, and may include spatial time series, nonstationary time series, nonlinear and non-Gaussian models, fitting of dynamical systems models, ployspectra, filtering and smoothing, and the analysis of point processes data.

**Format:** Lecture 3 hours  
**Prerequisite:** Stat 4390.03  
**Cross-listing:** STAT 5410.03

**STAT 4620.03A or B: 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.

## 408 Statistics

---

**Format:** Lecture 3 hours  
**Prerequisite:** STAT 3340.03, 3460.03, or  
instructor's consent  
**Cross-listing:** STAT 5620.03

**SCIE 8700.00: Co-op Seminar.** This seminar is used to prepare Co-op students for their first work-term experience. It is a prerequisite for the first work-term.

**STAT 8891.00: Co-op Work-Term I**

**STAT 8892.00: Co-op Work-Term II**

**STAT 8893.00: Co-op Work-Term III**

**STAT 8894.00: Co-op Work-Term IV**

## Theatre

**Location:** Dalhousie Arts Centre, 5th Floor, Halifax, N.S.  
**Telephone:** (902) 494-2233  
**Fax:** (902) 494-2801

### Chair

L. Sorge (494-2241)

### Undergraduate Advisor

J. Gantar

### Professors

A.R. Andrews, BA, DipEd, MA (Leeds), PhD (III) FRSA  
 P. Perina, MA, Dip. Scenography (Prague)

### Associate Professors

F. Christopher, Dip (NTSC)  
 R. Doyle  
 D.R. Overton, BA, MA (UBC), PhD (Calif)

### Assistant Professor

J. Gantar, BA, MA (Ljubljana), PhD (Toronto)  
 L. Sorge, BA (King's/Dal), MA (NYU)

### Production Manager

D. Giffin

### Special Instructors

K. Beale  
 K. Edgett  
 B. MacLennan, BA (Dal)  
 D. Porter  
 R. Theriault, BEd (Laval)  
 I. Thomson

## Introduction

The Dalhousie Theatre Department offers different ways to study the theatre:

- 1) You can undertake programmes that lead to a university degree: an Honours BA (4 years), a General BA (3 years);
- 2) You can enrol in a programme in Costume Studies which combines academic study and research skills with creative design interpretation and applied skills, leading to a Diploma (2 years), an Advanced Diploma (3 years);
- 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 a part-time or extension student.

Basically, the degree programmes involve a curriculum of theatre classes, and a selection of other classes in different disciplines. The university has a set of regulations which specify how these programmes must be arranged. These regulations are all listed earlier in this calendar, and prospective students should refer to them to become aware of the opportunities offered. There are a surprising number of different ways to arrange one's studies; what we recommend is the basic structure you should follow if theatre is your primary interest.

## Degree Programmes

### BA in Theatre (Theatre Studies) (3 years; 4 years with Honours)

#### Departmental Requirements

Year 1: THEA 1000.06 and either THEA 1050.06 or 1800.06

### BA with Honours in Theatre (4 years)

Students who wish to follow a programme of theatre studies that keeps the whole of the theatre in perspective choose this programme. They must maintain a high scholastic level of performance to remain in this programme (B- or better in all classes). Only theatre classes are listed. The Honours programme requires at least nine and not more than eleven theatre credits beyond the 1000 level, including two beyond the 3000 level. At least the equivalent of two full credits must be taken from each of the following three groupings:

**History:** THEA 2011.03, 2012.03, 2400.06, 3500.06, 3900.06, 4400.06, 4500.03, 4501.03  
**Theory:** THEA 2300.06, 2900.06, 3510.03, 3511.03, 4700.06, 4900.06, 4910.06  
**Performance:** THEA 2001.06, 2002.03, 3200.06, 3600.06, 4200.06, 4710.06, or any of the acting classes.

A comprehensive exam/thesis has to be passed as a 21st credit.

### BA with a Major in Theatre (3 years)

You can major in theatre in a three-year BA programme (15 classes). This requires at least four and not more than eight theatre classes beyond the 1000 level, including two beyond the 2000 level. You may also take an advanced major after consultation with the Undergraduate Advisor. At least the equivalent of one full credit must be taken from each of the three groupings listed above.

### BA in Theatre (Acting) (3 years; 4 years with Honours)

There are two degree programmes in Acting. The BA in Acting (3 years) and the BA Honours Acting (4 years). These programmes share a common curriculum for the first two years. Auditions will be held at the end of the first year for admission into the upper years of study. At the end of the second year students will be advised as to their ability to succeed in the 4 year Honours Programme. Students who elect to complete their degree in 3 years will design a curriculum for their final year under faculty guidance which will include a performance credit.

### BA with Honours in Theatre (Acting) (4 years)

**Year 1:** THEA 1000.06, 1800.06, plus three classes in other subjects  
**Year 2:** THEA 2011.03, 2012.03, 2800.06/2810.06, plus two classes in other subjects  
**Year 3:** THEA 3800.06/3810.06/3820.06, plus two classes in other subjects



## 410 Theatre

**Year 4:** THEA 4800.06/4810.06/4820.06, one other advanced elective in Theatre Studies, plus one class in another subject

A role in the DTDP may be submitted as a 21st credit.

### BA in Theatre (Acting) (3 years)

**Year 1:** THEA 1000.06, 1800.06, plus three classes in other subjects

**Year 2:** THEA 2011.03, 2012.03, 2800.06/2810.06, plus two classes in other subjects

**Year 3:** THEA 3100.06, two other Theatre electives, plus two classes in other subjects

The main objective of the Acting Programme is to satisfy the needs of those students who have decided to pursue a professional career in the theatre. The programme is progressive in nature, culminating in a company of student actors who perform in the DTDP Season in their third and fourth years. As it is progressive, students move through all four years together and must, in addition to meeting degree requirements, achieve adequate grades in all acting programme classes, as well as be recommended by the acting faculty in order to advance to the next year's course of study. The programme provides these students with pre-professional training and the benefits of a liberal education at a major Canadian University.

### BA in Theatre (Scenography & Technical Scenography) (3 years; 4 years with Honours)

People from very different backgrounds are attracted to the study of scenography. Students with considerable art school or architecture background are offered especially tailored programmes, and should contact the scenography professor to work out a suitable programme of studies in scenography. Students starting with a keen interest and little formal background in art or architecture are admitted if they meet the university entrance requirements, and should then plan to follow either of the following programmes:

#### BA with Honours in Theatre (Scenography & Technical Scenography) (4 years)

**Year 1:** THEA 1000.06, 1050.06; plus three classes in other subjects

**Year 2:** THEA 2011.03, 2012.03, 2060.06/2070.06, 2700.06; plus one class in another subject

**Year 3:** THEA 3060.06/3070.06 and 3710.06; plus two classes in other subjects

**Year 4:** 4700.06; two other Theatre electives (at least two of these must be at the 4000-level); plus two classes in other subjects.

A comprehensive exam/thesis has to be completed as a 21st credit.

#### BA in Theatre (Scenography & Technical Scenography) (3 years)

**Year 1:** THEA 1000.06, 1050.06; plus three classes in other subjects

**Year 2:** THEA 2011.03, 2012.03, 2060.06/2070.06, 2700.06; plus one class in another subject

**Year 3:** THEA 3060.06/3070.06; one other Theatre elective, plus one class in another subject.

Students wishing to pursue the scenography specialty are urged to make an appointment with the scenography professor before they register to ensure they plan their specific programme in line with their particular needs.

### Combined BA and BEd

The Theatre Department in conjunction with the School of Education may offer a 4-year programme leading to the BA and BEd degrees. The outline of this programme is approximately as follows:

**Year 1:** (5 Credits) THEA 1000.06, 1800.06, introductory class in minor area\* (1 full credit), and two Arts and Social Sciences electives (2 full credits).

**Year 2:** (5 Credits) THEA 2000.03 and 2001.03, 2900.06, further classes in minor area\* (2 full credits), ½ credit class in educational foundations, ½ credit Arts and Science or other elective.

**Year 3:** (6 Credits) THEA 3200.06, 2011.03, 2012.03, further classes in minor area\* (2 full credits at 2000\* level), two ½ credit classes in educational foundations, and one credit Arts and Science or other elective.

**Year 4:** (6 credits) EDUC 4620.06, one credit class in Field Experience, one credit in methods area (elementary option: 2 credits), one credit in special education, ½ credit class in educational foundations, further class in minor area\* (1 full credit), and ½ credit Arts and Science or other elective.

\*The minor area must also be a recognized teachable subject.

For further information, consult the Undergraduate Advisor.

### Costume Studies, Diploma in 2 years, Advanced Diploma in 3 years

This programme combines 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 the theatre, film, museums, or historical animation.

Students entering this programme must meet university entrance requirements. Students taking the two-year Diploma take all ten credits in two years. The third year, leading to an Advanced Diploma in Costume Studies, is reserved for students who have a special interest in theatre design, wardrobe management/cutting, film co-ordination/continuity, or museum studies.

Some classes in Costume Studies are open to general BA students.

Please see class listings.

Students taking the two-year Diploma in Costume Studies are required to combine the classes in the following manner:

#### Year 1:

- THEA 1400.03A or B: Designers' Language
- THEA 1405.03A or B: Textile History: An Introductory Survey
- THEA 2400.06R: Cave to Cafe: Costume and Identity from Antiquity - 1700
- THEA 2406.06R: The Aesthetics of Contemporary Costume
- THEA 2450.06R: Costume Technology I
- THEA 3405.06R: The Aesthetics of Historical Costume

#### Year 2:

- THEA 3408.03A or B: The Aesthetics of Ritual Costume
- THEA 3450.03A or B: Costume Technology II
- THEA 3454.03A or B: Historical Introduction to Tailoring
- THEA 3455.03A or B: Historical Introduction to Modern Tailoring
- THEA 4400.06R: Dress for Success: King's Court to Corporate Office, 1700-1950
- THEA 4450.03A or B: Costume Technology III
- THEA 4451.03A or B: The Fabrication of Textiles
- THEA 4452.03A or B: Costume as Sculpture
- THEA 4454.03A or B: Costume in Performance

Students taking the three-year Advanced Diploma in Costume Studies are required to take the following classes in their third year:

- THEA 4456.06R/4457.06R/4458.06R: Advanced Seminar in Costume Studies
- Elective
- Elective

The following classes are open to Costume Studies students only, except by special permission of Costume Studies instructors:

**THEA 2450.06R: Costume Technology I.** This class builds upon the knowledge gained in THEA 1405.03, emphasizing sewing skills and techniques, and exploring their multitudes of applications to historical and modern costume. This class is part of the Costume Studies Programme.

**Format:** Lecture/lab 4 1/2 hours  
**Prerequisite:** See Costume Studies class combinations

**THEA 3450.03A or B: Costume Technology II.** In this year the student will apply the knowledge from THEA 1405.03 and THEA 2450.06 to create modern and historical costumes for the stage. This class is part of the Costume Studies Programme.

**Format:** Lecture/lab 4 1/2 hours  
**Prerequisite:** See Costume Studies class combinations

**THEA 3454.03A or B: Historical Introduction to Tailoring.** This class introduces the student to the process of tailoring as it originated in the Renaissance, and its development down

through the sixteenth, seventeenth, eighteenth, nineteenth, and twentieth centuries. Emphasis is placed on the purpose of underpaddings, understructures and the techniques of fixing them in place. This class is part of the Costume Studies Programme.

**THEA 3455.03A or B: Historical Introduction to Modern Tailoring.** The "Systems" of Pattern Drafting from the early nineteenth century to the twentieth century. Utilizing traditional tailoring techniques, the process of professional tailored garments is studied in detail. This class is part of the Costume Studies Programme.  
**Format:** Lecture/lab 4 1/2 hours  
**Prerequisite:** See Costume Studies class combinations

**THEA 4450.03A or B: Costume Technology III.** This class extends the expertise in costume creation developed in THEA 1405.03, THEA 2450.06, and THEA 3450.03 to examine techniques of fine finish as students prepare their costume "masterpiece". This class is part of the Costume Studies Programme.  
**Format:** Lecture/lab 4 1/2 hours  
**Prerequisite:** See Costume Studies class combinations

**THEA 4451.03A or B: The Fabrication of Textiles.** The analysis and creative exploration of textiles. Techniques of surface decoration are studied in preparation for original interpretation of Costume Design. Textile manipulation techniques of painting, quilting, beading and various theatrical applications of these techniques will be studied. This class is part of the Costume Studies Programme.  
**Format:** Lecture 2 1/2 hours, lab 2 hours  
**Prerequisite:** See Costume Studies class combinations

**THEA 4452.03A or B: Costume as Sculpture.** Based less in abstract principles and more in creativity, this class examines sculptural forms in a human context to facilitate modern and historical costume design. The student works directly on the human body or mannequin to gain proficiency in modelling textiles to shape costume. This class is part of the Costume Studies Programme.

**Format:** Lecture/demonstration/lab 4 1/2 hours  
**Prerequisite:** See Costume Studies class combinations

**THEA 4454.03A or B: Costume in Performance.** 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 plays provide a venue for students to develop interpersonal and technical skills. Students work as an integral part of a team whose work will ultimately lead to "Opening Night". This class is part of the Costume Studies Programme.

