

calendar

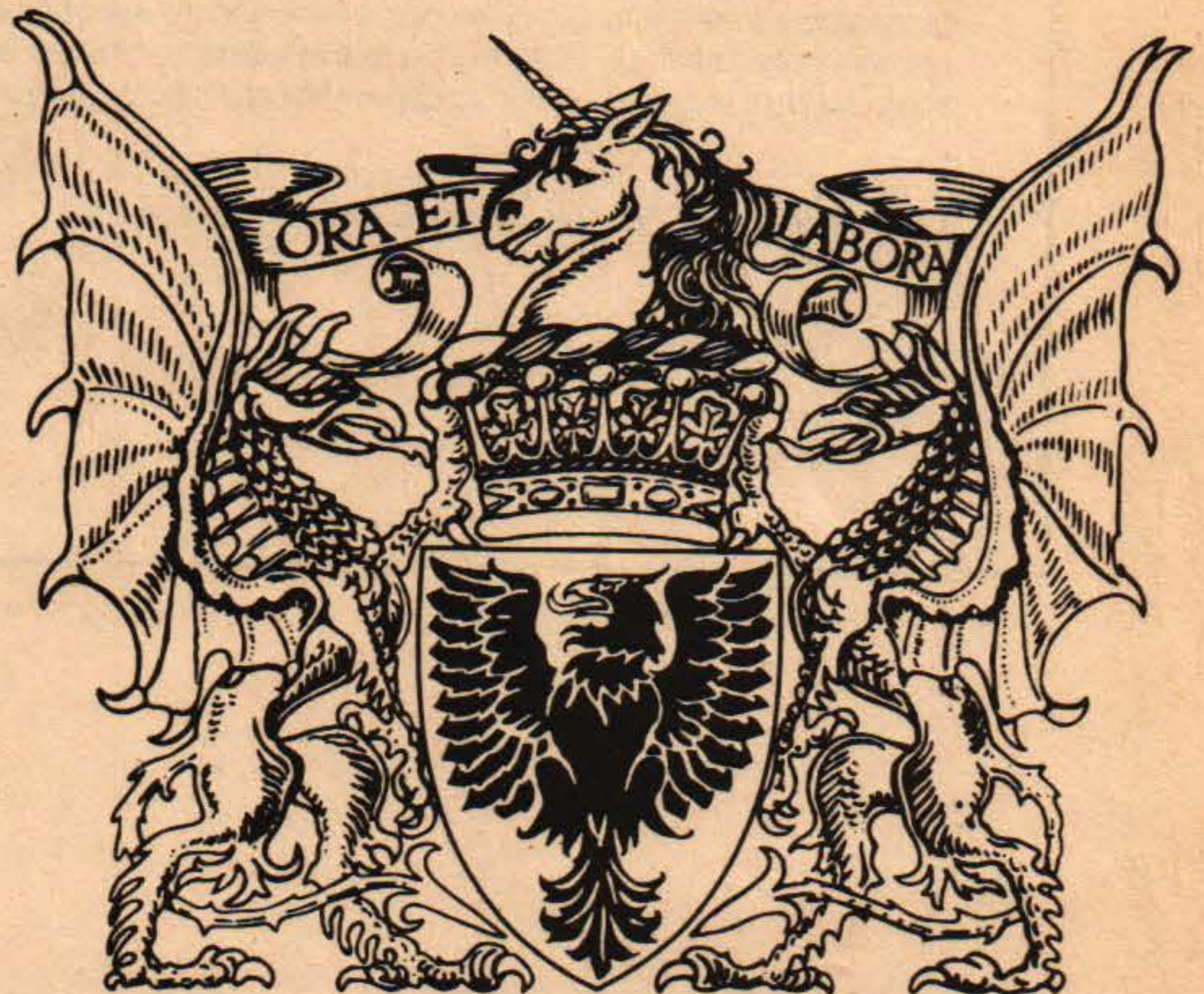
Faculty of  
Graduate Studies



**Dalhousie  
University 1986-87**

# Dalhousie University Graduate Studies Calendar

Founded in 1818  
Halifax, Nova Scotia, Canada



# Notices

All readers and prospective 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.

Any reference to courses or classes contained herein is a statement of courses or classes that have been taught at Dalhousie University in the past. Dalhousie University assumes no obligation to continue to teach such courses or classes and prospective students are asked to consult with the respective Faculty to determine any changes to a course or class description contained herein.

*Dalhousie University reserves the right to delete, revise or add to anything described in this Calendar 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.*

*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.*

The University reserves the right to limit enrollment in any program. Prospective students should note carefully the application deadlines indicated for the various programs. They should be aware that enrollment in most programs is limited and that students who are admitted to programs at Dalhousie are normally required to pay deposits on tuition fees to confirm their acceptance of offers of admission. These deposits may be either non-refundable or refundable in part, depending on the program in question. While the University will make every reasonable effort to offer classes as required within programs, prospective students should note that admission to a degree or other program does not guarantee admission to any given class, except those specified as required, within that program. 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.

Inquiries regarding Academic Matters should be directed to:

The Registrar  
Dalhousie University  
Halifax, Nova Scotia  
Canada  
B3H 4H6  
902-424-7068

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# Almanac 1986-87

Most classes offered at Dalhousie have one of the letters "A," "B," "C" or "R" following the number. "A" classes are those given in the fall term or in the first three weeks of a summer session, "B" classes are those given in the winter term or the second three weeks of a summer session, and "R" and "C" classes are given throughout the regular year or a summer session ("R" classes carry one full credit or more, "C" classes less than one full credit).

## May, 1986

**Friday, 2:** Senate meeting to consider candidates for the award of degrees in Arts and Science, Management Studies, Health Professions and Graduate Studies.

**Thursday, 8:** University Convocations (Management Studies, Health Professions and Graduate Studies).

**Friday, 9:** University Convocations (Arts and Science and Graduate Studies).

**Monday, 12:** Summer School (first session) registration. Classes begin.

**Thursday, 15:** Last day for cancelling registration in "A" classes, first summer session.

**Friday, 16:** Last day for cancelling registration in "R" or "C" classes, first summer session.

**Monday, 19:** Victoria Day.

**Wednesday, 21:** University Convocation (Dentistry and Graduate Studies).

Last day for withdrawing without academic penalty from "A" classes, first summer session, graduate students.

**Friday, 23:** University Convocation (Law and Graduate Studies).

**Saturday, 31:** Last day for receipt of applications for Graduate Studies from foreign (except U.S.A.) applicants (except for programs for which earlier dates are specified).

Last day for receipt of applications for the Master of Nursing program.

## June, 1986

**Monday, 2:** Last day for withdrawing without academic penalty from "R" and "C" classes, first summer session, graduate students.

**Thursday, 5:** Last day for cancelling registration in "B" classes, first summer session, graduate students.

**Wednesday, 11:** Last day for withdrawing without academic penalty from "B" classes, first summer session, graduate students.

**Tuesday, 24:** Summer School ends (first session).

**Monday, 30:** Last day for receipt of applications for Oral Surgery. (NOTE: This is 30th June of year preceding commencement of program).

## July, 1986

**Tuesday, 1:** Canada Day.

**Wednesday, 2:** Summer School (second session) registration and classes begin.

**Friday, 4:** Last day for cancelling registration in "A" classes, second summer session.

**Tuesday, 8:** Last day for cancelling registration in "R" and "C" classes, second summer session.

**Friday, 11:** Last day for withdrawing without academic penalty from "A" classes, second summer session, graduate students.

**Friday, 18:** Last day for withdrawing without academic penalty from "R" and "C" classes, second summer session, graduate students.

**Tuesday, 29:** Last day for cancelling registration in "B" classes, second summer session.

## August, 1986

**Friday, 1:** Last day for receipt of applications to Graduate Studies except for Human Communication Disorders, Law, Nursing, Oral Surgery, Social Work and non-North American students (all programs), (all of which have earlier closing dates).

Last day for withdrawing without academic penalty from "B" classes, second summer session, graduate students.

**Monday, 4:** Halifax Natal Day and Dartmouth Natal Day — no classes

**Friday, 8:** Last day for those expecting PhD degrees in October to submit unbound theses to departments.

**Thursday, 14:** Final day of classes, Summer School.

**Wednesday, 27:** First year MBA orientation begins.

## September, 1986

**Monday, 1:** Labour Day.

**Tuesday, 2:** Registration ends in Law and Library Service. Registration ends and classes begin in School of Human Communication Disorders and MBA.

**Wednesday, 3:** Classes begin in Library Service and Law.

**Wednesday, 3 — Saturday noon, 6:** Last regular days for registration and payment of fees for students in Graduate Studies (Wednesday is reserved for new students.)

**Friday, 5:** Last day for those expecting Masters degrees in October to submit unbound theses to departments.

**Monday, 8:** Classes begin in Graduate Studies (unless otherwise specified).

**Friday, 19:** Last day for those expecting to receive graduate degrees in October to submit approved unbound copies of theses to Faculty of Graduate Studies Office.

## October, 1986

**Monday, 13:** Thanksgiving Day.

Saturday, 18: Fall convocation.

## November, 1986

Tuesday, 11: Remembrance Day, no classes.

Friday, 14: Last day for those expecting PhD degree by approval of Senate in February to submit unbound theses to departments.

Monday, 17: Last day for withdrawing from "A" classes without academic penalty, graduate students.

Friday, 28: Last day to change status (PT to FT or FT to PT), graduate students.

## December, 1986

Thursday, 4: Last day of classes.

Friday, 5: Last day of classes, Law.

Monday, 8: Examinations begin.

Tuesday, 9: Last day of classes, School of Library Service.

Wednesday, 10: Examinations begin, School of Library Service.

Friday, 12: Last day for those expecting Masters degrees by approval of Senate in February to submit unbound theses to departments.

Thursday, 25: Christmas Day.

Friday, 26: Boxing Day.

The last working day before December 31 is the deadline for submission of approved unbound copies of theses to the Faculty of Graduate Studies Office by those expecting to receive a graduate degree by approval of Senate in February.

## January, 1987

Thursday, 1: New Year's Day.

Monday, 5: Classes resume in all faculties.

Friday, 30: Last day for withdrawing from full-year classes without academic penalty, Graduate Studies.

Saturday, 31: Last day for receipt of applications to the graduate program in Social Work.

## February, 1987

Friday, 6: Munro Day, no classes.

Saturday, 7: Winter Carnival, no classes.

Monday, 23: Study break begins.

Wednesday, 25: Last day for those expecting PhD degrees in May to submit unbound theses to departments.

Saturday, 28: Last day for receipt of applications for Human Communication Disorders.

## March, 1987

Monday, 2: Classes resume.

Friday, 13: Last day for withdrawing from "B" classes without academic penalty, Graduate Studies.

Monday, 30: Last day for those expecting Masters degrees in May to submit unbound theses to departments.

## April, 1987

Thursday, 9: Last day of classes in Law (all years).

Friday, 10: Last day of classes in Library Service.

Saturday, 11: Last day of classes in Graduate Studies.

Monday, 13: Examinations begin in Graduate Studies.

Wednesday, 15: Last day for receipt of applications for graduate programs in Law and the School of Library Service.

Thursday, 16: Last day for those expecting to receive graduate degrees in May to submit approved unbound copies of theses to Faculty of Graduate Studies Office.

Friday, 17: Good Friday.

## May, 1987

Friday, 8: Senate meeting to consider candidates for the award of degrees in Arts and Science, Management Studies, Health Professions and Graduate Studies.

Monday, 11: Summer School (first session) registration and classes begin.

Thursday, 14: University Convocations in Management Studies, Health Professions, and Graduate Studies.

Last day for cancelling first summer session registration in "A" classes.

Friday, 15: University Convocations, Arts and Science and Graduate Studies.

Last day for cancelling first summer session registration in "C" or "R" classes.

Monday, 18: Victoria Day.

Wednesday, 20: Last day for withdrawing without academic penalty from "A" classes, first summer session, Graduate Studies.

Wednesday, 27: University Convocation (Dentistry, Dental Hygiene and Graduate Studies).

Sunday, 31: Last day for receipt of applications from non-North American students for programs in Graduate Studies, except for Human Communication Disorders, Law, and Social Work, all of which have earlier closing dates.

Last day for receipt of applications for the Master of Nursing program.

## June, 1987

Monday, 1: Last day for withdrawing without academic penalty from "R" and "C" classes, first summer session, Graduate Studies.

Wednesday, 10: Last day for withdrawing without academic penalty from "B" classes, first summer session, Graduate Studies.

Tuesday, 23: Summer School ends (first session).

# Admission Dates

<b>Graduate Studies (except as below)</b> .....	August 1
Non-North American Students .....	May 31
Human Communication Disorders .....	February 28
Law .....	April 15
Library Service <sup>5</sup> .....	April 15
Nursing .....	May 31
Oral Surgery <sup>6</sup> .....	June 30
Social Work .....	January 31

## Arts and Science

Students entering from Canada or US .....	August 1
Foreign Students (except USA) .....	May 1
Transfer Students <sup>1</sup> .....	July 1
BEd Program .....	May 30

## Health Professions

(Undergraduate)	
Transfer Students <sup>1</sup> .....	July 1
Recreation, Physical and Health Education .....	July 15
BSc (Nursing) .....	April 1
BN for Post RN <sup>2</sup> .....	August 1
Outpost and Community Health Nursing <sup>3</sup> .....	April 15
Occupational Therapy .....	March 1
Physiotherapy .....	January 28
Pharmacy .....	March 1
Social Work .....	March 1

## Management Studies

Students entering from Canada or US .....	August 1
Transfer Students .....	July 1
Non-American Foreign Students .....	May 1

**Dentistry** ..... December 1

**Dental Hygiene** ..... January 31

## Medicine

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

**Law**<sup>4</sup> ..... February 28

## Winter Term

BA<sup>7</sup> BSc<sup>7</sup> and BComm programs only ..... November 15

Early registration and registration by mail is possible for most students, and is advised.

<sup>1</sup> Except Occupational Therapy, Pharmacy, Physiotherapy, Social Work.

<sup>2</sup> Subject to change depending on numbers applying

<sup>3</sup> Application date for class entering in January is October 1

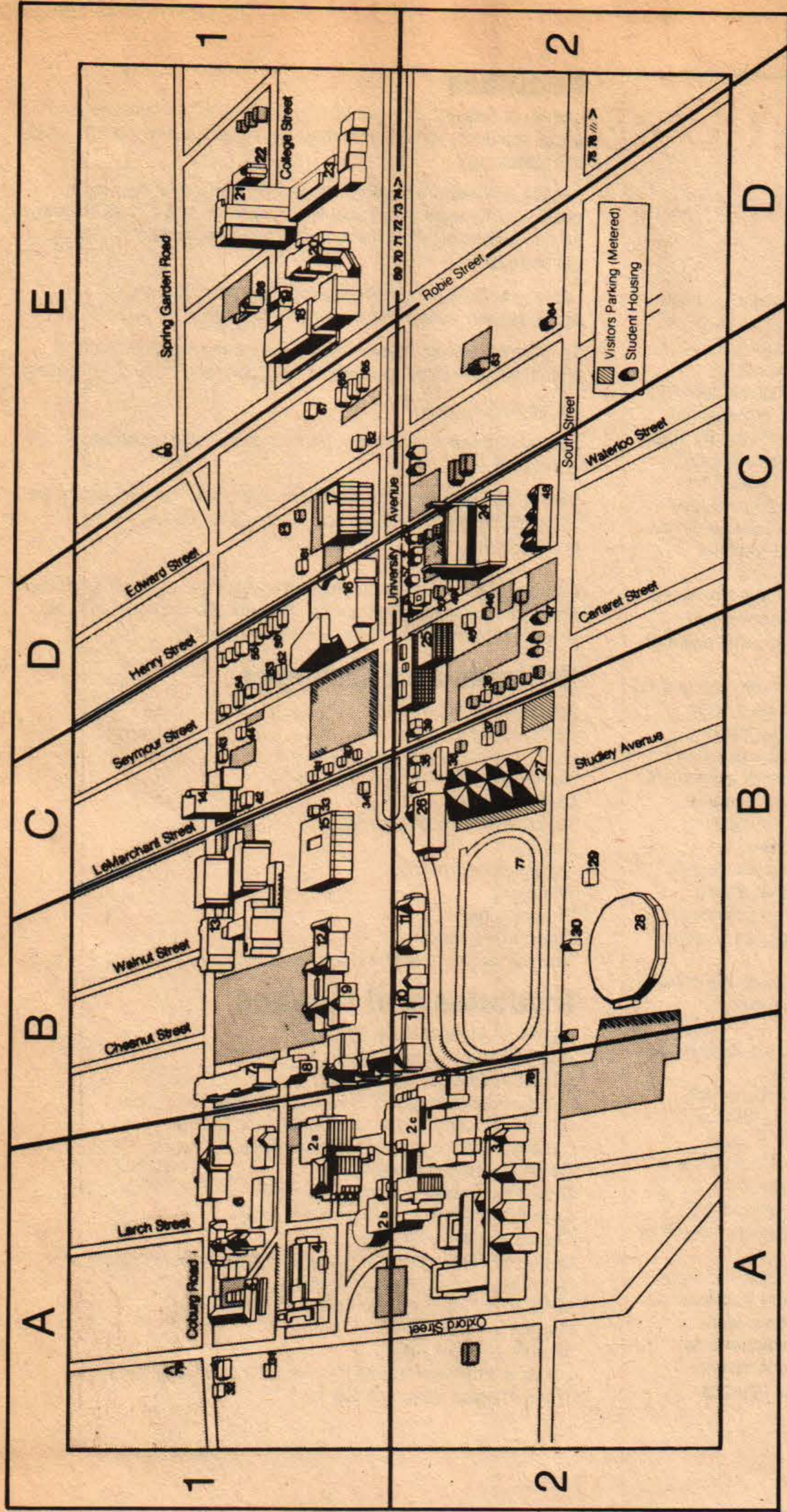
<sup>4</sup> Late applications may be considered

<sup>5</sup> Late applications may be considered up to August 1

<sup>6</sup> Of year preceding commencement of program

<sup>7</sup> Part-time and transfer students only

# The Campus Map



Admissions - 1 (B1, B2)  
 Alumni Office - 30 (B2)  
 Arts and Administration Building - 1 (B1, B2)  
 Arts Centre - 16 (C1)  
 Biology - 2a (A1)  
 Bookstore - 25 (C2)  
 Burbidge Building - 19 (E1)  
 Business Administration, School of - 14 (C1)  
 Central Services Building - 24 (C2)  
 Chemistry - 9, 12 (B1)  
 Classics - 36 (C2)  
 Comparative Religion - 7 (B1)  
 Computer Centre - 15 (B1)  
 Counselling and Psychological Services - 25 (C2)  
 Dalplex - 28 (B2)  
 Day Care - 5 (A1)  
 Dentistry and Dental Hygiene - 18 (E1)

Development Office - 43 (C1)  
 Dunn Building - 7 (B1)  
 Economics - 35 (B2)  
 Education - 11 (B2)  
 Engineering - 7 (B1)  
 English - 53, 55 (C1)  
 Forrest Building - 20 (E1)  
 French - 40 (C1)  
 Geology - 2b (A2)  
 German - 41 (C1)  
 Graduate House - 39 (C2)  
 Henson College - 51 (C2)  
 History - 54 (C1)  
 Howe Hall - 13 (B1)  
 Institute of Public Affairs (IPA) - 51 (C2)  
 Killam Library - 15 (B1)  
 King's College - 6 (A1)  
 Law Building - 17 (D1)  
 Life Sciences Centre - 2a,b,c (A1, A2)  
 Macdonald Science Library - 9 (B1)

Mathematics, Statistics and Computing Science - 8 (B1)  
 Medicine - 21 (E1)  
 Nursing, School of - 20 (E1)  
 Occupational Therapy, School of - 20 (E1)  
 Oceanography - 2b (A2)  
 Old Public Archives Building - 8 (B1)  
 Part-time Studies & Extension - 57 (C2)  
 Pharmacy, College of - 19 (E1)  
 Philosophy - 56 (C1)  
 Physics - 7 (B1)  
 Physiotherapy, School of - 20 (E1)  
 Political Science - 1 (B1, B2)  
 Psychology - 2c (A2)  
 Public Administration, School of - 15 (B1)  
 Public Relations - 15 (B1)  
 Recreation, Health & Phys. Ed., School of - 29 (B2)  
 Rink - 27 (B2)

Russian - 33 (B1)  
 Security and Traffic - 24 (C2)  
 Shirreff Hall - 3 (A2)  
 Sociology and Social Anthropology - 48 (C2)  
 Spanish - 33 (B1)  
 Student Union Building - 25 (C2)  
 Studley Gymnasium - 26 (B2)  
 Theatre - 16 (C1)  
 Tupper Building - 21 (E1)

For more specific locations of offices and departments, consult: The university switchboard, 424-2211, or the Halifax-Dartmouth telephone directory, or the Dalhousie telephone directory.



# Dalhousie University

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.

Dalhousie's student population has grown to over 10,000 students. To accommodate these, in a wide variety of undergraduate, professional, and graduate programs offered, Dalhousie occupies more than 60 acres in a residential area of the city 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 Archives building, the Atlantic Regional Laboratory of the National Research Council, major provincial hospitals, and the Dr. D.J. MacKenzie Laboratories are located in close proximity 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 on the Dalhousie campus, is an affiliated institution, and its students in Arts and Science receive Dalhousie degrees authorized in the name of both institutions. By agreement with Mount Saint Vincent University there is co-operation in access for students to various courses and services, and by agreement with the Technical University of Nova Scotia there are co-operative arrangements for engineering, engineering-physics, and computer science studies. By arrangement with the Nova Scotia Teachers College, graduates of that institution may complete education degree requirements at Dalhousie. Co-operation in a number of academic programs, in administrative services, and in use of library resources is also provided for in working arrangements with Saint Mary's University and other institutions in Halifax.

Arrangements have been concluded with the Nova Scotia Agricultural College, which provide for the award of degrees in Agriculture by Dalhousie in cooperation with the College.

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, by the alumni, by the Student Union and by certain other bodies. Internal regulation of the University is the primary concern of the Senate, subject to approval of the Board of Governors. The Senate consists of the President, Vice-Presidents, Deans of faculties and academic department heads, Registrar, full professors, other members of the academic staff elected from and by each faculty, six students elected by students, and certain other persons.

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.

Subject to the general approval of the Senate, seven faculties are responsible for supervision of programs of study, of teaching and research, and for the recommendation of candidates for degrees, diplomas, and university prizes.

## Faculties

Faculty of Arts and Science (the humanities, the physical, life and social sciences, some performing arts, education, introductory years in engineering);

Faculty of Health Professions (nursing, occupational therapy, pharmacy, recreation, physical and health education, physiotherapy, human communication disorders, social work and health services administration);

Faculty of Management Studies (commerce and business administration, public administration, library service);

Faculty of Medicine (basic medical sciences, medicine, medical internship and clinical specializations, continuing medical education);

Faculty of Law (law);

Faculty of Dentistry (dentistry, dental hygiene, and continuing dental education);

Faculty of Graduate Studies (advanced study in the humanities, the physical, life, social, and medical sciences, and a number of professions).

Coordination of continuing education programs both for degree credit and part-time studies and community education activities is being organized by the Dean of Continuing Education.

## Schools and Colleges

Business Administration  
Dental Hygiene  
Health Services Administration  
Human Communication Disorders  
Library Service  
Maritime School of Social Work  
Nursing  
Occupational Therapy  
Pharmacy  
Physiotherapy  
Public Administration  
Recreation, Physical and Health Education

## Institutes and Centres

Atlantic Institute of Biotechnology  
Applied Microelectronics Institute  
Atlantic Institute of Criminology  
Atlantic Region Magnetic Resonance Centre  
Atlantic Research Centre for Mental Retardation  
Canadian Centre for Marine Transportation  
Centre for African Studies  
Centre for Foreign Policy Studies  
Centre for International Business Studies  
Centre for Marine Geology  
Centre for Regional and International Development Projects  
Dalhousie Ocean Studies Program  
Institute for Resource and Environmental Studies  
Institute of Oceanography  
Institute of Public Affairs  
Lester B. Pearson Institute for International Development  
Trace Analysis Research Centre

## Academic Programs and Information Sources

In 1986-87 Dalhousie will offer the following academic programs. The normal years of full-time study are shown. Information about each may be found in the relevant University calendar.

### Faculty of Arts and Science

Bachelor of Arts (Major 3 years, Honours 4 year)  
 Bachelor of Science (Major 3 years, Honours 4 years)  
 Diploma in Engineering (2 years)  
 Bachelor of Education (Sequential) (1 year post BA, BSc)  
 Bachelor of Education (Integrated) (4 years for BA or BSc with BEd, 5 years for BPE with BEd)  
 Bachelor of Music (4 years)  
 Bachelor of Music Education (4 years)  
 Certificate in Costume Studies (2 years)  
 Diploma in Costume Studies (3 years)  
 Diploma in Meteorology (1 year)  
 Certificate in Educational Administration (minimum 1 year)

### Faculty of Management Studies

Bachelor of Commerce (Major and Honours 4 years)  
 Certificate in Public Administration (1 year)

### Faculty of Health Professions

Bachelor of Physical Education (4 years)  
 Bachelor of Recreation (4 years)  
 Bachelor of Science (Health Education) (4 years)  
 Bachelor of Science (Nursing) (4 years)  
 Bachelor of Nursing (with previous RN) (3 years)  
 Bachelor of Science in Pharmacy (4 years)  
 Residency Program Pharmacy (1 year) (post BSc Pharm)  
 Bachelor of Science (Physiotherapy) (3 years Physiotherapy following one year of Arts and Science or minimum 2 years post Diploma program)  
 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)

### Faculty of Dentistry

Doctor of Dental Surgery (4 years)  
 Postgraduate Certificate in Periodontics (2 years)  
 Diploma in Dental Hygiene (2 years)

### Faculty of Law

Bachelor of Law (3 years)  
 Bachelor of Laws with Master of Business Administration (4 years)

### Faculty of Medicine

Doctor of Medicine (4 years)  
 Intern Year (1 year)  
 Residencies (various programs ranging from 2-6 years post-intern)

### Faculty of Graduate Studies

Master of Arts (1 or 2 years, with thesis) in Classics, Economics, Education, English, French, German, History, Mathematics, Philosophy, Political Science, Psychology, and Sociology  
 Master of Science (1 or 2 years with thesis) in Anatomy, Biochemistry, Biology, Chemistry, Geology, Health Education, Human Communication Disorders, (Audiology or Speech Pathology), Mathematics, Microbiology, Oceanography, Oral Surgery (4 years), Pathology, Pharmacology,

Pharmacy, Physical Education, Physics, Physiology and Biophysics  
 Doctor of Philosophy (2 or 3 years, with thesis) in Anatomy, Biochemistry, Biology, Chemistry, Classics, Economics, Education, English, Geology, History, Interdisciplinary Studies, Mathematics, Microbiology, Oceanography, Pharmacology, Pharmacy, Philosophy, Physics, Physiology and Biophysics, Political Science, Psychology  
 Doctor in the Science of Law (2 or 3 years, with thesis)  
 Master of Arts in Teaching (French) (2 years)  
 Master of Business Administration (2 years)  
 Master of Education (1 year)  
 Master of Environmental Studies (1 or 2 years)  
 Master of Health Services Administration (2 years)  
 Master of Laws (1 year)  
 Master of Library Service (2 years)  
 Master of Public Administration (2 years)  
 Master of Development Economics (2 years)  
 Master of Nursing (2 years)  
 Master of Social Work (1 or 2 years)  
 Diploma in Public Administration with Bachelor of Laws (4 years)

## Honorary Degrees

The degree of Doctor of Laws may be conferred *honoris causa tantum* upon approval of the Senate in recognition of significant contributions to society. All other degrees earned in course are approved by Senate.



# Special Institutes

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

## The Institute of Public Affairs

Acting Director: M. Cross, BA, MA, PhD

Aided by a grant from the Rockefeller Foundation, Dalhousie University established its Institute of Public Affairs in 1936. The Institute was conceived as an experimental centre, a bridge between University and community in the area of social science and public policy.

The work of the Institute involves applied research and continuing education in four program areas: (1) social and economic policy studies; (2) public administration; (3) industry, with programs for developing management capability, for training labour leadership, and for developing effective management-labour relationships; and (4) community service. Institute activities focus on matters of regional, provincial, and local concern.

The Henson Centre, on the southeast corner of University Avenue and Seymour Street, is designed as a conference centre for the Institute's own programs and as a community meeting facility. Institute staff are available to assist groups in organizing and conducting workshops, seminars, and other events. The Institute of Public Affairs Library serves the Institute's own research staff, and is open to students and faculty of the University and to the general public. The Institute Publications Unit, which publishes and distributes Institute-related studies, conference reports, occasional papers and reprints, has a current list of more than one hundred titles.

## The Atlantic Institute of Criminology

Director: R. C. Kaill, BA, MDiv, MA, PhD

The Atlantic Institute of Criminology has been established to provide a criminological research and career-development facility in the Atlantic Region, equivalent to those existing in other regions of the country. Scholarships for graduate students in Criminology have already been announced for the current academic year. An interdisciplinary graduate program in criminology is also projected.

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

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

## Dalhousie Ocean Studies Program

Director: E. Gold, BA, LLB, PhD, FNI, MCIT, MRIN

The Dalhousie Ocean Studies Program (DOSP) was established in the summer of 1979, chiefly as the result of a major five-year negotiated grant from the Social Sciences and Humanities Research Council of Canada and substantial support by Dalhousie University. DOSP's current research activities include: (1) economic zone policy and legislation studies; (2) marine pollution regulation studies; (3) Canadian shipping law and policy studies; (4) studies of ecosystem management problems in the Gulf of Maine and Bay of Fundy; (5) Nova Scotia rural coastal community studies; (6) maritime boundary delimitation studies; (7) studies of ocean law, policy and management in the Eastern Caribbean; and (8) bibliographical services in ocean law, policy and management. Extension into further study areas is planned. DOSP has

also undertaken training responsibilities in the field of ocean law, policy and management in conjunction with other institutions, and participates in a wide range of conference and workshop activities in many parts of the world.

## The Institute of Oceanography

Director: A. J. Bowen, MA, PhD

Established in 1959, the Institute has received continuous support through grants from the National Research Council of Canada. It forms part of a major marine research establishment in the Halifax area and maintains the Aquatron Laboratory, a marine research facility containing large seawater tanks and controlled-environment labs. The facility is available to researchers from universities, governments, and the private sector.

## The Atlantic Research Centre for Mental Retardation

Director: M.W. Spence, MD, PhD

Established in 1967, the Centre conducts basic biomedical research and population studies in the field of mental retardation. It also provides education in this field to undergraduate and graduate students and the general public. Special tests and consultative services for the prevention and treatment of diseases causing mental retardation 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 Department of National Health and Welfare, the Scottish Rite Charitable Foundation of Canada, and the governments of the three Maritime provinces, and by private donations.

## The Atlantic Region Magnetic Resonance Centre

Director: W.A. Aue, PhD

Established in 1982 with assistance from the Natural Sciences and Engineering Research Council, the Centre is concerned with teaching and research programs in magnetic resonance. The Centre has modern nuclear magnetic resonance (NMR) and electron spin resonance (ESR) instruments including a 360 MHz Narrow Bore Nicolet NMR instrument.

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 of eleven universities and research institutes in the Atlantic Region.

## The Centre for Foreign Policy Studies

Director: R. Boardman, BSc, PhD

Established in 1971 with the assistance of a grant from the Donner Canadian Foundation, the Centre is concerned with teaching, research and other professional activities in various aspects of foreign policy and international politics. The work of the Centre is concentrated in the following areas: Canadian Foreign Policy, Maritime and Strategic Studies, and International Political Economy and Developmental Studies. Geographical specializations include African, Chinese, European and American foreign policy.

The Centre is affiliated with the Department of Political Science at Dalhousie University. Centre faculty offer courses in the Department on international relations, foreign and defence policy at both undergraduate and graduate levels. They also supervise masters and doctoral students in these fields.

## The Trace Analysis Research Centre

Director: D.E. Ryan, BSc, MA, PhD, DIC, DSc

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.

### **The Institute for Resource and Environmental Studies**

Director: A.J. Hanson, BSc, MSc, PhD

This Institute was established in 1973 with a supporting grant from the Province of Nova Scotia. It provides a mechanism for coordinated and interdisciplinary research on natural resource management and environmental problems of applied significance in Canada or abroad. The Master of Environmental Studies graduate degree program is offered through the Institute.

### **The Centre for African Studies**

Director: T.M. Shaw, BA, MA, PhD

This Centre, established in 1975, coordinates a teaching and research program in African Studies. Its staff hold primary appointments in departments in the social sciences and the humanities. It organizes postgraduate/staff seminars on Africa and encourages interdisciplinary interaction at all levels on African subjects and issues.

### **The Centre for International Business Studies**

Director: A.M. Rugman, BA, MSc, PhD

The Centre was established in 1975 with the aid of a grant from the Department of Industry, Trade and Commerce. Its purposes include the provision of specialist training in international business studies and research in international business. It carries out these functions within the administrative framework of the School of Business Administration.

### **The Canadian Centre for Marine Transportation**

Director: J. Gratwick, BSc

Established in 1977 with federal and provincial support, the Centre encourages interdisciplinary studies of marine transportation issues from a Canadian perspective. Centre research studies are funded by various public and private sector sources. Student research assistantships which result provide research experience in the marine transportation field. The Centre also facilitates graduate student applications for "Transportation Fellowships" offered annually by Transport Canada.

### **Centre for Regional and International Development Projects**

Director: D. Cherry, BComm, MBA, CMA

The Centre was established at Dalhousie University, in 1979, as an extension of work being undertaken by Dalhousie faculty in the broad field of economic development projects and studies. Although the Department of Economics nurtured its formation, the Centre has subsequently become interdisciplinary in character and is completely separate from the department.

The Centre for Development Projects strives to encourage and facilitate further involvement by Canadian faculty and students in significant international development projects, and to initiate and direct such projects in cooperation with institutions in the Third World. Outside personnel with appropriate experience are encouraged to spend time with the Centre, as are Dalhousie faculty to take secondment with appropriate development agencies in Canada and overseas as well as participating in particular development projects.

The Centre primarily focuses on the implementation and management of international development programs and projects, and has been responsible for the direction of a number of training and applied research projects in Ghana, Zimbabwe, the Caribbean and India. An annual review is available which discusses the range of activities historically undertaken by the Centre.

### **Lester Pearson Institute for International Development**

Director: T.M. Shaw, BA, MA, PhD

The Pearson Institute is a new organization, funded by the Secretary of State, which aims to enhance Dalhousie's role in development studies,

education and projects. Founded in mid-1985, this Institute is intended to promote Dalhousie's Third World activities in collaboration with established development centres and agencies. Major activities include public lectures and conferences, seminar series, applied and theoretical research, publications, training programs and input into public policy on Canada's role in international development. The Institute advances international development degree and non-degree programs and hosts the University Chair in Development Studies.

### **The Atlantic Institute of Biotechnology**

Director: R. Bidwell, BSc, BA, MA, PhD

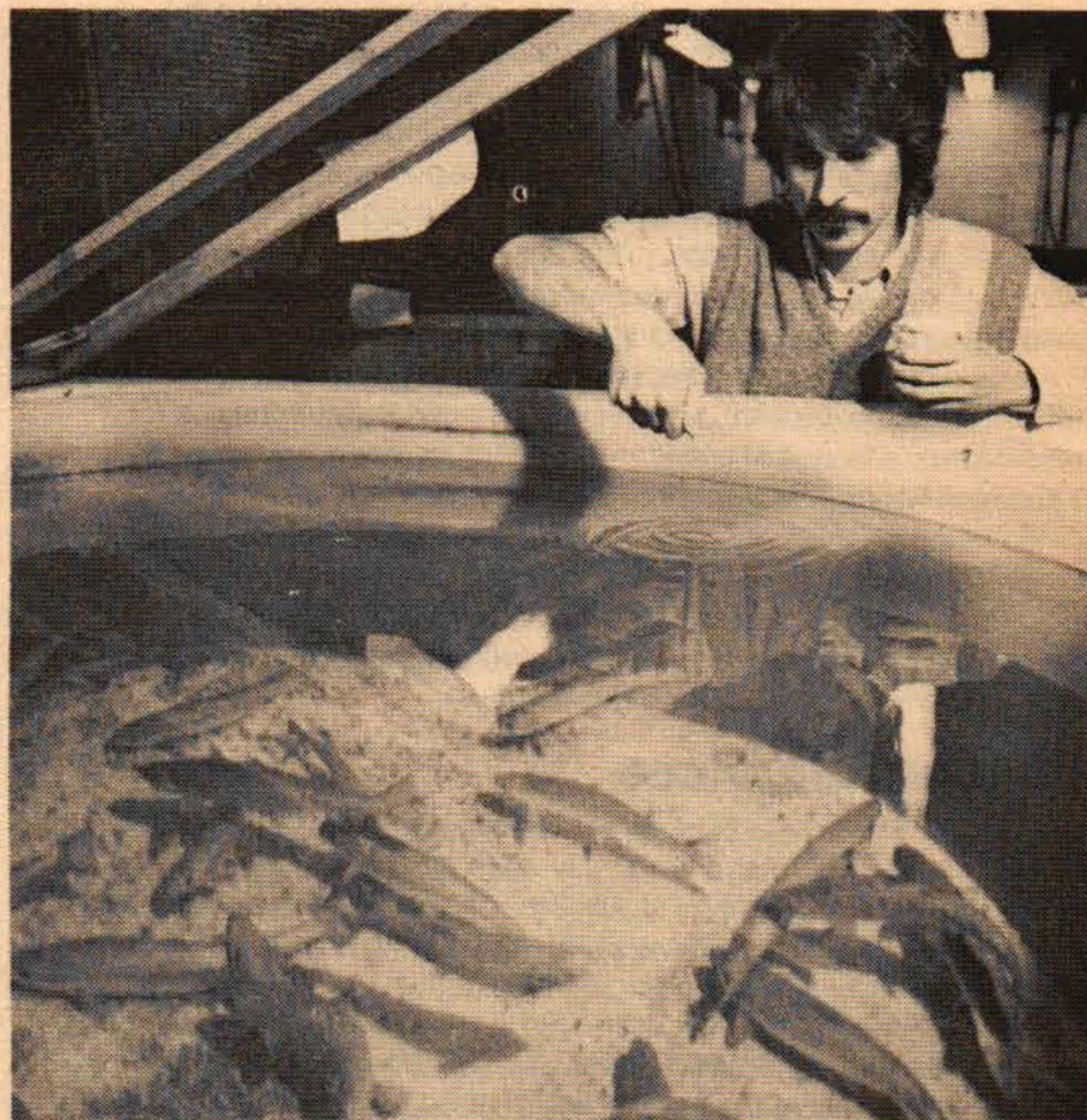
The Atlantic Institute of Biotechnology was established in 1985 with funding from the Department of Regional Industrial Expansion. Its purpose is to assist industry in Atlantic Canada to improve biologically-based processes, and to develop new manufacturing and industrial techniques.

The Institute's main areas of specialization are agricultural and forest technology, fermentation, aquaculture and microbial mining technology. In addition, work is undertaken for any industry on biological systems, including food production and processing, chemical production, biomass conversion, plant and animal nutritional systems and bio-pollution related problems.

### **Centre for Marine Geology**

Director: J.M. Hall, 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 Geology, 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.



# General Information

## Libraries

The Dalhousie University Library System is organized to accommodate the needs of the undergraduate teaching programs, graduate and faculty research projects, and professional schools. The system is made up of the following components: the University Library (Killam Library — Humanities, Social Science, and Mathematics; Macdonald Library — Sciences), the Sir James Dunn Law Library (temporarily located in the Killam Library), and the Kellogg Health Sciences Library.

As of April 1, 1985, the total Dalhousie University Library System holdings include over 1,519,000 volumes of books, bound periodicals, documents, and bound reports, 279,800 microfiche and microcards, and 120,000 data cards, maps, musical scores, and other media. 12,000 serials titles are currently received, and dead title holdings number over 6,000.

The University Library alone has a collection of over 613,000 volumes of books and bound serials, as well as a periodical collection of more than 6,100 current subscriptions, and a government documents collection of over 275,000 items. In addition to the traditional printed materials, the library is developing its resources in forms such as records and microforms.

## University Computing and Information Services

University Computing and Information Services (UCIS) is responsible for all centrally managed computing and communications facilities and services. These are available to faculty, staff and students for instructional, research and administrative purposes.

UCIS has three divisions. "Facilities and Operations" is responsible for the operation of central computers, hardware maintenance services, campus communications (including the telephone system) and central word processing and data entry services. "Academic Computing Services" provides consulting, education and documentation services related to the use of both large computers and personal computers. It is also responsible for support and maintenance of applications software for academic users. "Administrative Computing Services" is responsible for the selection, installation, development and maintenance of administrative computing systems, and for providing advice and education to users of administrative systems.

Currently, UCIS supports a Control Data Cyber 730 mainframe computer for general use, a couple of minicomputers for specific departments, plotters, public terminal laboratories and a microcomputer laboratory. A wide range of computer languages and applications software is available on the Cyber computer.

## Student Services

Located in Room 124 of the Arts and Administration Building, this office provides a point of referral for any student problems. The Dean coordinates the administration of Awards, Chaplaincy, Counselling and Psychological Services, University Health, the *Writing Workshop*, the Ombud Office, and is the International Student Adviser. Through the Council of Student Life, the Dean acts as liaison with the Deans of Residences and the Student Union. Active participation exists among the various divisions and the officials of Housing, Recreation, and the Federal Employment Office located on campus.

The Dean can assist students with any University related problem, and can offer direction in class or program selection to ensure compliance with the degree requirements of Dalhousie University. A special program has been developed for students requiring academic assistance. All divisions of Student Services co-operate in the program together with a number of departmental faculty advisers. Students who may experience difficulties are encouraged to consult with the Dean who reviews their situation and advises them of the various services available.

Many students, particularly those in their first year, experience difficulty in organizing and presenting written work. In an attempt to respond to this problem, the University provides a *Writing Workshop*. Attendance is on a voluntary basis. For further information call 424-2404.

Non-Canadian students should look to this office for assistance in matters related to immigration status, medical insurance or any matter of special concern to visa students.

Information about CUSO, WUSC and CBIE can be had through the Office of the Dean.

## Student Counselling Service

The Counselling and Psychological Services Centre offers programs for personal, career and educational concerns. Counselling is provided by professionally trained, male and female, Counsellors and Psychologists. Strict confidentiality is ensured. Counselling is available both individually and on a group basis. Topics covered by regularly offered group programs include Study Skills, Career Decision Making, Exam Anxiety Reduction, Public Speaking Anxiety Reduction, Assertiveness Training and Shyness Clinic, Resume Writing and Job Search Skills. Information on a wide variety of careers and academic programs is available in the 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 program.

The Counselling and Psychological Services offices and the Frank G. Lawson Career Information Centre are located on the 4th Floor of the Student Union Building. Inquire or make appointments by dropping in or calling 424-2081.

## Chaplaincy at Dalhousie

The University provides facilities for chaplains appointed by various churches. There are four full-time chaplains at Dalhousie, representing the Anglican, Roman Catholic, Lutheran, and United Church traditions. In addition, contact ministers are designated by the Baptist, Jewish, and Presbyterian traditions and can be reached through the Chaplains' Office on campus. The Chaplains' Office is located on the third floor of the Student Union Building. Office hours are Monday to Friday 9-5. 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 455-7971, or via the SUB Enquiry Desk 424-2140.

## University Health Service

The university operates an out-patient service, in Howe Hall, at Coburg Road and LeMarchant Street staffed by general practitioners and a psychiatrist. Further specialists' services are available in local hospitals 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.

In the event of emergency, students should telephone the University Health Service at 424-2171 or appear at the clinic in person. The university maintains health services on a 24-hour basis with a physician on call. The offices are closed from 10 p.m. to 9 a.m.

All students must have medical and hospital coverage approved by the Health Service. 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 University Health Service prior to registration. Any student who has had a serious illness within the last 12 months, or who has any chronic medical condition, should contact and advise the Health Service, preferably with a statement from his doctor.

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

## Housing 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 very low. It is therefore very important that students planning to attend Dalhousie think well in advance about their accommodation needs. It is fair to say two things about housing for Dalhousie students: first, early application for University residence is essential and second, students seeking off-campus housing should also begin to investigate that process well in advance of the beginning of term.

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. In each case the name of the person responsible is listed and telephone number provided.

**Please Note:** Academic acceptance by the University, i.e., admission to a course of study, **DOES NOT IN ANY WAY 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.

**Early application for university residences and housing is strongly recommended.** Applications will be received commencing January 1. Students are encouraged to complete their applications before March 1.

### A. Traditional Style On Campus Residence

**Howe Hall — Men** (located on corner of Coburg Rd. at LeMarchant St.)

Residence life offers a major opportunity to meet many students of diverse backgrounds, beliefs, opinions and cultures. The challenge of group living can be both rewarding and educational.

In order to encourage closer bonds within a fraternal atmosphere, Howe Hall Men's Residence is divided into five houses: Henderson, Studley, Smith, Bronson and Cameron.

Each house has its own identity and yearly elects a President who sits on the Howe Hall Residence Council. Howe Hall provides fully furnished accommodation for 525 male students in single and double rooms. The double rooms constitute 50 per cent of the accommodation and are normally filled by first year students. The majority of other rooms are assigned to undergraduates and for this reason graduate students may

wish to seek accommodation elsewhere. Central dining is provided in two dining rooms. Television lounges, a games room, squash courts, weight room and laundry facilities are readily available. A comprehensive intramural sports program is administered by the Residence Council.

Applications should be submitted early since accommodation is limited.

Direct inquiries to: Patrick J. Donahoe, Dean of Men, Howe Hall, Dalhousie University, Halifax, Nova Scotia B3H 4H5. Phone (902) 424-2107.

**Shirreff Hall — Women** (located at the corner of South and Oxford Streets)

The residence provides opportunities for students to become a part of a community and to participate in a variety of educational, cultural and recreational experiences. Residential living is an integral part of a student's development, where leadership, responsibility and other pertinent life skills are enhanced. To achieve this, senior students (Residence Assistants, Floor Presidents and Vice-Presidents) are trained to work with the residents in their areas to create a communal environment that contributes to their intellectual, social and personal growth.

There are 3 sections in Shirreff Hall — Old Eddy, New Eddy and Newcombe — which accommodate 444 students in single and double rooms. One-half of the residence is reserved for first-year students and the other half for more senior students in undergraduate programs. First-year students are normally assigned to double rooms. In the centre of the building is the dining room, providing full meal services. The building also contains a library, television lounges, study hall, exercise room, kitchenettes and laundry rooms. Student rooms are furnished as study bedrooms.

A varied and active social and sports program is co-ordinated under the auspices of the self-governing Residence Council.

Early application for all accommodation is advisable. Inquiries should be directed to: Mrs. Pamela Stonehouse, Dean of Women, Shirreff Hall, Dalhousie University, Halifax, Nova Scotia B3H 4J4. Phone (902) 424-2577.

### B. Off Campus, University Owned Housing

**Co-Ed Residence — Fenwick Place** (5599 Fenwick Street, a 15 minute walk from campus-also on City Transit Route).

Fenwick Place is Dalhousie University's 33 storey high-rise apartment residence. Several one and two bedroom apartments, as well as the two bachelor apartments per floor, are rented to married and single students respectively as conventional apartments. These apartments have a full kitchen with refrigerator, stove and ample cupboard space, a full bathroom and balcony. There is also a storage room in every apartment. Except for the stove and refrigerator the above apartments are unfurnished. Heat and hot water are included in the rent but tenants must make their own arrangements for electricity and telephone. Drapery tracks, draperies and carpets are not provided.

The remaining apartments in Fenwick Place are furnished to accommodate students in groups of two, three or four. Priority will be given to those who apply in complete groups of two, three or four. A four person apartment consists of four single bedrooms. A three person apartment consists of one single bedroom and one double (shared) bedroom. A two person apartment consists of two single bedrooms. All apartments have full kitchen with refrigerator and stove, a full bathroom, furnished living room and dining room and a balcony. All beds are single, bunk-style with a folding backboard that allows the bed to be used as a settee. Dresser drawers (built in under the bed), a desk with a bookcase and ample closet space are provided. Please note that meals, maid or

room service are not provided. Dishes, cooking utensils, cleaning equipment and small appliances must all be provided by the students. Students must make their own arrangements for telephone; however electricity is included in the residence fees.

All inquiries and applications should be directed to: Mrs. Janice Irving, Manager, Fenwick Place, 5599 Fenwick Street, Halifax, Nova Scotia B3H 1R2. Phone (902) 424-2075.

**Ardmore Hall — Women** (1 mile from campus at the corner of North and Oxford Streets on the City Transit Route)

Ardmore Hall is an undergraduate residence with accommodation for 58 students. At least half of the residence is reserved for first year students.

A distinctive feature of Ardmore Hall is that student kitchens are available. A student may either prepare her meals or she may purchase a meal ticket for residence dining halls. Furnishings are similar to Shirreff Hall and the operation of the building is along the same traditional line as Shirreff Hall.

Early application for all accommodation is advisable. Inquiries should be directed to: Mrs. Pamela Stonehouse, Dean of Women, Shirreff Hall, Dalhousie University, Halifax, Nova Scotia B3H 4J4.

**The Women's Residence Houses** (within walking distance of campus)

The women's residence houses are former family residences and contain a kitchen and lounge. Most houses are reserved for students in the professional schools and graduate studies, but a few houses are available for undergraduate students.

Early application for all accommodation is advisable. Inquiries should be directed to: Mrs. Pamela Stonehouse, Dean of Women, Shirreff Hall, Dalhousie University, Halifax, Nova Scotia B3H 4J4.

In Ardmore Hall, and the Women's Residence Houses, all rooms are furnished as study-bedrooms. Blankets, sheets, pillow and case, hand towels, drapes and bedspreads are provided. Students must supply their own cooking utensils, small appliances, china and cutlery for use in the students kitchens. Each student is responsible for cleaning her room. Common rooms and facilities are cleaned by staff.

**Glengary Apartments — Women** (situated on Edward Street, 5 minutes walk from main campus)

Glengary Apartments is a furnished building with accommodation for 52 students in 12-4 person apartments and 4 bachelor apartments. It is situated within walking distance of the campus. Preference for the four person apartments will be given to students in their third or second year of an undergraduate program, who apply in groups of four. These apartments contain 2 single rooms, 1 double room, kitchen, living room and bathroom.

Early application for all accommodation is advisable. Inquiries should be directed to: Mrs. Pamela Stonehouse, Dean of Women, Dalhousie University, Halifax, Nova Scotia B3H 4J4.

**International Student Housing** (5 minutes walk from main campus) (Available only to students arriving in Canada for their first year at Dalhousie).

Dalhousie University provides off-campus housing in three rooming houses. The rooming houses consist mainly of single rooms, with some cooking facilities, but shared bath. The rooms are furnished with a bed, desk, drapes and chairs. Most of the single rooms have a common bath and kitchen area. Paper towels, toilet tissue, garbage bags and light bulbs are supplied, COOKING UTENSILS ARE NOT. Heat, hot water, and electricity are supplied, but tenants must make their own arrangements for telephone. MEALS, MAID OR ROOM SERVICE ARE NOT PROVIDED.

Inquiries should be directed to: Mrs. Janice Irving, Manager Fenwick Place, 5599 Fenwick Street, Halifax, Nova Scotia B3H 1R2.

**Apartment Units — Co-Ed** (5 minutes walk from main campus)

Dalhousie University offers off campus housing in two apartment buildings on University Avenue consisting of bachelor, one and two bedroom units.

The apartments have a fridge and stove, ample cupboard space, and a full bathroom. The apartments are unfurnished except for the stove and fridge. Heat and hot water are included in the rent but tenants must make their own arrangements for electricity and telephone. Drapery tracks, drapes and carpets are not provided.

Inquiries should be directed to: Mrs. Janice Irving, Manager, Fenwick Place, 5599 Fenwick Street, Halifax, Nova Scotia B3H 1R2.

**General Information**

All application forms must be accompanied by a deposit in Canadian funds. No applications will be processed until the deposit is received. Deposit amounts will be stated on the application forms.

Students living in residence MUST maintain FULL TIME status at Dalhousie University.

**C. Off Campus Listing Service**

The University Housing Office on the main floor of the Student Union Building on University Avenue, co-ordinates information on housing, apartments and other accommodation offered for rent in the Halifax-Dartmouth area. Information is posted on notice boards outside the Housing Office and a phone is provided for use in calling prospective landlords. A list of temporary accommodation, as well as a list of rental agents in the area are available through the office. Office hours are sometimes extended during peak periods in late August and early September.

Inquiries should be directed to: Mrs. Sheila Fougere, Manager, Off-Campus Housing, Room 120, Dalhousie Student Union Building, Halifax, Nova Scotia B3H 4J2, (902) 424-3831.

**Dalhousie Student Union**

*President, Student Union:* Catherine Blewett

*Vice-President:* Reza Rizvi

*Treasurer:* Neil Ferguson

*General Manager, Student Union:* A.P. Beckett, BCom, CA

The Dalhousie Student Union is an incorporated body comprising all full-time students of Dalhousie University, and other students who have paid their union fees of \$99. The objects of the Union include acting as the official organization of the students of Dalhousie, and promoting activities for the advancement of its members. Government of all extra-curricular student activities is another Union responsibility.

Because of Dalhousie's diverse student population, the central Council has two tiers of student government. Matters of concern only within a particular faculty or degree program are usually dealt with by the relevant major society, while matters of general interest are under the direct control of the Students' Council. Council has given the major societies power to collect compulsory fees.

The Union regulates scores of student organizations, represents students throughout the University and, wherever possible, provides services to students as requested. Through the Union's efforts, students operate their own building, and the Union budget is now in excess of a million dollars.

The Union employs a staff to administer its affairs and to enable the Union to carry out its obligations. Supervision of the staff is generally entrusted to the General Manager, a full-time employee of the Student Union who is responsible to the President and to Council. His job is

largely administrative, but he is often called on for information and advice by the Council or other Union organizations. About eight full-time employees provide continuity and expertise. The Union uses its need for employees as a source of part-time work for students.

Every student has the opportunity to take advantage of the Union's financial, physical and organizational resources. To use that opportunity you should know who represents you on Council and who are the members of the Executive. The Student Council office is located on the second floor of the SUB and is open from 8:30 a.m. to 5:00 p.m. Monday through Friday. Council members have mail boxes located in that office. Union Executive officers also have offices in the SUB. Their office hours are usually posted, or messages can be left for them in Room 222 or at the Enquiry Desk.

## Student Clubs and Organizations

Extracurricular activities and organizations at Dalhousie are as varied as the students who take part in them.

Organizations range from small informal groups to large well organized ones; they can be residence-based, within faculties, or university-wide.

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.

## Dalhousie Arts Centre

The region's major art gallery and the performing arts centre on the Dalhousie campus are active places indeed. The Dalhousie Art Gallery and the Rebecca Cohn Auditorium attract major exhibitions and regional, national, and international entertainment.

Dalhousie theatre productions and the Dal music department offer outstanding opportunities for student expression and performance.

## Athletics

Dal's main building for athletics and recreation is recognized as a superb international-class sport facility. "Dalplex" sports programs welcomes students of all skill levels.

The Division of Athletics and Recreation offers a well-diversified program for every student at Dalhousie University. For those interested in highly competitive sports, there is a broad selection of inter-collegiate activities. For those who enjoy competition and friendly rivalry there is an interfaculty athletic program. For those interested in recreational activities on a casual or club basis opportunities exist.

Dalhousie is a major participant in regional varsity sports through the Association of Atlantic Universities and the Canadian Intercollegiate Athletic Union.

## Alumni Association

The Alumni Association is composed of over 31,500 former students of the University. It operates a number of programs, including reunions, branch receptions, sports events, information lectures, and a tutoring service. The association also publishes the *Dalhousie Alumni Magazine* which is sent to all Alumni and friends of the University.

The association sponsors a Student Leadership Conference, Scholarships and bursaries, the Alumni Award for Teaching Excellence and arranges for alumni representation on the Board of Governors.

## Canadian Armed Forces

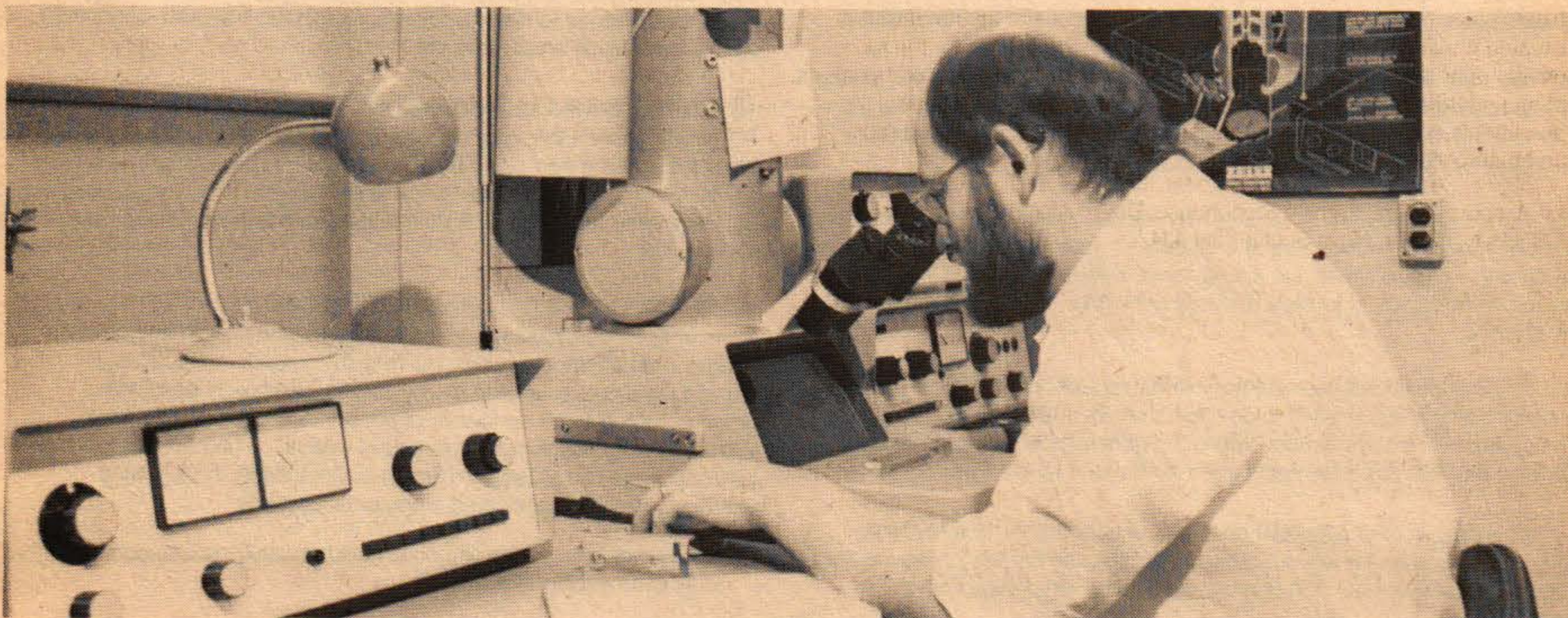
The Regular Officer Training Plan (ROTP), Medical Officer Training Plan (MOTP) and the Dental Officer Training Plan (DOTP) are completely subsidized university plans covering tuition, books, medical services, monthly pay and summer employment for up to four years of undergraduate study. Successful applicants serve as commissioned officers in the Canadian Armed Forces for varying compulsory periods after graduation.

For further information on above plans, contact a Canadian Forces recruiting centre.

## Awards Office

Director: G.G. Steedman, BA

The awards office offers information and assistance with respect to Dalhousie Scholarships, Bursaries and Prizes, the Canada Student Loan Program, Provincial Loan and Bursary Programs, and Dalhousie Loan Funds. Students with financial problems are encouraged to ask for advice at our office. Further information may be obtained from the Awards Office, Room 125, Arts & Administration Building. A booklet, Scholarships, Prizes and Financial Aid, is available from the office.





# University Regulations

NOTE: All of the regulations in this section may not apply to Graduate Students. Please check "Faculty of Graduate Studies" section commencing page 23.

## General

1. 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.
2. Place of Residence of Students. 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.
3. No person under sixteen years of age is admitted to any class except by special permission of the Senate.
4. All students must agree to obey all the regulations of the University already made or to be made, and pay the required fees and deposits before entering any class or taking any examinations.
5. Students taking classes in another Faculty as part of an affiliated course must conform to the regulations of that Faculty with respect to these classes.
6. A student is not eligible to register unless all previous accounts, including fees, library fines, and other fines to the University have been paid.
7. Late registration requires the approval of the Dean of the Faculty.
8. Withdrawal: See the individual faculty regulations and the fee section.
9. Tuberculin Test: In the interests of public health in the University, students are encouraged to have a tuberculin test. This is compulsory for Dental, Dental Hygiene and Physiotherapy students. Facilities for testing are arranged by the University Health Services.
10. Transcript of Record: A student may receive only an unofficial transcript. Official transcripts will be sent at a student's request to other universities, or to business organizations, etc. on payment of the required fee. If a student so requests, copies of a medical certificate will be enclosed with the transcripts.
11. 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 Governors. Within the general policies approved by Senate, academic requirements are administered by the Faculty concerned.
12. 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.

13. If a student is required to withdraw from a Faculty because of failure to maintain adequate academic standing, such a student may apply to another Faculty. However, in assessing the application, previous performance may be taken into consideration.

14. Students whose accounts are delinquent on March 15 will not be eligible for graduation at the May convocation. For October or February graduation the dates are Sept. 1 and Jan. 1 respectively.

## 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 offences (which is delegated to the Senate Discipline Committee), as well as certain other offences.
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.