**Format:** Lecture/lab 4 1/2 hours  
**Prerequisite:** See Costume Studies class combinations

**THEA 4456.06R/4457.06R/4458.06R: Advanced Seminar in Costume Studies.** Students showing an interest in and proficiency for theatre design, wardrobe management/cutting,

film co-ordination/continuity, or museum studies may apply to take these classes as independent study. Using an integrative approach by applying the research, analytical, interpretive and creative skills learned in previous Costume Studies classes, students will explore costume in areas of special interest in theatre, film and museum studies, with the guidance of members of the faculty. Students will spend the second semester in a work-study programme. These classes are part of the Costume Studies Programme.

Format: Seminar 9 hours

Prerequisite: Permission of Costume Studies Faculty

## 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.

The department is developing close collaboration in certain theatre work with the Neptune Theatre and other regional theatres.

Some theatre classes by the nature of the work involved have a restricted enrolment. All students wishing to take any 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.

## Classes Offered

Note: Classes marked \* are not offered every year. Please consult the current timetable on registration to determine if these classes are offered.

### Classes in the Degree Programme

#### Year 1

**THEA 1000.06R: A Survey of Dramatic Literature.** The purpose of this class is twofold: first, to introduce students to the study of dramatic literature, and to provide them with a knowledge of different styles and genres in various historical periods; and secondly, 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 fulfils the writing requirement of Dalhousie University and is a prerequisite for all Theatre Majors.

Format: Writing Requirement, lecture/tutorial 3 hours

\***THEA 1010.06R: An Introduction to Dramatic Literature.** (Summer Session only). The purpose of this class is to introduce students to the study of dramatic literature, and to provide them with a knowledge of different styles and genres in various historical periods. It is designed to serve as an elective for the student who wishes to take a single class in theatre. This class may serve as a prerequisite to advanced theatre classes in lieu of THEA 1000.06R.

Format: Lecture/discussion 10 hours

**THEA 1050.06R: Introduction to Theatre Organization and Stagecraft.** This class takes the student behind the scenes to understand how a play is brought to life. Scenography is discussed and explored. Students are introduced to construction, properties, sound, lighting and costume for the stage. How a script is staged determines how an audience will understand the ideas inherent to the script. Methods and procedures for theatre productions make up the substance of this class. This class is a prerequisite for the scenography classes.

Format: Lecture 3 hours

\***THEA 1200.06R: The Nature of Acting.** (Summer Session only). This class is designed to be a basic exploration of the fundamental techniques required by the performer. It may be taken as a substitute for THEA 1800.06. Through the use of theatre games (C. Barker), introductory improvisational exercises (V. Spolin), and physical awareness work (R. Benedetti), the student develops the imaginative and emotional awareness that serves as the foundation of the performers' technique.

Format: Lecture 6 hours

**THEA 1400.03A or B: Designers' Language.** This class explores components of costume design, offering a discourse on design language, colour theory, symbolism, and thematic intent as it relates to theatre, and leads to an understanding of theatrical characterization. This class may be taken by general BA students, and is also part of the Costume Studies Programme.

Format: Lecture/demonstration 3 hours

**THEA 1405.03A or B: Textile History: An Introductory Survey.** An introduction to the history of the technology of textiles, through scientific study and exploration, this class provides an opportunity to discover the origins, structure, and characteristics of fibres, through to the woven cloth. Fibres are analyzed from an historical perspective, beginning with the earliest primitive body coverings of man, moving through the natural fibres worn throughout the ages, and ending with the development of man-made fibres in the twentieth century. Through the examination of source material such as artifacts from the eighteenth and nineteenth centuries, the student is enabled to acquire an in-depth knowledge of textiles in their cross-cultural and historical context. This class may be taken by general BA students, and is also part of the Costume Studies Programme.

Format: Lecture/lab 3 hours

**THEA 1800.06R: An Introduction to Acting and Performance.** This class offers an introduction to a variety of ways to understand performance. Practical exercises coupled with lectures and seminars provide a useful introduction to the communication and facilitation necessary for education students, and anyone interested in the inter-social dynamics of human behaviour. This class is a prerequisite for all acting classes. An auxiliary fee must be paid upon registration in this class.

Format: Lab/seminar 3 hours

## Year 2

**\*THEA 2001.09A: Performance Drama I.** This class will examine major realistic and non-realistic approaches to performance in the twentieth century. Both theoretical and practical sides of the work will be explored.

Consideration will also be given to performance as a factor in social interaction.

Format: Lecture/lab 6 hours

Prerequisite: THEA 1000.06

**\*THEA 2002.03B: Performance Drama II.** This workshop class will explore in greater depth and in practical terms some of the concepts of performance considered in THEA 2001.03. Some public performance is likely.

Format: Lecture/lab 6 hours

Prerequisites: THEA 2001.03

**THEA 2011.03A or B: The History of the Theatre from its Origins to the Renaissance.** This class gives students an opportunity to study various aspects of the early history of theatre. Specific topics covered include the origins of theatre, the Greek theatre, the Roman theatre, the medieval theatre and the theatres of the Italian Renaissance and of Shakespeare. 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 3 hours

**THEA 2012.03A or B: The History of the Theatre from Renaissance to the Twentieth Century.** This class is in a sense the sequel to Theatre 2011.03, though that class is not a prerequisite. It aims to study the development of the theatre in Europe and North America from the Renaissance to the twentieth century. There is no 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 3 hours

**\*THEA 2020.06R: Jazz Dance I. (Spring Session Only).** The theories and techniques of Jazz Dance: the use of space, rhythm, dynamics, and aesthetic awareness. Emphasis is on the development of personal expression through the medium of dance. Concentration is also placed on awareness of dance terminology and vocabulary.

Format: Lab/demonstration 4 hours

**THEA 2060.06R: Technical Scenography I.** The theory 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. An auxiliary fee must be paid upon registration in this class.

Format: Lecture/lab 6 hours

Prerequisite: THEA 1000.06, 1050.06

Co-requisite: THEA 2070.06R

**THEA 2070.06R: Performance Technology I.** This class is concerned with the more complex problems of the preparation of theatre production in lighting, sound, construction, and properties. Workshop preparation in light and sound, properties, and construction is

integrated with crew responsibilities in department productions. This class is the practical application of THEA 2060.06.

Format: Lab 6 hours

Prerequisite: THEA 1000.06, THEA 1050.06

Co-requisite: THEA 2060.06

**\*THEA 2300.06R: Film Study.** The history and development of film, from its beginnings to its social function as a mass entertainment medium. The class examines film genres and history, the component elements of film, and the medium's impact on 20th century society.

Format: Lecture/lab 4 hours

Prerequisite: THEA 1000.06 or permission of instructor

**THEA 2400.06R: Cave to Cafe: Costume and Identity from Antiquity to 1700.** An introduction to the study of human social behaviour and its relationship to the development of body coverings. This survey class begins with the earliest Mediterranean cultures, Ancient Egypt, Greece and Rome, and continues through to the end of the seventeenth century. This class may be taken by general BA students, and is also part of the Costume Studies Programme.

Instructor: Staff

Format: Lecture 2 hours

**THEA 2406.06R: The Aesthetics of Contemporary Costume.** By examining the aesthetics of contemporary costume, this class will enable the student to understand established systems used to create clothing, utilizing body image as principle means.

Through the study and application of systematic principles, the student will gain a better understanding of people's need to define body image in terms of ornamental self-expression and social identification. This class may be taken by general BA students, and is also part of the Costume Studies Programme.

Instructor: Staff

Format: Lecture/lab 4½ hours

Prerequisite: THEA 1405.03, or permission of instructor.

**THEA 2700.06R: Scenography I.** Designed to give students basic visual judgment 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 the class teaches perspective; the final project is to integrate all the previous material and apply it to simple stage composition. Throughout the year analysis and criticism of various works are encouraged. The texts followed are Gyorgy Kepes' *Language of Vision* and Johannes Ihen's *The Elements of Colour*. Students wishing to take this class should consult with the instructor. An auxiliary fee must be paid upon registration in this class.

Instructor: Staff

Format: Lecture/lab 6 hours

Prerequisite: Permission of instructor

**THEA 2800.06R/2810.06R: Acting I: The Discovery Year.** The second year of the Acting Degree Programme introduces students to the fundamental principles of acting through Acting, Improvisation, Voice and Movement. Emphasis is placed on the discipline that is the basis for a career in the professional theatre.

**THEA 2800.06R: Acting and Improvisation.** Through the use of theatre games, improvisation, sensory awareness exercises and basic scene work, students will begin to develop their physical, vocal and imaginative abilities. Emphasis will be placed on developing the imagination and accessing a broad range of emotional expression. An auxiliary fee must be paid upon registration in this class.

Format: Lecture/lab 6 hours

Co-requisite: THEA 2810.06

**THEA 2810.06R: Voice and Movement.** This class will focus on developing vocal and physical spontaneity and expressiveness. Voice: The principles of effective voice use will be identified through kinaesthetic exploration of breath, resonance and articulation, and applied to a variety of text and language environments. Emphasis will be placed on allowing flexible and responsive vocal energy, and on identifying usage patterns that limit the spontaneous connection to the voice. Singing: Musical ability is explored through weekly classes in singing technique. Movement: Students are introduced to fundamental movement and dance technique. Attention is focused on correct alignment, good posture, and healthy body awareness. The students begin a practical exploration into a dance vocabulary repertoire. An auxiliary fee must be paid upon registration in this class.

Format: Lecture/lab 6 hours

Co-requisite: THEA 2800.06

**THEA 2900.06R: Dramaturgy.** This class involves specific study of dramaturgical practices introduced in 1st year Survey of Dramatic Literature. 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 DTDP season of plays.

Format: Lecture/seminar 3 hours

Prerequisite: THEA 1000.06 or permission of instructor

**THEA 3010.06R: The History of Musical Theatre.** See class description for MUSC 3319.06 in the Music section of this calendar.

#### Year 3

**\*THEA 3020.06R: Jazz Dance II.** (Spring Session only). Intermediate studies in the principles and techniques of Jazz Dance. Students must have a solid foundation in dance technique (Modern, Ballet or Jazz).

Format: Lab/demonstration 4 hours

Prerequisite: Admission is subject to approval of instructor (Audition/Interview)

**THEA 3060.06R: Technical Scenography II.** A class designed to supplement Production Technology II. It includes lecture periods devoted to Administration, Publicity, Advance Techniques, and other related topics. This class is a continuation of THEA 2060.06 and covers the topics in greater detail. An auxiliary fee must be paid upon registration in this class.

Format: Lecture/lab 6 hours

Prerequisites: THEA 2011.03, 2012.03, 2060.06/2070.06, 2700.06

Co-requisite: THEA 3070.06R

**THEA 3070.06R: Performance Technical II.** An advanced class in production technology. Students work intensively in the areas of: construction, properties, lights and sound, or stage management. Each student serves as crew head for at least two departmental productions.

Format: Lab 6 hours

Prerequisites: THEA 2011.03, 2012.03, 2060.06/2070.03, 2700.06

Co-requisite: THEA 3060.06

**\*THEA 3100.06R: Directed Studies in Performance I.** Under the guidance of the members of faculty the student explores in detail a particular area of performance work. The class may be structured around an earned role (or roles) in a DTDP or in an Independent Student Project (ISP). A suitable advising structure will be designed to suit the particular project. The class content may include specified research documentation and the successful completion of a paper.

Format: Seminar 6 hours

Prerequisites: Permission of the Department

**\*THEA 3200.06R: The Director in the Theatre.** This class explores in theoretical and practical terms the various functions of the director in creating a theatrical event. Topics include the historical role of the director, conceptualizing scripts, working with dramaturgies, 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. An auxiliary fee must be paid upon registration in this class.

Format: Lecture/lab 4 hours

Prerequisites: THEA 2000.06 or permission of instructor

**THEA 3405.06R: The Aesthetics of Historical Costumes.** A continuation of THEA 2406.06R, this class examines the aesthetics of historical costume, tracing the evolution of changing silhouettes and historical pattern-making techniques throughout 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 may be taken by general BA students, and is also part of the Costume Studies Programme.

Format: Lecture/lab 4 1/2 hours

Prerequisite: THEA 2406.06; it is recommended to take this class in conjunction with THEA 4400.06.

**THEA 3408.03A or B: 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 may be taken by general BA students, and is also part of the Costume Studies Programme.

**Format:** Lecture/lab 4½ hours  
**Prerequisite:** THEA 1400.03, or permission of instructor

\*THEA 5500.06R: **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.

**Format:** Seminar 2-3 hours  
**Prerequisite:** THEA 2011.03, 2012.03, or permission of instructor

\*THEA 3510.03A: **Tragedy.** A study of how and why the structure of plays has altered from the classical Greek period to the eclecticism of the 20th century. The content of the class will begin with Greek tragedy, cover the Elizabethan/Jacobean periods, the Spanish Golden Age, Neo-Classicism, 19th century Romanticism and modern drama.

**Format:** Seminar/discussion 3 hours  
**Prerequisite:** Permission of instructor

\*THEA 3511.03B: **Comedy.** This class complements the class on tragedy. The main subject of the class is an in-depth analysis of comedy and other related dramatic genres such as farce, burlesque, parody, travesty and tragicomedy. A substantial portion of class will be devoted to the investigation of classical theories of comedy and laughter.

**Format:** Seminar/discussion 3 hours  
**Prerequisite:** Permission of instructor

\*THEA 3600.06R: **The Playwright in the Theatre.** The play as a vehicle for performance rather than as a literary work. Through weekly writing exercises dealing with specific dramaturgical problems, the craft of playwriting is explored. Simultaneously, a basis for understanding the nature of dramatic forms is provided through detailed analysis of the structure and techniques of plays representing a broad spectrum of styles, genres, and historical periods. With this background, the class then writes plays (both individually and collaboratively) which are then revised, critiqued, and given a public presentation by the 2000.06 and 3200.06 classes. An auxiliary fee must be paid upon registration in this class.