## Examples of Academic Offenses

### (a) Plagiarism

Plagiarism is considered a serious academic offence which could lead to loss of credit and suspension from the University. Plagiarism may be defined as the presentation by an author of the work of another author, in such a way as to give one's reader reason to think that the other author's work is one's own. A student who is in any doubt as to what constitutes plagiarism is urged to discuss the matter with the instructor concerned *before* completing an assignment.

### (b) Irregularities in Admissions Procedures

A member of the University 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 offence and is liable to a penalty.

### (c) 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 program, 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:

- (i) arranging for or availing oneself of the results of any personation at any examination or test, or,

- (ii) attempting to secure or accepting assistance from any other person at any examination or test, or,
- (iii) having in one's possession or using any unauthorized material during the time that one is writing any examination or test, or,
- (iv) without authorization procuring a copy of an examination, test or topic for an essay or paper, or,
- (v) 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,
- (vi) 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 program.

## Senate Discipline Committee

### 1. Composition

Academic Offences are dealt with by the Senate Discipline Committee, which consists of five members, three of which are members of the Senate and two of which are students.

### 2. Terms of Reference

- (a) The Senate Discipline Committee is vested with original jurisdiction to consider all complaints or allegations respecting offences 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.
- (b) The Senate Discipline Committee shall assume jurisdiction when a complaint or allegation respecting offences or irregularities of an academic nature are brought to its attention by the Secretary of Senate.
- (c) The Senate Discipline Committee shall report its findings and any penalty imposed to the Secretary of the Senate. The Secretary of the Senate shall forward a copy of the report to any member of the University community whom the Senate Discipline Committee has found to have committed an offence or irregularity and if the member concerned be other than a student a copy shall also be sent to the Vice-President (Academic).
- (d) If the member of the University found to have committed an offence or irregularity is a student, he may appeal to Senate any finding or any penalty imposed by the Senate Discipline Committee by advising the Secretary of the Senate in writing within 30 days of receipt of the report by the student.
- (e) The Senate Discipline Committee, when it finds that a member of the University who is a student has committed an academic offence or irregularity may impose one or more of the following penalties:
  - (i) loss of all credit for any academic work done during the year in which the offence occurred;
  - (ii) suspension of rights to attend the University for a specified period;
  - (iii) dismissal from the University;
  - (iv) such lesser penalty as the Committee deems appropriate where mitigating circumstances exist.

## Definitions

**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.

**Graduate Students:** students who are enrolled in the Faculty of Graduate Studies.

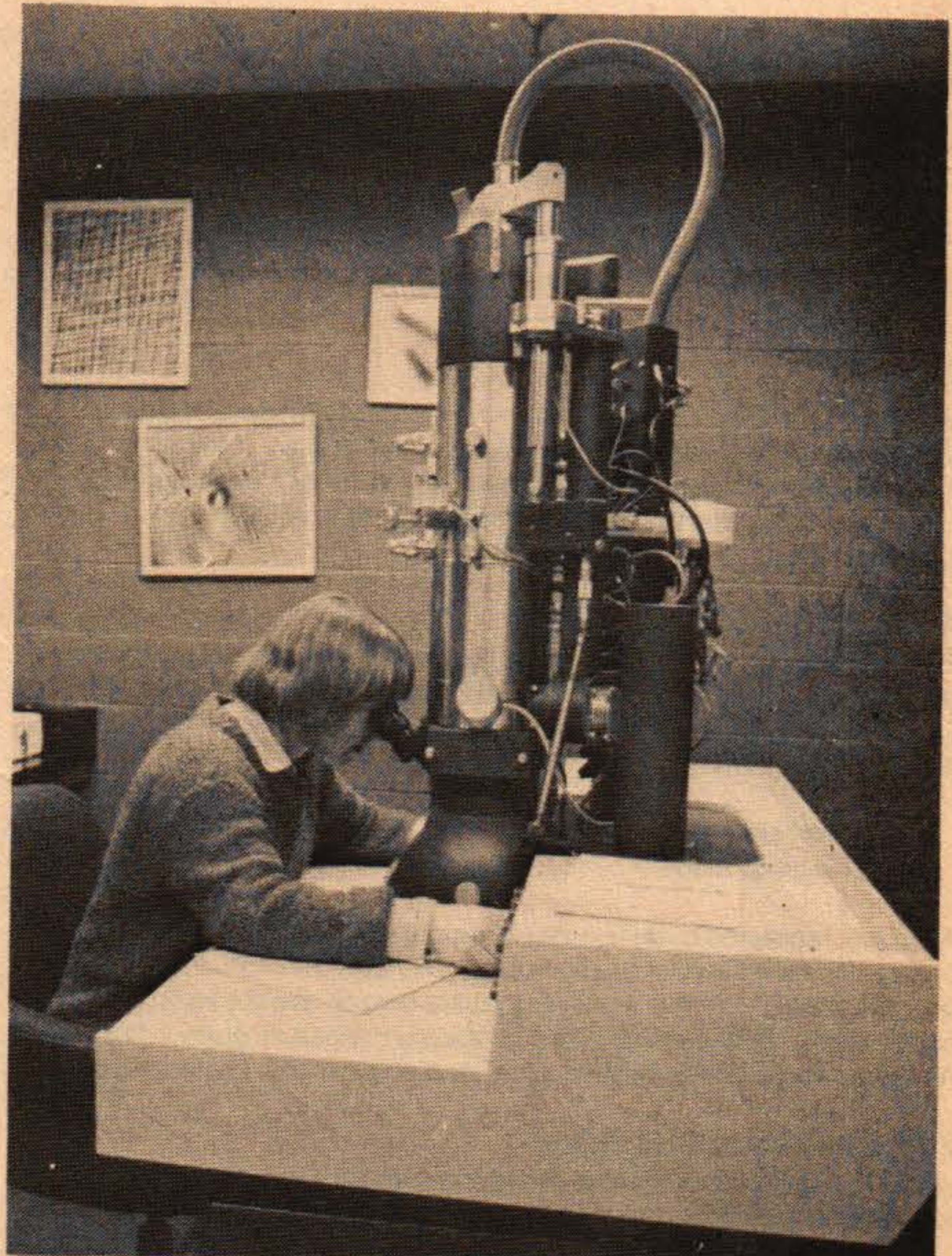
**Matriculation Standing:** Senior Matriculation designates the level of studies attained by students who have successfully completed Grade XII in public high school in Nova Scotia or its equivalent elsewhere.

**No-degree Students:** students who are not candidates for a degree or diploma but who wish to take one or more university classes which may be allowed for credit. This is not the same as auditing a class. No-degree students must satisfy normal admission requirements.

**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.

**Undergraduates:** students who are candidates for an undergraduate qualification.



# Fees

## Full-time Students

For fee purposes, full-time undergraduate students are those registered for fall and winter terms for more than three full credits, or if registered for only one term, for more than three one-half credits. (For other purposes, there is another definition.) Students other than graduate students may be registered full-time in one term and part-time in the other.

## Fees 1985-86

The 1986-87 fee schedule was not available at the time of printing this calendar. It will be available from the Student Accounts Office by June 86.

Fees are due and payable at registration but if preferred, those registered for fall and winter terms may pay in two installments, the first due by September 30, 1986, the second by January 25, 1987.

Students whose accounts are more than 30 days in arrears are considered financially dismissed from the University.

To be reinstated the student must pay the arrears in full, the interest on the arrears and a \$50.00 Reinstatement fee.

Please note the fee reduction if paid in full before August 31, 1986.

## Foreign Students

Students registering at Dalhousie who are not Canadian citizens or permanent residents are required to pay an additional fee of \$1700.00 for new students or new to program and \$1435.00 for returning students in the same program, if registered on a full-time basis, or if registered part-time, a proportionate fee related to their part-time studies. (Any assessed differential must be paid in full with the first installment, and is payable each session the student attends as a visa student).

## Dalplex

Membership at Dalplex is included in the University fee for all full-time students at Dalhousie and all part-time students at Dalhousie taking three full credit courses. Membership in Dalplex for ALL other part-time students at Dalhousie may be obtained at the office of Dalplex at prevailing rates.

## Audit Students

Full time students may audit classes (where this is permitted), which are related to their programs without additional fees. Part-time students who wish to audit classes are required to register and pay fees at registration on the following basis:

One-half credit class	\$78.00
One full credit class	\$156.00

A student registered to audit a class who during the session wishes to change to registration for 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 before the last date for adding classes as given in the Almanac. The same deadline applies for a change from credit to audit.

## Summer Session Students

Students registered for the first or second summer session are expected to register on the specified registration dates, otherwise a late

registration fee must be paid. For full information, see the Summer School Calendar, available from the Director of the Summer School.

## Regulations for Payment of Fees

Fees must be paid in Canadian funds by cash or negotiable cheque. If payment is by cheque and returned by the bank as non-negotiable, the account will be considered unpaid and there will be an additional fee of \$15.00. If the cheque was to cover the first payment on tuition, the student will not be considered registered and, if applicable, the late fee for registration will apply.

## Application Fee

An application fee of \$15.00 is required with the application form submitted by any student for any program except one in which the applicant has been previously enrolled. If the fee is paid for a given session, and the applicant does not attend, whether accepted or not accepted, and an application is made for a subsequent session, the fee is again payable. Application fees are not refundable and are not applied as a credit to class fees.

## Admission Deposit

A deposit of \$100.00 is required by all new students (except in Law, where the required deposit is \$200.00) within three weeks of receipt of an offer of a place at Dalhousie. In some programs there is a partial refund for students who notify the Registrar's Office in writing of cancellation of their application by August 1. There is no refund for limited enrolment programs. Where fees in full are payable by a government or other agency, any deposit paid by an individual will be refunded to the student by November 15, unless the account is not paid by November 1. In this case the refund will be made as soon as payment is received.

## Registration Fees

All students are expected to register on or before the specified dates. To complete registration a student is required to complete the registration process, including any necessary class selection or approval, and to pay a minimum fee of \$50.00 unless a deposit of at least this amount has been made. This payment must be made by all students including those on scholarships, fellowships, student loans, or whose fees are to be paid by external agencies, and commits the student to the payment of the balance of fees unless formal action to withdraw is taken in writing at the Registrar's office.

## Late Registration

Students are expected to register on or before the dates specified in the almanac.

Late registration requires the approval of the Dean of Faculty.

The late fee is \$50.00 to September 30, \$100.00 thereafter.

Note 1: For those registering for the winter term only, read Jan. 30 instead of Sept. 30.

Note 2: For summer school registration, use the summer school calendar, which may be obtained from the Office of the Registrar or the Office of Continuing Education.

## Fees 1985-86

	University Fee	Student Union Fee <sup>1</sup>	Society Fee	TOTAL	If paid by TWO installments		
					If paid before Aug. 31, 1985 pay only	At Registration	Balance Jan. 25/86
<b>Graduate Studies</b>							
Full time	1,570.00	99.00	20.00	1,689.00	1,658.00	1,150.00	539.00
Full time MBA	1,570.00	99.00	35.00	1,704.00	1,673.00	1,150.00	554.00
Part-time for Degree	541.00	40.00	10.00	591.00	580.00	390.00	201.00
Thesis-only Full-time	244.00	99.00	20.00	363.00	363.00	363.00	—
Thesis-only Part-time	244.00	29.50	10.00	303.50	303.50	303.50	—
MSc Dentistry-Oral Surgery	1,825.00	99.00	20.00	1,799.00	1,765.00	1,150.00	794.00
LLM (Full-time); JSD	1,680.00	99.00	15.00	1,794.00	1,760.00	1,150.00	644.00
LLM (Part-time for Degree)	840.00	49.50	10.00	899.50	882.50	600.00	299.50
<b>Arts &amp; Science</b>							
King's (Payable to Dalhousie)	1,466.00	99.00	5.00	1,570.00	1,541.00	1,000.00	570.00
Engineering	1,550.00	99.00	10.00	1,659.00	1,628.00	1,000.00	659.00
<b>Health Professions</b>							
Nursing	1,550.00	99.00	15.00	1,664.00	1,633.00	1,000.00	664.00
Outpost nursing, 2nd year	1,550.00	—	15.00	1,565.00	1,534.00	1,000.00	565.00
Pharmacy	1,550.00	99.00	31.50	1,680.50	1,649.50	1,000.00	680.50
Clinical Residence — Pharmacy	374.00	—	—	374.00	374.00	374.00	—
Phys. Ed., Health Ed., Rec.	1,550.00	99.00	10.00	1,659.00	1,628.00	1,000.00	659.00
Physio./Occ. Therapy	1,550.00	99.00	13.00	1,662.00	1,631.00	1,000.00	662.00
<b>Management Studies</b>							
BComm	1,550.00 <sup>1</sup>	99.00	30.00	1,679.00	1,648.00	1,000.00	679.00
CPA; BSW	1,466.00	99.00	10.00	1,575.00	1,546.00	1,000.00	575.00
<b>Law</b>							
	1,680.00	99.00	15.00	1,794.00	1,760.00	1,150.00	644.00
<b>Medicine</b>							
MD	1,825.00	99.00	19.00	1,943.00	1,906.00	1,150.00	793.00
Postgraduate, Interns, Residents	374.00	—	—	374.00	374.00	374.00	—
<b>Dentistry</b>							
DDS	1,825.00	99.00	150.00	2,074.00	2,037.00	1,150.00	924.00
DDS Advanced Standing <sup>2</sup>	3,650.00	99.00	150.00	3,899.00	3,826.00	2,300.00	1,599.00
Dental Hygiene	1,550.00	99.00	10.00	1,659.00	1,628.00	1,000.00	659.00
Dental Hygiene Advanced Standing <sup>2</sup>	3,100.00	99.00	10.00	3,209.00	3,147.00	2,000.00	1,209.00
Postgraduate Periodontics	1,825.00	99.00	150.00	2,074.00	2,037.00	1,150.00	924.00
<b>Full-time: one term only</b>							
more than 3 one-half credits	728.00	49.50	—	777.50	777.50	777.50	—
<b>Part-time: session and term<sup>3</sup></b>							
All Faculties per course							
1 Full-credit Course	312.00	20.00	—	332.00	326.00	200.00	132.00
2 Full-credit Courses	604.00	40.00	—	644.00	632.00	400.00	244.00
3 Full-credit Courses	896.00	99.00	4	995.00 +	977.00 +	625.00 +	370.00
½-credit Course	156.00	10.00	—	166.00	166.00	166.00	—
⅓-credit Course	104.00	10.00	—	114.00	114.00	114.00	—
<b>Audit: session and term<sup>5</sup></b>							
All Faculties per course							
1 Full Audit Course	156.00	—	—	156.00	156.00	156.00	—
½ Course for Audit	78.00	—	—	78.00	78.00	78.00	—
⅓ Course for Audit	52.00	—	—	52.00	52.00	52.00	—

<sup>1</sup> Charges include Year Book in graduating year.

<sup>2</sup> Candidates with advanced standing admitted to special programs in DDS and DENTAL HYGIENE to meet Provincial Professional Qualifications, are required to pay double the University fee paid by students in regular programs.

<sup>3</sup> Registered for a total of three (3) credits, or less, for session; if three one-half credits, or less for term.

<sup>4</sup> Society Fee for the appropriate faculty is an additional charge. (+)

<sup>5</sup> Course not for credit, for interest only. If during session a change from audit to credit is desired, an additional charge of \$25.00 plus the difference in fee for credit course is charged.

**Membership at Dalplex** is included in the University fee for all full-time students at Dalhousie and all part-time students at Dalhousie taking three full-credit courses. Membership in Dalplex for all other part-time students at Dalhousie may be obtained at the office of the Dalplex at prevailing rates.

**Foreign Students:** (additional charge) Visa Students (those who are not Canadian citizens or permanent residents) are required to pay a Differential Fee of \$1,435.00 for returning students in the same program, 1,700.00 for new students or students new to program. There is a proportionate charge for part-time. The differential fee is payable each year with the payment of the first installment of fees.

## Additional Information About Payment of Fees

*Bills for fees will not be issued. The receipt issued at registration will show the balance outstanding.*

Students planning to pay the first installment of fees from a Canada Student Loan should apply to their Province as early as possible so that funds will be available at registration.

Scholarships or bursaries paid by or through Dalhousie University will be applied to fees. Students must produce at registration adequate documentary evidence of entitlement to the sums claimed under the award. If fees are to be paid by a government or other agency, a signed statement from the agency must be presented at registration. (All such students are required to pay the appropriate deposit on registration.)

Fees cannot be deducted from salaries paid to students who are employed by Dalhousie University.

### Delinquent Accounts

Compound interest will be charged on any balance of fees outstanding after the registration date except where payment of a second installment is permitted. When fees are paid within two weeks of the last date for regular registration, interest charges will be foregone. Students whose accounts are more than 30 days in arrears are considered financially dismissed from the University. The student will be reinstated upon payment of the arrears, the arrears interest and a \$50.00 reinstatement fee.

### Fees Deductible For Income Tax

The amount of fees constituting an income tax exemption for the student is calculated by deducting from the total charge; (1) the portion of the Student Union Fee for operating expenses of the Union as applicable, and (2) the Society Fee. Fees may be claimed as a deduction only by the student. A special certificate for income tax purposes will be issued on request to the Student Accounts Office in February of each year.

### Refund of Fees

No refund is made for 30 days when payment is made by personal cheque.

In any program in which the registration is limited, the first installment of fees is not refundable except on compassionate grounds (e.g. illness). In other programs refunds may be made under certain conditions set out below. No refunds or rebates of charges for the session will be made to students withdrawing after the end of January.

*Non-attendance at classes does not constitute withdrawal.*

A student who has registered and wishes to withdraw must complete the necessary formalities through the Registrar's office in writing before becoming entitled to any refund or exemption from unpaid fees. Retroactive withdrawals are not permitted.

A student who has paid an admission deposit and *cancels* that application before *August 1*, may be entitled to a refund of 75%, depending on the program. The programs for which refunds are given are in Arts and Science and Management Studies.

A student *withdrawing* within two weeks of commencement of classes will be charged a registration fee of only \$25.00.

A student withdrawing after two weeks of the date of commencement of classes will be charged the incidental fees in full and may receive a refund (or be exempt from unpaid fees as the case may be) of the balance on a proportional basis, calculated in monthly units; a full charge will be made for the month in which the withdrawal is effective, including the month of December.

A student withdrawing in January will be charged the full first installment of fees.

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

A student registered for the fall term only who withdraws in September will be charged a registration fee of only \$25.00. For withdrawal on any date in the month of October the charge is one-third of the university fee (plus incidental fee in full, where applicable). The full fee is charged if a student withdraws after October 31.

A student registered for the winter term only, who withdraws up to January 15 will be charged a registration fee of only \$25.00. From January 15 to February 15 the charge is one-third of the university fee (plus Incidental Fee if applicable). The Full fee is charged if a student withdraws after February 15.

A student who is dismissed from the University for any reason will not be entitled to a refund of fees.

Application for a refund or adjustment should be made to the Student Accounts Office after the approval of the Registrar has been obtained.

## Other Charges

### Identification Cards

All new, full and part-time students may obtain identification cards upon registration and payment of proper fees. ID cards for those who register early for the regular academic year are issued by the ID Office (located in the central foyer of the Arts and Administration Building basement) starting on the first weekday in June. For either summer school session, ID cards are issued starting two weeks prior to the commencement of classes. An ID card will only be issued upon presentation of the appropriate requisition form, authorized by both the Registrar's Office and the Student Accounts Office. If a card is lost, authorization for a replacement may be obtained from the Office of the Registrar. A fee of \$12.00 is charged for all replacement ID cards except those expressly directed by the University. Regular academic year ID cards remain valid until the beginning of the following academic year (including summer session. (ID cards issued specifically for a summer session expire at the conclusion of that session.) At the commencement of subsequent consecutive years, validation stickers are affixed to the "expired" ID card. Should ID cards not be available for validation, a new one will be issued and the student charged for the replacement (currently \$12.00). A student who also becomes an employee of Dalhousie University will have a sticker showing the employee number, placed on the student ID card. Similarly, a Dalhousie University employee may have a sticker showing the student number placed on the employee ID card when becoming a student.

### Laboratory Charge

No laboratory deposit is required. Students will be charged for careless or willful damage.

### Fees for Supplemental and Special Examinations

For supplemental and special examinations the fee is \$25.00 per examination. There is an additional fee of \$25.00 if an examination is written at an outside centre. The fee will be forfeited unless application for refund is made on or before July 31, or in the case of February supplemental examination, January 31.

The fee for reassessment of a class grade (where this is permitted) is \$3.00.

### Degree in Absentia

Any graduating student who is unable to appear at the convocation is expected to notify the Registrar in writing prior to May 4, or October 15 for Fall convocation, giving the address to which the diploma is to be

mailed. In any case where notification is not received by the required date, and a student does not appear at the convocation, there will be a fee of \$20.00.

### Transcripts

Transcripts, official or unofficial, will be issued only on the request of the student concerned. Official transcripts will be sent only to other universities, prospective employers, etc. The charge is \$3.00 for the first copy, \$0.50 for each additional copy ordered at the same time for the same address. Transcripts will not be issued if any account with the university is delinquent.

## Residence Charges

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 succeeded in securing a room, withdraw from residence before the end of the school year, there are serious financial penalties. One month's written notice must be given to the Dean or Manager. Complete information on withdrawal from residence is available from the residence Dean, or Manager. No refund will be made to any resident who is dismissed for misconduct. Discretionary power in exceptional circumstances remains with the Assistant Vice-President University Services. Confirmation of accommodation will not be granted until the student has been accepted by the University for the coming session and the \$100.00 residence deposit has been received.

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 Charges

Payment may be made in full at registration or, for an extra charge of \$10.00, in two installments as per rate schedule. Scholarships may be applied to residence charges only after tuition fees for the full session are paid. The first installment must be paid in full by the date of registration. A penalty is imposed for late payment, of \$5.00 per day, to a maximum of \$100.00, commencing on the first business day following

registration. To all accounts outstanding after September 30 an interest of 1.33% per month (16% per annum) will be charged. On second installments outstanding after February 1 interest of 1.33% per month (16% per annum) will be charged. The interest rate may change from time to time without notice if the cost of money to the University varies. The student will not be permitted to register for another session until all accounts are paid in full. Students whose accounts are in arrears more than 30 days are considered financially dismissed from the University.

### Key and Caution Deposits

Key and caution deposits may be charged before admission to residence.

The key deposit is refundable when the keys are returned to the Dean or Manager. The credit balance of the caution deposit will be refunded as soon as possible after the end of the academic session.

### Regulations and Additional Charges

The complete session is defined as being from the Wednesday before classes begin in the Arts and Science Faculty to the last regularly scheduled examinations in the Faculty of Arts and Science.

No reduction in board charge can be made for meals not taken, except that a rebate of \$20.00 per week may be considered in case of illness or other cause necessitating absence of four weeks or more.

Residence students may apply to the Dean or Manager for permission to stay in residence over the Christmas holidays, if they are unable to return home due to the distance involved.

In all other cases, an additional fee is payable to all residents who are registered in a Faculty where the academic session commences before or continues after the session of the Faculty of Arts and Science. Special arrangements are to be made with the Dean or Manager by residence students for accommodation for periods prior to or following the session as defined above. The charge for such accommodation is as follows:

#### Residence students before or after current session, all residences

Room per night: \$13.00  
Room per week: \$55.00

Non-residence students may be accommodated for temporary periods at the same rates, if accommodation is available.



## Residence Fees and Meal Charges

Period September 5, 1985, to the day in April after the last examination in the Faculty of Arts and Science (exclusive of Christmas vacation)

SUBJECT TO CHANGE

	Total	Prepaid Deposit	In Full At Reg.	Payable At Reg.	Balance Jan. 24 <sup>8</sup>
<b>Howe Hall<sup>1</sup></b>					
Single Room	\$3,380.00	\$100.00	\$3,280.00	\$1,700.00	\$1,590.00
Double Room	3,100.00	100.00	3,000.00	1,700.00	1,310.00
<b>Shirreff Hall<sup>2</sup></b>					
Single Room	3,350.00	100.00	3,250.00	1,700.00	1,560.00
Double Room	3,160.00	100.00	3,060.00	1,700.00	1,370.00
<b>Ardmore Hall<sup>3</sup></b>					
Single Room	1,776.00	100.00	1,676.00	900.00	786.00
Double Room	1,565.00	100.00	1,465.00	900.00	575.00
<b>Residence Houses<sup>4</sup></b>					
Single Room	1,950.00	100.00	1,850.00	950.00	910.00
Double Room	1,700.00	100.00	1,600.00	950.00	660.00
<b>Glengary Apartments<sup>5</sup></b>					
Single Room	2,000.00	100.00	1,900.00	1,000.00	910.00
Double Room	1,765.00	100.00	1,665.00	1,000.00	675.00
Bachelor Apartment	2,745.00	100.00	2,645.00	1,350.00	1,305.00
<b>Fenwick Place<sup>6,7</sup></b>					
Student shared rates:					
2 person	2,400.00	100.00	2,300.00	1,200.00	1,100.00
3 person	1,888.00	100.00	1,788.00	950.00	838.00
4 person	1,952.00	100.00	1,852.00	1,000.00	852.00
<b>Meals Only</b>					
Special rates for session:					
3 meals per day	1,450.00				
2 meals per day	1,400.00				

<sup>1</sup> Charges include residence membership fee of \$25.00, and key deposit of \$6.00.

<sup>2</sup> Charges include residence membership fee of \$15.00, and key deposit of \$2.00.

<sup>3</sup> Charges include residence membership fee of \$10.00, and key deposit of \$2.00.

<sup>4</sup> Charges include key deposit of \$2.00.

<sup>5</sup> Charges include caution deposit of \$50.00.

<sup>6</sup> The \$100.00 prepaid deposit is a damage deposit — see application for details.

<sup>7</sup> The \$10.00 service charge is not applicable.

<sup>8</sup> Charges include service charge of \$10.00.

# Faculty of Graduate Studies

## Administrative Officers

(Tel. (902) 424-2485)

Dean, K.T. Leffek, BSc, PhD (Lond.)

Assistant Dean, M.G. Parks, MA (Dal), PhD (Tor.)

Secretary, R. Apostle, BA (Simon Fraser), MA, PhD (U. of Calif. Berkeley)

Administrative Assistant, A.R. Thomson

## Council and Standing Committees

The figure following a member's name is that individual's year of completion of term.

### Faculty Council

R. Apostle	'86 Sociology
R. Brookbank	'86 Business
R. Kocourek	'86 French
R. Lyons	'86 Recreation, Physical & Health Ed.
W. Hare	'86 Education
J. Cornwall	'87 Economics
W. Eifler	'87 Physiology/Biophysics
L. O'Brien	'87 Law
S. Nugent	'87 Physics
A. Thompson	'87 Mathematics, Statistics, & Computing Sc.
P. Atherton	'88 Classics
M. Karmazyn	'88 Pharmacology
D. Nance	'88 Anatomy
R. Seewald	'88 Human Communication Disorders
M. Stone	'88 English
W. Birdsall	University Librarian
Anthony O'Malley	DAGS Rep (Education)
Sandra Mooibroek	DAGS Rep (Chemistry)
S. Cameron	Faculty Secretary (Chemistry)
M. Parks	Assistant Dean
K.T. Leffek	Dean

### Scholarship Committee

S. Burns	'86 Philosophy
G. Ferrier	'86 Pharmacology
E. Friedenber	'87 Education
D. Rasmusson	'87 Physiology/Biophysics
D.K. House	'87 Classics
J. Fingard	'88 History
J. Pooley	'88 Recreation, Physical & Health Ed.

### Postdoctoral Fellowship Committee

P. Borwein	'86 Mathematics
D. Kiang (Chair)	'86 Physics
I. Meinertzhagen	'86 Psychology
R. Berard	'87 Education
O. Knop	'87 Chemistry
I. McLaren	'87 Biology
E.S. McFarlane	'88 Microbiology
H. Robertson	'88 Pharmacology

## Research Development Fund in the Social Sciences & Humanities

D. Elliott	'86 Sociology/Social Anthropology
W. Mitic	'86 Recreation, Physical & Health Ed.
R. Martin	'87 Philosophy
F.G. Cohen	'87 Institute for Resource & Environmental Studies
J.T. O'Brien	'87 History
R.C. MacKay	'88 Nursing
D.P. Varma	'88 English

## Research Development in the Sciences

Chairperson	Biology
Chairperson	Chemistry
Chairperson	Geology
Chairperson	Mathematics
Chairperson	Oceanography
Chairperson	Physics
Chairperson	Psychology
R. Wassersug	'87 Anatomy
G. Elder	'87 Recreation, Physical & Health Ed.

## Killam Lecture Committee

C. Boyle	'86 Law
R.B. Goldbloom (Co-Chair)	'86 Pediatrics
B. Raymond	'86 Library Service
T. Laidlaw	'87 Education
H.J. Thiebaux	'87 Mathematics, Statistics & Computing Sc.
P. Waite	'87 History
F. Medioli	'88 Geology
T.J. Murray (Co-Chair)	'88 Medicine
K.B. Ruf	'88 Physiology/Biophysics

## Library Committee

J. Singleton	'86 Recreation, Physical & Health Ed.
Melvin Cross	'87 Economics

## Human Ethics Review Committee

A. Barton	'88 Education
E. Belzer	'88 Recreation, Physical & Health Ed.
B. Earhard	'88 Psychology
N. Jabbra	'89 Sociology/Social Anthropology
O.P. Kamra	'90 Biology
M. Parks	Assistant Dean (Coordinating Chairperson)

## Academic Appeals Committee

H.L. O'Brien	'86 Law
P.B. Huber	'87 Economics
C. Sloan	'88 Human Communication Disorders

## Reserve Panel for Academic Appeals Committee

M.J.C. Martin	'86 Business
E.S. McFarlane	'87 Microbiology
M.M. Hansell	'88 Anatomy

## Library Representatives on Faculty

Ms. Paddy Burt	'86 Killam Library
Ms. Sylvia Fullerton	'86 Macdonald Science Library
Mrs. Ann Manning	'86 Kellogg Health Sciences Library
Mrs. Holly Melanson	'86 Killam Library

## Honorary Faculty Appointments

Highly qualified scientists and scholars on the staff of neighbouring institutions and government laboratories cooperate with the research and graduate degree program at Dalhousie on a part-time basis. These



persons, and other individuals in or close to the University community, are appointed to honorary faculty positions. Honorary Research Associates cooperate with members of the University departments in the direction, or evaluation, of graduate research. Such cooperation may take the following forms:

1. serving on a student's advisory committee
2. serving as a departmental reader on a student's thesis
3. serving as co-supervisor of a thesis
4. participation in graduate seminars.

Honorary Adjunct Professors may cooperate with members of the University departments in all of the above ways and, in addition, may teach regular or special lecture and/or laboratory classes by mutual consent of the Adjunct Professor, the Department, and the Faculty of Graduate Studies.

Honorary Research Associates and Adjunct Professors in the Faculty of Graduate Studies are listed under appropriate departments.

## 2. Faculty Regulations

General regulations and administrative procedures are outlined in this section. Detailed information about particular programs will be found in the Departmental entries in the subsequent sections of this calendar or may be obtained from Departmental publications. Graduate students are urged to familiarize themselves with the regulations which govern the conditions of their programs of study at the University.

### 2.1 Degree Programs

Departments in the Faculty of Graduate Studies offer programs leading to the following degrees:

- Doctor of Philosophy (PhD)
- Doctor in the Science of Law Degree (JSD)
- Master of Arts (MA)
- Master of Business Administration (MBA)
- Master of Development Economics (MDE)
- Master of Education (MEd)
- Master of Environmental Studies (MES)
- Master of Health Services Administration (MHSA)
- Master of Laws (LLM)
- Master of Library Service (MLS)
- Master of Nursing (MN)
- Master of Public Administration (MPA)
- Master of Science (MSc)
- Master of Social Work (MSW)
- Master of Teaching (French) (MAT)
- Diploma in Public Administration (DPA)

#### 2.1.1 Conferring of Degrees

Successful candidates for degrees are ordinarily required to appear at Convocation in the proper academic costume to have the degree conferred upon them. By special permission of the Senate, degrees may be conferred, in exceptional cases, in absentia. Any graduating student who is unable to appear at the convocation is expected to notify the Registrar in writing prior to May 4, or October 15 for Fall convocation, giving the address to which the diploma is to be mailed. In any case where notification is not received by the required date, and a student does not appear at convocation, there will be a fee of \$20.00.

#### 2.1.2. Academic Costume

Graduates of the University are entitled to wear gowns and hoods of black stuff. The distinctive part of the costume is the lining of the hood, which for the various degrees is as follows:

**MA:** Crimson silk

**MAT:** Crimson silk/white border

**MBA:** Turquoise silk

**MDE:** Medium blue/scarlet border

**MEd:** Royal Blue silk

**MES:** Brown silk

**MHSA:** Sky blue silk/white border

**LLM:** Purple silk

**MLS:** Mid-forest Green silk

**MN:** Apricot silk

**MPA:** Sky Blue silk

**MSc:** Scarlet silk

**MSW:** Citron silk

**PhD:** Entitled to wear a gown of black stuff faced with yellow silk. The hood is of black corded silk with a lining of yellow silk and of the Cambridge design. The birretum is the doctor's bonnet of black velvet with yellow cord.

**JSD:** Entitled to wear a gown of black stuff faced with olympic blue silk bordered with yellow silk. The hood is of black corded silk with a lining of olympic blue silk bordered with yellow silk and of the Cambridge design. The birretum is the doctor's bonnet of black velvet with yellow and blue cord.

## 2.2 Admission Requirements

The following are minimum requirements for admission to the Faculty of Graduate Studies. Individual Departments may require additional qualifications of their candidates.

#### 2.2.1 English Language Competency

Candidates from outside Canada whose native language is other than English must demonstrate their capacity to pursue a graduate-level program in English. Such candidates should submit the results of a TOEFL or other standard English competency test at the time of application. The Faculty sets a minimum acceptable score of 550 for the TOEFL. However, candidates are advised that some programs within the Faculty set higher English language requirements.

#### 2.2.2 Master's Degree Program

Candidates must hold a Bachelor's Degree from a university of recognized standing with

(a) *honours or the equivalent of honours standing as granted by Dalhousie University, in the area in which graduate work is to be done, or*

(b) *completion of at least four (4) undergraduate classes, or their equivalent, in the area in which graduate work is to be done, with an average of at least second-class standing.*

Only candidates with honours or the equivalent of honours standing may complete the requirements for the degree in a twelve-month period of full-time study.

Candidates who do not meet the minimum admission requirements stated above may, upon the recommendation of the Department, be admitted to a preliminary year of study. This year is known as the Qualifying Year. At the end of the Qualifying Year, students must reapply for admission. Completion of the Qualifying Year may not be offered as a substitute for the first year of graduate work.

### 2.2.3 Doctoral Degree Program

Candidates must hold

- (a) a Bachelor's Degree from a recognized university with honours standing as granted by Dalhousie University, or
- (b) a Master's Degree, or its equivalent, from a recognized university.

Only candidates with a Master's Degree (normally in the area of PhD study), or equivalent, may complete the requirements for the degree in two (2) years of full-time study.

*The time periods specified in 2.2.2 and 2.2.3 refer to the minimum number of years of full-time study required for particular degree programs.*

## 2.3 Application

Application for Admission forms may be obtained from the Registrar's Office, Dalhousie University, and should be returned to that office along with all supporting materials. Application deadlines for the Faculty are May 31 for Overseas applicants and August 01 for applicants from within North America, except where special dates apply, (see page 6). Any application received after August 01 will, in the event that it is accepted, incur an automatic late penalty.

## 2.4 Financial Aid

The various kinds of scholarship aid for which graduate students may apply are detailed in Section 3 "Scholarships and Fellowships." In the case of Dalhousie graduate fellowships, the application for admission serves as an automatic application for fellowship consideration if the appropriate box is marked. Students who wish to be considered for fellowship assistance are advised to submit their applications no later than March 31. Advice concerning other forms of financial assistance may be requested from the Awards Office.

## 2.5 Registration

All students must register in September of each year of their graduate program in one of the following categories:

**Full Time:** a student who is carrying more than two (2) full-credit classes during the 12 month academic year or a student who has not yet completed the minimum number of years of full-time study required for a particular degree program.

**Part Time:** a student who is carrying not more than two (2) full credit classes during the 12 months September to August.

**Part Time Continuing:** a student who is continuing his part-time program after fulfilling the maximum residency requirement permitted for part-time study. (See section 2.6)

**Thesis Only:** a student who has completed the minimum number of years of full-time study required for a particular degree program and is completing degree requirements (usually the thesis). If degree

requirements are being completed on campus, the student is designated *Full-Time Thesis Only*. If the degree requirements are being completed off campus the designation is *Part-Time Thesis Only*.

**Qualifying:** a student who has been required to do a year of preliminary work in order to meet admission standards before being considered for acceptance into a regular program. Classes taken in a Qualifying Year cannot be counted as credits toward a graduate degree.

**No Degree:** a student who has not been accepted into a regular graduate program but who wishes to take classes at the graduate level. No commitment is made to such students that they will, in future, be admitted to graduate programs or that the classes taken will be accepted as part of the requirements for a graduate degree. Moreover, such students require the approval of the Department in which the class is given before registration.

*Registration is the process by which the student officially establishes with the University (Registry and Faculty of Graduate Studies Office) the degree program (MA, MSc, PhD, etc.) and status (full time, part time, etc.) and pays the appropriate academic fees (Cashier). Both aspects of the process (program/status and fee payment) must be completed before a student can be said to be registered. (Most fees may be paid in two (2) installments.)*

Canadian and non-visa students may register by mail prior to the September deadline. Such students are reminded that they must inform the Graduate Studies Office of their current address so that forms can be sent to them. Students who do not register by mail must register in person on or before the day specified by the Faculty.

Students unable to register on or before the specified date should apply to the Faculty Office for permission to register. A late registration fee will be assessed (see page 18). *Any student who fails to register in September will not be allowed to submit a thesis or obtain any service whatsoever from the University during that academic year.*

Students who change their registration status by the addition or deletion of classes must report this to the Faculty Office. Changes in status, i.e. part-time to full-time or full-time to part-time cannot be made after initial registration without permission of the the Dean of Graduate Studies. No changes will be allowed after 30th November. Withdrawal from a degree program should be reported immediately to the Faculty Office since reimbursement of fees is calculated from the official date of withdrawal.

Students who wish to suspend their program of studies may apply in writing through their department or school for a "leave of absence." If the department or school recommends to the Dean that leave of absence be granted, and if the Dean is also satisfied that the need is justified, he will grant such leave for the twelve-month academic year commencing September 1st. The "leave of absence" may be extended, upon written application, for a further twelve months, but the student may not exceed the maximum time limit to complete the program — five years for full-time study, six years for part-time study. Application for leave of absence may be made at any time of the year as long as it is no later than the final registration date for the academic year during which leave is requested.

**Readmission** of students who have dropped out of a program. Readmission *within* the 5 year time limit (6 years for part-time students). The readmitted student will pay all fees for each of the years during which he or she did not register at the *current* fee rate at the time of readmission.

Readmission *after* the 5 year limit (6 years for part-time students). Provided the program was fully paid while the student was in the program, the readmitted student will pay one year of *full* fees at the *current* fee rate at the time of readmission. If the program fee was not fully paid previously, the readmitted student shall pay the remainder of

the program fee, plus one extra year of full fees, both at the *current* fee rate at the time of readmission.

## 2.6 Residency Requirement

The residency requirement, which must be met before a degree can be conferred, varies according to the degree program and to the candidate's qualifications. This requirement refers to the minimum number of years that a student must spend in full-time study.

- MA/MSc — 1 year residency if entering with an Honours Bachelor's degree or equivalent
- 2 year residency if entering with a Pass Bachelor's degree.
- MEd — 1 year residency if entering with a BEd or equivalent.
- MDE — 2 year residency if entering with a Pass Bachelor's degree.
- MHSA — 2 year residency.
- MN\* — 2 year residency.
- MAT — 1 year residency if entering with BA Honours in French and BEd
- LLM — 1 year residency.
- MES — 2 year residency, 1 year if entering with advanced professional qualifications, e.g. BEng or B Arch with a concentration in environmental studies.
- MLS\* — 2 year residency.
- MBA\* — 2 year residency.
- DPA\* — 1 year residency.
- MPA\* — 2 year residency.
- PhD — 2 year residency, if entering with a Master's degree or equivalent.
- 3 year residency, if entering with an Honours Bachelor's degree.

JSD — 1 year residency if entering with thesis LLM.

\*1 year of the residency requirement may be fulfilled by 3 years of part-time study. A qualifying year of study does not count toward fulfillment of the residency requirement.

In terms of residency, three (3) years of part-time study will be the equivalent of one (1) year of full-time study in those programs in which part-time study is allowed. In certain cases, on the recommendation of the Department, a student may transfer from a Master's program to a Doctoral program without fulfilling the Master's thesis requirement. In such cases the total residency requirement is three (3) years.

## 2.7 Fees

Fully qualified students will pay full fees for fixed periods only, in accordance with the schedule below.

### Full Time

- From Bachelor's degree to DPA — 1 year
- From Honours Bachelor's degree to MA or MSc — 1 year
- From Pass Bachelor's degree to MA or MSc 2 years
- From Honours Bachelor's degree in French plus BEd to MAT — 1 year
- From Pass Bachelor's degree to MDE. — 2 years
- From DDS to MSc (Oral Surgery) — 3 years
- From Bachelor's degree to MBA — 2 years
- From Honours Bachelor's Degree to MES — 2 years (except for students admitted to 1-year program)
- From Bachelor's degree to MHSA — 2 years
- From Bachelor's degree to MPA — 2 years
- From Bachelor's degree to MLS — 2 years
- From Bachelor's degree to MN — 2 years
- From LLB to LLM — 1 year
- From Honours Bachelor's degree to PhD — 3 years
- From Master's degree to PhD — 2 years
- From LLM degree to JSD — 1 year

Part-time students will pay part-time fees (equivalent to one-third of the fee paid by a full-time student) for fixed periods as follows:

- From Bachelor's degree to DPA — 3 years
  - From Honours Bachelor's degree to MA or MSc — 3 years
  - From Pass Bachelor's degree to MA or MSc — 6 years
  - From Honours Bachelor's degree in French plus BEd to MAT — 3 years
  - From Pass Bachelor's degree to MDE. — 6 years
  - From Bachelor's degree to MBA — 6 years
  - From Honours Bachelor's degree to MES — 6 years (except students admitted to a one-year program)
  - From Bachelor's degree to MHSA — 6 years
  - From Bachelor's degree to MPA — 6 years
  - From Bachelor's degree to MLS — 6 years
- Part-time students in an LLM program will pay part-time fees (equivalent to one-half of the fee paid by a full-time student) for a period of two years.
- From LLB to LLM — 2 years

**Full-time Graduate Students** pay a program fee annually as set out in section 2.7 on page 26, thereafter he/she pays annually a thesis-only or continuing fee. The fee is the same for all programs except MSc Dentistry, LLM and JSD (see above) and does not depend upon the number of required classes taken in an academic (12 month) year. Full-time students may take between two and one-half (2 ½) and six and one-half (6 ½) full credit classes during the 12 month academic year starting on 1st September, according to the requirements of the program.

**Qualifying Year Students** pay fees as set out above for full-time students.

**Part-time Graduate Students** in degree programs must, before completion of their degree, pay fees equivalent to those paid by full-time students, plus any fees chargeable to those completing the program as thesis-only or continuing students. Three (3) years of part-time study will be the equivalent of one (1) year of full-time study, except in an LLM program where two (2) years of part-time study is the equivalent of one (1) year full-time. Part-time students may take up to two (2) full credit classes in a 12 month academic year.

Graduate student registered part-time but not for degree credit pay fees on the same basis as undergraduate students.

**Differential fee** for non-Canadian Graduate Students must be paid for:

- Full-time Masters student (except Oral Surgery) 2 years (or equivalent)
- Full-time Masters student Oral Surgery 4 years
- Part-time Masters student (1 year program) 3 years
- Part-time Masters student (2 year program) 6 years
- Full-time PhD student (following a Masters degree) 3 years
- Full-time PhD student (following a Bachelors degree) 5 years

## 2.8 Identification Cards

Full-time, part-time students in a degree program, and Thesis Only students will receive ID cards entitling them to all University services.

Part-time no-degree students receive ID cards which entitle them to use such facilities as libraries and laboratories.

## 2.9 Notification of Address

Students are required to keep the Faculty Office, the Registrar's Office, and their Department office up to date on changes of address. Notifications from the University will be sent to the most recent address

possessed by these offices; students will be held responsible to comply with these notifications, and non-receipt of material because of failure to report a change of address will not excuse students from such responsibility.

## 2.10 Degree Requirements

A graduate student is expected to devote full time to his or her course if it is to be completed in the minimum time. The normal maximum time allowed for completion of the degree is five (5) years (six years in part-time programs) from the first time of registration in the program for which the degree is sought. In exceptional cases, an extension of this period may be granted by the Faculty on the recommendation of the Department.

### 2.10.1 Summer School Classes

In cases where a student is required by his/her department to take classes offered only during summer school, the fee will be paid by the Faculty of Graduate Studies. Only one credit is allowed a year. Recommendations should be submitted by the department before the beginning of the first summer session.

Registration dates for summer school appear in the almanac in the Graduate Studies calendar. Any student who is entitled to have the summer school fee waived must report to the Graduate Studies office before registration.

### 2.10.2 Requirement for the MA and MSc Degrees

The course of study will consist of work in advance of that given in ordinary undergraduate classes and will be confined to one subject or two closely related subjects.\* Students are normally required to complete a course of study worth at least five (5) credits. Such a course may include classes, seminars, preparation of fields of study, comprehensive examinations, demonstrations of foreign language proficiency, a thesis, and oral defence of the thesis. Some departments may require course work in excess of five (5) credits.

Advanced classes normally included in the Master's course, completed before admission, may be presented at the time of admission as part of the requirements, provided that they have not been counted for another degree.

*One full session of resident study at Dalhousie University is a minimum requirement for the Master's degree.*

Course requirements for the degrees MAT, MBA, MDE, MHSA, MLS, MN, MPA, MSW, LLM, JSD, and MSc in Oral Surgery are described in the department entries in the next section.

*\*Except interdisciplinary programs in African Studies, Environmental Studies, and Urban and Regional Studies.*

### 2.10.3 Course Requirements for the PhD Degree

A candidate must demonstrate the ability to carry out research of high quality leading to an advance of knowledge in his/her area of study. In general, at least two (2) years must be spent in full-time study on the Dalhousie campus. The candidate's course of study will be initiated with the advice of a supervising committee of at least three (3) members. The thesis and course of study will be directed by a committee consisting of the research supervisor and at least two (2) other members. The course of study must include a preliminary examination (to be taken not less than one (1) year before submission of the thesis) and preparation and oral defence of a thesis. The course of study may include classes, seminars, comprehensive examinations, qualifying examinations, preparation of fields of study, demonstrations of foreign language proficiency, and any other requirements considered necessary for the clear demonstration of post-Master's-level comprehension, scholarship, and ability in the candidate's particular area of study.

Candidates for graduate degrees may be required to engage in

teaching duties. These duties will conform to the requirements of the Departments and usually will not involve more than six (6) hours per week.

Residency requirements must be fulfilled before degrees can be conferred.

## 2.11 Classes, Theses, Examinations, Etc.

**Classes** may be full or half year (full or half credit respectively) and may be designated by the candidate's committee as "Required" (pass mark B-) or "Ancillary" (normal undergraduate pass mark).

**Examinations** will normally be the method of grade assessment in graduate classes. There are no supplementary examinations. A student who fails an examination is automatically dropped from the program. However, such a student may apply for readmission immediately.

A full-time student in a professional program will have successfully completed the year if the student has obtained a pass mark in each class or has obtained an average standing of at least "B" in all classes with not more than one "C" grade in a class not regarded as ancillary. A part-time student must obtain a pass mark in each class. A student who fails to meet these requirements in any year is automatically dropped from the program. However, such a student may apply for readmission immediately.

A student who fails to complete the required work for a particular class during the normal period of the class will receive a grade of "F." However, where circumstances warrant it, a grade of "Incomplete" may be assigned. Subsequent completion of the work following the end of the class may result in a change of grade, as long as the work is completed before the following deadlines:

**Full-year classes:** May 31, or 8 weeks after the end of the class, whichever is the longer period.

**A/B classes:** January 31 / May 31, or 8 weeks after the end of the class, whichever is the longer period.

**Summer classes:** July 31 (first session) and September 1 (second session), or 4 weeks after the end of the class, whichever is the longer period.

After these deadlines, an "Incomplete" grade cannot be changed and will appear on the official academic record of the student.

The grade of "In Progress" may be used only to report thesis classes and those designated as "open to independent completion of study."

**Withdrawal From Classes:** The final date for withdrawal from classes shall be: for 'A' classes — 17 November, for 'B' classes — one week after study break; for full year classes (both 'R' and 'C') — 31 January; for summer session classes — the mid-point of the class. For withdrawals before these dates, the class and the withdrawal is not recorded on the academic record. After these dates, the student is responsible for the content of the class and receives a grade for it. Students must complete the appropriate registration change form, which must be approved by the instructor concerned.

**Preliminary Examination** of PhD candidates is conducted not less than one (1) year before the candidate submits a thesis. The examination may be oral, written, or both, at the discretion of the Department concerned, and will cover subjects relevant to the general area of the candidate's research. Failure to pass the examination may result in dismissal. However, the student may be permitted to repeat the examination within the subsequent twelve (12) months.

**Comprehensive Examinations** in the candidate's area of study are part of both Master's and PhD degree courses of study in some Departments. Refer to particular departmental entries for details. It is the responsibility of Departments to make the necessary arrangements for these examinations.

**Foreign Language Proficiency** is required of candidates by some departments. Refer to particular departmental entries for details.

**Theses** must display original scholarship expressed in satisfactory literary form consistent with the discipline concerned and be of such value as to merit publication. The subject of the PhD thesis must be approved by the Faculty at least twelve (12) months before the date of final examinations.

Theses will normally be graded as "Approved" or "Not Approved."

**Oral Defence** of the thesis is required by some Departments of Master's degree candidates. Refer to particular departmental regulations. A public defence of the PhD thesis shall be held before members of the Faculty and other interested persons. A candidate will be examined on this occasion by a committee consisting of the Dean (or his designate) as chairperson, and at least four (4) other persons named by the Dean in consultation with the Department chairperson, one (1) of whom shall be an outside examiner.

**Credits** may be given for classes, seminars, comprehensive examinations, preparation of fields of study, foreign language proficiency, a thesis, etc., at the discretion of the Department. A Master's-level thesis is not usually worth more than two (2) credits.

## 2.12 Regulations for Thesis Preparation

### 2.12.1 Presentation for Examination

Theses for the Master's degree must be presented to the Department for examination not later than March 30, for Spring Convocation, or September 5, for the Fall awarding of degrees. Five (5) unbound copies are required (original and four copies).

### 2.12.2 Regulations For Oral Examination of a Doctoral Candidate: Procedures

1. The candidate shall register the proposed title of the thesis with the Assistant Dean, Faculty of Graduate Studies, no later than six months before submission of the completed thesis.

2. The Chairperson of the Department shall recommend to the Dean or Assistant Dean of Graduate Studies a suitable person (or persons) as an external examiner at least three months before the anticipated date of completion of the thesis. These persons should be acknowledged experts in the field or discipline of the research being examined in the thesis. Initial contact with the external examiner should be made by the Chairperson of the Department.

3. Of the five copies of the thesis required, the candidate shall submit one unbound copy of the completed thesis (the External Examiner's copy) to the Faculty of Graduate Studies. The deadlines for submitting unbound PhD theses to departments (see the Almanac in the Faculty of Graduate Studies calendar under August and March) are also the deadlines for departments to deposit the External Examiner's copy in the Faculty of Graduate Studies office. At that time the candidate shall normally provide a brief abstract of the significant findings, no longer than 300 words, suitable for publication in a public notice of the defence.

4. The other four copies of the thesis will be submitted by the candidate to the departmental graduate coordinator, who will distribute them immediately to local members of the examining committee. One

copy may be held in the departmental secretary's office for use by other interested faculty and students.

5. No arrangements will be made for the oral examination until all of these requirements are fulfilled. The examination will be held no earlier than four weeks after submission of the thesis, thereby allowing adequate time for the thesis to be read by the external examiner.

6. The Dean or Assistant Dean of Graduate Studies will issue a formal invitation to the external examiner and will send a copy of the thesis to him at least four weeks before the examination.

7. In consultation with the Chairperson of the Department, the graduate co-ordinator, and the research supervisor, the Assistant Dean of Graduate Studies will establish a time and place for the examination. The defence will be held in a central location on campus, normally the MacMechan Room for defences in the Sciences and the Board and Senate Room for those in the Humanities and Social Sciences.

8. The external examiner will normally submit a constructively critical and analytical report to the Assistant Dean of Graduate Studies, who will send a copy to the graduate co-ordinator. Normally the external examiner will attend the defence, but in the rare event of the external examiner not attending, the written report should be submitted to the Assistant Dean one week before the defence.

9. No thesis shall be accepted without the approval of an external examiner, except that a negative opinion of an external examiner who does not attend the examination should not prevail over the unanimous opinion of the other examiners present and voting.

10. Notice of the public defence of the thesis will be published and sent to all relevant departments by the Faculty of Graduate Studies. All interested faculty, students, and members of the public will be welcome to attend.

11. Variation of the regulations outlined above may be permitted only with the written permission of the Dean of Graduate Studies.

## Oral Examination

The oral examination of a doctoral thesis is the culmination of the candidate's research program. It exposes the work to scholarly criticism and gives to the candidate the opportunity to defend the thesis. It is only fitting that the examination should be a public defence before the members of Faculty and other interested persons.

The Examining Committee consists of the Dean or Assistant Dean of Graduate Studies (or a designate), the chairperson of the Department concerned (or a designate), and at least four additional members, one of whom shall be the external examiner from outside the University.

The candidate is questioned on the thesis following a summary presentation no longer than 20 minutes. The Chairperson will give priority to questions from the external examiner and from the other members of the examining committee in some pre-arranged order. The audience will then be invited to ask questions. The Chairperson adjourns the examination when the examining committee decides that further questioning is unnecessary. He then chairs the examining committee during its deliberations *in camera*. The decision of the examining committee is based both on the thesis and on the candidate's ability to defend it.

The thesis is graded on a pass or fail basis. A thesis can be accepted by the Examining Committee as submitted; accepted on condition that specific corrections are made; rejected with permission to submit a revised thesis; or rejected. It should be stressed that theses can be rejected on grounds of form as well as content.

If specific corrections are required, the thesis will be returned to the candidate and a time limit during which the corrections must be completed will be decided upon by the examining committee. All corrections and revisions should be made with the same kind of type as used in the thesis. Insertions by pen are not acceptable. If the corrections and revisions require additional pages, the numbering of the pages has to be changed so that all pages are numbered consecutively.

Specific corrections will be left to the satisfaction of the local committee and research supervisor.

If the thesis is rejected with permission to submit a revised thesis, the revised thesis will be re-read by an examining committee, at least two of whose members were on the original committee. The thesis shall be submitted to an external examiner who may be the original external examiner if the Assistant Dean of Graduate Studies considers this to be desirable. The candidate shall defend the thesis before an examining committee in the usual way.

In situations where a thesis has been failed and is judged to have been unfairly assessed, an appeal may be made to the Dean or the Assistant Dean of Graduate Studies by the candidate or, on behalf of the candidate, by the research supervisor or Chairperson of the Department. If the evidence presented appears sufficiently strong, the Dean shall initiate the procedure for a re-examination as outlined above. No more than one such appeal shall be entertained, and the Dean's judgement shall be final.

The recommendation for degree must be approved by the Faculty of Graduate Studies and by the Senate.

Variation of the procedures stipulated above may be permitted only with the written permission of the Dean of Graduate Studies.

### 2.12.3 Preparation of Manuscript

Theses manuscripts must be prepared in accordance with Faculty of Graduate Studies rules. Detailed instructions may be obtained from the Faculty Office (Room 314, Arts and Administration Building.)

### 2.12.4 Binding

At the time of submitting unbound thesis (original and four copies) to the Graduate Studies Office, students will present a cheque for \$65.00\* payable to the Faculty of Graduate Studies, Dalhousie University. This sum will cover the cost of binding.

The Faculty Office will arrange for the binding and subsequent distribution of theses as follows:

- a. One (1) copy is sent to the author.
- b. Two (2) copies are sent to the student's Department.
- c. Two (2) copies are sent to the University Library which arranges for the production of microfilm copy to be retained in the National Library, Ottawa. The National Library can then circulate such copy according to the International Inter-Library Loan Code, with full copyright protection; it also guarantees a permanent record of the thesis. The University Library retains one (1) bound copy in the University Archives.

\*Subject to change without notice.

## 3. Scholarships, Fellowships and Financial Assistance

### 3.1 Postgraduate Awards

#### 3.1.1 Dalhousie Graduate Fellowships

Dalhousie graduate fellowships are offered in the various fields of the liberal arts, science and interdisciplinary studies.

Applications for fellowships must be made on the form "Application for Admission" obtainable from the Registrar. Graduate fellowships are awarded only to students pursuing a degree program on a full-time basis. A student may register full-time and hold a job simultaneously only if the job involves not more than 10 hours work per week. Fellowships are not offered to anyone on leave from a job with salary continuation. In order to be eligible for a Dalhousie Graduate Fellowship, a student is expected to hold at least the equivalent of a Dalhousie honours degree in an appropriate field of

study. Those wishing to be considered for fellowship assistance are advised to submit their applications *no later than March 31*.

In general, the Dalhousie Graduate Fellowship will be paid to the student in regular monthly payments on the 27th of each month, after University fees have been deducted. Cheques should be collected from the Awards Office. Students who are in receipt of an award but are pursuing some part of their program off campus at the request of their Department must apply to their Department for permission to have alternate arrangements made for payment of the award.

Some assistance with the work of the Departments may be required of fellowship holders. The amount of work will vary among Departments. Applicants for graduate fellowships should write the chairperson of the Department concerned, in addition to making their official application to the Registrar.

Very well qualified scholars who receive awards from Federal agencies may receive Dalhousie supplements within the limits set down by the agencies offering the awards.

#### 3.1.2 The Izaak Walton Killam Memorial Scholarships

Shortly before her death, Mrs. Dorothy J. Killam set aside a substantial portion of her estate for the purpose of founding The Izaak Walton Killam Fund for Advanced Studies at Dalhousie University.

Her purpose in so doing was not only to establish a perpetual memorial in his native province to her late husband, Izaak Walton Killam, industrialist and financier, but also "to help in the building of Canada's future by encouraging advanced study." It was her hope that she might thereby in some measure "develop and expand the work of Canadian universities, and promote sympathetic understanding between Canadians and the people of other countries." It is in accordance with Mrs. Killam's wishes that Dalhousie University offers the Izaak Walton Killam Memorial Scholarships.

The scholarships, which may be renewed annually upon evidence of satisfactory completion of work leading toward the Master's or Doctoral degree, are valued at \$12,600 (1985). No remission of fees accompanies the scholarships, but additional funds to assist with transportation to Halifax will be supplied. Killam scholars may perform instructing or demonstrating duties, but, if they do, will be given additional remuneration for these services.

Those chosen as Killam scholars by the trustees will be selected on the basis of their likelihood "to contribute to the advancement of learning or to win distinction in a profession." A Killam scholar, however, "should not be a one-sided person and each scholar's special distinction of intellect should be founded upon sound character and good manners." Killam scholarships are open both to Canadians and non-Canadians.

Those seeking selection as Killam scholars should request Application for Admission forms from the Registrar as early as possible. Application for the award is not made directly by the student; individuals are recommended by Departments.

#### 3.1.3 Other Scholarships and Fellowships

Details of other scholarships and fellowships tenable at Dalhousie University may be found in the Awards Office calendar. The following postgraduate awards are described:

SSHRC Grants

NSERC Grants

Canadian Social Sciences Research Council Fellowships

Commonwealth Scholarships and Fellowships

The Parke, Davis Pharmacy Research Award Fellowship

Canada Mortgage and Housing Corporation Fellowships

- Dept. of National Defence (Military and Strategic Studies)  
 Sir James Dunn Postgraduate Scholarship (Law)  
 Goldberg/Schulich Award for Entrepreneurship in Business Administration  
 Imperial Oil Graduate Research Fellowships  
 Sarah M. Lawson Scholarship in Botany  
 Law Graduate Teaching Fellowships  
 The James Gordon MacGregor Memorial Teaching Fellowships in Physics  
 The Dr. A. Stanley MacKenzie Teaching Fellowship in Physics  
 The Archibald MacMechan Scholarship (English)  
 The Howard Murray Fellowship in Classics  
 Canadian Red Cross Fellowship  
 Canadian Nurses' Foundation Fellowship  
 W.B. Saunderson's Nursing Fellowship  
 Texaco Exploration Limited Fellowship in Oceanography  
 The James W. Tupper Graduate Fellowship in English  
 The H.W. Wilson Scholarship (School of Library Service)  
 Xerox Canada Inc. Fellowship (School of Business)  
 Canadian Foundation for the Advancement of Pharmacy Fellowship

## 3.2 Postdoctoral Awards

### 3.2.1 Izaak Walton Killam Memorial Postdoctoral Fellowships

Killam funds also provide for postdoctoral fellowships in most fields of study. The annual stipend is \$22,500 (1985) for initial terms of one year, plus travel grants. Applications for extensions of the fellowship may be considered. There are no restrictions regarding nationality of applicants, but non-Canadian candidates must meet all Canadian immigration requirements. These awards are tenable only at Dalhousie University and may be taken between July 1st and December 31st of the calendar year in which the award is made, but preferably in September or October. Those seeking Killam Memorial Postdoctoral Fellowships should apply for the appropriate forms from the Office of the Dean, Faculty of Graduate Studies, Dalhousie University, Halifax, Nova Scotia, Canada. Applications and supporting documents should be received at Dalhousie University not later than December 15. Successful candidates will be notified as soon as possible thereafter.