**Format:** Lecture/lab 4 hours  
**Prerequisite:** THEA 2900.06 or permission of the instructor

\*THEA 3710.06: **Scenography.** For theatre honors and special scenography students only. It builds on the knowledge from the previous class in the field. THEA 2700.06R, as far as visual knowledge is concerned, and from technical knowledge acquired in THEA 2060.06/THEA 2070.06. 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 constructionally a designed work. They are introduced to the directorial/scenographic relationship. The texts followed are John R. Walker's *Exploring Drafting: Basic Fundamentals* and Willis Wagner's *Modern Woodworking*. An auxiliary fee must be paid upon registration in this class.

**Format:** Lecture/lab 6 hours

**Prerequisites:** THEA 2011.03, 2012.03, 2060.06/ 2070.06, and 2700.06

THEA 3900.06R/THEA 3810.06R/THEA 3820.06R: **Acting II. The Transformation Year.** The third year of the Acting Programme is structured to build on the knowledge acquired in the previous two years of training. 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 DTDP season, dependent upon the needs of the plays chosen and the student's readiness for the performance situation as assessed by the faculty.

THEA 3800.06R: **Acting.** This class is designed to build upon the creative and imaginative work done in the first two years of the Acting Class. Students explore personal self-awareness and physical expressiveness through the continued use of relaxation techniques, sensory exercises and theatre games. Students continue to refine the physical, vocal, imaginative and psychological skills that must be focused within the actor's process. This is achieved through the in-depth study and exploration of written play scripts, (the actor as interpreter) and the use of the full face character mask, (the actor as creator). An auxiliary fee must be paid upon registration in this class.

**Format:** Lecture/lab 6 hours  
**Prerequisite:** Permission of the department  
**Co-requisites:** THEA 3810.06, THEA 3820.06

THEA 3810.06R: **Voice and Speech.** Continued exploration of spontaneous voice connection through breath, resonance and articulation, while extending awareness of flexibility, range and power. Inhibiting usage patterns will be further identified and reduced as effective voice-use strategies become more habitual. A variety of texts will be investigated and emphasis placed on developing sensitivity to the stimulus of thought, image, emotion, sensation, and impulse which is embodied in language. A thorough investigation of the component sounds of spoken English will be undertaken, and an ability to utilize Canadian Stage Standard Speech developed. **Singing:** Musical ability is explored through weekly classes in singing technique. An auxiliary fee must be paid upon registration in this class.

**Format:** Lecture/lab 6 hours  
**Co-requisites:** THEA 3800.06, 3820.06

THEA 3820.06R: **Movement/Dance.** The class is designed to develop and enhance the student's movement knowledge. The student will learn a basic warm-up routine which includes exercises for focus, flexibility, alignment and balance. Practical exploration continues with intermediate dance technique and vocabulary. An auxiliary fee must be paid upon registration in this class.

**Format:** Lecture/lab 3½ hours  
**Co-requisites:** THEA 3800.06, 3810.06

\*THEA 3900.06R: **Heroines and Actresses: Women in Drama and Theatre.** This class is intended to provide an opportunity for the study of theatrical events as representations of women's experience. Specific themes to be explored are: women as dramatic characters; the experience of women who attempted to pursue

careers in the theatre in different countries at different times; and contemporary feminist theatre in Britain, the United States, and Canada.

Format: Seminar 2 hours

Prerequisite: Some background in dramatic literature and/or theatre studies is useful

Cross-listing: WOST 3900.06

**THEA 3910.03A or B: Women in Theatre: an Introduction.** This short seminar class will study some of the circumstances affecting women in the theatre, and is designed to serve as an introduction to the topic. Students will be expected to view the issues that arise in a historical perspective, as well as to examine theatrical practice in the light of more recent theoretical perspectives.

Format: Seminar

Prerequisite: Background in Dramatic Literature or Theatre Studies

Cross-listing: WOST 3910.03

#### Year 4

**THEA 4100.06R: Directed Studies in Performance II.** Under the guidance of the members of faculty the student explores in detail a particular area of performance work such as technical scenography, lighting design, stage management, dramaturgy, etc. The class may be structured around an earned role (or roles) in a Dalhousie Theatre Department Production. The class content may include specified research documentation and the successful completion of a paper. An auxiliary fee must be paid upon registration in this class.

Format: Seminar 6 hours

Prerequisites: Permission of the Department

**\*THEA 4200.06R: Developmental Drama.** A class which shows anyone involved or interested in the development of children or adults how drama can be used both to guide personal development and to heighten learning ability. The class considers how best to adapt developmental drama to school situations or organized groups. Improvisation, theatre games and dramatizations of social issues make up part of the class; various approaches to drama in education are considered. Regular practice runs through the class, and each student must develop individual practical workshops.

Format: Seminar 3 hours

Prerequisite: THEA 2000.03, 2001.03

**THEA 4400.06R: Dress for Success: King's Court to Corporate Office, 1700-1950.** The development of dress in the eighteenth, nineteenth, and first half of the twentieth centuries, ending with Christian Dior's "New Look" in 1947. Throughout this class, emphasis will be placed on dress worn in England and France, but costume from other countries may be explored as individual topics of research. Emphasis will be placed on the social and cultural aspects of costume history, using slides of representative works of art and artifacts as visual documentation for each period. This class may be taken by general BA students, and is also part of the Costume Studies Programme.

Instructor: Staff

Format: Lecture 2 hours

**\*THEA 4500.03A or B: Canadian Drama.** A survey of the Canadian dramatic voice from its origins to the present as it has been shaped by

the political, geographical and cultural milieu. The influence of major cultural developments on playwriting in Canada will be examined and specific playwrights will be studied in detail. Approved with Canadian Studies.

Format: Seminar/discussion 3 hours

Prerequisite: Permission of instructor

**\*THEA 4501.03A or B: The History of Canadian Theatre.** A seminar class exploring the major developments in the history of Canadian theatre from its origin in aboriginal tradition, the major influences of British and American practices, through its post-war revival to the current fringe phenomenon. Approved with Canadian Studies.

Format: Seminar/discussion 3 hours

Prerequisite: THEA 2011.03, 2012.03, or permission of instructor

**\*THEA 4700.06R: Special Topics.** The student explores in detail particular areas of the theatre of special interest, with the guidance of members of the faculty. Frequency and the length of meetings are decided to meet the needs of the particular topic or project under study. The class is open only to fourth-year honours theatre students.

Format: Seminar 6 hours

Prerequisite: Permission of the department

**\*THEA 4710.06R: Directing in Practice.** Students gain practical insight into the work of the contemporary theatre director by serving as apprentice assistant directors on two productions of the DTDP season of plays. Enrolment is by special application and limited to two. An auxiliary fee must be paid upon registration in this class.

Format: Discussion/lab 6 hours

Prerequisite: Permission of the Department

**THEA 4800.06R/THEA 4810.06R/THEA 4820.06R: Acting III.** The Interpretation and Performance Year: Having discovered and strengthened natural abilities students can now apply techniques to scripts of different styles. The students learn to communicate with an audience. This is achieved by applying the in-class work to the DTDP season. Students are expected to earn significant roles in Dalhousie Theatre Department productions.

**THEA 4800.06R: Acting.** The fourth-year acting class is designed to continue the ongoing classroom work of problem solving, physical freedom, relaxation, concentration, character and textual analysis and the study of the "process of action." Through the continued use of practical scene work students will apply the techniques introduced in the third year of study to scenes chosen from both modern and classical texts. By gaining an understanding of the shape of drama students are encouraged to apply these techniques to the performance work done in the DTDP season. Students will also focus on audition technique for the professional situation. One hour per week will be assigned to the practical study of the Feldenkrais Technique. (Functional integration) An auxiliary fee must be paid upon registration in this class.

Format: Lecture/lab 15 hours per week, rehearsals week-nights and Saturdays

Co-requisites: THEA 4810.06 or 4820.06

**THEA 4810.06R: Voice and Speech.** The class will further develop the principles of effective voice use in work on on-stage roles. Class work will focus on continuing to develop an awareness of effective voice use and extending flexibility, range and power. Further investigation of the role of language in theatre performance will enhance the actor's sensitivity to text and to the elements of speech. A practical study of the dialects and accents of spoken English may be applied to roles either as part of the DTDP season or in a workshop situation. An auxiliary fee must be paid upon registration in this class.

**Format:** Lecture/lab 6 hours

**Co-requisites:** THEA 4800.06 or 4820.06

**THEA 4820.06R: Movement/Dance.** The class is designed to further develop and enhance the student's knowledge of movement, incorporating performance, style, and a professional attitude. Emphasis will focus on an expanded practical vocabulary and movement repertoire. An auxiliary fee must be paid upon registration in this class.

**Format:** Lecture/lab 3½ hours

**Co-requisites:** THEA 4800.06 or 4820.06

**\*THEA 4900.06R: Theory and Criticism of Drama and Theatre.** A writing intensive class that tackles the problems for evaluating theatre. It looks at the various hypotheses and critical strategies that have been devised hitherto, and attempts to judge their present worth. It also asks what critical values are necessary for the survival and future growth of the theatre.

**Format:** Seminar 2 hours

**Prerequisite:** THEA 2011.03, 2012.03, 2900.06

**\*THEA 4910.06R: Theatre Criticism from Aristotle to the Present.** A workshop oriented class in which students learn the principles of performance reviewing and theatre criticism using the examples of current productions and classical authors. The discussed critics include: Aristotle, Horace, Boileau, Lessing, Archer, Esslin, Tynan, Simon etc.

**Format:** Seminar 3 hours

**Prerequisite:** Permission of the Instructor



## Women's Studies

**Location:** Multidisciplinary Centre, 1444  
Seymour Street, Halifax, N.S.  
**Telephone:** (902) 494-3814  
**FAX:** (902) 494-2105

### Coordinator & Undergraduate Advisor

Marjorie Stone (494-3814/3331/2105)

### Administrative Assistant

Marian MacKinnon (494-3814)

### Faculty

A. Andrews (Theatre)  
J. Arscott (Philosophy/Political Science)  
P. Gardiner Barber (Sociology & Social  
Anthropology)  
B. Bednarski (French)  
M. Binkley (Sociology & Social Anthropology)  
S. Campbell (Philosophy)  
M. Cassin (Public Administration)  
J. Crowley (History)  
E. Edwards (Contemporary Studies)  
J. Fingard (History)  
J. Gilroy (Social Work)  
D. Ginn (Law)  
J. Jarman (Sociology & Social Anthropology)  
B. Keddy (Nursing/Sociology & Social  
Anthropology)  
A. LaForest (Law)  
T. Laidlaw (Undergraduate Medical Education)  
C. Lucky (English)  
R. Maitzen (English)  
R. Neal (Social Work)  
L. Oore (French)  
J. Parpart (History/International Development  
Studies)  
B. Richard (Social Work)  
S. Sherwin (Philosophy)  
M. Stone (English)  
J. Thompson (English)  
S. Tillotson (History)  
N. Treves (French)  
E. Van Roosmalen (Sociology & Social  
Anthropology)

### Introduction

Women's Studies is a dynamic and rapidly expanding interdisciplinary area of study. An alternative to the traditional curriculum, Women's Studies provides students with the opportunity to examine history, social structures, the sciences, language, literature and culture from new and illuminating perspectives. During the last twenty years Women's Studies programmes have been introduced in leading universities across North America. In Canada more than a dozen undergraduate programmes and several graduate programmes have been established since 1970.

At Dalhousie, students can currently enter the following programmes in Women's Studies: a Major, an Advanced Major, or an Advanced Double Major, and a Combined Honours programme. These programmes include classes in the disciplines of English, French, History,

Philosophy, Political Science, Sociology and Social Anthropology and Theatre, and in interdisciplinary and professional fields, including International Development, Law, Nursing, and Social Work.

Students in the Dalhousie Women's Studies programmes develop a critical understanding of gender as a category of analysis in scholarly enquiry, social dynamics, cultural expression and belief systems. They also investigate the ways in which gender 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 rapidly growing body of research in a number of disciplines and fields, Women's Studies Majors gain a grounding in the methodologies and concepts shaping the organization and dissemination of knowledge.

Women's Studies classes also provide students with opportunities of uniting theory with social and cultural practice, addressing contemporary issues that individuals and institutions are grappling with in the changing world order of the 1990s. 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 through exploring and respecting differences.

Do men take Women's Studies classes?

Yes. At Dalhousie, male faculty members also regularly participate in the teaching of core and related classes in Women's Studies. 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 therefore relevant to men as well as women, in part because it involves the study of constructions of masculinity.

### Degree Programmes

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

For students interested in a preparatory degree, Women's Studies programmes provide appropriate preparation for professional schools and programmes in the fields of Education, Social Work, Counselling, Journalism, the Health Professions, and certain areas of Law. Women's Studies programmes also provide suitable preparation for graduate programmes in Interdisciplinary Studies, Cultural Studies, and Educational Studies, as

well as in Women's Studies itself. Students interested in proceeding to graduate work should enter a four-year degree programme.

Students normally enter Women's Studies programmes in their second or third year of study. In many cases, students in these years may already have acquired some Women's Studies credits through taking classes in the traditional disciplines or in other interdisciplinary programmes that are cross-listed with Women's Studies core classes.