### 3.2.2 Other Postdoctoral Fellowships

The following postdoctoral awards are described in the Awards Office Calendar:

- Medical Research Fellowship
- National Sciences and Engineering Research Council
- Postdoctoral Fellowships
- Social Sciences and Humanities Research Council
- Postdoctoral Fellowships

## 4. University Services

### 4.1 Computer Centre

The Dalhousie Computer Centre serves Dalhousie University and the Technical University of Nova Scotia. In addition, other universities, high schools, and research institutions in Nova Scotia as well as private business are either using the computer on location, or via terminals or small computers connected to the main computer with telephone lines. The computer is a CDC CYBER 170-720 system and is located in the basement of the Killam Library.

Non-credit programming classes are given at regular intervals for undergraduate and graduate students. A credit class called "Introduction to Computing" is given at the undergraduate level. In addition, computer instruction is an integrated part of many course curricula. These classes are given in arts, science, medicine, and law study programs. The staff of the Computer Centre provides a consulting service to students and faculty who are taking the programming classes and who are using the computer to analyze data for class and research projects.

Several other computers are installed in various academic departments on campus.

### 4.2 Laboratories

Laboratories are well equipped for a wide variety of research in the sciences and medical sciences. The Sir James Dunn Science Building houses the laboratories for the Departments of Engineering, Geology, and Physics, while the Chemistry Building contains the research areas for the Department of Chemistry.

Medical science facilities are located in the Sir Charles Tupper Medical complex. The Sir Charles Tupper Medical Building houses the Departments of Anatomy, Biochemistry, Microbiology, Pathology, Physiology, and Pharmacology. The Animal Care Centre is also located in the Tupper Building. The Clinical Research Centre, which is connected by a link to the Tupper Tower, houses the research laboratories for the Departments of Medicine, Obstetrics, Paediatrics, Preventive Medicine, and Family Practice Teaching Unit. The Atlantic Research Centre for Mental Retardation is situated in the link area between the Clinical Research Centre and the Tupper Building.

In close association with these are a number of affiliated institutions and teaching hospitals for medical training.

The George A. Burbridge Pharmacy Building is equipped with modern research and teaching laboratories to accommodate programs in pharmaceutical research.

Facilities are available for research in Microbiology and Pathology in the Pathology Institute of the Nova Scotia Department of Health. Excellent equipment for advanced research has been established in this centre.

Research facilities for the Departments of Biology, Psychology, and Oceanography are located in the Life Sciences Building.

The Psychology Laboratories are equipped for research in all major areas of Psychology. Excellent facilities, including a laboratory nursery school, are available for research with children, and arrangements exist for clinical research in Camp Hill Hospital and the Nova Scotia Hospital.

The Oceanography Department, in cooperation with the Departments of Biology, Chemistry, Geology, and Physics, works closely with the Atlantic Oceanographic Group and the Bedford Institute to provide a powerful institutional group for study of the oceans.

Ocean-going research vessels are in active use, particularly in the summer months, providing sea time as an integral part of the student's academic program.

The University also maintains close contacts with the Atlantic Regional Laboratory of the National Research Council, the Defense Research Establishment (Atlantic), the Fisheries Experimental Station

(Atlantic), and the Nova Scotia Research Foundation. Dalhousie faculty members, postdoctoral fellows and graduate students make active use of the research facilities of these cooperating institutions.

The language laboratories for the Departments of French, Spanish, German, and Russian are housed in the Killam Library.

### 4.3 Libraries

The Dalhousie University Library system is organized to accommodate the needs of the undergraduate teaching programs, graduate and faculty research projects, and professional schools. The libraries in the system are: University Library (Killam — Humanities and Social Science; and the Macdonald — Sciences, Mathematics), Sir James Dunn Law Library, Kellogg Health Sciences Library.

Although these libraries have specific responsibilities, the resources and services of all are available to the whole University community as well as to many other groups within the Atlantic Provinces.

#### 4.3.1 University Library

The University Library has a collection of over 600,000 monographs and bound serials which support the Arts & Science programs, a periodical collection of 6500 current subscriptions, and a government document and report collection of approximately 200,000 items. This last is particularly strong in Canadian and UN material. In addition to traditional printed materials, the library is developing its resources in forms such as records, scores, and microforms. These central resources are supplemented by small departmental working collections as required.

#### 4.3.2 Special Collections

Dalhousie University Library has a number of excellent special collections providing support for research programs. These include the J.J. Stewart Canadiana Collection, the William Inglis Morse Collection of rare maps, bindings, and early printed books, the Bacon Collection, and the James MacGregor Stewart Kipling Collection, one of the finest in the world. Also of significance are the McCulloch Collection of mineral and fossil specimens, and the Honeyman Collection of geological specimens.

#### 4.3.4 Killam Memorial Library

Opened in 1970, the Killam Memorial Library has a number of specialized features. These include faculty offices, seminar rooms and 400 student carrels. These carrels are wired for eventual installation of on-line computer connections and closed circuit television. This library offers a variety of audio-visual units and ancillary services (typing rooms, computer services, language laboratories, microfilm equipment) as well as an auditorium and display and exhibition areas.

#### 4.3.5 Law Library

The Law Library, with resources exceeding 145,000 volumes and over 750 current legal periodical subscriptions, provides a virtually complete collection of common law materials, a very good collection of international law materials, and a fast growing marine and environmental law section. It also has a small working collection of foreign law, in particular French law.

#### 4.3.6 Halifax Libraries

Dalhousie is fortunate in being able to use the resources of libraries in the Halifax area. Chief among these for research interests are King's College Library with its incunabula; Dalhousie Institute of Public Affairs with its specialized collection in community planning; the Public Archives of Nova Scotia, which includes the Akins' Library, a collection of more than 4,000 volumes on colonial and Canadian history; the Provincial Legislative Library; the libraries of the Nova Scotia Research Foundation,

the Bedford Institute, the Technical University of Nova Scotia, the Maritime School of Social Work, and the Nova Scotia College of Art and Design.

## 5. Interdisciplinary Studies

### 5.1 Interdisciplinary PhD Program

Occasionally a student may wish to engage in a program of doctoral studies whose requirements are shared by two or more departments within the University. As significant advances in scholarly knowledge frequently occur at interdisciplinary boundaries, the University offers students the opportunity to undertake an interdisciplinary PhD program. Students considering such a program must pay particular attention to the following aspects of interdisciplinary doctoral study:

(a) The responsibility largely lies with the student to 'organize' a unique program of studies with appropriate faculty members and the Office of the Dean of Graduate Studies.

(b) The student must hold a first-class Honours undergraduate degree and a Master's degree, or acceptable equivalents, and therefore must have attained an academic level higher than that normally required for entry into a Dalhousie PhD program.

(c) The broader demands of interdisciplinary scholarship dictate that a student can expect, typically, to take a year longer to complete an interdisciplinary program than is normal for a program in a single discipline.

(d) The student should plan such studies in the context of an overall career goal to ensure that, as far as possible, the program will constitute a proper qualification for desired employment upon graduation.

Anyone wishing to pursue the program should plan it within the framework of the following requirements:

(1) Normally, the student will have completed at least one year of study in a Faculty of Graduate Studies and be in 'good standing.'

(2) The student should develop a tentative program of proposed study, reviewing its various features and ramifications, and making sure that it (a) clearly focuses on career goals, (b) is truly interdisciplinary, and (c) cannot be completed within the framework of an extant program.

(3) The student should discuss the proposed program with a faculty member in a participating department obtaining that person's agreement to act as the supervisor or as one of the thesis committee members.

(4) A formal application should then be initiated for entry into the program. Details of the procedure (including an application form) for pursuing an interdisciplinary PhD program are available from the Office of the Dean of Graduate Studies. If the application is approved, a supervisory committee will be established by the Dean.

(5) The committee will be responsible for supervising the student's overall program of study, including the setting and scheduling of comprehensive examinations, the development of a thesis proposal, the research, and the thesis-writing and defence.

### 5.2 African Studies

The Centre for African Studies serves to promote African studies and to provide for cross-disciplinary interaction both at the undergraduate and graduate level. At the graduate level, the responsibility for the student's program rests with the Department concerned, although, with the consent of the Department, it may include one or more classes from another discipline.

One of the functions of the Centre is to organize an interdisciplinary senior seminar. This is a research-oriented seminar open to faculty, graduate students and senior undergraduate students of the participating Departments. These Departments are Economics, English, History, Political Science, and Sociology and Social Anthropology.



### 5.3 Biomathematics

The Biomathematics program involves course work in Mathematics, Biophysics and Physiology, or any other area of Biology for which faculty advisors are available; the required MSc thesis is to be a theoretical analysis of a problem in the student's area of application. Depending on the student's inclination, registration may be in the Department of Mathematics, the Department of Physiology and Biophysics, or the Department of Biology.

Further information may be obtained from The Faculty of Graduate Studies, Dalhousie University.

### 5.4 Neuroscience

The Neuroscience program is designed to promote training in some area of this emergent interdisciplinary area of the behavioural, medical and life sciences. The program will involve research supervision at the graduate level by members of the faculty in the Departments of Anatomy, Biochemistry, Pharmacology, Physiology and Psychology. Research in a wide variety of areas within the neurosciences is currently conducted in laboratories at Dalhousie, and cooperation amongst these laboratories centres around an active Halifax regional chapter of the Society for Neuroscience. Depending on the students' inclination, registration may be in the Department of Anatomy, Biochemistry, Pharmacology, Physiology or the Department of Psychology. Students interested in applying should contact the Faculty of Graduate Studies, Dalhousie University, for further information.

### 5.5 Institute for Resource and Environmental Studies

The Institute offers a graduate program leading to the Master of Environmental Studies (MES) degree. See main entry in this Calendar.

### Departmental Listings

The following entries are designed to provide information about particular graduate programs. Although general Faculty of Graduate Studies requirements apply to all graduate programs, the methods of fulfilling these requirements vary considerably among Departments.

Each Departmental entry includes the following information:

1. A list of faculty members engaged in the teaching of graduate classes and/or the direction of graduate research. Faculty members whose major appointments are in other Departments are so indicated. In addition, the names of other teachers and/or researchers in the Department may be listed.

2. A description of facilities available may be included. Some general regulations may be described.

3. A list of admission requirements in addition to those of the Faculty of Graduate Studies. In some cases the minimum requirements outlined in Section 2.2 are not sufficient for entry into a particular program. Other particular requirements may be listed.

4. A description of degree program requirements broken down into five categories:

- (a) Minimum time required to complete the program.
- (b) Coursework required.
- (c) Other academic requirements.
- (d) Thesis requirement.
- (e) Other requirements.

5. A representative list of class offerings. Not all of the classes will necessarily be offered in a given year. In all cases where a letter

appears after a class number in this calendar it should be understood as follows:

A after the class number denotes a single-term class offered in the fall term only

B after the class number denotes a single-term class offered in the spring term only

A/B denotes a single-term class which students may take in either fall or spring term

C after the class denotes a half credit class lasting both fall and spring terms

R denotes a class lasting both fall and spring terms. It usually — though not necessarily — carries one full credit.

6. An extensive list of areas of specialization.

7. A list of departmental brochures or publications relating to graduate study.

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# Anatomy

(Tel. 424-2051)

#### Campbell Professor and Head of Department

D.G. Gwyn, MB, BS, LRCP (Lond.), MRCS (Eng.), PhD (Birm.)

#### Professors

D.M. Chapman, MSc (Man.), PhD (Cantab.)

D.H. Dickson, BA, MSc, PhD (W.Ont.)

D.A. Hopkins, BSc (Alta.), MA, PhD (McMaster)

#### Associate Professors

J.R. Asuncion, Jr., MD, CM (Santo Tomas), AA (Philippines)

R.E. Clattenburg, BSc, MSc (Acadia), PhD (W.Ont.)

M.M. Hansell, BSc (Tor.), PhD (Calif.)

R.A. Leslie, BSc (Brock), PhD (Cantab)

I.G. Mobbs, BSc (Aberdeen), MSc (McMaster), PhD (W.Ont.)

D.M. Nance, BS, MS, PhD (Oklahoma)

J.G. Rutherford, MSc (Syracuse), PhD (SUNY)

S.B. Singh, BSc, MSc (Alld.), PhD (W.Ont.)

V.G. Vethamany, BA, MA (Madras), PhD (Tor.)

R.J. Wassersug, BSc (Tufts), PhD (Chicago)

J.C. Penny, MSR, FSR, TE (Lond.)

#### Assistant Professors

R.W. Currie, BSA, MSc, PhD (Man.)

P.C. Jackson, PhD (McMaster)

J.A. Matsubara, BSc (Columbia), PhD (Calif.)

E.J. Scott, BSc, MSc, PhD (Man.)

#### Lecturers

J.D. Shaw, MSCP (SMU)

The Department of Anatomy provides facilities for advanced study and research in Neuroscience, Histology, Embryology, Neuroendocrinology and Evolutionary Biology.

## Admission Requirements

All general requirements for admission to the Faculty of Graduate Studies must be fulfilled. In addition, applicants are expected to have received a sound training in biology and chemistry.

Candidates entering with the minimum qualifications (a 4-year BSc) will be registered in a 2-year MSc program. Honours students in biology with *excellent qualifications* usually register in a 2-year MSc program but, after 1 year, may transfer to a PhD program or in certain circumstances, may enter the PhD program directly. Recommendation for such a transfer, from the masters to the PhD program, must come from the student's advisory committee and be based upon excellence in course work and research potential. Applicants holding a Master's Degree in a biological science may apply for direct admission into a PhD program. Medical graduates with an aptitude for research may apply for admission to the MSc or PhD program.

Applicants holding a 3-year BSc degree will be required to complete a qualifying year before being admitted into a graduate program. The content of this year of study will be recommended by the Department of Anatomy Graduate Studies Committee.

## MSc Degree Program

The minimum residency requirements for the MSc degree are as indicated in Section 2.6 of the Faculty of Graduate Studies Calendar.

A minimum of five graduate-level credits is required. A written thesis reporting original research must be submitted and defended orally. The MSc thesis (Anatomy 9000) may count for three of the five graduate-level credits required for the degree. All MSc candidates must participate in the departmental seminar program during each year of training.

Classes are determined by consultation between the student, research supervisor and the Department of Anatomy Graduate Studies Committee. For each candidate, classes will be selected from those listed below or, where appropriate, from those offered by other Departments. Consent of the instructor is required for admission into each class. Normally, 24 months (2 years) are necessary to complete all requirements for the MSc degree.

All MSc candidates must assist in laboratory teaching or an equivalent (approximately 40-50 hours) during each year of residency.

Financial assistance is normally available for no more than two full years.

## PhD Degree Program

Residency requirements for the PhD degree are summarized in Section 2.6 of the Graduate Studies Calendar.

The course requirements for each PhD candidate are determined by consultation between the student, the research supervisor and the Department of Anatomy Graduate Studies Committee. All PhD candidates must participate in the departmental seminar program during each full year of training. The student is also required to assist in laboratory teaching (approximately 40-50 hours per year for at least two years) and to deliver 4-6 hours of lectures during the course of his/her training.

A written thesis (Anatomy 9530) based on original research of a high calibre must be submitted and defended orally.

Financial assistance is normally available for no more than four years.

**Preliminary Examination:** All PhD candidates must pass a preliminary examination no later than 1 full year prior to the submission of a thesis (see Section 2.11). The examination will include material related to the general and specific areas of research. The examining committee will be selected by the Department of Anatomy Graduate Studies Committee after consultation with the candidate's research supervisor and will conduct the examination in accordance with the regulations established by the Department of Anatomy.

**Theses Examination:** MSc and PhD theses will be defended in accordance with the regulations of the Faculty of Graduate Studies (see Sections 2.12.1 and 2.12.2).

## Classes

503R Human Histology: one credit, co-ordinator M.M. Hansell.

504R Research: Microanatomical Methods: one credit, co-ordinator M.M. Hansell.

505C Seminar: half credit, co-ordinator P.C. Jackson.

507R Histochemistry. One credit. Co-ordinator D.M. Chapman.

510R Neuroanatomy: one credit, co-ordinator J.G. Rutherford.

512R Human Embryology: one credit. Prerequisite: Anatomy 515C and 516R, an equivalent or the consent of the instructor. Co-ordinators: D.M. Chapman, M.M. Hansell

515R Head and Neck: one credit, co-ordinator D.G. Gwyn

516R Gross Anatomy: one and one-half credits, co-ordinator R.J. Wassersug.

517C Special Topics: half credit, co-ordinator to be arranged.

9000 MSc Thesis

9530 PhD Thesis

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# Biochemistry

(Tel. 424-2480)

## Head of Department

R.W. Chambers, Carnegie and Rockefeller Professor

## Professors

A.H. Blair, MSc (UBC), PhD (Calif.)  
 W.C. Breckenridge, BSc (Kingston), MSc, PhD (Tor.)  
 R.W. Chambers, BA, PhD (Calif.)  
 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)  
 C. Mezei, BSc, PhD (UBC)  
 F.B. Palmer, BSc, PhD (W. Ont.)  
 S.J. Patrick, BA, PhD (Tor.)  
 D.W. Russell, B.Pharm. PhD, DSc (Lond.), BEd (Dal)  
 S.D. Wainwright, BA (Cantab.), PhD (Lond.)

## Associate Professors

P.J. Dolphin, BSc, PhD (Southampton)  
 R.G. Fenwick, Jr., BA (Miami), PhD (Tenn.)  
 F.I. Maclean, MA (Tor.), DPhil (Oxon.)

R.A. Singer, AB (Princeton), PhD (Harv.)  
J.A. Verpoorte, Drs (Utrecht), DSc (Pretoria)

#### Assistant Professors

M.W. Spence, MD (Alta.), PhD (McG)  
L.C. Stewart, MSc (McG)  
M.H. Tan, BSc, MD (Dal), FRCP(C), FACP

#### Lecturers

D.E.C. Cole, BSc, MD (Tor.), PhD (McG.)  
H.W. Cook, BSc, MSc (McG), PhD (Dal)  
R.A. Mulroney, BSc (Ott.), PDt (Montreal), MSc (Wisc.)

## Admission Requirements

Applicants must fulfill the general requirements for admission to the Faculty of Graduate Studies (section 2.2). Foreign applicants should submit the results of the Graduate Record Examination. A score of at least 550 on the TOEFL is required of applicants whose native language is not English (section 2.2).

## General Regulations

General Faculty requirements are given in sections 2.10 —2.12. In the course of their studies, students must demonstrate a basic knowledge at an introductory level of all aspects of Biochemistry, and a firm grasp at an advanced level of one of three specialties: molecular biology, general biochemistry with emphasis on lipids, or protein biochemistry. The basic knowledge requirement may be satisfied by passing open-book assessment tests in four areas: general biochemistry with emphasis on proteins; general biochemistry with emphasis on metabolism; molecular biology; bioorganic chemistry. These can be taken singly or in combination during the first two weeks of May, September and January. Assistance will be available for those who need it in preparing to meet this requirement. The advanced knowledge requirement may be met by formal classes and/or guided study arranged for each student through consultation with his or her advisory committee. Participation in the weekly Biochemistry Seminar series (Biochemistry 5900-5903) is also required. A preliminary examination on the subject area of the thesis is taken at the end of the first year of study. Application may be made at that time to transfer from an MSc to a PhD program.

## MSc Program

A thesis describing original research done by the candidate is prepared and defended orally. A Thesis Supervisory Committee consisting of the research director and two others is appointed to assist the candidate.

The minimum residence requirements of the two MSc programs are 1 and 2 years respectively (see section 2.6). Experience has shown that most candidates require an additional 6-12 months to complete the thesis.

## PhD Program

The preparation and oral defence of a thesis describing an extensive original investigation carried out by the candidate is the major requirement. A Thesis Supervisory Committee consisting of the research director and three others is appointed to oversee the research.

The minimum times to complete the PhD are 2 years from the MSc and 3 years from the BSc (see section 2.6). Most students require an additional year to complete the thesis.

## Areas of Specialization

Research for graduate degrees may be undertaken in the following fields:

1. Structure, biosynthesis and metabolism of serum lipids and lipoproteins (W.C. Breckenridge, P.J. Dolphin, and M.H. Tan).
2. Metabolic bone disease and the role of inorganic anions in

connective tissue metabolism (D.E.C. Cole).

3. Antibody-linked drugs in cancer therapy (A.H. Blair).
4. Control of eukaryotic cell reproduction; the cell cycle (R.A. Singer).
5. Structure, function and evolution of mitochondrial nucleic acids; organization and evolution of eukaryotic ribosomal RNA genes (M.W. Gray).
6. Insulin action in skeletal muscle (M.H. Tan).
7. Enzyme mechanisms; alcohol and aldehyde metabolism (A.H. Blair).
8. Biogenesis of myelin in the peripheral nerve during development (C. Mezei).
9. Metabolism of physiologically active membrane phospholipids (F.B. Palmer).
10. Biochemistry of biological clocks with special reference to neurohormones in chick pineal gland and retina (S.D. Wainwright).
11. Mechanism of estrogen action: estrogen receptors in normal and neoplastic tissue (C.B. Lazier).
12. Chemical and physicochemical studies on enzymes and cell membrane proteins (J.A. Verpoorte).
13. Structure, function and evolution of ribosomal RNA; control of gene expression in prokaryotes; genome structure and evolution of archaeobacteria; eukaryotic repetitive DNAs (W.F. Doolittle).
14. Metabolism of unsaturated fatty acids and membrane lipids in cultured cells (H.W. Cook).
15. Membrane-bound enzymes of lipid metabolism, local membrane remodelling and bulk turnover in eukaryotic cells in culture. Human inherited metabolic diseases (M.W. Spence).
16. Mathematical programming and game theory in biochemistry (F.I. Maclean).
17. Mutagenesis and carcinogenesis. Nucleic Acid Chemistry. Site-specific mutagenesis. The molecular mechanisms of mutations by carcinogens (R.W. Chambers).
18. Molecular genetics of cultural mammalian cells including the transfer, expression and mutation of cloned DNA sequences. (R.G. Fenwick, Jr.).

## Classes

The 4000 series classes are designed primarily for undergraduates in the final year of the honours program, but may be taken for graduate credit. Classes marked (\*) are not offered every year. Please consult current timetable.

**4300B Metabolic Organization and Regulation:** lecture 2 hours, F.B. Palmer, W.C. Breckenridge.

**4301B Biochemical Communication: Membranes, Neurotransmitters and Hormones:** lecture 2 hours, C. Mezei, C. Lazier, F.I. Maclean.

**4302A Biochemistry of Lipids:** lecture 2 hours, F.B. Palmer and others.

**4303A Biochemical Energetics:** lecture 2 hours, F.I. Maclean.

**4403A (Microbiology 4403A) Structure, Organization and Replication of Genes:** lecture 2 hours, R.G. Fenwick.

**4404B (Microbiology 4404B) Gene Expression:** lecture 2 hours, R.A. Singer.

**4700A Proteins:** lecture 2 hours, tutorial 1 hour, alternate weeks, J.A. Verpoorte.

**4701B Enzymes:** lecture 2 hours, A.H. Blair.

\*5800R (Pathology 501) **Clinical Medical Biochemistry**: lecture 2 hours, lab 3 hours, Pathology faculty members.

\*5802R (Pathology 503) **Principles of Instrumentation**: lecture 3 hours, lab by assignment, Pathology faculty members.

5000R **Special Topics in Biochemistry**: Students interested in topics not covered in formal classes may ask the department for special classes to meet their needs. The fields in which the department can offer instruction may be gauged from the list of research topics.

5302B **Structure, Biosynthesis and Metabolism of Lipoproteins**: lecture 2 hours, W.C. Breckenridge, P.J. Dolphin, J.A. Verpoorte.

\*5400R **Protein Synthesis and Control Mechanisms**: lecture 2 hours, S.D. Wainwright.

\*5402B **Biochemical Evolution**: seminar and guided reading 2 hours, W.F. Doolittle.

5601C and 5602C **Selected Topics in Advanced Biochemistry**: guided reading and tutorial A.H. Blair, R.W. Chambers, R.G. Fenwick, F.B. Palmer, J.A. Verpoorte.

5900-5903 **Biochemistry Seminar**: weekly seminars in which all Biochemistry graduate students must participate.

9000 MSc Thesis

9530 PhD Thesis

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# Biology

(Tel. 424-3514)

**Chairperson of Department**  
W.C. Kimmins

## Professors

R.G. Brown, MSc (McG.), PhD (Rutgers)  
M.L. Cameron, MSc (Dal), PhD (Cantab.)  
A.R.O. Chapman, PhD (Liv.)  
R.W. Doyle, MSc (Dal), PhD (Yale)  
J. Farley, MSc (W.Ont.), PhD (Man.)  
J.C. Fentress, BA (Amherst), PhD (Cantab.) Major appointment in Psychology  
E.T. Garside, MA, PhD (Tor.)  
L.E. Haley, MSA (Tor.), PhD (Calif.)  
B.K. Hall, PhD, DSc (UNE)  
O.P. Kamra, MS (N. Car. State), PhD (Wash. State)  
W.C. Kimmins, PhD (Lond.)  
P.A. Lane, MSc (SUNY Binghamton), PhD (SUNY Albany)  
K.E. von Maltzahn, MS, PhD (Yale), *Carnegie Professor, King's College*  
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, AB (Berkeley), PhD (UBC)

J.G. Ogden, III, MA (Tenn.), PhD (Yale)  
L.C. Vining, MSc (Auck.), PhD (Cantab.), FRSC  
E. Zouros, MSc, PhD (Agr. College Athens), PhD (Chic.)

## Associate Professors

E.W. Angelopoulos, MS, PhD (Minn.)  
B. Freedman, MSc, PhD (Tor.)  
M.J. Harvey, PhD (Dunelm)  
G.S. Hicks, MSc (Carl.), PhD (Sask.)  
R.W. Lee, MA (Mass.), PhD (SUNY Stony Brook)  
R.P. McBride, MSc (UBC), PhD (Edin.)  
J.A. Novitsky, BSc (Penn. St.), PhD (Oregon SU)  
D.G. Patriquin, MSc, PhD (McG)  
M.R. Rose, MSc (Queen's), PhD (Sussex), *N SERC Res. Fellow*  
J.H.M. Willison, PhD (Nottingham)

## Associate Professor (Research)

G.F. Newkirk, PhD (Duke)

## Assistant Professors

R.G. Boutilier, MSc (Acadia), PhD (East Anglia) *N SERC Res. Fellow*  
T.H. MacRae, MSc, PhD (Windsor)  
R. Scheibling, BSc, PhD (McG), *N SERC Res. Fellow*

## Postdoctoral Fellows

R.K. Bhatnagar, PhD (Delhi)  
P. Brylski, PhD (Berkeley)  
K. Lofdahl, PhD (Chicago)  
H. Whitehead, PhD (Cambridge)  
H. Wilson, PhD (Johns Hopkins)

## Honorary Research Associates

J. Bubar, BSc (Macdonald College, McG), MS (Penn. St.), PhD (McG)  
N.S. Agric. Coll.  
L. Cook, BSc (McG), MS (Wis.), PhD (Maine), N.S. Agric. Coll.  
D.K. Cone, BSc, MSc (Guelph), PhD (UNB), St. Mary's University  
R. Conover, PhD (Yale), Mar. Ecol. Lab., BIO  
K.T. Frank, PhD (McG), Mar. Ecol. Lab., BIO  
J. Fraser, BSc (Bedford College, London University), MSc (Aberdeen),  
PhD (Lincoln College, Un. of Canterbury), N.S. Agric. Coll.  
B.T. Hargrave, BSc, MSc (Dal), PhD (UBC), Mar. Ecol. Lab., BIO  
F.H. Harrington, BA Hons (Delaware), PhD (New York at Stony Brook),  
Mount Saint Vincent University  
W.G. Harrison, BSc, PhD (North Carolina, Raleigh), Mar. Ecol. Lab., BIO  
J.J. Kerekes, BSc (UBC), MSc (Alberta), PhD (Dal) Canadian Wildlife  
Service, Environment Canada  
S.R. Kerr, BSc (Carleton), MSc (Queen's), PhD (Cal.), Mar. Ecol. Lab.,  
BIO  
W.S.G. Maass, Dr rer nat (Tubingen), Atlantic Reg. Lab. NRC  
J. McGlade, PhD (Guelph), Mar. Fish Division, Fish. and Oceans  
Canada, BIO  
I.A. Meinertzhagen, BSc (Aberdeen), PhD (St. Andrews), Psychology  
Dept., Dalhousie  
P.V. Mladenov, PhD (Alberta), Mount Allison Univ.  
J. Nowak, PhD (Olsztyn), N.S. Agric. Coll.  
R. Olson, MSc (Wisc.), PhD (Alberta), N.S. Agric. Coll.  
T.C. Platt, BSc (Nottingham), MA (Tor.), PhD (Dal), Mar. Ecol. Lab., BIO  
R.K. Prange, BSc (Acadia), MSc (UBC), PhD (Guelph), N.S. Agric. Coll.  
J.D. Pringle, BSc, MSc (Victoria), PhD (Dal), Mar. Ecol. Lab., Fisheries  
and Oceans  
A.R. Robinson, BSc, MSc, PhD (Macdonald College, McG), N.S. Agric.  
Coll.  
G.W. Stratton, BSc, MSc, PhD (Guelph), N.S. Agric. Coll.  
J.P. van de Meer, BSc Hons (W.Ont.), PhD (Cornell), Atlantic Reg. Lab., NRC

R.R. Warman, PhD (Guelph), N.S. Agric. Coll.  
 R.J. Wassersug, BSc (Tufts), PhD (Chic.), Dept. of Anatomy, Dalhousie  
 J.L.C. Wright, PhD (Glasgow), Atlantic Reg. Lab., NRC.

#### Honorary Adjunct Professors

R.G.S. Bidwell, BSc (Dal), BA, MA PhD (Queen's), FRSC, Atl. Inst. Biotechnology.  
 J.D. Castell, MSc (Dal), PhD (Oregon), Fisheries and Oceans  
 J.S. Craigie, BA, MSc, PhD (Queen's), Atlantic Reg. Lab., NRC  
 K.H. Mann, BSc, DSc (Lond.), PhD (Reading), FRSC Mar. Ecol. Lab. BIO  
 J.L. McLachlan, BSc, MA, PhD (Oregon State College), Atlantic Reg. Lab., NRC  
 H. Schrempf, PhD (Stuttgart-Hohenheim), Inst. für Mikrobiologie, Munich

The Biology Department has facilities for advanced study and research leading to the MSc and PhD degrees. Guidelines to the departmental requirements for graduate study are available from the departmental secretary.

### Admission Requirements

Candidates must satisfy the general requirements for admission to the Faculty of Graduate Studies. Normally a student will not be permitted to earn all three degrees (BSc, MSc, and PhD) at Dalhousie.

### MSc Degree Program

For minimum times required to complete this program, see section 2.6. Students are required to obtain five graduate credits; of these at least two must be graduate classes and include Biology 5700C and Biology 5705C; they may include graduate classes from other departments. The thesis may count as 1, 2, or 3 credits. Additional classes may be specified by supervisory committees.

Students are required to demonstrate in an undergraduate biology class for at least one year and must be admitted to candidacy before they are permitted to submit and defend a thesis.

A thesis reporting original research must be submitted and defended orally.

Students are expected to participate in weekly departmental seminars.

### PhD Degree Program

For minimum times required to complete this program, see section 2.6. Biology 5700C and Biology 5705C are required classes and additional classes may be specified by supervisory committees.

A preliminary examination on subjects in the general area of the thesis research is required for all PhD students. Students must pass the preliminary examination at least one year before submitting a PhD thesis.

Students are required to demonstrate in an undergraduate biology class for at least one year, and must be admitted to candidacy before submitting and defending a thesis.

A thesis reporting original research must be submitted and defended orally.

Students are expected to participate in weekly departmental seminars.

### Streams

Incoming students are assigned to one of four streams: however, they may take (other) classes outside their stream areas. Consult department for details. The four streams are:

- A: Ecology/Evolution/Marine Biology/Animal Physiology
- B: Plant-Terrestrial Biology/Plant Physiology
- C: Cell/Molecular/Genetics/Development/Microbiology
- D: Animal Development/Genetics/Physiology

### Classes

Unless noted otherwise those classes designated A, B, C are half-credit, all other are one-credit classes.

Classes marked with an asterisk are offered in alternate years. Please check the current timetable to see whether a particular class is being offered.

5020A **Advanced Cell Biology**: lecture 3 hours, T.H. McRae.

5024B **Microscopy**: lecture 2 hours, lab 3 hours, J.H.M. Willison, D.B. Stolz, K.B. Easterbrook, G. Faulkner.

5030A **Topics in Genetics**: seminar 2 hours, R. Lee.

5050B **Seminar in Development\***: seminar 2 hours, B.K. Hall.

5060B **Environmental Ecology\***: lecture 2 hours, lab (field/seminar) 3 hours, B. Freedman.

5067B **Introductory Fisheries Population Biology\***: seminar 2 hours, R.W. Doyle.

5068B **Limnology**: lecture 3 hours, J.G. Ogden.

5070C **Animal Physiology II**: lecture 2 hours, lab 3 hours, R.K. O'Dor, R. Boutilier, instructor: M.J. O'Halloran.

5072C **Animal Nutrition\***: lecture seminar 2 hours, J. Castell.

5100A **Marine Microbiology\***: lecture 2 hours, seminar, discussions, 2 hours, J.A. Novitsky.

5101B **Industrial Microbiology and Biochemistry**: lecture, seminar 2 hours, L.C. Vining.

5214B **Physiology and Biochemistry of Marine Algae\***: lecture 2 hours, permission of instructor required: J.S. Craigie.

5379A **Ichthyology\***: lecture 3 hours, E.T. Garside.

5439B **Topics in Human and Medical Genetics**: lecture, seminar 2 hours, O.P. Kamra (coordinator) and others.

5451A **Selected Topics in Biomathematics\***: lecture 2 hours, R. Rosen.

5600A **Aquaculture\***: lecture, discussion 2 hours, G.F. Newkirk.

5611B **Biogeography\***: lecture 2 hours, seminar 1 hour, J.G. Ogden.

5616B **Ecosystem Analysis\***: lecture/discussion 3 hours, P. Lane.

5617A **Theoretical Population Dynamics\***: lecture 3 hours, M.R. Rose.

5618A **Theoretical Evolutionary Ecology\***: lecture 3 hours, M.R. Rose.

5652C **Advanced Ecology Seminar**: consult Department.

5654A **Plant Ecology\***: lecture 2 hours, lab 3 hours, B. Freedman

5700C **Graduate Seminar Class**: seminars 1 hour, staff.

5705C **Graduate Stream Class**: 2 hours, staff.

5706C Graduate Stream Class II: 2 hours, staff.

5800-5899 Special Topics in Biology: members of the staff.

9000 MSc Thesis

9530 PhD Thesis

## Areas of Specialization

### Stream A — Ecology/Evolution/Marine Biology/Animal Physiology

Population and community ecology of seaweeds. (A.R.O. Chapman).  
 Ecology; Zooplankton physiology and population studies. (R.J. Conover).  
 Ecological genetics of marine organisms. (R.W. Doyle).  
 Parasitology; history of biology. (J. Farley).  
 Ethology; development and adaptation in behaviour. (J.C. Fentress).  
 Feeding ecology of zooplankton and ecology of fish larvae (K. Frank).  
 Resource and environmental studies. (A. Hanson).  
 Marine benthic ecology. (B.T. Hargrave).  
 Behavioural ecology; ethology. (F.H. Harrington).  
 Marine phytoplankton. (G. Harrison).  
 Chemical and biological effects of lake acidification; primary production and nutrient-trophic relationships in lakes. (J. Kerekes).  
 Marine population studies; ecology. (S.R. Kerr).  
 Community ecology, structure and stability of plankton communities, competition-predation phenomena, eutrophication. (P.A. Lane).  
 Analysis of ecosystems. Comparison of system function in coastal inlets and in lakes. Ecological energetics. (K.H. Mann).  
 Microbial ecology of disturbed habitats. (R.P. McBride).  
 Marine population, community ecology, fisheries biology (J. McGlade).  
 Marine botany. (J. McLaghlan).  
 Population, evolutionary ecology of zooplankton, birds and seals. (I.A. McLaren).  
 Biological oceanography, benthic invertebrates. (E.L. Mills).  
 Echinodermbiology (P. Mladenov).  
 Environmental distribution of Sr90; radiocarbon dating; pollen stratigraphy. (J.G. Ogden III).  
 Dynamics and spatial properties of phytoplankton. (T. Platt).  
 Ecology of crustacea and marine plants. (J.D. Pringle).  
 Life-history evolution; genome evolution; theoretical population biology. (M.R. Rose).  
 Foraging and life history strategies of marine invertebrates; population and community ecology of marine benthos. (R. Scheibling).  
 Genetics of marine algae (J. van de Meer).  
 Evolutionary biology; anatomical adaptation. (R.J. Wassersug).  
 Population and ecological genetics; the genetic basis of adaptation and evolution. (E. Zouros).

### Stream B — Plant — Terrestrial Biology/Plant Physiology

Applied physiology; agricultural engineering; photosynthesis; photorespiration. (R.G.S. Bidwell).  
 Field crops cultivar evaluation; forage crops breeding, new crop development. (J.S. Bubar).  
 Taxonomy and ecology of soil fungi. (D. Brewer).  
 Physiology and biochemistry of marine algae. (J.S. Craigie).  
 Crop production. (J. Fraser).  
 Forest ecology, pollution and resource management, ecology. (B. Freedman).  
 Plant biosystematics and biogeography; grass systematics. (M.J. Harvey).  
 Plant development: morphogenesis, histology, organ culture, regulatory mechanisms. (G.S. Hicks).

Plantbiochemistry: role of cell wall glycoproteins. Plant physiology: applications of hydroponics. (W.C. Kimmins).  
 Lichen biology and chemistry. (W.S.G. Maass).  
 Regeneration and reproduction in lower plants. (K.E. von Maltzahn).  
 Plant tissue culture (J. Nowak).  
 Plant anatomy, taxonomy (A.R. Olson).  
 Physiology, microbiology and ecology of nitrogen-fixing plant-bacterial associations; Biological Agriculture. (D.G. Patriquin).  
 Environmental physiology of agronomic plants; water stress physiology. (R.K. Prange).  
 Soil chemistry (P.R. Warman).  
 Electron microscopy; plant cell wall structure and development. (J.H.M. Willison).

### Stream C — Cell/Molecular/Genetics/Development/Microbiology

Ultrastructure of trypanosomes and *Trichomonas* (E. Angelopoulos).  
 Structure and function of plant cell wall glycoproteins. Control of expression in yeast and other fungi — role of glucose analogues. (R. Brown).  
 Developmental biology, cell differentiation, organ regulation. (B.K. Hall).  
 Radiation genetics and chemical mutagenesis; cytogenetic effects of food additives and insecticides. (O.P. Kamra).  
 Genetics, characterization and regulation of chloroplast DNA in *Chlamydomonas*. (R.W. Lee).  
 Microtubule assembly and organization; protein synthesis regulation during embryogenesis. (T.H. MacRae).  
 Applied, environmental, industrial microbiology. (R.G.L. McCready).  
 Marine Microbiology, microbial response to low nutrient conditions. (J.A. Novitsky).  
 Molecular genetics (H. Schrempf).  
 Soil and aquatic microbiology; pesticide microbiology; microbial toxicology. (G.W. Stratton).  
 Microbial biochemistry; biosynthesis of antibiotics; metabolic controls. (L.C. Vining).  
 Chemistry of natural marine products (J.L.C. Wright)

### Stream D — Animal Development/Genetics/Physiology

Respiratory and acid-base physiology in lower invertebrates (R.G. Boutilier).  
 Nutrient requirements of aquatic species (J. Castell).  
 Fish parasites and diseases (D.K. Cone).  
 Parasitology; history of biology (J. Farley).  
 Thermal and osmoregulative physiology, pollutant pathology and structural analysis in fishes (E.T. Garside).  
 Genetics of oysters (L.E. Haley).  
 Invertebrate nervous systems: Their structural organization and development (I.A. Meinertzhagen).  
 Aquaculture genetics and bivalve culture (G.F. Newkirk).  
 Reproductive physiology and bioenergetics of molluscs, especially cephalopods.  
 The life cycle of the squid, *Illex illecebrosus* (R.K. O'Dor).  
 Development, nutrition, pathology of marine invertebrates (R. Scheibling).  
 Functional morphology of amphibian larvae (R. Wassersug).

# School of Business Administration

(Tel. 424-7080)

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. Graduates in good standing in any discipline can apply to enter the graduate program leading to the degree of Master of Business Administration. Details of the undergraduate program leading to the Bachelor of Commerce degree may be found in the calendar for the Faculty of Management Studies.

## Director of the School

John H. Scheibelhut

## Director, International Business Centre

Alan M. Rugman

## Coordinator, MBA Program

M. Eileen MacDougall

## Professors

A.A. Atkinson, BComm, MBA (Queen's), MSc, PhD (Carnegie)  
 C.R. Brookbank, BA, MA, PhD (Toronto)  
 G.R. Chesley, B Comm (MtA), MA, PhD, (Ohio), CA  
 M.A.H. Dempster, BA (Toronto), MS, PhD (Carnegie), MA (Oxon.) (Roy A. Jodrey Chair)  
 C.R. Dipchand, B Comm (Queen's), MBA (Sask.), PhD (Western)  
 R.E. George, BSc (London), MS (Bristol), PhD (London) (Wm. A. Black Chair)  
 M.J.C. Martin, BSc (Nottingham), PhD (Sheffield)  
 J.D. Misick, BA (Dal), MBA (Col.)  
 J.R.E. Parker, B Comm (Dal), MBA (Wash.), C Phil (Mich.), CA  
 G.S. Roberts, AB (Oberlin), MA, PhD (Boston College)  
 A.M. Rugman, BA (Leeds), MSc (Lond.), PhD (Simon Fraser)  
 J.H. Scheibelhut, BSc (Notre Dame), MBA (Ind.), PhD (Oregon)  
 R.G. Storey, BBA (UNB), MBA (Queen's), PhD (Mich. State)

## Associate Professors

B.C. Archibald, BA (Queen's), MSc (Stanf.), PhD (Wat.)  
 M.R. Brooks, BOT (McG.), MBA (Dal), PhD (Wales)  
 D.C. Cherry, B Comm (Dal), MBA (McM), CMA  
 T.K. Clarke, BS Nautical Science (Calif. Maritime Acad.), PhD (Ill.)  
 C.J. Dirksen, BS (Santa Clara), MBA, PhD (Oregon)  
 J.F. Duffy, BS, MS, PhD (Iowa)  
 R.A. Ellison, BSc (UNB), MBA (McM.), PhD (Tenn.)  
 R.H.R. Glube, BSc (Dal), MBA (Chic.), PhD (Cranfield)  
 R.E. Klapstein, BSc (Calg.), BA (Alta.), MBA, LLB (Dal), LLM (Osgoode Hall), CMA  
 S.O. Larsson, BSc (SGW), MSc (Alta.), PhD (UBC)  
 L.C. MacLean, BA, BEd, (StFX), MA, PhD (Dal)  
 R.N. Maddox, BA, MBA, PhD (Ohio)

L.W. Mealiea, AB, MBA (Rutgers), PhD (Mass.)  
 A. Oppong, BSc (Ghana), MBA (Chic.), PhD (Iowa), CGA  
 D.J. Patton, BA (UNB), MA (Tor.), DBA (Indiana)  
 R.J. Rosson, Dip. MS (Salford), MA (Lancaster), PhD (Bath.)  
 R.S. Sandhu, BSc, BCL, LLM (Delhi), LL.M (Yale), MBA (Dal)  
 Y. Sankar, BA (McG), MA (Tor.), PhD (Johns Hopkins)  
 D.A. Schellinck, BSc, MBA (Dal), PhD (Ill.)  
 E.W. Scott, BComm (Dal), MBA (Col.), CA, CMA  
 Y. Shafai-Sahrai, BSc, MPA (Tehran), MBA, PhD (Mich.)  
 D. Sheridan, BA, BEd, MEd (Sask), PhD (Alta)  
 R.A. Street, BComm, LLB, LL.M (Dal), MBA (Western)  
 Y.B. Yalawar, BComm, MComm (Karnatak), MBA, PhD (Ohio State)  
 G.E.R. Zinck, BComm (Dal), BEd (MSV), CA

## Assistant Professors

J. Barzilai, BSc, MSc, DSc (Technion)  
 I. Fooladi, BS (Iran), MA (Tehran), MS, PhD (Ore.)  
 A.M. Ireland, BA (Chatham Coll.), MSc (Carnegie-Mellon), MBA (Dal), CA  
 S.J. Kamath, BA (Delhi), MBA (Indian Inst. Mgt.), MA, PhD (Simon Fraser)  
 P.C. Lam, B Comm (Dal), MBA (McG), PhD (Manchester)  
 B.W. MacLean, BComm, MBA (Dal), CA  
 A.C. Peacock, BA, MA, PhD (UWO)  
 P.C. Secord, BComm, MBA (Dal), CIA, MPA (Dal), CMA

## Part-Time Faculty

J. Barger, BS (Pace), BEd, MA (Dal)  
 R. Carroll, BBA, BEd (StFX), MBA (Dal), CGA  
 J.E. Forrest, BSc, MSc, (Wales), MBA (Dal)  
 J. Gratwick, BSc (London), FCIT  
 R. Hallett, BA, BSc (Dal), MBA (SMU)  
 D.C. MacDonald, BSc (MSV), BEd (MtA), MBA (Dal)  
 M.E. MacDougall, BSc, MBA (Dal)  
 C. McManus, B Eng (NSTC), MBA (Dal)  
 D. Moulton-Barrett, BA (Dal)  
 E. Pease, BA, BEd (Dal), MEd (MSV)  
 R.M. Sparkman, BSIE (Northwestern), MBA (College of William and Mary), PhD (Houston)  
 T.E. Withers, BComm, MBA (Dal), CA, CMA

## MBA Program

Additional information on the MBA program, including course descriptions, is found in a brochure published by the School of Business, and available from Graduate Admissions or the School. Students seeking further information should address themselves to:

M. Eileen MacDougall  
 Coordinator, MBA Program  
 School of Business Administration  
 6152 Coburg Road  
 Halifax, N.S. B3H 1Z5  
 Telephone: (902) 424-7080

The objective of the MBA program at Dalhousie is to develop effective business managers. The program concentrates on developing the ability to make sound decisions and judgements, and trains students in the analysis and evaluation of decision-making data. These skills have wide application not only in business enterprises, but equally in government and other organizations.

The first year of the program develops the student's understanding of all the major functional areas of business through an integrated set of courses embracing economics, statistics, finance, operations research, operations management, accounting, marketing and management. The

second year has only one required course, Business Policy, and beyond this the student may select those courses offering an opportunity to examine in greater depth areas of special interest. While students may choose to concentrate elective studies in one or two areas, there is no requirement that a major be formally declared.

## Admission Requirements

Regulations of the Faculty of Graduate Studies govern admissions. A candidate must hold a degree recognized by Dalhousie University as the equivalent of a Bachelor's Degree in one of its own faculties. The candidate must also show those interests and qualities which are necessary for success in business management. Good experience in business or government is a definite asset. A resume should accompany the application for admission.

Candidates are required to sit for the Graduate Management Admission Test (GMAT). This requirement may not be waived, without explicit permission of the Admissions Committee. GMAT results will be considered with other information submitted by applicants, in deciding on eligibility for admission.

The Test may be taken at conveniently-located centres throughout North America and in many other parts of the world. In the case of North American candidates, applications for the test are accepted by the E.T.S. in Princeton until approximately six weeks before test dates. For candidates in other countries, closing dates are eight weeks before test dates.

Applicants for the test should use an order form obtainable from the Registrar's Office, Dalhousie University, to obtain an information bulletin and registration form for the GMAT. If the order form is lost or omitted from the materials you receive, you should write directly to:

Graduate Management Admission Test  
Educational Testing Service  
Box 966  
Princeton, N.J., 08540, U.S.A.

Every student is required to demonstrate at an early stage in his studies that he is proficient in writing reports and essays in English. Candidates from countries whose mother tongue is not English will be required to take the Test of English as a Foreign Language as a requirement for admission. Further information may be obtained by writing:

Test of English as a Foreign Language  
Box 899  
Princeton, N.J., 08540, U.S.A.

**CANDIDATES ARE ADVISED TO TAKE THE TEST(S) AT THE EARLIEST POSSIBLE DATE.**

It is strongly recommended that all documents (transcripts, GMAT scores, references, and resumes) be submitted prior to May 31.

Any applications received after this date will be considered on a first-come-first-served basis because of limited class size. Applications received after August 1 will not be processed without written permission of the Dean of Graduate Studies

Foreign students should have their documents submitted prior to April 30.

Applicants who are accepted into either the MBA or the MBA/LLB program are required to make a nonrefundable deposit of \$100.00 (to be set against fees) within ten days of receiving an offer of a place. This deposit is independent of any early registration fees and is the means by which mailing of additional information is initiated.

The Faculty of Law may require a deposit in addition to that required by the School of Business.

## Grading System and Good Standing

Under the regulations of the Faculty of Graduate Studies and the requirements of the School of Business, MBA students are required to achieve a grade of B- or better in all classes taken. Full-time students are permitted one C grade in any year if an overall B average is maintained for the year. This special exception available only to full-time students.

Students who do not meet these requirements may not continue in the program unless their application for readmission is approved by the Faculty of Graduate Studies.

Failed core classes must be repeated and passed at the earliest opportunity; failed elective classes may be repeated and passed or replaced. A second failure in the same course, regardless of when such failure occurs, will normally result in immediate dismissal from the MBA program. In order to graduate, students must achieve an overall B average for the program.

Within two weeks of the first meeting of a class, each instructor shall make available a written description of the method of evaluation to be used in this class. In any course for which 25 percent or more of the evaluation is based on group work, there must be an exam(s), which must be passed on average.

Special examinations may be granted to students in the case of illness supported by a medical certificate, or in other exceptional circumstances. Medical certificates must be submitted at the time of the illness and will not normally be accepted after a lapse of one week from the date of the examination.

## Part-time MBA Program

Although students are encouraged to complete the MBA program, and especially the second year, by full-time attendance, the following provisions are available for those who can attend only as part-time students.

A student must complete the requirements for the MBA degree within six years of initial enrollment in the program. Extensions may be granted in special cases upon petition to the Faculty of Graduate Studies.

All part-time students must include MBA 6001 (Business Policy) as one of the last classes taken. This class provides an integration of the MBA program.

No more than four (4) half-credit classes may be taken in each twelve month year including summer sessions. Credit for Summer School classes is limited to one-half course per six-week summer session. Only Graduate level classes approved for Summer Session offering will be eligible for such credit.

Part-time MBA students will be enrolled in classes together with full-time MBA students.

## Advanced Standing

Students with relevant academic background may receive some advanced standing for core classes in the MBA program. For further information, contact the MBA coordinator. Full-time students will not normally be permitted to carry less than a full work load in the first year of the program, regardless of the number of waivers granted. Students requiring more than thirteen half courses for the degree will be registered in a two year program and must pay two years' tuition (or equivalent in part-time fees).

## Special Areas of Study

Dalhousie has developed strong programs in the areas of International Business and Transportation. Students planning to concentrate their studies in these areas should consider the following recommendations:



## International Business

Students wishing to be recognized as International Business majors by the Centre for International Business Studies must include the following courses in their programs: 6801 A or B The Firm in the International Environment, and 6802 A or B International Business Policy, and at least two of the other International Business courses offered by the School. These include:

- 6803 A or B International Transportation
- 6804 A or B Seminar in Ocean Transportation
- 6805 A or B International Business and Ocean Resources
- 6806 A or B Export Marketing
- 6807 A or B International Financial Management
- 6808 A or B International Banking and Finance
- 6315 A or B Human Problems in International Management

In addition, MBA 6553 A or B Managing Technological Innovation is designed with a significant international aspect included.

## Transportation

A proposed grouping of courses for students wishing to follow a transportation/distribution stream is as follows:

- 6402 A or B Marketing Channels and Logistical Management
- 6406 A or B Domestic Transportation
- 6407 A or B Physical Distribution Management
- 6408 A or B Management of Transportation
- 6803 A or B International Transportation
- 6804 A or B Seminar in Ocean Transportation

## Combined LLB and MBA Program

This is a four-year program which enables senior students to select classes leading to degrees of Bachelor of Laws and Master of Business Administration. The suggested order of the program is:

**Year I:** First-year classes of MBA program. See "Program Structure" for details.

**Year II:** First-year classes of the LLB program.

**Year III:** One and a half classes from the MBA program plus 25 hours of classes from the LLB program.

**Year IV:** One full-year class from the MBA program and between 23 and 25 hours of classes in law.

Candidates for the MBA/LLB program must also satisfy the entrance requirements of the Faculty of Law (see calendar of that Faculty) and may obtain further information about the combined program by writing either to the Faculty of Law or to the Co-ordinator of the MBA program. For admission, students must apply to both the Law School and the Business School individually.

## Program Structure

The total program includes nine Core I classes, five Core II classes, two required non-credit classes (except MBA/LLB), and seven free electives, (four for MBA/LLB).

Full-time students are normally required to carry a full course load in

the first year, consisting of ten half-credit classes and two non-credit classes. These will normally include eight Core I classes and two classes which may be either from Core II or free electives.

## First Term

- MBA 5001A: Communications and Career Management Skills I
- MBA 5101A: Financial Accounting
- MBA 5311A: Organizational Behaviour
- MBA 5501A: Business Statistics
- MBA 5502A: Operations Research
- MBA 5701A: Economic Decision-Making: The Company

## Second Term

- MBA 5002B: Communications and Career Management Skills II
- MBA 5201B: Finance
- MBA 5401B: Marketing Management
- MBA 5551B: Operations Management
- Plus 2 electives or Core II classes

Combined MBA/LLB students take six half-credit courses in each term of the first year, and are not required to take MBA 5001A and 5002B.

## Core II

Students with no academic business background are encouraged to take all Core II classes; all students are required to take:

### A. Three of:

- MBA 5702 A or B: Economic Decision-Making: The Economy
- MBA 5102 A or B: Managerial Accounting
- MBA 5312 A or B: Organizational Design
- MBA 6903 A or B: Management Information Systems

and

### B. Two of:

- MBA 6801 A or B: Firm in the International Environment
  - MBA 6901 A or B: Business Law
  - MBA 6902 A or B: Business and Government
  - MBA 6002 A OR B: Business Policy II.
- (MBA/LLB candidates — one of: 6801, 6902, 6002.)

These requirements may be met in the first or second year. Some electives may have Core II prerequisites.

The second year normally includes MBA 6001 (Core I), electives, and Core II classes to total eleven half-credit classes. The variety of electives allows a student to develop a program in keeping with his/her career plan. Not all classes will necessarily be offered every year. In addition, new classes may be added from time to time. Therefore, students should check with the Department for up-to-date information.

Students may also elect to take a limited number of *approved* classes in other faculties and departments, such as Mathematics, Economics, Public Administration, Law, etc.

Throughout the program, candidates will be expected to attend lectures given by visiting professors and business executives and to take part in projects involving the analysis of the problems of local business firms.

## Core Class: Required for all students

MBA 6001 Policy: seminar. Prerequisite: all first-year MBA classes.

## Elective Classes

### Accounting

MBA 6101A or B Business Information Systems & Auditing: seminar. Prerequisite: MBA 5101.

**MBA 6102A or B Taxation:** seminar. Prerequisite: MBA 5101. MBA 5701/5702 may be taken concurrently.

**MBA 6103A or B Advanced Taxation:** seminar. Prerequisite: 6102.

**MBA 6104A or B Financial Accounting for Managers:** lecture. Prerequisite: 5101. This class is not open to students who plan to take or have taken MBA 6108 and 6109.

**MBA 6105B Accounting for Non-Profit Organizations:** lecture. Prerequisite: MBA 5101.

**MBA 6106A Advanced Managerial Accounting 1:** lecture. Prerequisite: MBA 5102 or permission of the instructor.

**MBA 6107B Advanced Managerial Accounting 2:** lecture. Prerequisite: MBA 6106 or permission of the instructor.

**MBA 6108A Advanced Financial Accounting 1:** lecture. Prerequisite: MBA 5101 or permission of the instructor.

**MBA 6109B Advanced Financial Accounting 2:** lecture. Prerequisite: MBA 6108 or permission of the instructor.

**MBA 6112A or B Financial Statement Analysis:** lecture. Prerequisite: MBA 5101, MBA 5201, and MBA 5501.

**MBA 6150R Accounting Seminar:** seminar.

### Finance

**MBA 6201A or B Investments:** lecture. Prerequisite: 5000 level Finance and Accounting classes.

**MBA 6202A or B Investments II:** lecture. Prerequisite: MBA 5201. MBA 6201 or MBA 6205 recommended.

**MBA 6203A or B Capital Markets:** lecture. Prerequisite: 5000 level Finance and Accounting classes.

**MBA 6204A or B Working Capital Management:** lecture. Prerequisite: 5000 level Finance and Accounting classes.

**MBA 6205A or B Capital Budgeting:** lecture. Prerequisite: 5000 level Finance and Accounting classes.

**MBA 6206A or B Portfolio Theory:** lecture. Prerequisite: 5000 level Finance and Accounting classes.

**MBA 6807A or B:** (see International Business).

### Management

**MBA 5312A or B Organizational Design:** lecture. Prerequisite: MBA 5311.

**MBA 5321A or B Introduction to Personnel Administration:** lecture. Prerequisite: MBA 5311.

**MBA 5331A or B Introduction to Labour Management Relations:** seminar. Prerequisite: MBA 5311.

**MBA 6313A or B Organizational Change:** seminar & lecture. Prerequisite: MBA 5311 & MBA 5312 or permission of the instructor.

**MBA 6314A or B Organization Theory and Research:** seminar.

Prerequisite: MBA 5311 & MBA 5312 or permission of the instructor.

**MBA 6315A or B Human Problems in International Management:** lecture. Prerequisite: MBA 5311, MBA 5312 (may be taken concurrently).

**MBA 6322A or B Selection: Testing & Interviewing:** seminar. Prerequisite: MBA 5321 or permission of the instructor.

**MBA 6323A or B Training & Development:** seminar & lab. Prerequisite: MBA 5321.

**MBA 6324A or B Performance Appraisal & Compensation:** seminar. Prerequisite: MBA 5321.

**MBA 6325A or B Occupational Safety Management:** seminar. Prerequisite: MBA 5321.

**MBA 6332A or B Collective Bargaining:** seminar. Prerequisite: MBA 5331.

**MBA 6333A or B Comparative Labour Relations:** seminar. Prerequisite: MBA 5331 or permission of the instructor.

### Marketing and Transportation

**MBA 5402A or B Buyer Behaviour:** lecture. Prerequisite: MBA 5401.

**MBA 6401A or B Marketing Research and Information Systems:** seminar. Prerequisite: MBA 5402, MBA 5401; strongly recommended MBA 6504.

**MBA 6402A or B Marketing Channel and Logistical Management:** lecture. Prerequisite: MBA 5401; recommended MBA 5402.

**MBA 6403A or B Advertising Management:** lecture & seminars. Prerequisite: MBA 5401; recommended MBA 5402.

**MBA 6404A or B Consumer Behaviour:** lecture & seminar. Prerequisite: MBA 5401 and MBA 5402.

**MBA 6405A or B Sales Management:** lecture & case studies. Prerequisite: MBA 5401.

**MBA 6406A or B Domestic Transportation:** lecture & seminar.

**MBA 6407A or B Physical Distribution Management:** lecture & seminar. Prerequisite: MBA 5551 or permission of the instructor.

**MBA 6408A or B Management of Transportation:** lecture. Prerequisite: MBA 5201 and MBA 5311.

**MBA 6450B Marketing Strategy Seminar:** seminar. Prerequisite: MBA 5401, and at least two marketing classes, or instructor's consent. These classes may be taken concurrently.

**MBA 6803A or B:** (see International Business).

**MBA 6804A or B:** (see International Business).

**MBA 6806A or B:** (see International Business).

### Quantitative Methods

**MBA 6501A or B Operations Research II:** lecture. Prerequisite: MBA 5501 and 5502.

**MBA 6502A or B Forecasting Models:** seminar. Prerequisite: MBA 5501 or equivalent.

**MBA 6503A or B Simulation Models:** lecture & seminar. Prerequisite: MBA 5501 and 5502.

**MBA 6504A Applied Statistics:** seminar. Prerequisite: MBA 5501.

**MBA 6505A or B Managerial Decision Making:** lecture & seminar.

**MBA 6506A or B Case Problems in Operations Research:** seminar & case studies.

**MBA 6507R Advanced Operations Research Project:** tutorial. Choice of instructor. See the MBA program co-ordinator for requirements.

### Operations and Innovation Management

**MBA 6551A or B Operations Management II:** lecture. Prerequisite: MBA 5501, 5502 and 5551.

**MBA 6552A or B Operations Management in Service Industries:** lecture/seminar. Prerequisite: MBA 5551

**MBA 6553A or B Managing Technological Innovation:** seminar.

### International Business

**MBA 6801A or B The Firm in the International Environment:** seminar. Prerequisite: MBA 5701/5702.

**MBA 6802A or B International Business Policy:** seminar. Prerequisite: MBA 6801.

**MBA 6803A or B International Transportation:** seminar.

**MBA 6804A or B Seminar in Ocean Transportation:** seminar. Prerequisite: MBA 6803.

**MBA 6805A or B International Business and Ocean Resources:** seminar.

**MBA 6806A or B Export Marketing:** seminar. Prerequisite: MBA 5401. A useful class is MBA 6801.

**MBA 6807A or B International Financial Management:** seminar. Prerequisite: MBA 5701, 5702, 5201 and 5101. A useful class is MBA 6801.