Students can currently enter four programmes in Women's Studies: a BA Major, a BA Advanced Major, and a BA Advanced Double Major combining Women's Studies with a traditional discipline or with another interdisciplinary programme such as International Development Studies or Canadian Studies; and a Combined Honours programme in Women's Studies and another area of study.

Note: The regulations in the "Degree Requirements" section of this calendar apply to students majoring in Women's Studies.

### BA Major in Women's Studies (3-year 15-credit programme)

This degree is a general liberal arts degree with a concentration in Women's Studies. It permits a wide range of choice in course selection. A three-year degree in Women's Studies can prepare a student for work in the occupational areas described above, or it can be used as a preparatory degree for professional programmes such as Law and Social Work.

#### Departmental Requirements

- at least four and no more than eight credits beyond the 1000 level in 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 Women's Studies classes

### BA Advanced Major (4-year, 20-credit programme)

This programme provides a more comprehensive grounding in Women's Studies than the B.A. Major programme. Students interested in applying to graduate programmes should enter a four-year degree programme.

#### Departmental Requirements

- at least six and no more than nine credits beyond the 1000 level in 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 Women's Studies classes

### BA Advanced Double Major (4-year, 20-credit programme)

Students can combine a concentration of Women's Studies classes with classes either in a traditional discipline or with another interdisciplinary programme such as International Development Studies or Canadian Studies.

#### Departmental Requirements

- at least ten and no more than thirteen credits beyond the 1000 level in two allied subjects, one of which is 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 Women's Studies classes.

### BA Combined Honours (4-year, 20-credit programme)

Students can enter a Combined Honours programme in 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 Women's Studies and another subject should consult with the Departments concerned.

#### General Degree Requirements

Please read the detailed description of Combined Honours Programme in the Degree Requirements section of this calendar (page 98). 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 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 full elective credits which are not from the major or allied subject group.

Please note: Where a class selected from the Women's Studies "list" in the Combined Honours programme 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 Women's Studies "list" in the Combined Honours programme 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, Women's Studies students must meet the following requirements:

- 1) at least three 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 Women's Studies classes (in disciplines other than the allied subject)

- 3) The following classes are required:
- at least one full credit from the following: WOST 2300.03, 2301.03, 2500.03, 2800.06 (normally this requirement should be met in the second year of the programme).
  - at least one half-credit from the following: WOST 3050.03, 3500.03, 3600.03, 3805.03
  - at least one full credit 4000-level Women's Studies class, either Directed Readings, Special Topics, or cross-listed class (normally this requirement should be met in the fourth year of the programme).
  - to meet the Honours Examination requirement when Women's Studies in the major subject, students will prepare a research paper under the supervision of a Women's Studies faculty member.

### Classes Offered

**Note:** Classes marked \* may not be offered every year. Please consult the current timetable on registration to determine if these classes are offered. More detailed information can be obtained from the Multidisciplinary 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 Women Studies credits, with the permission of the Instructor concerned and the Coordinator. Students may also select Women's Studies classes at Saint Mary's or Mount Saint Vincent Universities, subject to the rules and regulations of the College of Arts and Science at Dalhousie regarding transfer credits and in consultation with the Women's Studies Coordinator.

#### Core Classes

**WOST 2200.06R: Fictions of Development.** Fictions of development are novels or short stories focusing on the crises and the conflicts involved in growing up, finding a vocation, and finding oneself. This class studies representative fictions of development ranging from 19th century classics like *Jane Eyre* to contemporary works like *The Color Purple*. Emphasis is given to the connections between psychological theories and literary depictions of human development, and to the ways in which gender, race and class shape social and psychological formation.

**Instructor:** M. Stone  
**Format:** Lecture/discussion 2 hours  
**Prerequisites:** ENGL 1000.06 or permission of the Instructor

**Restriction:** Preference is given to majors in Women's Studies and English

**Cross-listing:** ENGL 2221.06

**WOST 2300.03 A or B: Making Gender: Male and Female from Antiquity to Mary Wollstonecraft.** This class examines the diverse and fascinating ways western cultures have shaped the meanings of gender. The history of women informs us about the once little-known history of femininity. And, as a result, historical changes in definitions of masculinity become visible. The meanings of gender are exposed in this class through topics such as: the origins of myths of western civilization, the Galenic

one-sex model of physiology, patristic theology, the cult of courtly love, eighteenth century salons, and the rights of man.

**Instructor:** S.M. Tillotson  
**Format:** Lecture/tutorial 3 hours  
**Cross-listing:** HIST 2614.03

**WOST 2301.03A or B: 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: republican motherhood, respectability, the family wage, the homosexual, imperialism, citizenship, welfare dependency, and infertility.

**Instructor:** S.M. Tillotson  
**Format:** Lecture/tutorial 3 hours  
**Cross-listing:** HIST 2615.03

**WOST 2400.06R: Tinker, Tailor, Soldier: Divisions of Labour in a Changing World.** Work is a fundamental aspect of all human societies and a key aspect to the development of social inequalities, be they based on gender, class, ethnicity, or cultural difference. Work has been seen as a main component of an individual's identity, but what do we mean by work? Against a backdrop of international and historical patterns, this class considers the changing nature of work and occupations. Topics which may be covered include: agrarian societies; home based labour; work patterns in family life; labour migration and citizenship; international divisions of labour; shifts in occupational structures such as shop floors, typing pools, or professions; managerial and union strategies; the relationship between education and employment; and, how occupational status, employment, and unemployment limit or enhance a person's political power.

**Instructor:** J. Jarman  
**Format:** Lecture 3 hours  
**Prerequisite:** One of SOSA 1000.06, 1050.06, 1100.06 or 1200.06.

**Exclusion:** SOSA 2160.03  
**Cross-listing:** SOSA 2161.06

**\*WOST 2500.03A or B: 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 response to racism will be considered.

**Instructor:** S. Sherwin, S. Campbell  
**Format:** Lecture/discussion 2-3 hours  
**Cross-listing:** PHIL 2160.03

**\*WOST 2800.06R: 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 and cultural contexts. The class begins with an overview of the study of gender relations in anthropology and sociology. Other themes around which the class will be organized include: gender, culture and difference; gender, sexuality and reproduction;

gendered labour; gender in the global political economy; and gender politics, power relations and political discourse.

**Instructor:** P. Gardiner Barber  
**Format:** Three hours  
**Prerequisites:** One of SOSA 1000.06, 1050.06, 1100.06; 1200.06; or Women's Studies Class  
**Cross-listing:** SOSA 2190.06

**WOST 3000.03A or B/3100.03A or B/3002.06R:** Directed Readings in Women's Studies. Readings and research in 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 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.

**Format:** Variable  
**Prerequisites:** Variable

**WOST 3050.03A or B: Contemporary Women Poets.** During the last few decades, an extraordinary number of powerful new women poets have transformed traditional poetic practices and subject matter. Approaching this body of poetry within the context of key theoretical writings generated by "Second Wave" feminism, this class surveys representative works by Canadian and American poets, and explores the ways in which monolithic ideas of "woman" have been challenged by individuals who are positioned differently by race, class, sexual orientation and national identity. It also considers recurrent topics in women's poetry, including mother-daughter relations, love, rape, the politics of food, the female body, and revisionary myth-making.

**Instructor:** M. Stone  
**Format:** Lecture/discussion 2 hours  
**Prerequisite:** ENGL 1000.06 or permission of the instructor

**Cross-listing:** ENGL 3050.03

**WOST 3250.03A or B: French Women Writers through the Centuries/ Les femmes écrivains: du temps des cathédrales à celui des Editions des femmes.** A chronological survey based on the study of literary texts by French Women Writers, this class will attempt to analyze the society of the time, the way it portrayed women and their role, and the overall condition of women. Emphasis will be given each time to a special period/authors within the context of the survey. Students taking the class as a Women's Studies credit may write their essays and exams in English.

**Instructor:** N. Trèves  
**Format:** Lecture/discussion 3 hours  
**Recommended:** FREN 2201.03 or FREN 2202.03  
**Cross-listing:** FREN 3250.03

**WOST 3300.03A or B: Family and Community in North America 1600-1900.** The family in North American history from the period when the family was a model for social relations to the time when it was seen as a private refuge from society at large. Among the topics considered are the role of the family in rural and urban communities; the demographic transition from high fertility and mortality; the construction of the family's responsibilities in

economic life and education; 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.

**Instructor:** J. Crowley  
**Format:** Lecture/discussion 2 hours  
**Prerequisites:** 2000-level class in Canadian or American History  
**Cross-listing:** HIST 3350.03

**\*WOST 3310.03A or B: Gender and Development in Africa.** This class examines the economic, political and social roles of women and men in Africa from precolonial to modern times. It analyzes the way women and men construct their lives and economic processes and contest and reinforce the definitions of womanhood and manliness in various African societies. The class will examine development and feminist/gender theory in light of recent debates over gender and development issues.

**Instructor:** J. Parpart  
**Format:** Seminar 2 hours  
**Prerequisites:** 1000- or 2000-level History, IDS, or Women's Studies class

**Cross-listing:** HIST 3461.03/5461.03

**\*WOST 3500.03A or B: Theories of Feminism.** A study of the theoretical underpinning of the major feminist theories in critical comparison, concentrating on the ideological disputes and the implications for traditional approaches to social and political thought.

**Instructor:** S. Sherwin  
**Prerequisites:** Two previous classes in Philosophy or Women's Studies

**Cross-listing:** PHIL 3170.03

**\*WOST 3600.03A or B: Women in Western Political Thought.** The role of women in political life has been vilified, praised or ignored by major thinkers. Pertinent texts will be read along with interpretations by modern feminists in order to assess why the formal political enfranchisement of women has not resulted in greater substantial equality.

**Instructor:** J. Arscott  
**Format:** Lecture/discussion 2 hours  
**Cross-listing:** PHIL 3427.03, POLI 3427.03

**\*WOST 3800.03A or B: Gender and Health.** The class focuses upon 3 major areas in the relationship between gender and health: (a) the relationships among gender stereotypes and food, sexuality and body image, dieting and health; (b) reproduction and child care including birth control, menstruation, menopause, reproductive technology, child care and child health; (c) health care and health care workers - an analysis of caring, both paid and unpaid. Topics include sexual inequality in health care, health policy, family relationships and health care responsibilities.

**Instructor:** P. Gardiner Barber  
**Format:** Seminar 2-3 hours  
**Prerequisite:** One of SOSA 1000.06, 1050.06, 1100.06 or 1200.06

**Cross-listing:** SOSA 3145.03/5145.03

**\*WOST 3805.03A or B: Feminist Perspectives in Anthropology and Sociology: Current Debates.** This class examines more recent critical debates in feminist theories. Readings map out new theoretical agendas and/or

provide critical reflection on previous priorities in feminist scholarship. Relevant current issues include re-conceptualizing patriarchy; re-working dualistic models; work, domestic labour and sexuality debates; sexism, racism, class; rethinking kinship and reproduction; feminism, culture, and political economy; post-modernism, voice, difference; beyond colonialism and imperialism; beyond women as victims; resistance; and feminist research and praxis.

**Instructor:** P. Gardiner Barber  
**Format:** Seminar 2-3 hours  
**Prerequisite:** SOSA 2190.06/WOST 2800.06, or permission of the instructor  
**Cross-listing:** SOSA 3100.03/5100.03

**\*WOST 3810.03A or B: Women and Aging.** As women grow older the experience of aging is generally more difficult for them than for men. 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 ("granny bashing"), older women and housing, self-image and sexuality, health and the aging woman, and older women and poverty.

**Instructor:** B. Keddy  
**Format:** Seminar 2-3 hours  
**Prerequisites:** SOSA 1000.06, 1050.06, 1100.06, or 1200.06, or 2 credits in Women's Studies  
**Cross-listing:** SOSA 3245.03/5245.03, NURS 4370.03

**\*WOST 3850.03A or B: Women and Social Change.** This class is designed to examine feminist critiques of selected social policies and services (policies such as those governing financial assistance or welfare programmes, child protection services, day care provision); evaluate the usefulness of feminist theories and methods for developing social policies and programmes which are more oriented to women; assist students in developing a critical analysis of social policy and human services from the perspective of women and feminism.

**Instructor:** J. Gilroy  
**Format:** Lecture/seminar 2.5 hours  
**Prerequisite:** Preference is given to students registered in Social Work and in the third year of Women's Studies  
**Co-requisite:** Related courses in Social Work, health and social sciences, and/or Women's Studies  
**Cross-listing:** SLWK 3230.03

**\*WOST 3855.03A or B: Feminist Counselling.** This class examines feminist counselling theories and approaches, assesses these critically and assists students in the development of feminist frameworks for counselling.

**Instructor:** J. Gilroy  
**Format:** Lecture/seminar 2.5 hours  
**Prerequisite:** Preference given to students in Social Work or Women's Studies  
**Co-requisite:** Related classes in Social Work, health and social sciences, and/or Women's Studies  
**Cross-listing:** SLWK 3170.03

**\*WOST 3900.06R: Heroines and Actresses: Women in Drama and Theatre.** This class is

intended to provide an opportunity for the study of theatrical events as they represent women and their experiences. Specific themes to be explored are: women as dramatic characters; the experiences of women who have attempted to pursue careers in the theatre in different countries at different times; and contemporary feminist theatre in Britain, the United States and Canada.

**Instructor:** A. Andrews  
**Format:** Two hours  
**Recommended:** Some background in dramatic literature and/or theatre studies is useful  
**Cross-listing:** THEA 3900.06

**WOST 3910.03A or B: Women in Theatre: and Introduction.** This short seminar class will study some of the circumstances affecting women in the theatre, and is designed to serve as an introduction to the topic. Students will be expected to view the issues that arise in a historical perspective, as well as to examine theatrical practice in the light of more recent theoretical perspectives.

**Instructor:** A. Andrews  
**Format:** Seminar  
**Prerequisite:** Background in Dramatic Literature or Theatre Studies  
**Cross-listing:** THEA 3910.03

**WOST 4000.03A or B / WOST 4100.03A or B / WOST 4200.06R: Selected Topics in Women's Studies.** Advanced readings and research in 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 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.

**Format:** Variable  
**Prerequisites:** Variable  
**Restriction:** Restricted to senior students

**\*WOST 4250.03A or B: Québec women Writers/Écrivaines québécoises.** This class will explore the condition of women as revealed in texts by Quebec women writers. In any given year different writers and time periods will be covered, and a variety of genres may be included.

**Instructors:** B. Bednarski, I. Oore  
**Format:** Lecture/discussion 2 hours  
**Recommended:** FREN 2201.03/2202.03 and at least one third-year literature class, preferably French Canadian  
**Cross-listing:** FREN 4904.03

**WOST 4300.03A or B: Introduction to Women and the Law.** The first half of the class focuses on theory and comprises a broad overview of some of the main themes that have been considered in feminist jurisprudence. For example, feminist epistemology and its relationship to legal method, equality, and feminism in legal education will be examined in detail. In addition, considerable emphasis is placed upon feminism and its integration with race, class, sexual orientation, and disability. In order to provide context for discussion, a legal historical review of feminism, particularly in Canada, is also presented throughout. The second half of the class develops these ideas by

examining specific issues of current interest in feminist scholarship and case law such as pornography, violence against women, work place issues, and abortion.

**Instructor:** A. LaForest or D. Ginn  
**Format:** Lecture/discussion 2 hours  
**Prerequisite:** Open to all 2nd and 3rd year Law students as well as students eligible to take classes listed as Women's Studies core classes

**Cross-listing:** LAWS 2125.03

**WOST 4320.03A or B: Feminism, Postmodernism and Development.** In the last decade poststructural and postmodern critiques have increasingly dominated the world of scholarship. The grand theories of the past have been called into question; universals have been overtaken by particularities and difference(s). Feminist scholars have reacted to these critiques in a number of ways. Some reject them outright, which others call for a synthesis. Scholars and activists concerned with international development issues have for the most part rejected both feminism and postmodernism. This class will explore the debates between the two perspectives and the possibility that they may have important insights to offer to both the theory and practice of development, especially the development of women.

**Instructor:** J. Parpart  
**Format:** Seminar 2 hours  
**Cross-listing:** HIST 4320.03

**WOST 4400.06R: The Place of Women in Contemporary French Critical Theory.** This course 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 course 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:** E. Edwards  
**Format:** Lecture/tutorial  
**Exclusion:** Former CSP 2030.06  
**Cross-listing:** CTMP 4300.06

**WOST 4450.03A or B: Writing Women/Women Writing 1580-1640.** The objective of this class is to explore the context and range of writings by Renaissance Englishwomen in the late sixteenth and early seventeenth centuries. Adopting a multidisciplinary approach, we will examine a range of cultural documents by and about women, from non-fiction prose (witchcraft trials, medical pamphlets, antifeminist tracts and protofeminist defenses) to address the following questions. Why and how did some Renaissance women write, and for what audience? What was the climate in Renaissance England like for women who wanted to write? What models were available to women writers, and how did they modify or transform them for their own purposes? Is women's writing different from men's writing of the same period? What perceptions of gender — and of life — emerge from women's writing? What

shapes does Renaissance "feminism" take? Women writers to be studied in depth will include Lady Mary Wroth, Lady Elizabeth Cary, and Aemilia Lanier.

**Instructor:** C. Luckyj  
**Format:** Seminar  
**Prerequisite:** English 1000 or permission of the instructor  
**Cross-listing:** ENGL 4007.03

**WOST 4500.003A or B: Topics in Feminist Philosophy.** In this class we shall explore some of the current research in a focused area of feminist philosophy such as feminist ethics, feminist epistemology, feminist philosophy of science, or postmodern feminism.

**Instructor:** S. Sherwin  
**Format:** Seminar 2 hours  
**Prerequisite:** Strong background in philosophy or feminist theory (normally including at least one previous class in feminist philosophy or permission of the instructor).

**Cross-listing:** PHIL 4500.03/5500.03

## Related Classes

These classes are subject to change; consult the programme office for offerings.

**Classes Offered at Mount Saint Vincent University and Saint Mary's University**

Classes offered within the Women's Studies programmes at these universities are available to Women's Studies majors at Dalhousie. Classes offered are subject to change. Please consult Women's Studies, Mount Saint Vincent, (902) 457-6788 or Women's Studies, Saint Mary's University (902) 420-5768. These classes must be taken on a letter of permission (see the Dalhousie Women's Studies Programme Coordinator).



## 1996

## JANUARY

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

## FEBRUARY

S	M	T	W	T	F	S
			1	2	3	
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29		

## MARCH

S	M	T	W	T	F	S
				1	2	
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

## APRIL

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

## MAY

S	M	T	W	T	F	S
		1	2	3	4	
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

## JUNE

S	M	T	W	T	F	S
					1	
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

## JULY

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

## AUGUST

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

## SEPTEMBER

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

## OCTOBER

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

## NOVEMBER

S	M	T	W	T	F	S
				1	2	
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

## DECEMBER

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

## 1997

## JANUARY

S	M	T	W	T	F	S
		1	2	3	4	
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

## FEBRUARY

S	M	T	W	T	F	S
					1	
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	

## MARCH

S	M	T	W	T	F	S
					1	
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

## APRIL

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

## MAY

S	M	T	W	T	F	S
		1	2	3		
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

## JUNE

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

## JULY

S	M	T	W	T	F	S
	1	2	3	4	5	
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

## AUGUST

S	M	T	W	T	F	S
				1	2	
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

## SEPTEMBER

S	M	T	W	T	F	S
1	2	3	4	5	6	
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

## OCTOBER

S	M	T	W	T	F	S
		1	2	3	4	
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

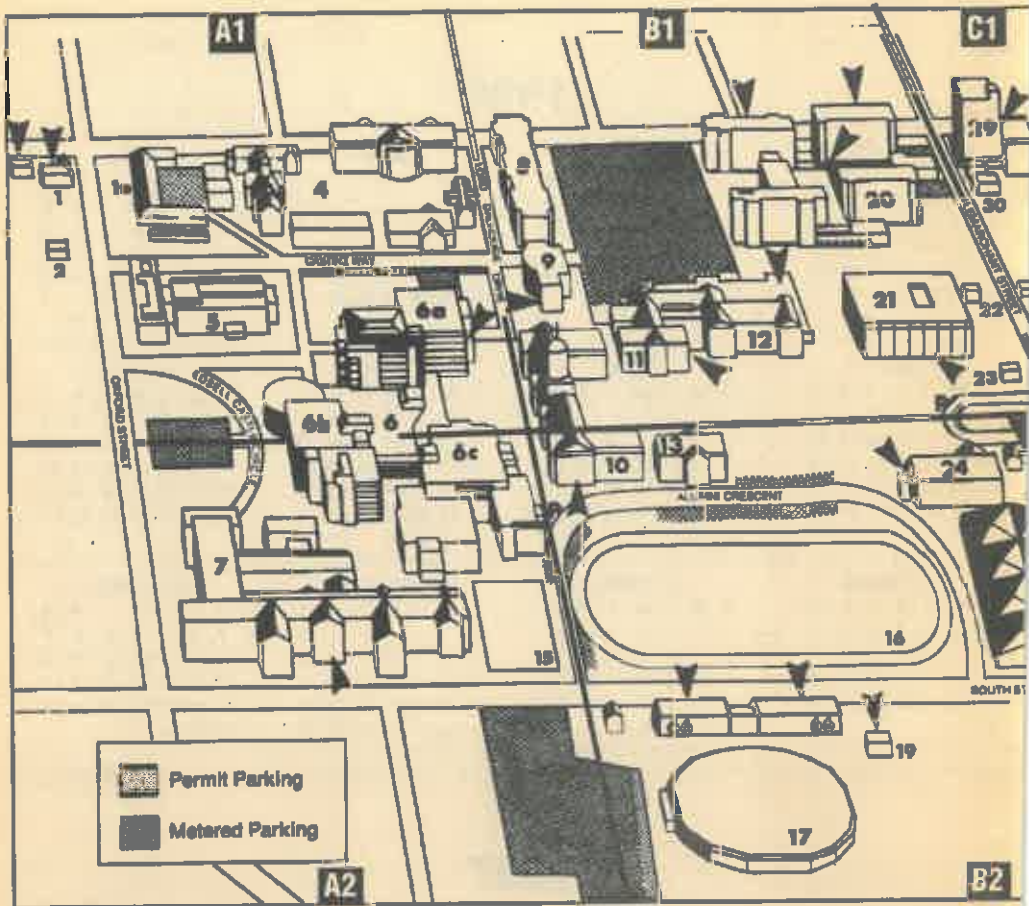
## NOVEMBER

S	M	T	W	T	F	S
					1	
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

## DECEMBER

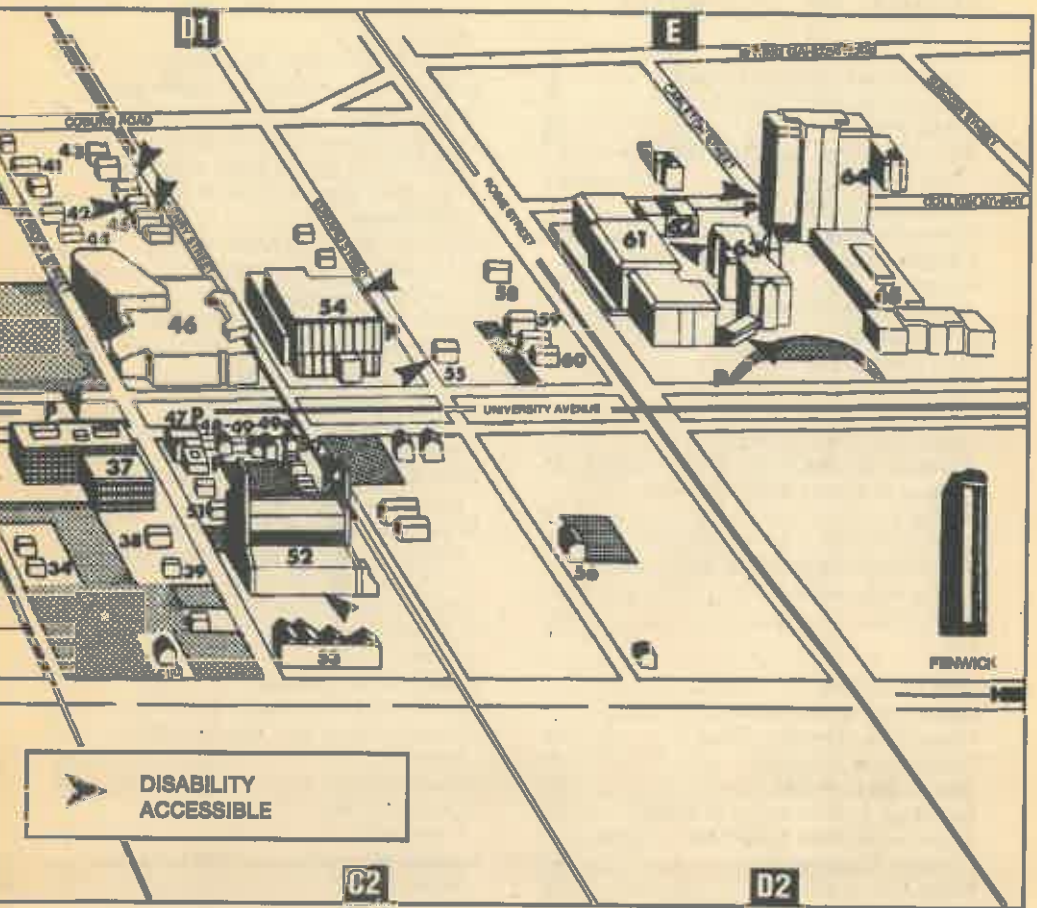
S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			





- Admissions — 10 (B1, B2)
- Alumni Office — 11 (B1)
- Arts and Administration Building — 10 (B1, B2)
- Biology Department — 6a (A1)
- Bookstore — 37 (C2)
- Burbridge Pharmacy Building — 62 (E1)
- Business Administration — 29 (C1)
- Canadian Studies — 36 (C1)
- Central Services Building — 52 (C2)
- Chase Building — 9 (B1)
- Chemistry — 12 (B1)
- Classics — 27 (C2) (C2)
- Comparative Religion — 23 (B1)
- Computer Centre — 21 (B1)
- Counselling and Psychological Services — 37 (C2)
- Dalhousie Arts Centre — 48 (C1)
- Dalhousie Memorial Arena (rink) — 25 (B2)
- Dalplex — 17 (B2)
- Day Care — 1a (A1), 6c (A2)
- Dental Hygiene — 61 (E1)
- Dentistry Building — 61 (E1)
- Development Office — 11 (B1)
- Disabled Students Adviser — 37 (C2)
- Dunn Building — 8 (B1)
- Earth Sciences — 6a (A1)
- Economics — 26 (B2)