**MBA 6808A or B International Banking and Finance:** seminar. Prerequisite: MBA 5701, 5702. A useful class is MBA 6801.

### General

**MBA 6901A or B Business Law:** seminar.

**MBA 6902A or B Business and Government:** lecture.

**MBA 6903A or B Management Information Systems:** lecture/seminar. Prerequisite: MBA 5101.

**MBA 6951A/6952B Research Reading and Conference:** choice of instructor.

# Chemistry

(Tel. 424-3305)

**Chair**  
TBA

### Professors

D.R. Arnold, BS (Bethany Coll.), PhD (Roch.)  
W.A. Aue, PhD (Vienna)  
R.J. Boyd, BSc (UBC), PhD (McG)  
T.S. Cameron, MA, DPhil (Oxon.), Associate Dean of Faculty of Arts and Science  
A. Chatt, BSc (Calcutta), MSc (Roorkee), MSc (Wat.), PhD (Tor.)  
W.J. Chute, BSc (Acad.), MA, PhD (Tor.)  
J.A. Coxon, MA (Cantab.), MSc, PhD (East Anglia)  
T.P. Forrest, BSc (MtA), MSc (Dal), PhD (UNB)  
K.E. Hayes, BSc (Lond.), PhD (Ore.)  
W.E. Jones, BSc, MSc (MtA), PhD (McG), *Chairman of Senate*  
O. Knop, DSc (Laval), Harry Shirreff Professor of Chemical Research  
J.C.T. Kwak, BSc, MSc, PhD (Amsterdam)  
K.T. Leffek, BSc, PhD (Lond.), *Dean of Faculty of Graduate Studies*  
D.E. Ryan, BSc (UNB), MA (Tor.), PhD, DSc (Lond.), DIC, Mcleod Professor of Chemistry; Director, Trace Analysis Research Centre and Slowpoke Reactor.

### Associate Professors

T.B. Grindley, BSc, MSc, PhD (Queen's)  
J.S. Grossert, BSc, MSc, PhD (Natal)  
K.R. Grundy, BSc, MSc, PhD (Auckland)  
D.L. Hooper, BSc, MSc, PhD (UNB)  
P.D. Pacey, BSc (McG), PhD (Tor.)  
J.A. Pincock, BSc, MSc (Man.), PhD (Tor.)  
L. Ramaley, BA (Colo.), MA, PhD (Princeton)  
R. Stephens, MA (Cantab.), MSc (Bristol), PhD (Lond.), DIC  
C.H. Warren, BSc (UWO), PhD (McM)  
R.E. Wasylishen, BSc (Wat.), MSc, PhD (Manit.)

### Assistant Professor

R.D. Guy, BSc (SFU), PhD (Carleton)

### Assistant Professors (NSERC Research Fellows)

B.J. Forrest, BSc (UWO), MSc (Bishop's), PhD (SFU)  
M.A. White, BSc (UWO), PhD (McM)

### Visiting Scientists (1985)

K. Sakai, Tokai University, Japan  
Wu Caiying, Wuhan University, China  
Xi Feng, Institute of Environmental Chemistry, Beijing, China  
T.Z. Guo, Qinghai Geology Bureau, China  
A. Jarczewski, A. Mickiewicz University, Poznan, Poland  
Lu Mu-jian, Peking University, China  
N. Ohno, Akita National College of Technology, Japan

### Instructors

C.D. Burkholder, BSc (Wat.)  
J. Gabor, MSc (Budapest)  
S.A. Sawler, BSc (MSVU)  
D.J. Silvert, M.S. (CWRU)

N.E. Somers, BSc (McG)  
 W.D. Tacreiter, MSc (Krakow)  
 K.E. Thompson, BSc (Acad.)  
 M.E. Warren, BSc (Western)

#### Research Assistants

S.C. Choi, MSc (Dal)  
 S.W. Kim, PhD (Wayne State)  
 J.B. MacDonald, MSc (Guelph)

#### Postdoctoral Fellows and Research Associates (1985)

D. Adhikesavalu, PhD (IISc, Bangalore)  
 R. Cordes, PhD (UBC)  
 K.V. Darvesh, PhD (UNB)  
 S.M. De Silva, PhD (Dal.)  
 H. Flakus, PhD (Kraków)  
 H. Furue, PhD (Queen's)  
 A. Kumari, PhD (IIT, Delhi)  
 U. Maciejwska, PhD (Gdansk)  
 N. Mathur, PhD (Dal.)  
 S. Muddukrishna, PhD (IIT, Kanpur)  
 G. Neshvad, PhD (Essex)  
 A.M. de P. Nicholas, PhD (Dal)  
 A. Okamoto, PhD (Tokyo)  
 V. Paramasigamani, PhD (Dal.)  
 S. Peiris, PhD (Concordia)  
 C. Peters, PhD (McM)  
 S. Pihlajamacki, PhD (Turku)  
 G. Reimer, PhD (Queen's, Belfast)  
 S.P. Roe, PhD (LaTrobe)  
 U.K. Roychowdhury, PhD (IIT, Kanpur)  
 P. Sunkada, PhD (IISc, Bangalore)  
 N.S. Vempati, PhD (IIT, Kanpur)  
 J. Wierzchowcki, PhD (Warsaw)  
 A.B. Yamashita, PhD (UWO)  
 F. Yamashita, PhD (Hokkaido)

#### Honorary Adjunct Professors

M.T.H. Liu, BSc (St. Dunstan's), MA (StFX), PhD (Ott.), University of P.E.I.  
 K. Vaughan, BSc Tech Hons (UMIST), PhD (Queen's College, St. Andrew's), Saint Mary's University

Programs leading to MSc and to PhD degrees are offered. Research for these degrees can be undertaken in analytical, inorganic, organic or physical chemistry.

### Admission Requirements

Candidates must satisfy the general requirements for admission to the Faculty of Graduate Studies. In some cases an MSc Degree may be required as a prerequisite for entry into a PhD program. It is recommended that all students from outside Canada submit the results of the advanced Graduate Record Examination in Chemistry. In some cases this will be made a precondition to consideration of the student's application for admission.

### General Regulations

All graduate students are required as part of their training, to instruct in the undergraduate laboratories and to attend departmental seminars, Chem 5880, which are given by invited speakers. The Department will hold an annual meeting at which time it will review the work of all graduate students. Permission to continue will be contingent upon a satisfactory decision by the Department.

All graduate students must be in the department and available for

demonstrator duties by September 1st of each year. Further details of degree regulations are presented in a Handbook for Graduate Students in Chemistry, which may be obtained from the Departmental Office.

### MSc Degree

#### Full-time Program

Two full-credit classes, or the equivalent, together with the presentation and oral defence of a thesis based on original research are required. Faculty regulations permit a 1-year MSc candidate to graduate after 12 months of resident study. Experience has shown that most MSc candidates in the Department require at least 16 months to complete their work. Financial support is not available for more than two years.

#### Part-time Program

The full-time MSc class requirements and thesis regulation apply. However, students enrolled in the part-time MSc program are expected to complete their class work in four years and their thesis work in six years. The thesis must be supervised by a member of the Department. No stipends are available from the Faculty of Graduate Studies.

### PhD Degree Program

Three full-credit classes, or the equivalent, are required. A preliminary oral examination must be completed successfully. Original research, together with preparation and oral defence of a thesis, is required.

For the minimum time required to complete the program, see Section 2.6. Financial support is not available for more than four years.

### Classes

Two types of graduate classes are offered by the Department - core classes and specialized classes. The core classes constitute the main framework of a student's formal course work, and are designed to be broad-based but at an advanced level. They are intended to help the student gain a wide understanding in several major branches of chemistry and thus students are required to take such classes outside their area of specialization. The following half-credit core classes are offered at least every other year. Please consult the timetable to ascertain which classes are being given.

#### Analytical

5200 — Advanced Chemical Equilibria and Electroanalytical Chemistry  
 5210 — Separations  
 5220 — Analytical Spectroscopy

#### Inorganic and Structural

5100 — Solid State Chemistry  
 5110 — Advanced Inorganic Chemistry  
 5120 — Advanced Organometallic Chemistry

#### Organic

5400 — Synthetic Organic Chemistry  
 5410 — Physical and Theoretical Organic Chemistry  
 5420 — Structure Determination

#### Physical and Theoretical

5000 — Applied Quantum Chemistry  
 5300 — Molecular Spectroscopy  
 5310 — Physical Chemistry of Condensed Phases  
 5320 — Physical Chemistry of the Gas Phase  
 5330 — Principles of Magnetic Resonance

Specialized classes provide the opportunity for in-depth study of selected topics which are more closely related to the student's research

area. These classes vary from year to year depending on students' needs and interests. Some of the topics covered recently in specialized courses include: X-ray crystallography, pollution evaluation, organic photochemistry, organic electrochemistry, nuclear chemistry, electronics for scientists, carbohydrate chemistry, analytical flame spectroscopy, electrolyte solutions, heteroatom chemistry.

Approved classes may be taken for credit from departments outside the Chemistry Department.

### Chemistry Research Interests

#### Analytical Chemistry

W.A. Aue: Basic and applied chromatography.

A. Chatt: Behaviour of trace elements in the environment by nuclear analytical methods.

R.D. Guy: Method development for the speciation of toxic metals and organic chemicals in the aquatic environment.

L. Ramaley: Electroanalytical chemistry and chemical instrumentation.

D.E. Ryan: Molecular and gamma-ray spectroscopy in trace elements.

R. Stephens: Analytical atomic spectroscopy.

#### Inorganic and Structural Chemistry

T.S. Cameron: X-ray structural studies on inorganic, organic and organometallic compounds; hydrogen bonding in oxanion salts.

K.R. Grundy: Synthesis and reactivity of low-valent organometallic complexes and their utilization in organic synthesis.

O. Knop: Structural and solid-state inorganic chemistry.

#### Organic Chemistry

D.R. Arnold: Photochemistry, especially the development of synthetically useful methods.

T.P. Forrest: Stereochemistry; nmr spectroscopy.

T.B. Grindley: The chemistry of carbohydrates and of carbanions; conformational analysis.

J.S. Grossert: Synthetic, structural and spectroscopic aspects of organosulphur chemistry; effects of pressure on reactions in solution.

D.L. Hooper: Spectroscopic methods, especially high field multinuclear, nmr applied to chemical problems.

K.T. Leffek: Physical organic chemistry, including the study of reaction mechanisms and isotope effects.

J.A. Pincock: Studies on reaction mechanisms involving both ground and excited states.

#### Physical and Theoretical Chemistry

R.J. Boyd: Quantum chemistry; theoretical biophysical chemistry.

J.A. Coxon: Electronic spectra of small molecules using laser excitation and double resonance techniques; intensities; chemiluminescence.

B.J. Forrest: Magnetic resonance of biomembranes and liquid crystals.

K.E. Hayes: Investigations in adsorption and catalysis.

W.E. Jones: Atomic and molecular spectroscopy; gas phase kinetics; infrared chemiluminescence; reaction dynamics; laser enhanced surface chemistry and catalysis.

J.C.T. Kwak: Physical chemistry of colloidal electrolytes; biophysical chemistry.

P.D. Pacey: Temperature dependence of reaction rates.

C.H. Warren: Laser Raman, laser induced fluorescence, and molecular spectroscopy.

R.E. Wasylishen: Applications of multinuclear nmr spectroscopy: molecular motion in liquids and orientationally disordered solids; isotope effects; conformational studies.

M.A. White: Thermal properties of solids.

# Classics

(Tel. 424-3468)

#### Chairperson of Department

R. Friedrich

#### Visiting Professor

L. Obertello (Professor, University of Genoa)

#### Professor Emeritus

J.A. Doull, BA (Dal), MA (Tor.)

#### Adjunct Professor

A.H. Armstrong, MA (Cantab.), FBA

#### Professors

J.P. Atherton, MA (Oxon.), PhD (Liverpool)

R.D. Crouse, BA (Vind.), STB (Harv.), MTh (Trin.), PhD (Harv.)

E. Segelberg, DTh, FK (Upsala)

R. Friedrich, PhD (Gott.)

#### Associate Professors

W.J. Hankey, BA (Vind.), MA (Tor.)

P.F. Kussmaul, PhD (Basle)

C.J. Starnes, BA (Bishop's), STB (Harvard), MA (McG), PhD (Dal)

#### Assistant Professor

D.K. House, MA (Dal), PhD (Liverpool), *Graduate Studies Coordinator*

The Department invites applications especially from students of wide humanistic interests who wish to study contemporary culture through its ancient origins.

The graduate teaching and research of the Department is chiefly in the following areas:

(a) Greek and Latin Poetry.

(b) Hellenistic and early Christian history.

(c) Greek Philosophy; Aristotle and the history of Aristotelian philosophy (from the Greek commentators to Hegel).

MA students may concentrate their work in any of these areas. PhD candidates must work in the area of Hellenic and Hellenistic Studies.

## Admission Requirements

Candidates must satisfy the admission requirements of the Faculty of Graduate Studies. The requirement of both Classical languages at Honours level may sometimes be relaxed, e.g., where a student has taken a Combined Honours course involving only one Classical language. In such cases at least two classes in the second language will be taken in addition to the MA course proper. In certain programs, a knowledge of other ancient languages may be required.

## MA Degree Program

It will rarely be possible for candidates to complete their classes and thesis in less than a calendar year.

Three graduate seminars, two in the general area of interest and a reading and research class related to the thesis subject are required. Candidates are expected to attend graduate seminars related to their

theses throughout their period of full-time study. A thesis is required.

MA students should obtain a copy of the Departmental regulations for the degree.

## PhD Degree Program

The normal admission requirement is the Dalhousie MA in Classics, or equivalent preparation. The minimum residence requirement for such candidates is two years, during which time they must satisfy the general requirements of the Faculty, and, in addition, must demonstrate competence in the languages (ancient and modern) necessary for research in their particular fields of study.

All candidates are expected to have a broad understanding of all aspects of Classical culture, and within the general area of Hellenic-Hellenistic Studies, each candidate is expected to concentrate, with the guidance of a Supervising Committee, in one of three fields: History, Literature and Philosophy. At least one year before submitting a thesis, the candidate must pass a comprehensive examination (written and oral) in his special field.

## Classes

### Greek, Latin and Near Eastern Literature

Greek 5010 Seminar on Greek Epic: R. Friedrich.

Greek 5020 Seminar on Greek Lyric: R. Friedrich.

Greek 5030 Seminar on Greek Drama: Tragedy. R. Friedrich.

Greek 5040 Seminar on Greek Drama: Comedy. R. Friedrich.

Greek 5050 Seminar on Greek Philosophical Texts I: staff.

Greek 5060 Seminar on Greek Philosophical Texts II: staff.

Greek 5070 Seminar on Greek Philosophical Texts III: staff.

Greek 5080 Seminar on Greek Historians: staff.

Greek 5090 Seminar on Greek Literary Criticism: R. Friedrich.

Greek 5100A & B — 5109A & B Reading and Research: staff.

Greek 5120 — 5129 Reading and Research: staff.

Latin 5500 Seminar on Roman Satire: staff.

Latin 5510 Seminar on Vergil: J.P. Atherton.

Latin 5520 Advanced Reading in Latin Literature: staff

Latin 5530 Seminar on Roman Historians: P.F. Kussmaul.

Latin 5550A & B — 5559A & B Reading and Research: staff.

Latin 5560 — 5569 Reading and Research: staff.

Coptic 5020 Seminar on Aspects of Coptic Language, Literature & Culture: E. Segelberg.

### Ancient History

Classics 5260 Seminar on Roman Religion: E. Segelberg.

Classics 5270 Seminar on Near Eastern Religion: E. Segelberg.

Classics 5280 Seminar on Christian Beginnings: E. Segelberg.

Classics 5290 Seminar on Greek Religion: E. Segelberg.

Classics 5520 Seminar on Problems of the Hellenistic Period: E. Segelberg.

Classics 5530 Seminar on the Roman Empire and the Rise of Christianity: staff.

Classics 5550A & B — 5559A & B Reading and Research in Ancient History: staff.

### Classical Philosophy

Classics 5600 Seminar on the Philosophy of Aristotle: J.A. Doull, J.P. Atherton.

Classics 5610 Seminar on the Philosophy of Plato: D.K. House.

Classics 5620 Ancient and Modern Dialectic: J.A. Doull.

Classics 5630 History of the Interpretation of Aristotle: J.A. Doull, W.J. Hankey.

Classics 5640 Medieval Interpreters of Aristotle: R.D. Crouse, J.P. Atherton.

Classics 5650 Seminar on Ancient Natural Philosophy: J.A. Doull, W.J. Hankey.

Classics 5670 Seminar on Ancient Practical Philosophy: J.A. Doull.

Classics 5700 Seminar on the Philosophy of the Church Fathers: R.D. Crouse.

Classics 5800 Seminar on Neoplatonism: D.K. House.

Classics 5810 Greek Philosophical Texts: Classical and Patristic: staff.

Classics 5830 Latin Philosophical Texts: Classical and Patristic: staff.

Classics 5850A & B — 5859A & B Reading and Research in Classical Philosophy: staff.

Classics 5900 Departmental Seminar: staff.

Classics 5901 — 5910 Reading and Research: staff.

9000 MA Thesis

9530 PhD Thesis

# Economics

(Tel. 424-2026)

## Chairperson of Department

E. Klein

## Professor Emeritus

Z.A. Konczacki, BSc (Lond.), B. Econ. Hons. (Natal), PhD (Lond.)

## Professors

R.L. Comeau, BA, MA (StFX), PhD (Brown), *Coordinator of Graduate Studies*

J.L. Cornwall, BA (Iowa), MSc (Lond.), PhD (Harv.)

R.E. George, BSc (Lond.), MA (Brist.), PhD (Lond.), *William A. Black Professor of Commerce*

J.F. Graham, BA (UBC), MA, PhD (Col.), FRSC, *Fred C. Manning Professor of Economics*

E. Klein, LL.M. (Buenos Aires), MSc (Dal), Dr. Rer. Pol. (Hamburg)

C. Marfels, Dr. Rer. Pol. (Berlin)

R.I. McAllister, MA (Oxon.), MA (Cantab.)

N.H. Morse, BA, MA (Acad.), PhD (Tor.)

L. Osberg, BA (Hons) (Queen's), MPhil, PhD (Yale)

A.M. Sinclair, BA (Dal), MA, B Phil (Oxon.), PhD (Harv.)

## Associate Professors

F.M. Bradfield, BComm (McM), PhD (Brown)

M.G. Brown, BA (W.Ont.), MA (Queen's), AM, PhD (Chi.)

S. DasGupta, BA (Calcutta), MA (Delhi), PhD (Rochester)

P.B. Huber, BA, MA, PhD (Yale)

G. Kartsaklis, CE (Athens), Dr. Rer. Pol. (Bonn), *Coordinator of Admissions for Graduate Programs*

B. Lesser, BComm (Dal), MA, PhD (Cam.)

U.L.G. Rao, MA, MSc (Andhra), PhD (W.Ont.)

## Assistant Professors

M.L. Cross, AA (Dawson College), BA (Montana), MA (SFU), PhD (Texas A. & M.)

D. Gordon, BA Hons (Lethbridge), MA (Saskatchewan), PhD (UBC)

B. Jamieson, BA (UBC), MA, PhD (Tor.)

L. Mazany, BSFS (Georgetown), PhD (UBC)

## Lecturers

T.H. O'Neil, BA, MA (Dal)

D. Price, BA, MA (Dal)

## Special Lecturer

T. Pinfeld, BA, MA (W.Ont.), PhD (Minn.)

## MA Degree Program

### A. Admission Requirements

MA programs in Economics may be of one or two years duration. Entrance to a two-year MA program requires a pass or General BA degree with a major in Economics and an average of at least 70% (B) at Dalhousie standards in the classes of Economics and related fields. A minimum of four classes in Economics beyond the introductory level, with content and level of work satisfactory to the Department, is required. These prerequisite classes should include one full class in intermediate theory (equivalent to Dalhousie Economics 2220/2221) and a basic

class in Statistics (equivalent to Dalhousie Economics 2228). A first-level Mathematics class (equivalent to Dalhousie Mathematics 1000A and 1010B or 1100) is also required.

Promising students who do not meet the entrance requirements for the two-year program may be admitted to a Qualifying Year to permit them to bring their work up to full admissions standards.

Entrance to a one-year MA Program requires that a student should have completed an Honours BA in Economics (or equivalent) with an average of at least 70% (B) at Dalhousie standards in classes in Economics and related fields. Normally this means completion of at least eight classes in Economics beyond the introductory level including classes in Economic Theory and Statistics, and classes which are substantially equivalent to those classes recommended in the field preparation year for the program chosen below. A first year Mathematics class (equivalent of Dalhousie mathematics 1000A and 1010B or 1100) is also required.

Applicants should also consult regulations 2.2, "Admissions Requirements," which include regulation 2.2.1, "English Language Proficiency."

### B. Program Choices

The Program Choices outlined below, are shown as two-year programs. Honours graduates who plan to enter a one-year program should choose classes in their Honours program which serve to satisfy the recommendations for the first year of the program of their choice or, if that is not possible, should consult with a Department representative to choose a program which is consistent with the work they have completed in their undergraduate studies. Students who have completed one or more of the classes listed for the field preparation year during their previous undergraduate work are exempted from these classes but must replace them with other economics classes to reach the required number. Shifts in programs at the student's option are possible provided the earlier preparation is consistent with the change of goals. Departmental approval is required for the program of each student.

Three basic programs are available:

- 1. Economic Analysis and Policy:** The goal of this program is the preparation of students for further advanced work, e.g. doctoral programs, or to give a sound training in basic theoretical and analytical economics for students seeking a terminal degree for careers in teaching, government or business.
- 2. Mathematical Economics and Econometrics:** This program is designed primarily for those wishing to continue on to doctoral programs but it may also provide a rigorous training in economic analysis for those wanting a terminal degree. Those considering this program should have an interest in mathematics and have completed at least two classes in Mathematics beyond the 1000 level (preferably including Mathematics 2000 and 2030A, 2040B) before entering the program.
- 3. Applied Economics:** The purpose of this program is to produce technically competent, practically oriented working economists at the MA level. This program concentrates on the working tools of economics.

**Interdisciplinary Programs:** The Department of Economics participates with other Departments and Institutions in several such programs. These include:

- African Studies
- Environmental Studies
- Health Evaluation Studies
- Urban, Rural and Regional Studies

Graduate students wishing to orient their studies in the direction of these

interdisciplinary fields take some classes in the relevant area from offerings outside the Department and do their graduate thesis on related topics. The Department's approval of such a program is required. Other special interdisciplinary programmes may be devised, with the Department's consent, to meet particular interests.

### Completion of MA Program

Students must successfully complete the required and optional classes of their program. Normally a course of study worth at least five (5) credits is required, including a thesis which must be submitted and approved by the Department.

## MDE Degree Program (Master of Development Economics)

### A. Admission Requirements

The normal duration of the program is two years; applicants with either a well-rounded Honours BA in the social sciences or a professional degree (such as MPA, MBA, LLB or MES) may be eligible for a one-year program.

Entrance to the two-year program normally requires a Pass or General BA, BSc or B Comm degree, with a minimum of 2 classes in economics beyond the introductory level, including one full class in intermediate theory and a basic class in statistics. A first-level mathematics class should also be included.

Promising students who do not meet the entrance requirements for the two-year program either might be admitted to a qualifying year or permitted to take not more than 2 missing classes within the time frame of the two-year program.

Applicants should also consult regulations 2.2, "Admissions Requirements," which include regulation 2.2.1, "English Language Proficiency."

### B. Program Choices

The program normally is for two years. The first year is a foundation year to allow persons from disciplines such as political science, engineering, law, accountancy, sociology or commerce, who have only minimum undergraduate training in economics, to acquire a practical background in applied development economics. Those with a background in economics, will in their turn, have the opportunity to ensure they have an adequate breadth of academic background.

A one-year program option is available to applicants with the necessary undergraduate training in economics and a blend of other disciplines. The one-year option also relates conveniently with a number of other graduate programs such as the MPA, MBA and MES. Two graduate programs may not be embarked upon concurrently.

Two basic programs are available. These programs are designed for young professionals who are already embarked on, or intend to pursue, professional careers in public agencies or private corporations that are active in the field of economic development. As an essential component of this program, strategic links are made with other programs in the University, including public administration, international business policy, sociology, environmental and ocean studies, history, law and political science.

1. *The Canadian Studies Program* concentrates particularly on Canadian development, with comparative insights from other industrialized countries. The program includes a focus on Eastern Canada and such issues as: the provision of transport and communications to rural Labrador; the development of major projects such as Fundy tidal power, off-shore energy and the James Bay hydro project; urban planning for growing cities such as Halifax and Quebec City; manpower mobility programs; and alternative strategies for tenacious problems such as Sydney Steel and the East Coast fisheries.

2. *The International Development Studies Program* concentrates more

on sectoral themes than on geographic regions. These include rural development, manpower planning, the role of state corporations, international trade and payments, import substitution policies, international development and aid agencies, world health issues and the problems of helping those in greatest need in Third World countries. Specific country case experiences are extensively drawn upon through links the University faculty have with West Africa, East Africa, Indonesia, Latin America, the Caribbean and China.

### Completion of MDE Program

Students must successfully complete a minimum of nine full-credit classes, plus thesis.

## PhD Degree Program

### A. Admission Requirements

Applicants for admission to the PhD program must have academic qualifications superior to those required for entrance into the MA program. The minimum required for entry is an Honours Degree in Economics with an average of at least 75% (B+) by Dalhousie standards in the classes in economics and related fields. Students entering after completing the required course work for an MA degree in Economics would normally prepare for their PhD Comprehensive Exams in two years; those with only an Honours BA would normally require three years. Other specific requirements for entry depend upon the PhD program chosen and are listed below.

Applicants may be required to submit the results of the Graduate Record Examination in Economics with their application. They should also consult regulations 2.2, "Admissions Requirements," which include regulation 2.2.1, "English Language Proficiency."

Students admitted to the last two years of the PhD program may choose to do either the General Program or the Mathematical Program. Students admitted to a three year PhD program may follow either of these programs after having satisfactorily completed one year's prescribed study.

All student programs must be approved by the Department.

### B. General Program

The General Program is designed to provide students with a strong foundation in economic theory and quantitative methods and intensive work in two applied fields of economics. In addition to the entrance requirements above, students are expected to have completed classes, at a satisfactory level, in Intermediate Calculus, Matrix Algebra, Linear Algebra and Statistics (equivalent to Dalhousie Mathematics 2000, 2030 and 2040 and Economics 2228).

At the completion of their class work, candidates for the PhD in the General Program will be examined in:

1. Macroeconomic and Microeconomic theory (at the level of Dalhousie Economics classes 5500A, 5509B, 6600B and 6609A, including applications of the economic theory described).
2. A major field.
3. A minor field.
4. History of Economic Thought.

They are also required to show proficiency in Quantitative Analysis and Economic History in the course of their work. A course of study recommended for the two-year General Program would include:

#### First Year:

1. Economics 5500A (Macroeconomics theory)
2. Economics 5509B (Microeconomics theory)
3. Economics 5506 (Economic History)



4. One class in an applied field selected as the student's "major applied field"
5. One other class

#### Second Year:

1. Economics 6600B (Macroeconomic theory)
2. Economics 6609A (Microeconomic theory)
3. Economics 5533 (Econometrics)
4. A second class selected from the "major applied field"
5. One class in an applied field selected as the "minor applied field."

### C. The Mathematical Economics Program

The Mathematical Economics Program provides students with the option of pursuing work leading to specialization in Mathematical Economics. In addition to the entrance requirements in (A) above, applicants for the two-year program should have classes in Advanced Calculus, Matrix Algebra, Linear Algebra and Statistics (equivalent to Dalhousie classes Mathematics 2000, 2030, 2040 and Economics 2228).

Students with combined Honours in Mathematics and Economics, or Honours in Mathematics and who have done (reasonable) undergraduate work in Economics may be accepted into the same course of study and be permitted to make up deficiencies during the first year of study.

At the completion of their class work students in the Mathematical Program will be examined in General Economic Theory (including History of Thought); Mathematical Economics and one applied field. A course of study recommended for the two-year program would include:

#### First Year:

1. Mathematics 3040 (half class); Metric Spaces and Elementary Topology, and Mathematics 4140 (half class); Introduction to Functional Analysis

or

1. Mathematics 3300 (half class); Linear Integer Programming, and Mathematics 3310 (half class); Discrete and Dynamic Programming
2. Economics 6600B (half class); Economic Theory
3. Economics 6610; Mathematical Economics
4. One class in an applied field
5. One other class

#### Second Year:

1. Mathematics 4010; Measure and Integration Theory, Mathematics 3120 (half class); Differential Equations, or Mathematics 4300 (half class); Control Theory
2. Economics 6619 (half class) and Economics 6620 (half class); Seminars in Mathematical Economics and Economic Theory
3. Economics 5533; Econometrics
4. One class in the applied field selected in the first year.

### D. Examination and Thesis

Comprehensive examinations consisting of written papers in economic theory and two fields, and oral examinations in the same three subjects, are required at the end of the required period of course work.

A suitable thesis must be submitted and defended. Students are required to make a public presentation of a thesis proposal no later than six months after completion of the comprehensives and preferably at some point prior to the comprehensives.

## Classes

Classes other than those listed may be offered. Not all classes listed are necessarily offered in any given year.

5231A Health Economics: M.G. Brown.

5238A The Industrial Revolution in Europe: Z.A. Konczacki and P.B. Huber.

5239B The European Economy in Historical Perspective: After the Industrial Revolution: P.B. Huber and Z.A. Konczacki.

5250 Applied Development: Policy, Practice and Economics: R.I. McAllister.

5251 Seminar in Development Studies: R.I. McAllister.

5328 Industrial Organization: C. Marfels.

5330A International Trade: A.M. Sinclair.

5333A Theories of Economic Development: Z.A. Konczacki.

5334B Economic Development: Recent Debates, Controversies and Conflicts: Z.A. Konczacki.

5336B Regional Development: Post-1945 Canadian and Industrial Countries' Economic Policy Experience: R.I. McAllister.

5341A Urban Economics: Growth and Development of Urban Areas: T.A. Pinfeld.

5342B Urban Economics: Economic Analysis of Urban Problems: T.A. Pinfeld.

5431B International Payments: A.M. Sinclair.

5433B Intergovernmental Fiscal Relations: J.F. Graham.

5446B Classical Liberalism and Democracy (same as Philosophy 5470B and Pol. Sci. 5479B): D. Braybrooke.

5448A Social Choice Theory (same as Philosophy 5480A and Pol. Sci. 5480A): D. Braybrooke.

5449B The Logic of Questions, Policy Analysis, and Issue Processing (same as Philosophy 5490B and Pol. Sci. 5490B): D. Braybrooke.

5500A Macroeconomics: J.L. Cornwall.

5502A Monetary Theory: Microeconomic Aspects: G.A.B. Kartsaklis.