- Education — 14 (B2)
- Eliza Ritchie Hall — 66 (B2)
- Engineering — 8 (B1)
- English — 42, 43 (C1)
- Financial Services — 10 (B1)
- Forrest Building — 63 (E1)
- French — 23 (B1), 32 (C1)
- German — 31 (C1)
- Glengary Apartments — 56 (D1)
- Graduate House — 33 (C2)
- Graduate Studies — 10 (C2)
- Health Profession (Office of the Dean) — 62 (E1)
- Health Services Administration — Fenwick
- Henson College — 47, 48, 49, 50, 51 (C2)
- History — 41 (C1)
- Howe Hall — 20 (B1)
- International Development Studies — 36 (C1)
- International Student Centre — 37 (D1)
- Keillogg Health Sciences Library — 64 (E1)
- Killam Library — 21 (B1)
- King's College — 4 (A1)
- Law — 54 (D1)
- Library and Information Services — 21 (B1)
- Life Sciences Centre — 6 (A1)
- Macdonald Building — 11 (B1)
- Management — 29 (C1)



➔ **DISABILITY ACCESSIBLE**

- Mathematics, Statistics, Computing Science — 9 (B1)
- Medical Computing & Media Services — 64 (E1)
- Medicine — 64 (E1)
- Multidisciplinary Centre — 36 (C1)
- Music — 46 (C1)
- Nursing — 63 (E1)
- Occupational Therapy — 63 (E1)
- Oceanography — 6b (A1, A2)
- Off-campus Housing Office — 37 (C2)
- Personal Computer Purchase Centre (PCPC) — 20 (B1)
- Personnel/Payroll Services — 10 (B2)
- Pharmacy — 62 (E1)
- Philosophy — 45 (C1)
- Physics — 8 (B1)
- Physiotherapy — 63 (E1)
- Political Science — 10 (B1, B2)
- President's Office — 10 (B1, B2)
- Psychology — 6c (A2)
- Public Relations — 11 (B1)
- Public Administration — 34 (C2)
- Registrar's Office — 10 (B1, B2)
- School of Recreation, Physical and Health Education — 17, 19, 24 (B2)
- School for Resource and Environmental Studies — 58, 59, 60 (D1)
- Science — 10 (B1)

- Security Services — 40 (C2)
- Shirreff Hall — 7 (A2)
- Social Work — 1 (A1)
- Sociology and Social Anthropology — 53 (C2)
- Spanish/Russian — 22 (B1)
- Student Accounts — 10 (B1)
- Student Services — 69 (B2)
- Student Union Building — 37 (C2)
- Studley gymnasium — 24 (B2)
- Theatre — 46 (C1)
- Transition Year Programme — 30 (C1)
- Tupper Building — 64 (E1)
- University Club — 13 (B2)
- University Health Services — 20 (B1)
- Women's Centre — 68 (C2)
- Women's Studies — 36 (C1)

For specific locations of offices and departments, consult the university switchboard, 494-2211, the Halifax-Dartmouth telephone directory, or the Dalhousie telephone directory.

January 1986

## Index of Awards

## A

Acadian Lines Limited Scholarship .....	56
Aitchison, James H., Award .....	61
Aldous Prize .....	58
Allen, John David and Ellen Matheson, Endowment Fund .....	71
Alumnae Award (Nursing) .....	65
Alumni Swimming Award .....	56
Amoco Canada Petroleum Company Ltd. Award .....	58
Amoco Canada Undergraduate Scholarship in Earth Sciences .....	53
Anonymous Economics Prize .....	59
Apotex Inc./PACE Future Leader Award .....	63
Apotex Inc./P.A.C.E. Bursaries .....	72
Archibald, Dr. William J., Prize in Physics ..	61
Ashkins, Eva and David, Memorial Bursary .....	73
Ashkins, Nathan T. A., Scholarship .....	52
Association of Professional Engineers of Nova Scotia Award .....	59
Avery Prize .....	63

## B

B'nai B'rith Prize .....	58
Barlow, David, Memorial Award .....	58
Barrett, John Hamilton, Prize .....	58
Beaver Foods Awards .....	58
Beer, Annie L., Prize .....	66
Bell, Hugh P., Scholarship in Biology .....	53
Bellemare, Anthea, Award for Excellence in Student Teaching .....	68
Belzer, B.G., Jr. Prize .....	68
Berman, Wilfred, Memorial Prize .....	69
Berman, Wilfred, Scholarship .....	56
Bernoulli Prize .....	60
Beta Sigma Phi Scholarship to Dalhousie University .....	52
Bevan, Allan and Lura, Memorial Scholarship .....	54
Biochemistry .....	58
Biology .....	53, 58
Birke Family Foundation Bursaries .....	73
Black and Gold Awards .....	56
Blair, A. David, Scholarship .....	53
Blanchard, Jotham, Bursary .....	74
BMS Pharmacy Award .....	63
Boehringer Ingelheim (Canada) Ltd. Bursary .....	72
Boyd, George, Bursary .....	74
Bredin, Jeff, Memorial Bursary .....	73
Brehaut, Ernest, Memorial Bursaries .....	71
Brimer Memorial Prize in Psychology .....	62
Brown, Isabel, Scholarship .....	51
Bruce, Robert Scholarships .....	48
Bruce, Robert, Bursaries .....	71
Bruce, Robert, Scholarship .....	52
Burbridge, Dean George A., Memorial Award .....	63
Burbridge, Minnie F., Scholarships .....	51
Burroughs Wellcome Scholarship .....	55
Buttenshaw, Katherine M., Prize .....	60

## C

Campbell, George H., Memorial Scholarship .....	51
Campbell, James and Abbie, Bursaries .....	71
Campbell, James and Abbie, Memorial Scholarships .....	48
Campbell, James and Abbie, Memorial Scholarships and the James and Abbie Campbell/Department of Music Scholarships .....	54
Campbell, James and Abbie, Prize, Campbell Incentive Award .....	61
Canada Scholarships .....	51
Canada Student Loan for Part-Time Students .....	75
Canada Student Loans Plan .....	75
Canadian Association for Health, Physical Education and Recreation Student Award .....	68
Canadian Association of Occupational Therapists Book Prize .....	66
Canadian Institute of Mining and Metallurgy Earth Science Scholarship for New Brunswick Students .....	53
Canadian Merit Scholarship Foundations ...	51
Canadian Physiotherapy Association Award .....	67
Canadian Physiotherapy Cardiorespiratory Society Book Prize .....	68
Canadian Society for Chemistry Silver Medal .....	58
Canadian Society for Exercise Physiology ...	68
Canadian Society of Exploration Geophysicists Scholarship .....	53
Canadian Society of Petroleum Geologists Award .....	58
Canadian Society of Petroleum Geologists Student Industry Field Trip .....	59
Cardwell/Robinson Prize .....	67
Cassidy, Norma, Prize .....	67
Chandler, R. Frank, Award .....	63
Chemistry .....	53, 58
Chute, Walter J., Prize in Chemistry .....	58
Clarke, Enid Hager, Textbook Fund .....	74
Class of '85 Award .....	66
Classics .....	58
Clayden, F.R., Prize .....	63
Clinical Pharmacy Award .....	63
Coade-Dessauer, Janet Gwendolyn, Memorial Prize .....	60
Cohn, Rebecca, Bursary Fund .....	74
Collins, Bert and Betty, Bursary .....	72
Commerce .....	56, 69, 73
Commerce Alumni Association Awards .....	69
Computing Science .....	54
Continuing Education .....	75
Cooke, Dean J. Esmonde, Award .....	63
Copp, Walter P., Memorial Prize .....	59
Corston, Helen, Marshall Award in Pharmacy .....	64
Covert, Patricia Stanfield, Award in Physiotherapy .....	67
Criteria for Entrance Scholarships .....	48
Crowe, Belle, Scholarships in Chemistry .....	52
Crowe, Belle/Department of Chemistry Scholarships .....	53
Crowell, Robert G., Memorial Pharmacy Award .....	63

Currie, Honourable L.D., Memorial  
Scholarship in Music..... 54

**D**

Daisey, Dale, Pharmacy Award for  
Excellence ..... 63  
Dalhousie Alumni Association (Women's  
Division) Medal in Music..... 61  
Dalhousie Alumni Association Bursaries .... 74  
Dalhousie Alumni Association  
Scholarships ..... 48  
Dalhousie Alumni Leadership  
Scholarships ..... 49  
Dalhousie Basic Degree Certificate and  
Dalhousie Post-RN Degree Certificate..... 65  
Dalhousie Club of New York Scholarships. 49  
Dalhousie Leadership Bursaries ..... 74  
Dalhousie Memorial Bursary Fund ..... 74  
Dalhousie Occupational Therapy Student  
Involvement Award..... 67  
Dalhousie Science Society Bursary ..... 71  
Dalhousie Student Development Awards... 57  
Dalhousie Student Pharmacy Society  
Book Award ..... 63  
Dalhousie University Women Alumnae  
Medal ..... 69  
Dalhousie Women's Alumnae Medal .... 61, 66

Darville, Alfred George, Memorial  
Bursary ..... 70  
Davis, Frank R., Memorial Bursaries..... 74  
Davis, Frank R., Memorial Scholarships..... 49  
Daviss, Beatrice, Music Prize..... 61  
Dawson, Audrey-Lea, Memorial Bursary .. 71  
de Carteret Memorial Prize..... 62  
Deloitte and Touche Scholarship ..... 56  
DeMille, James, Prizes ..... 57  
Dennis, Eric, Gold Medal ..... 62  
Dennis, Honourable W.H., Memorial Prizes  
for Literary Compositions in English..... 57  
Departmental Scholarships..... 53  
dePaul, Sister Frances, Award..... 63  
DeWolfe, L.A., Memorial Scholarship ..... 52  
Dickson, Robert C., Memorial Award ..... 63  
Divinity Candidates..... 72  
Dougall, David Andrew, Memorial  
Bursary..... 71  
Douglas, G.V., Memorial Prize in Earth  
Sciences ..... 59  
Dover Elevator Scholarship ..... 49  
Drug Information Award..... 63  
Duff, J.G., Pharmacy Award..... 64  
Dunlop, John, Memorial Bursary..... 71  
Durward, David, Memorial Prize..... 58

**E**

Earth Sciences ..... 53, 58  
Economics..... 53, 59  
Ellis, Dr. M.J., Award..... 68  
Ellis, Marjorie F., Scholarships ..... 51  
Engineering ..... 53, 59  
English ..... 54, 59  
Entrance Scholarship Funds ..... 48  
Entrance Scholarships..... 48  
Ernst and Young Scholarship ..... 56  
Evanowitz, Duane, Memorial Award ..... 68

**F**

Faulkner, E. Ross, Scholarships..... 49  
Final-Year Degree Award ..... 65

Fooshee, Clare Murray, Poetry Prize..... 57  
Foundation Travel Award ..... 66  
Fraser, Hugh Graeme, Memorial Prize in  
Advanced Chemistry ..... 58  
Frazee, Rowland C., Undergraduate  
Scholarships in Business  
Administration..... 49  
French..... 54, 60  
French, Professor J.B. and Mrs. H.H.,  
Prize..... 61  
Frost, Charles E., Award..... 64  
Frost, Charles E., Medal..... 64

**G**

Galloway, S.L.T Bruce, Memorial Prize ..... 57  
Gaudet, Dr. Frederick J., Scholarship ..... 52  
Geological Association of Canada Student  
Prize..... 59  
German ..... 60  
Gibson, Stewart Lockie, Memorial Prize..... 69  
Gibson, Stewart Lockie, Scholarship in  
Commerce..... 56  
Goodman, Edith and Rose, Prize in  
History ..... 60  
Government Student Loans ..... 69  
Governor-General's Silver Medal ..... 63  
Grace Maternity Medical Staff  
Association Award for Excellence in  
Maternal Nursing ..... 65  
Grant, Frances Havergal, Bursaries ..... 74  
Guptill, Dr. E.W., Memorial Prize..... 61

**H**

Halifax Children's Hospital Alumnae  
Prize..... 65  
Halifax Ladies Music Club Scholarship ..... 54  
Hall, James L., Scholarship in Earth  
Sciences ..... 53  
Harper, W.L., Scholarship ..... 51  
Harrison, Annie M., Bursary ..... 74  
Haverstock, Alice M., Bursary..... 74  
Hayes, Kenneth and Dorothy, Memorial  
Prize..... 58  
Health Education Awards..... 68  
Henderson, Dr. George, Prizes in Physics... 61  
Hill, Annette S., Bursaries ..... 74  
Hillis, Wilfred E., Bursary ..... 71  
History ..... 54, 60  
Hoechst-Roussel Canada Inc. Award..... 64  
Home Prescription Services Prize ..... 64  
Horne, Frank W., Medal ..... 64  
Howe, C.D., Scholarships in Engineering... 49  
Hurdle, Denton, Memorial Bursary..... 73

**I**

In-course Scholarships ..... 51  
International Development Studies ..... 60  
Irvine, Christine, Scholarship ..... 51

**J**

Jackson, Isabel M., Scholarships..... 55  
Jacobson, Hyman I., Scholarship..... 52  
Jacobson, Samuel S., Scholarship ..... 56  
Jeffery, Ralph and Frances Lewis,  
Scholarship ..... 54  
Jenkins, Ralph H., Memorial Pharmacy  
Scholarship ..... 55  
Jollota, Percy Bertram, Scholarships..... 49, 52  
Jones, Sonia, Scholarship ..... 55  
Jordan, E. John, Scholarships..... 49

- K**
- Kaye, John R., Memorial Scholarship ..... 54
- Keen, Michael J., Memorial Award ..... 59
- Kennedy, Phyllis, Memorial Bursaries ..... 73
- Kerr, Dr. Alexander E., Bursary ..... 72
- Khaki University Scholarships ..... 52
- Kidd, Jack/ANCA Bursary ..... 72
- Killorn, William, Award ..... 64
- Kinley, Honourable John J., Pharmacy Award ..... 64
- Knight, Bain, Seath Holbrook Atlantic Limited Scholarship ..... 56
- Knight, Bain, Seath, Holbrook Atlantic Limited Bursary ..... 73
- Knodell, John Frederick, Engineering Scholarship ..... 55
- Knop, Dr. Osvald, Prize in Chemistry ..... 58
- Kohler, Morris B., Award in Physiotherapy ..... 67
- L**
- Lawson, Sarah M., Scholarships in Botany .. 53
- Lawtons Drugs Bursary ..... 72
- Leisure Research Congress Award ..... 68
- Lilly, Eli, Book Award ..... 64
- Lloyd, Hazel, Foundation Book Prize ..... 67
- Lloyd, Hazel, Foundation Scholarship ..... 55
- Lockward Memorial Scholarships ..... 50
- Longard, Annie B., Memorial Bursary ..... 74
- M**
- MacDonald, George, Bursary ..... 72
- MacDonald, J. Winston, Bursary, The ..... 71
- MacDonald, J. Winston, Bursary ..... 72
- MacDonald, R.M., and R.C. Dickson Prize in Outpost Nursing ..... 66
- MacDonald, Robert and Katherine, Award. 57
- MacDonald, Robert Archibald, Bursaries .... 72
- MacEachern-Ponsford Memorial Award .... 59
- MacFarlane, Constance, Scholarship ..... 52
- MacGregor, James Gordon, Memorial Prizes ..... 61
- MacInnis, Lloyd, Memorial Bursary ..... 73
- MacKay, A. Murray, Scholarship ..... 49
- MacKay, W. Andrew, Scholarship ..... 52
- Mackenzie Trust Scholarships ..... 51
- MacKenzie, Annie S., Class of 1911 Bursary ..... 71
- MacKenzie, Col. J.D.B.F., Scholarship ..... 55
- MacKenzie, Dr. A. Stanley, Prizes in Physics ..... 61
- Mackenzie, Rev. Kenneth, Bursary ..... 71
- MacKnight, Dr. Jessie I., Scholarship ..... 55
- MacKnight, Dr. Jessie I., Miss Mona W. Fleming Award in Hospital Pharmacy .... 64
- MacLennan, R.B. and Annie J., Bursaries .... 72
- MacMechan, Archibald, Chapter/IODE Scholarship in English ..... 54
- MacMillan, Kilmer, Memorial Book Prize ... 58
- MacMillen, Frederick A., Scholarships ..... 49
- Management ..... 56
- Marginson, Kenneth F., Award ..... 59
- Margolian, Harry, Scholarships in Commerce ..... 56
- Maritime School of Social Work Alumni Bursary ..... 73
- Mathematics ..... 54
- Mathematics, Statistics and Computing Science ..... 60
- Matheson, Hannah G., Bursaries ..... 73
- Matheson, Neil and Jessie, Bursaries ..... 74
- Maxwell, Prof. W. Russell, Memorial Bursaries ..... 71
- Maxwell, Professor W. Russell, Memorial Scholarship ..... 53
- May, Ruth, Award ..... 66
- McAloney, Jean, Memorial Prize ..... 67
- McCaughin, Ellen, McFarlane Prize ..... 60
- McCulloch, H.B., Memorial Prize in Political Science ..... 62
- McCurdy Printing and Typesetting Limited Scholarship ..... 56
- McDonald, Kenneth and Lloyd, Bursary .... 71
- McInnes, Hector, Memorial Scholarships ..... 49, 51
- McIsaac, Paul, Memorial Prize ..... 59
- McKenna, Elizabeth, Bursaries ..... 71
- McKittrick, Burgess, Prizes in Physics ..... 61
- Medis Atlantic Medal ..... 64
- Merck, Sharp and Dohme Pharmacy Award ..... 64
- Meyerhof, Elisabeth, Scholarship in Music.. 54
- Microbiology ..... 61
- Military District No. 6 Provost Corps Bursary ..... 75
- Miller, Ross, Bursary ..... 72
- Mineralogical Association of Canada Student Prize ..... 59
- Mining Society Centennial Scholarship Medal ..... 59
- Mobil Oil Canada Award] ..... 60
- Montgomery, Darrell, Memorial Prize ..... 61
- Morton, Silvanus A., Memorial Scholarship ..... 49
- Mosby, C.V., Book Prize ..... 66
- Mosby, C.V., Book Prize ..... 66
- Murray, Ruth Skaling, Scholarship ..... 50
- Murray, Ruth, Scholarship for French Studies ..... 54
- Mushkat, Carl, Memorial Scholarships ..... 52
- Music ..... 54, 61
- N**
- Nelson, W. M., Scholarship ..... 49
- New Brunswick Association of Occupational Therapists Award for Achievement in Fieldwork ..... 66
- New Brunswick Pharmaceutical Society Bursaries ..... 72
- New Brunswick Pharmaceutical Society Centennial Medal ..... 64
- New Brunswick Pharmaceutical Society Scholarship ..... 55
- Newcombe, Margaret Florence, Scholarship ..... 50
- Newfoundland and Labrador Association of Occupational Therapists Book Prize .... 66
- Newfoundland and Labrador College of Physiotherapists Prize ..... 68
- Newfoundland and Labrador Physiotherapy Association Prize ..... 67
- Nicholson, Reverend J.W.A., Bursaries ..... 71
- 1992 Tenth Anniversary Award ..... 66
- Noble, Dr. Hugh A., Award ..... 68
- Nova Scotia Association of Certified Dispensers Prize ..... 64
- Nova Scotia College of Physiotherapists Book Prize ..... 68

Nova Scotia Neurosciences Section Book Prize..... 67

Nova Scotia Pharmaceutical Society Centennial Awards ..... 64

Nova Scotia Pharmaceutical Society Memorial Award..... 64

Nova Scotia Physiotherapy Association Prize..... 68

Nova Scotia Power Scholarship ..... 49

Nova Scotia Society of Occupational Therapists Book Prize ..... 67

Nova Scotia Society of Occupational Therapists Student Society Award ..... 66

Novopharm Pharmaceuticals Award ..... 64

Nursing..... 65

**O**

Occupational Therapy ..... 66, 73

Osley, Harold, Scholarship..... 50

**P**

Page, F. Hilton, Memorial Prize in Philosophy..... 61

Parke-Davis Prize..... 64

Parker, Frederick Thomas, Award for Part-Time Studies ..... 75

Payzant, Arthur S., Scholarship ..... 50

PEIOTS and PEIAOT Award for Community Occupational Therapy ..... 66

Pfizer Bursary ..... 73

Pharmacy..... 55, 72

Pharmacy's Canada Centennial Award (External) ..... 65

Philosophy..... 61

Physics ..... 61

Physiotherapy ..... 55, 67

Pictou Academy Scholarship..... 50

Political Science ..... 61

Foilok, Alan, Scholarship ..... 53

Pond, Margaret Nicoll, Memorial Prize in English ..... 60

John C. Pooley Sportsman Award..... 68

Practical Training Programme Prize ..... 65

Prince Edward Island Physiotherapy Association Prize ..... 68

Prince, M. Caroline, Scholarship ..... 56

Prince, Rev. S.H., Prize in Sociology ..... 62

Prix de l'Ambassadeur de France ..... 60

Prix de l'Ambassadeur de Suisse au Canada ..... 60

Prix du Consulat de France ..... 60

Prize of the Ambassador of Austria in Canada, Prize of the Ambassador of Switzerland in Canada, and the Prize of the Ambassador of Germany in Canada ..... 60

Prizes, Medals, and Awards ..... 56

Psychology ..... 62

Publicover, Warren, Class '25 Memorial Bursary..... 75

Pugaley, B. Trevoy, Memorial Pharmacy Award ..... 65

Pugaley, Mrs. Vera B., Award ..... 65

**R**

Recreation, Physical and Health Education..... 55, 68

Renouf, Harold A., Scholarship ..... 50

Robertson, George B., Phi Delta Theta Fraternity Scholarship ..... 53

Robertson, Lois J., Scholarships..... 50

Roche Award ..... 65

Ross, Effie May, Scholarships in Music..... 54

Ryan, John J., Pharmacy Administration Award ..... 65

**S**

Saffron, Morris, Prize..... 62

Sammons Award ..... 66

Sammons Research Award for Clinical Tutors ..... 66

Sandoz Prize in Pharmacy ..... 65

Saunders, W.B., Award (Nursing) ..... 66

Saunders, W.B., Book Prize..... 66

School of Occupational Therapy Prize in Kinesiology ..... 67

Searle Summer Research Scholarship ..... 55

Sample, Leigh, Memorial Award..... 65

VIIth Pan American Wheelchair Games Scholarship ..... 55

Sezerman, Omur, Prize in Physics ..... 61

Shatford Memorial Trust Scholarships ..... 50

Shoppers Drug Mart Community Pharmacy Bursaries ..... 73

Short-Term Loans for Occupational Therapy Students for Fieldwork ..... 70

Sinclair, Alexander, Scholarship ..... 50

Singh, Dr. Samar B., Prize in Anatomy ..... 65

Smith & Nephew Award..... 67

Smith, Lenore, Cumming Bursary ..... 74

Smith, Ronald G., Scholarship ..... 56

Smith, Ross Stewart, Scholarships ..... 52

SmithKline Beecham Pharma Inc. Award ... 65

Social Work ..... 56, 69, 73

Society of Chemical Industry, Canadian Section, Merit Award..... 58

Sociology and Social Anthropology ..... 62

Soloan, Dr. David M., Scholarship..... 50

Solomon, Mr. and Mrs. S.H., Scholarship in Engineering..... 52

Sony Science Scholarship ..... 53

Spanish..... 55

Stairs, C.W., Memorial Scholarship..... 52

Statistics ..... 54

Stern Award ..... 66

Stewart, Frances L., Memorial Prize in Psychology ..... 62

Stewart, I.C., Trust Fund ..... 50

Stewart, Joseph Duncan, Scholarships... 50, 52

Stora Undergraduate Scholarship in Arts & Science ..... 53

**T**

T.B. Clift Ltd./NLAOT Academic Achievement Prize ..... 67

Temporary Loans ..... 70

Theakston, Dr. H.R., Memorial Award..... 59

Theatre ..... 62

Thomas Family Prize ..... 68

3M Canada Bursary ..... 75

Todd, E. Walter, Scholarship ..... 53

Towse, John L. and Glenna E., Scholarships ..... 52

Transition Year Programme..... 62

Trenholm, Anna, Memorial Prize ..... 66

Tupper, James W., Graduate Fellowship in English ..... 60

Turner, Dr. Gerald, Bursary..... 75

## 432 Index of Awards

- U**
- Undergraduate Award in Analytical  
Chemistry..... 58
- University Medal in Biochemistry ..... 58
- University Medal in Biology ..... 58
- University Medal in Chemistry ..... 58
- University Medal in Classics ..... 58
- University Medal in Commerce ..... 69
- University Medal in Computing Science .... 60
- University Medal in Earth Sciences ..... 59
- University Medal in Economics ..... 59
- University Medal in English ..... 60
- University Medal in French ..... 60
- University Medal in German ..... 60
- University Medal in History ..... 60
- University Medal in International  
Development Studies ..... 60
- University Medal in Marine Biology ..... 58
- University Medal in Microbiology ..... 61
- University Medal in Music ..... 61
- University Medal in Nursing ..... 66
- University Medal in Occupational  
Therapy ..... 67
- University Medal in Pharmacy ..... 65
- University Medal in Philosophy ..... 61
- University Medal in Physics ..... 61
- University Medal in Physiotherapy ..... 67
- University Medal in Psychology ..... 62
- University Medal in Recreation, Physical  
& Health Education ..... 68
- University Medal in Russian Studies ..... 62
- University Medal in Social Anthropology ... 62
- University Medal in Sociology ..... 62
- University Medal in Spanish ..... 62
- University Medal in Statistics ..... 61
- University Medal in Theatre ..... 62
- University Silver Medal ..... 63
- Upjohn Company of Canada Scholarship .. 55
- V**
- Vair, J. Douglas, Scholarship ..... 50
- W**
- Wales, Freda N., Memorial Scholarship ..... 55
- Walter, Bob Walter, Award ..... 59
- Warner-Lambert Self-Medication Award .... 65
- Waverly Prize ..... 60
- Well, Sonja R., Memorial Bursary ..... 73
- White, Dr. Lilyan E., Prize ..... 62
- Wickwire, Susan (Cox), Bursary in  
Engineering ..... 72
- Williams and Wilkins Book Prize ..... 67
- Wilson, Dr. George E., Prize in History ..... 60
- Wilson, George E., Memorial Scholarship .. 54
- Wisdom, Jane, Memorial Bursary ..... 73
- Women's Division - Dalhousie Alumni  
Association Medal in Costume Studies .... 62
- Women's Division - Dalhousie Alumni  
Association Medals in RP&HB ..... 69
- Women's Division - Dalhousie Alumni  
Association Scholarships ..... 50
- Women's Division Bursaries ..... 75
- Wright, Don, Scholarships in Music  
Education ..... 55
- Wyeth Award of Excellence in Pharmacy  
Research ..... 65
- Y**
- Young, Sir William, Gold Medal ..... 60
- Young, Sir William, Scholarship ..... 52
- Z**
- Zwerling, Charles and Cecelia,  
Scholarship ..... 52

<b>A</b>	
Academic Advice .....	84
Academic Dismissal.....	93
Academic Programmes .....	6
International/Exchange Programmes ..	88
Preparation for Other Programmes .....	89
Academic Regulations .....	84
Academic Advice .....	84
Academic Dismissal .....	93
Academic Standing.....	91
Advanced Placement.....	87
Appeals.....	94
Assessment .....	90
Audit of Classes .....	87
Change of Programme .....	93
Class Changes.....	85
Class Selection.....	84
Counting of Credits for Two	
Dalhousie Undergraduate Degrees....	86
Deans' and Directors' Lists.....	94
Duration of Undergraduate Studies .....	89
Experimental Classes.....	87
Graduation.....	93
Graduation Standing .....	93
Numbering of Classes .....	84
Off-Campus, Summer School,	
Correspondence Classes Taken	
at Other Universities.....	88
Part-Time Students .....	87
Probation.....	92
Registration .....	85
Transfer Students .....	86
Withdrawal .....	85
Workload.....	85
Academic Standing .....	91
Accounts	
Delinquent.....	38
See Student Accounts	
Admission Requirements.....	27
Additional Requirements .....	29
Application Deadlines.....	26
Application submissions.....	28
BA.....	29
Basic Requirements.....	27
BMusic .....	29
BMusicEd .....	29
BSc .....	30
BSc Co-op .....	30
Commerce Co-op .....	30
Costume Studies .....	29
Early Acceptance.....	29
English Language Tests .....	29
Final Acceptance .....	29
from outside Nova Scotia .....	27
January Admissions .....	29
Kinesiology .....	34
Mature Students.....	28
Meteorology.....	30
Nursing.....	31
Nursing for RNs.....	31
Occupational Therapy.....	31
Outpost and Community Health	
Nursing.....	31
PCAT.....	32
Pharmacy .....	31
Physiotherapy.....	32
Public Administration.....	30
Recreation.....	33
Response.....	29
Social Work .....	34
Transfer Students .....	28
Admissions	
Deposit.....	36
Students with Learning Disabilities .....	27
Advanced Placement.....	87
African Studies.....	104
African Studies, Centre for.....	15
Alumni Association.....	17
Anatomy and Neurobiology.....	104
Anthropology	
See Sociology & Social Anthropology	
Appeals.....	94
Application Deadlines.....	26
Architecture.....	106
Arts and Social Sciences, Faculty of,	
Introduction .....	9
Arts and Social Sciences,	
Interdisciplinary .....	106
Arts Centre .....	18
Assessment.....	90
Athletics.....	17
Athletic Fees .....	39
Atlantic Research Centre.....	15
Audit Classes, Fees.....	37
Audit of Classes .....	87
Awards.....	50
See Index of Awards	
<b>B</b>	
Biochemistry.....	107
Biology .....	112
Biophysics.....	330
Black Students.....	18
Board of Governors .....	5
Bookstore .....	23
School of Business Administration .....	145
<b>C</b>	
Canadian Studies.....	126
Change of Programme.....	93
Chaplaincy.....	18
Chemistry .....	129
Class Changes .....	85
Fees.....	37
Classics.....	139
Clubs and Organizations.....	23
Co-operative Education in Science .....	156
Code of Student Conduct.....	79
College of Arts and Science, Introduction ....	8
Commerce, See Business Administration	
Commerce Work Term Requirements .....	102
Comparative Religion.....	158
Computing, Guide to Responsible.....	82
Computing and Information Services.....	24
Computing Science .....	162
Continuing Education, Henson College .....	12
Correspondence Classes.....	88
Counselling and Psychological Services .....	18
Counting of Credits for Two Dalhousie	
Undergraduate Degrees .....	86
Criminology, Atlantic Institute of.....	15
Cross-listed Classes.....	101
<b>D</b>	
Dalhousie Integrated Science	
Programme .....	171
Dalhousie University .....	4
Board of Governors.....	5
Executive Officers .....	4



## 434 General Index

- Senate ..... 5
- Dalplex, Fee ..... 39
- Dean's List ..... 94
- Definitions ..... 2
- Degree Requirements ..... 96
- Arts and Science Electives ..... 101
- BMusic ..... 102
- BMusicEd ..... 102
- College of Arts and Science ..... 100
- Commerce Co-op ..... 102
- Commerce Co-op Degree  
    Requirements ..... 102
- Commerce, Work Term ..... 102
- Costume Studies ..... 102
- Cross-listed Classes ..... 101
- Engineering ..... 102
- Health Professions ..... 103
- Honours Qualifying Examination ..... 98
- Individual Programmes ..... 100
- Joint Honours with MSVU ..... 97
- Language Class ..... 101
- Mathematics Requirement ..... 101
- Meteorology ..... 102
- Public Administration ..... 103
- Upgrading of BA or BSc ..... 99
- Writing Class ..... 101
- Director's List ..... 94
- Disabilities, Services for Students with ..... 22
- Discipline ..... 78
- Duration of Undergraduate Studies ..... 89
- E**
- Earth Sciences ..... 171
- Economics ..... 181
- Electives, Arts and Science ..... 101
- Engineering ..... 188
- English ..... 191
- English Language Tests ..... 29
- Environmental Classes ..... 198
- Examination Regulations ..... 76
- Examinations, Special Arrangements ..... 91
- Examinations and Tests ..... 90
- Exchange Programmes ..... 88
- Experimental Classes ..... 87
- F**
- Fees
- Academic Fees ..... 36
- Admission Deposit ..... 36
- Athletic ..... 39
- Audit Classes ..... 37
- Canada Student Loans ..... 38
- Changes ..... 37
- Delinquent Accounts ..... 38
- Foreign Students ..... 36
- ID Cards ..... 39
- Laboratory Deposits ..... 39
- Mail Registration ..... 36
- Payment ..... 37
- Provincial Bursaries ..... 39
- Refund Dates - First Term ..... 38
- Refund Dates - Regular Session ..... 38
- Refund Dates - Second Term ..... 38
- Refunds ..... 37
- Registration ..... 37
- Regulations ..... 36
- See Residence
- Scholarships ..... 39
- Senior Citizens ..... 37
- Student Accounts Office ..... 36
- Student Union Fee Distribution ..... 39
- Tax Credit ..... 39
- Withdrawals ..... 37
- Foreign Policy Studies, Centre for ..... 15
- Foreign Student, Fees ..... 36
- French ..... 205
- G**
- Geology, See Earth Sciences
- German ..... 214
- Grade Point Average ..... 91
- Grade Points on Admission ..... 92
- Graduation ..... 93
- Graduation Standing ..... 93
- Greek, See Classics
- H**
- Health Professions, Faculty of,  
  Introduction ..... 11
- Health Education ..... 362
- Health Law Institute ..... 16
- Health Professions, Interdisciplinary ..... 218
- Health Promotion Centre, Atlantic ..... 15
- Health Services ..... 24
- Henson College ..... 12
- Officers ..... 12
- Programmes and Services for Full and  
    Part-Time Mature Students ..... 14
- Transition Year Programme ..... 13
- History ..... 221
- Housing and Residence Services ..... 19
- Howe, Joseph, Prizes ..... 57
- I**
- ID Cards, Fees ..... 39
- Immunology ..... 255
- Individual Programmes ..... 100
- Institutes ..... 15
- Atlantic Health Promotion Centre ..... 15
- Atlantic Institute of Criminology ..... 15
- Atlantic Region Magnetic  
    Resonance Centre ..... 15
- Atlantic Research Centre ..... 15
- Centre for African Studies ..... 15
- Centre for Foreign Policy ..... 15
- Centre for International Business  
    Studies ..... 16
- Centre for Marine Geology ..... 16
- Dalhousie Health Law Institute ..... 16
- Lester Pearson Institute for  
    International Development ..... 16
- Neuroscience Institute ..... 16
- Oceans Institute of Canada/  
    Institut canadien des océans ..... 17
- Trace Analysis Research Centre ..... 17
- Instructional Development and  
  Technology ..... 21
- Integrated Science Programme ..... 171
- Intellectual Honesty ..... 77
- International and Exchange Students ..... 28
- International Business Studies, Centre for ... 16
- International Development, Lester  
  Pearson Institute for ..... 16
- International Programmes ..... 88
- Aix-en-Provence ..... 88
- Colegio de España, Salamanca ..... 88
- Québec ..... 88
- Russian Studies ..... 88
- International Student Centre ..... 21

**J**  
 Joint Honours with MSVU..... 97

**K**  
 Kinesiology..... 367

**L**  
 Laboratory Deposits..... 39  
 Language Class..... 101  
 Latin, See Classics  
 Learning Disabilities..... 90  
 Learning Disabilities, Admissions..... 27  
 Letter of Permission, Grade Points..... 92  
 Libraries..... 21  
 Linguistics..... 244  
 Loans, Canada Student..... 38

**M**  
 Magnetic Resonance Centre, Atlantic  
 Region..... 15  
 Management, Faculty of, Introduction..... 12  
 See Business Administration  
 Marine Geology, Centre for..... 16  
 Maritime School of Social Work..... 381  
 Math, Statistics, & Computing Science..... 245  
 Mathematics..... 246  
 Mathematics Requirement..... 101  
 Mature Students..... 14  
 Microbiology..... 255  
 Music..... 260  
 Music Degree Requirements..... 102

**N**  
 Neuroscience..... 272  
 Neuroscience Institute..... 16  
 School of Nursing..... 278

**O**  
 School of Occupational Therapy..... 289  
 Oceanography..... 298  
 Oceans Institute of Canada/  
 Institut canadien des océans..... 17  
 Off-Campus Classes..... 88  
 Ombud's Office..... 22

**P**  
 Part-Time Students..... 87  
 Pharmacy..... 63, 305  
 Philosophy..... 314  
 Physical Education..... 362  
 Physics..... 321  
 Physiology and Biophysics..... 330  
 School of Physiotherapy..... 332  
 Plagiarism..... 77  
 Political Science..... 339  
 Probation..... 92  
 Psychology..... 349  
 School of Public Administration..... 360  
 Public Affairs, Henson College..... 12

**R**  
 School of Recreation, Physical &  
 Health Education..... 362  
 Refunds..... 37  
 First Term Dates..... 38  
 Regular Session Dates..... 38  
 Second Term Dates..... 38  
 Registrar's Office..... 22  
 Registration..... 85  
 Fees..... 37

Late Registration Fees..... 37  
 by mail..... 36

**Regulations**  
 Academic..... 84  
 Computing..... 82  
 Discipline..... 78  
 Examinations..... 76  
 Fees..... 36  
 Intellectual Honesty..... 77  
 Plagiarism..... 77  
 Release of Information..... 77  
 Residence Fees..... 44  
 University..... 78  
 Release of Information..... 77  
 Religion..... 158  
 Repeating Classes..... 92  
 Requirements for Degrees..... 96  
 Residence Fees  
 Payment..... 44  
 Regulations and Additional Charges..... 44

**Resources and Services..... 17**  
 Advisory Committee on Sexual  
 Harassment..... 17  
 Alumni Association..... 17  
 Athletics..... 17  
 Black Students..... 18  
 Chaplaincy at Dalhousie..... 18  
 Counselling and Psychological  
 Services..... 18  
 Dalhousie Arts Centre..... 18  
 Dalhousie Student Union..... 19  
 Housing and Residence Services..... 19  
 Instructional Development and  
 Technology..... 21  
 International Student Centre..... 21  
 Libraries..... 21  
 Ombud's Office..... 22  
 Registrar's Office..... 22  
 Services for Students with Disabilities..... 22  
 Student Advocacy Service..... 23  
 Student Clubs and Organizations..... 23  
 Student Employment Centre..... 23  
 Student Services..... 23  
 University Bookstore..... 23  
 University Computing and  
 Information Services..... 24  
 University Health Services..... 24  
 Writing Workshop..... 24

**Russian Studies..... 62, 376**  
 Intensive Russian Programme..... 379

**S**  
 Science, Faculty of, Introduction..... 10  
 Science Co-op..... 156  
 Science, Interdisciplinary Class..... 380  
 Senate..... 5  
 Senior Citizens, Fees..... 37  
 Sexual Harassment, Advisory  
 Committee on..... 17  
 Social Anthropology..... 388  
 Social Work, Maritime School of..... 381  
 Sociology and Social Anthropology..... 388  
 Spanish..... 62, 399  
 Statistics..... 404  
 Student Accounts Office..... 36  
 Student Advocacy Service..... 23  
 Student Services..... 23  
 Student Union..... 19  
 Fee Distribution..... 39

## 436 General Index

---

Students with Learning Disabilities.....	27
Summer School .....	88

### T

Tax Credit, Fees.....	39
Trace Analysis Research Centre .....	17
Transfer Students.....	86
Transition Year Programme.....	13

### U

University Exploration Programme.....	14
University Regulations .....	78
Upgrading of BA or BSc .....	99

### W

Withdrawal.....	85
Workload .....	85
College of Arts and Science .....	85
School of Business .....	85
Spring and Summer Session .....	85
Writing Class.....	101
Writing Classes listed.....	101
Writing Workshop.....	24





**For further information**

**The Registrar's Office**

Dalhousie University

Halifax, N.S., Canada B3H 4H6

Fax: 902-494-1630 or call: 902-494-2450