5505 Public Finance

5506 North American Economic History: B. Lesser.

5508 Competition Policy and Anti-Trust Economics: C. Marfels.

5509B Microeconomics: S. DasGupta.

5511A Regional Economics: Theories: F.M. Bradfield.

5512B Regional Economics: Empirical Studies and Policies: F.M. Bradfield.

5514B Monetary Theory: Macroeconomic Aspects: R.L. Comeau.

- 5515 Labour Economics: L. Osberg
- 5516A Natural Resource Economics: M.L. Cross.
- 5521A Mathematics for Economists: D. Gordon.
- 5533 Econometrics: U.L.G. Rao.
- 5551A Special Topics in Advanced Monetary Policy: R.L. Comeau.
- 5552B Special Topics in Advanced Monetary Theory: G.A.B. Kartsaklis.
- 5558 Special Topics in Industrial Organization: C. Marfels.
- 5559 Special Topics in Labour Economics: L. Osberg.
- 5563 Special Topics in Regional Economics: F.M. Bradfield.
- 5570 Special Topics in Econometrics: U.L.G. Rao.
- 5571 Special Topics in Urban Economics: T.A. Pinfold.
- 5572 Special Topics in International Trade: P.B. Huber.
- 5575A Applied Statistics and Econometrics I
- 5576A Applied Statistics and Econometrics II
- 6600B Economic Theory: J.L. Cornwall.
- 6609A Economic Theory: E. Klein.
- 6610 Mathematical Economics: S. DasGupta and E. Klein.
- 6619A Seminar in Mathematical Economics and Advanced Economic Theory
- 6620B Seminar in Mathematical Economics and Advanced Economic Theory
- 6680 Directed Reading
- 9000 MA Thesis
- 9530 PhD Thesis

Special Topics classes, not separately listed, will be arranged to provide for advanced work in the areas of specialization chosen by PhD students. MA students with the appropriate backgrounds will also be admissible to such classes. Other classes than those listed may also be offered and certain of the classes listed are not necessarily offered on an annual basis.

# Education

(Tel. 424-3724)

**Chairperson of Department**  
L.E. Haley

## Professors

E.Z. Friedenbergs, BA (Centenary), MA (Stanford), PhD (Chicago)  
L.E. Haley, BSA., MSA. (Tor.), PhD (Calif.)  
W.F. Hare, BA (London), MA (Leics.), PhD (Tor.)  
J.D. Myers, BA, MA (Tor.), PhD (Edinburgh), *Dir. Part-time Studies and Extension*

## Associate Professors

A. Barton, BA, MA (Trinity)  
R.N. Bérard, BA (Antioch.), MA (McM.), BEd (Dal), PhD (McM),  
*Coordinator, BEd Program*  
R. Gamberg, BA (Brandeis), MA (Illinois)  
P. Keane, BA (Manch.), MEd (Bristol), PhD (Bath)  
T. Laidlaw, BA, MEd (Calgary), PhD (Alberta)  
J. Manos, BA, BEd (StFX), MEd (Calgary), PhD (Alberta)  
E.T. Marriott, BA (MtA), MEd (Tor.), *Dean, Student Services*  
H.J. Murphy, BSc (St. Dunstan's), BEd (PEI), MEd, EdD (Virginia)  
H.E. Poole, BA, MA, PGCE (Birm.), PhD (Tor.)  
E. Ricker, BA, MEd (UBC), PhD (Tor.), *Coordinator of MA/PhD Programs*  
J.B. Roald, BEd (UBC), MEd (Wash.), EdD (UBC)  
S.W. Semple, BA, Dip Ed (Syd.), MEd, EdD (Tor.)  
S.S. Sodhi, BA, BT, MA (Punjab), Dip. Guid. (Delhi), BEd, PhD (Alta.)  
K. Sullivan, BSc, BEd (Dal), MEd, PhD (Alta.)

## Assistant Professors

B.A. Wood, BA (Tor.), MEd (Ottawa), PhD (Ottawa)  
M. Welton, BA, MA, PhD (UBC)

## Adjunct Professors

M. St. J. Macdonald, BSc (Agr.) (McG), MA (StFX), EdD (Tor.)  
N. Vogan, BA (MtA), MMus, PhD (Rochester)

## Lecturers

M. Crowley, BA (Miami), MAT (Johns Hopkins)  
D.A. Manicom, BEd (McG), MEd (Atl. Inst. Educ.), *Acting Coordinator MEd Programs*

## Honorary Research Associates

L.P. Christiansen-Ruffman, BA (Smith), PhD (Columbia)  
V.G. Hammock, BFA (San Francisco AI), MFA (Indiana)  
J. Eaton, BSc (Acadia), PhD (Dal)  
C.P. McFadden, BSc (UBC), BEd (SMU), MSc (UBC), PhD (UWO)  
J.M. Newman, BSc (Dal), MA, PhD (Tor.)

## Admission Requirements

Students are advised to consult the Faculty Regulations.

Normal admission requirements are a first degree plus the BEd or its equivalent with at least second-class standing overall.

Applicants who are uncertain whether or not they possess the equivalent of the BEd should make inquiries of the Department. A Faculty advisor is assigned to each student admitted to a degree program. The advisor must approve all class selections.

## PhD Degree Program

Full-time study only is permitted.

The Department offers a program based on the study of educational theory, policies and practices. The Foundations disciplines (i.e., the educational subdisciplines of the social sciences and humanities) provide the framework for the program. Students may elect to examine educational theories, policies and practices through one or more of these disciplines.

Students must meet normal admission requirements for the Faculty of Graduate Studies. A Master's degree in Education or a cognate field is normally expected. In exceptional cases a student may be admitted with a Bachelor's degree in Education or an honours degree in a cognate field.

Degree requirements include a two or three-year residency (students entering with an acceptable Master's degree will be required to complete a two-year residency; those with an Honour's degree or equivalent will be required to complete a three-year residency); full time study; four to eight course credits or equivalent including Ed. 5800R; a reading knowledge of any language required for successful completion of doctoral research; Preliminary Examination, thesis, oral defence of thesis.

To qualify for the award of the PhD degree, the thesis must make a substantial original contribution to educational theory, either by discovery of new information, or by the original interpretation of known information, or both.

Students in residence must participate in weekly departmental seminars. For further information see the current edition of the *Graduate Source Book* (available from the Department).

## MA Degree Program

Part-time study is permitted.

The MA degree in Education offers a program which emphasizes research and writing, embodied in a thesis, together with a number of graduate classes. This program would normally be followed by a student who intends to pursue studies at the PhD level, but it is open also to students seeking only a Master's degree based upon research, writing and course work.

The Department offers programs of study leading to the MA degree in the following areas: Curriculum, Continuing Education, Educational Administration, Educational Psychology, Foundations of Education.

A minimum of five university graduate credits is required, including Ed. 5800R. Particular areas of concentration may require specific classes, and class credits beyond the minimum equivalent of five university credits. Additional credits may also be prescribed when, in the view of the Department, the applicant's academic experience or proposed area of concentration warrants such. A thesis equivalent to two credits is required.

Students in residence must participate in weekly departmental seminars. For further information see the current edition of the *Graduate Source Book* (available from the Department).

## MEd Degree Program

Part-time study is permitted.

The MEd is a course work degree which may include a project involving the practical application of educational ideas.

The Department offers programs leading to the MEd degree in the following areas: Curriculum, Continuing Education, Educational Administration, Educational Psychology, Foundations of Education.

A minimum of five university graduate credits is required. Particular areas of concentration may require specific classes, and class credits beyond the minimum equivalent of five university credits. Additional

credits may also be prescribed when, in the view of the Department, the applicant's academic experience or proposed area of concentration warrants such. A project may be required in some areas of concentration.

Students in residence must participate in weekly departmental seminars. For further information see the current edition of the *Graduate Source Book* (available from the Department).

## Areas of Specialization Leading to the Master's Degree

### 1. Educational Foundations

A course of studies in the humanistic and social scientific aspects of education, with either a single-discipline or multi-disciplinary emphasis.

Some classes may be taken in other departments of the University, e.g., Sociology and Social Anthropology, History, and Philosophy.

### 2. Educational Psychology

A program designed for students with a special interest in psychological issues as they pertain to education. The program includes courses in human development, personality and learning theory. Emphasis is placed on themes such as adolescence, gender issues and special education.

### 3. Educational Administration

The Department offers courses of study of particular interest and relevance to students wishing to prepare for administrative and supervisory positions and for those interested in advanced studies in educational administration. The program combines a solid theoretical base, a high degree of technical competence and a critical, analytical approach. Students are advised to contact the Graduate Secretary of the Department for information on course requirements, the supervisory allowance and other relevant details.

### 4. Continuing Education

This program is intended to serve the needs of participants in the broad field of adult learning, from Basic Education to Continuing Professional Education. It offers a core course of studies, plus a variety of options, encompassing career interests in such fields as teaching, counselling, administration, adult literacy and community development.

### 5. Curriculum

This program is designed to accommodate different student needs and interests related to the school curriculum and other educational institutions. A student may choose to focus upon curricular theory and practice, in which case classes should be selected from among those which deal with the philosophy and theory of curriculum, critical analysis, design, implementation, and so forth. Alternatively, a student may elect to study the pedagogy of a particular discipline or subject field, in which case the classes chosen should deal with such matters as the structure of knowledge within the particular discipline or field, research on teaching, and so forth.

## Classes

Students should note that within the confines of their program of study and with the approval of their advisor or the appropriate Coordinator they may elect to take classes from other areas or from other departments of the university. Students should consult the department about the availability of classes in any given term. Please Note: not all classes listed below are offered every year. Please check the *Graduate Source Book* for current listings.

5021A The Development of a Progressive Curriculum in Canadian Public Schools, 1890-1914: A. Wood.

- 5022B The Development of a Progressive Curriculum in Canadian Public Schools, 1914-1940: A. Wood.
- 5030R Teachers, Their Organizations and Decision Making in Education: R. Bérard.
- 5060R The History of Curricular Thinking: J.B. Roald.
- 5070R Anthropology of Education: staff.
- 5100R Advanced Studies in Philosophy of Education: W. Hare.
- 5101A/B Philosophy of Education — Advanced Seminar: W. Hare.
- 5151B Ethics and Education (Crosslisted with Philosophy 8060B): W. Hare.
- 5152B Philosophy of Education: Aesthetics and Education (Crosslisted with Philosophy 5070B): W. Hare.
- 5155A Moral Education: staff.
- 5162B Open-Mindedness and Education: W. Hare.
- 5172B Philosophical Issues in Sex Education: H. Poole.
- 5201A Youth as a Social Category: E.Z. Friedenberg.
- 5202B The School as a Communications System: E.Z. Friedenberg.
- 5211A Deschooling Society: Educational Alternatives: E.Z. Friedenberg.
- 5221B Higher Education and Social Policy: E.Z. Friedenberg.
- 5222B Schools and Social Identity: E.Z. Friedenberg.
- 5223A Criticism of Public Education: E.Z. Friedenberg.
- 5230R Social Issues in the Curriculum: A. Manicom.
- 5241A Gender Roles: T. Laidlaw.
- 5250R Advanced Seminar on the Family: T. Laidlaw.
- 5251A Educational Tradition and Change in Regional Context: The Soviet Realm: S. Semple.
- 5252B Comparative Perspectives on Issues in Education: S. Semple.
- 5260 Education and Development: staff.
- 5290R Multiculturalism and Education: staff.
- 5300R Human Learning: S. Sodhi.
- 5302B Extrinsic Motivation in Curriculum: E.Z. Friedenberg.
- 5310R Foundations of Childhood Education: staff.
- 5320R Current Issues in Educational Psychology: staff.
- 5330R Interdisciplinary Seminar on Early Childhood Education and Practicum: staff.
- 5335A/B Childhood into Maturity: H. Poole.
- 5341A Special Education Policy Decisions: S. Sodhi.
- 5342B Learning Disabilities: S. Sodhi.
- 5350R Contemporary Issues in Childhood Education: S. Sodhi.
- 5360 Theories of Personality: J. Manos.
- 5362B Leadership Programming in Childhood Education: staff.
- 5370R Developmental Psychology: T. Laidlaw/J. Manos.
- 5380R Psychology of Special Education: Resource Teachers: S. Sodhi.
- 5401A Administration of Public Education in Canada: E. Ricker.
- 5402B Concepts in Educational Administration: K. Sullivan
- 5411A Administration of Educational Personnel: E.T. Marriott.
- 5412B Administration of Educational Programs: E.T. Marriott.
- 5420R Political Economy of Education: staff.
- 5431B Education and Public Policy: E. Ricker.
- 5432B The Local Government and Administration of Education: E. Ricker.
- 5440A Contemporary Issues in Educational Administration: National and International Issues: K. Sullivan.
- 5442B Conceptual Analytical Skills for Educational Administration: staff.
- 5451A Philosophy and Educational Administration: W. Hare.
- 5460R Law and the Schools: staff.
- 5462B Interest Groups in Education: E. Ricker
- 5470R Local Government and Administration of Education: E. Ricker.
- 5471A Educational Finance: staff.
- 5480R The Analysis of Teaching: staff.
- 5500R Curriculum: A. Barton.
- 5510R Approaches and Issues in Curriculum Design: B. Roald.
- 5520R Implementation of Curriculum: M. Schoeneberger
- 5524A Issues in Curriculum Evaluation: J. Murphy/B. Roald.
- 5525B Curriculum Evaluation (Practicum): J. Murphy/B. Roald.
- 5530R Studies in Elementary Education: staff.
- 5540A The Nature of Scientific Knowledge: E.Z. Friedenberg.

- 5541B The Science Curriculum in Social Context: E.Z. Friedenberg.
- 5542A Perspectives in Science Curriculum: staff.
- 5542 Shaping Tomorrow's Science Curriculum: staff.
- 5550R Geography in Education: S. Semple.
- 5552B Organizing and Administering School Library Media Center Programs: staff.
- 5560R Canadian Studies in the Curriculum: R. Bérard.
- 5581B Science — A Cross-Disciplinary Approach
- 5600R Music Education: Kodaly Philosophy and Pedagogy: staff.
- 5601A Young Adult Literature and Media Interests: staff.
- 5612B Children's Literature and Media Interests: staff.
- 5613B Children's Literature and Creative Imagination: staff.
- 5624A/5625B New Directions in High School Math Curricula: M. Crowley.
- 5630R Advanced Computer Learning and Instructional Cybernetics. A. Barton.
- 5632B Collections Development: staff.
- 5633R Computers in Education: M. Crowley.
- 5636R Survey of Computer Applications in Education: staff.
- 5638R Advanced Computer Assisted Learning: staff.
- 5650R Computer Lesson Writing: A. Barton.
- 5660R Geography in Education: S. Semple.
- 5670R New Dimensions in Geographical Education: S. Semple.
- 5680R Science Curriculum: A. Barton.
- 5701A Understanding Reading: staff.
- 5702B Reading Instruction: staff.
- 5800R Graduate Seminar: staff.
- 5801A Qualitative Research Methods in Educational Settings: A. Manicom.
- 5802B Practicum in Qualitative Research: A. Manicom.
- 5811A Quantitative Research Methods: J. Murphy.
- 5821B Educational Statistics: J. Murphy.
- 5900R Foundations of Continuing Education: P. Keane.
- 5910R Education and Aging: P. Keane.
- 5921A Program Design in Continuing Education: P. Keane.
- 5931A Adult Learning Theory: M. Welton.
- 5932B Adult Education Methods: M. Welton.
- 5933B History of Adult Education: M. Welton.
- 5940R Adult Counselling: M. MacDonald.
- 5950R Comparative Studies in Continuing Education: S. Semple.
- 5961A Adult Psychology: S. Sodhi.
- 5962B Adult Psychology: S. Sodhi.
- 5970R Administration of Continuing Education: K. Sullivan.
- 5972B Managing Negotiations: A Case Study Approach: staff.
- 5973A Community Education and Development: M. Welton.
- 5975B Selected Policy Issues in Continuing Education: D. Myers.
- 5981A Issues in Adult Literacy: R. Gamberg.
- 5982B Adult Literacy Needs and Programs: R. Gamberg.
- 5990R Qualitative Methods for Evaluating Adult Educational Policy and Programs: staff.
- 5099-5999 Thesis Research Seminars
- 6000-6911 Reading Classes
- 7300R Senior Seminar in Educational Psychology: S. Sodhi.
- 7580 Reading Practicum: staff.
- 7974B Practicum in Community Education and Development: M. Welton. Open to independent completion of study.
- 7985R Theory and Practice of Literary Acquisition for Adults: R. Gamberg. Open to independent completion of study.
- 7990 Project — Educational Psychology: Consult Dept. Open to independent completion of study.
- 7991R Project - Curriculum: Consult Dept. Open to independent completion of study.
- 7992B Practicum in Continuing Education: P. Keane. Open to independent completion of study.
- 7998R Project — Educational Administration. Open to independent completion of study.
- 9000R MA Thesis
- 9530R PhD Thesis

# English

(Tel. 424-3384)

## Chairperson of Department

R.J. Smith

## Professors Emeritus

M.M. Ross, OC, BA (UNB), MA (Tor.), PhD (Corn.), DLitt (UNB), LLD (St. Thom.), LLD (Dal), DLitt (Trent), FRSC  
S.E. Sprott, MA, BD (Melb.), PhD (Col.)

## Professors

J. Fraser, MA (Oxon.), PhD (Minn.), George Munro Professor of English Language and Literature  
J. Gray, MA (Aberd.), MA (Oxon.), PhD (Mont.), FRSA, FRSC, *McCulloch Professor of English*  
A.E. Kennedy, BA, MA (UBC), PhD (Edinburgh)  
M.G. Parks, MA (Dal), PhD (Tor.)  
R.J. Smith, BA (Natal), MA (Oxon.), PhD (Natal)  
D.P. Varma, MA (Patna), PhD (Leeds)

## Associate Professors

J. Baxter, BA, BEd, MA, PhD (Alberta)  
S.A. Cowan, BA (Montana), MA (Yale)  
R. MacG. Dawson, MA (Tor.), B.Litt. (Oxon.)  
R.M. Huebert, BA (Sask.), MA, PhD (Pitt.)  
M.A. Klug, BA (Minn.), MA (Kan. State), PhD (Ill.)  
P. Monk, BA (Reading), MA (Carleton), PhD (Queen's)  
C.J. Myers, BA (Sask.), MA, PhD (Tor.)  
R.R. Tetreault, BA (UBC), MA, PhD (Cornell)  
J.A. Wainwright, BA (Tor.), MA, PhD (Dal.)  
H.S. Whittier, BA (U.S. Naval Acad.), MA (New Hamp.), PhD (Yale)

## Assistant Professors

M. Furrow, BA (Dal), MA, MPhil, PhD (Yale)  
B.R. Greenfield, BA (York), MA (McG), MPhil, PhD (Columbia)  
H.E. Morgan, BA (UBC), MA (Wash.), B.Litt. (Oxon.), PhD (Wash.)  
D. McNeil, BA (Concordia), MA (UNB), PhD (McM)  
R.L. Raymond, BS (Yale), MA (Tor.)  
M. Stone, BA (Guelph), MA, MPhil (Waterloo), PhD (Tor.)

Applicants should designate the proposed thesis area at the time of application for admission. The Department will entertain research proposals at the MA level in most areas of British, Canadian, or American literature, and at the PhD level in many of these areas. Nonetheless, applicants for the PhD should take care to consult the Graduate Coordinator of the department concerning its strength, in both resources and personnel, in the field of study in which they propose to specialize.

## Admission Requirements

Candidates must satisfy the general requirements for admission to the Faculty of Graduate Studies. Candidates for the PhD degree in English must hold an MA degree from Dalhousie or its equivalent. Only in exceptional circumstances will persons holding a BA and an MA from Dalhousie be allowed to proceed to a PhD program without study at another institution.

## MA Degree Program

For minimum time required to complete this program, see Section 2.6. Two graduate seminars in English, one in the thesis area and one in an area unrelated to the thesis, and a third seminar in English, or, with the approval of the Department, a class in another department relevant to the candidate's course, are required.

All students are required to have studied at least one European language other than English and to demonstrate some proficiency in it. A thesis, equivalent to two classes, is required.

Two unbound copies of the thesis are to be submitted to the Department at least two weeks before the deadline dates set by the Faculty of Graduate Studies.

## PhD Degree Program

For a minimum time required to complete this program, see Section 2.6. Three graduate seminars beyond the classes for the Dalhousie MA are required. A qualifying examination with written and oral portions is required. All graduate students in the Department are required to have studied at least one European language other than English, and to demonstrate some proficiency in it. In addition to this general requirement, each doctoral thesis area has its own specific language requirements.

Preparation and defence of a thesis are required.

## Classes

### Graduate Seminars

Approximately one-third of the seminars listed below are offered each year. Students should consult the Department about which of the following seminars will be offered in 1986-87.

501 Middle English Literature, 1350-1400: M. Furrow, H. Morgan.

502 Shakespeare

503 Renaissance Poetry and Rhetoric: J. Baxter.

504 Milton and His Age: M.G. Parks.

505 Dryden and Restoration Literature

506 Samuel Johnson and His Circle: J. Gray.

507 The Eighteenth-Century English Novel

508 Blake: H.S. Whittier.

509 Literature and Society, 1900-1920: J. Fraser.

510 Victorian Fiction

511 The Gothic Romance: D.P. Varma.

512 Studies in Nineteenth-Century Canadian Literature: M.G. Parks.

513 Experiments in Realism: Jane Austen and George Eliot

514 Graveyard Poetry: D.P. Varma.

515 Melville and Hawthorne: H.S. Whittier.

517 British Literature, 1920-1945: R.J. Smith.

518 The Literature of Victorian Social Criticism: C.J. Myers.

519 Poetry and Poetic Theory of the Aesthetic Movement and the Catholic Revival

520 Modern Critical Methods and Theories: A. Kennedy.

522 Keats and Shelley: R. Tetreault.

523 Joyce and Yeats: M.A. Klug.

525 Studies in Modern Canadian Poetry: P. Monk.

526 Recent American Fiction: M.A. Klug.

527 Traditionalism and Experimentation in English Poetry, 1880-1920: J. Fraser.

528 Restoration and Augustan Satire: J. Gray.

534 Literature and Society, 1750-1800: J. Gray.

537 Studies in Modern Canadian Fiction: J.A. Wainwright.

544 Innovation and Tradition in Romantic Poetry: R. Tetreault.

546 Hemingway, Faulkner and Bellow: M.A. Klug.

547 Mediaeval Romance: H.E. Morgan.

556 Canada and the Commonwealth: Selected Writers: P. Monk.

557 British Fiction Since 1945: R. Smith.

558 Victorian Narrative Modes: M. Stone.

559 Renaissance Dissident Writers: R. Huebert.

560 Studies in Modern American Poetry: M.A. Klug.

9000 MA Thesis

9530 PhD Thesis

**Note:** As the calendar goes to press before plans for the next year are completed, there may be significant changes in the seminars listed above. Students should consult the Department before registration, when a revised list will be available.

### Honours Classes (Tentative List)

051A An Introduction to Literary Research

201 The English Language

202 History of the English Language

244 (formerly 454) Literary Criticism

251 Sixteenth-Century Non-Dramatic Literature

252 Shakespeare and the Drama of His Time

253 Old English

254 Eighteenth-Century Literature

351 Middle English

352 Seventeenth-Century Non-Dramatic Literature

354 Victorian Novel

355 American Literature to 1900

356 Literature of the Romantic Period

357 Modern Canadian Literature

452 Nineteenth-Century Prose and Thought

453 Twentieth-Century British Literature

455 Modern American Literature

457 Victorian Poetry

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# Environmental Studies

(Tel. 424-3632)

## Institute for Resource and Environmental Studies

### Director

A.J. Hanson

### Associate Director

R. Côté

### Academic Program Coordinator

F. Cohen

### International Program Coordinator

G. Hainsworth, BA (Lond.), PhD (Calif. — Berkeley)

### Professor

A.J. Hanson, BSc, MSc (UBC), PhD (Michigan)

### Associate Professors

F. Cohen, BA, MEd (Harv.), PhD (Minnesota)

B. Freedman, BSc, MSc, PhD (Tor.) (jointly appointed in Environmental Studies and Biology)

### Assistant Professor

R. Côté, BSc (Loyola), MSc (Memorial)

ES 5100R Applied Economics: B. Jamieson (Cross-listed with MPA 5130R).

ES 5110A Resource Economics: M. Cross. (Cross-listed with Economics 5516A).

ES 5120B Environmental Ecology: B. Freedman. (Cross-listed with Biology 5060B).

ES 5180B Coastal Communities: L. Kasdan. (Cross-listed with SSA 5220B).

ES 5200A/B Introduction to Environmental Law: Staff. (Cross-listed with Law 2021A/B).

ES 5601A/B Management of the Marine Environment: staff.

ES 5300A Natural Resources Administration: P. Pross. (Cross-listed with MPA 6530A, Political Science 5266A).

ES 9000 Thesis

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# French

(Tel. 424-2430)

Chairperson of Department  
M. Bishop

## Professors

H.F. Aikens, BA (Dal), AM (Yale)  
M. Bishop, BA, BEd, (Manch.), MA, (Man.), PhD (Kent. Canterbury)  
J.W. Brown, AB (Miami), MA (Middlebury), PhD (Penn.)  
R. Kocourek, State Examination, PhD, CSc, (Charles U., Prague) —  
*McCulloch Professor, Graduate Coordinator*  
D.W. Lawrence, BA, MA, PhD (Lond.)  
H.R. Runte, MA, MPh, PhD (Kansas)

## Associate Professors

P. De Méo, BA, MA, PhD (UCLA), *Coordinator of MAT program*  
B.E. Gesner, BA, BEd, MA (Dal), Dr. de 3e cycle (Toulouse II)  
W.T. Gordon, BA, MA, PhD (Tor.)  
M. Sandhu, License es Lettres (Montpellier), PhD (Yale)  
N. Trèves-Gold, BSc (Amer. U., Cairo), PhD (Rice)  
K. Waterson, BA (Long Island), MA (NYU), PhD (CUNY)

## Assistant Professors

E. Boyd, BA (SMU), BEd (StFX), MA (Middlebury)  
T.P. Carter, BA (Prin.), MA, PhD (Brown), On leave.  
M.J. Myers, DUEL, Licence ès Lettres, MA, Dr. de 3e cycle (Strasbourg)  
I.Z. Oore, BA (Tel-Aviv), MA (Waterloo), PhD (Western Ontario)

## Lecturer

H.E. Bednarski, BA (Lond.), MA (Dal)

## Honorary Research Associates

P.R. Bernard, BA (Province College), MAT (Assumption College), PhD (Pennsylvania State), Saint Mary's University  
D.G. Bevan, BA Hons. (Leeds), MA (Cape Town), Maîtrise-ès-Lettres, D. Litt. Et. Phil. (South Africa), Acadia University  
J.A. Bour, BA Dist., MA (Rochester), MA, PhD (Princeton), Mount Allison University  
E.R. Clark, BA Hons. (King's College, Un. London), PhD (McMaster), Memorial University of Newfoundland  
J. Deleas, BA Hons (New Brunswick), MA (Dal), DTC (Un. Paul Valéry), Mount Saint Vincent University  
F.F. Falvo, MA, PhD (Laval), University of P.E.I.  
P. Gerin, BA (Lyon), MA (Aix-Marseille-Tananarive), PhD (Lyon), Mount Saint Vincent University  
D.E. Graham, BA Hons. (Saskatchewan), MA, PhD (Western Ontario), Memorial University of Newfoundland  
V. Harger-Grinling, BA, MA Hons. (Auckland), PhD (UBC), Memorial University of Newfoundland  
D.H. Jory, BA (Oxford), MA (McMaster), DU (Dijon), Memorial University of Newfoundland  
L. Lavoie, BA (Laurentienne), MA (Laval), PhD (d'Aix-Marseille), College of Cape Breton  
J.R. Lawler, BA Hons., MA Hons. (Melbourne), PhD (Paris)  
H-D Paratte, DUEL, MA, Maîtrise (Strasbourg), PhD (Lille III), Acadia University  
S. Pons-Ridler, BA, L. es L. (Algiers), L. ès L. & Maîtrise (Aix-en-Provence), DML (Middlebury), Memorial University of Newfoundland  
A.R. Pugh, BA, MA, PhD (Cambridge), Memorial University of Newfoundland  
M. Starets, BA, MA (University of Tel Aviv), PhD (Sorbonne, Paris), Université Sainte-Anne  
M.E. Walker, BA (Hons) (Victoria), PhD (UBC), St. Francis Xavier University

## Honorary Adjunct Professor

R. Runte, BA (SUNY), MA, M.Ph., PhD (Kansas), Université Sainte-Anne

## MAT Degree Program

This degree program, jointly administered by the French and Education Departments, is a professional degree designed for the practising teacher. It may be taken full-time or part-time.

MAT classes are normally offered in the late afternoon during the Fall and Winter terms. Every effort is made to offer one or two half-credit classes during the summer sessions.

The goals of the MAT are twofold:

1. to refine the student's knowledge of the French language and of francophone culture; and
2. to deepen the student's awareness of current research in second-language learning and the relevant issues in education in general, with a view to the application of these research findings to various teaching situations.

Coursework is evenly divided among the following four areas: French language and linguistics, francophone culture, second-language acquisition and teaching, and education. An independent project, supervised by members of the French and Education Departments, will focus on the *application* of some aspect of current research in second-language learning to a specific pedagogical situation. Students primarily interested in *research* on second-language pedagogy should consider doing an MA in French rather than an MAT.

Please contact the MAT Coordinator for information about courses applicable to this degree program.



**Assistant Professors (Research)**

P. Stokoe, BSc (Dal), PhD (Stanford)

A. Whitten, BSc (Southampton), PhD (Cantab.)

**Research Associates**

N. Blair, BSc (Carleton), MES (Dal)

C. Lamson, BA (Skidmore), MSLS (Simmons), MA (Memorial), MES (Dal)  
(jointly appointed in Environmental Studies and Ocean Studies)

J. Reade, BA (SMU), MLS (Dal)

P. Taschereau, BA (Sir Geo. Wms.), MA (Acadia), PhD (Man.)

**Honorary Adjunct Professor**

G.E.E. Beanlands, BSc, MSc (UNB), PhD (Dal)

The Institute offers a graduate program leading to the Master of Environmental Studies (MES) degree. There are two general options: (1) resource management and ecology with specialization in fields such as fisheries, forest and land management, environmental toxicology and (2) environmental policy and administration (for example, ocean and coastal zone management, environmental assessment). Classes in Environmental Studies are offered through the Institute. In addition, a wide selection of classes relevant to the program are given by other units within Dalhousie, and by Saint Mary's University and the Technical University of Nova Scotia. Students take core courses from which they will acquire a broad, interdisciplinary background in environmental studies. Each student will also take classes and write a thesis in a particular field of interest. An important element in the MES program is group research projects which give the students experience in multidisciplinary team work. There are opportunities for study and research from the points of view of policy, technique and science. More than 20 faculty members from various academic units in the university contribute in classwork and as thesis supervisors.

**Admission Requirements**

In order to be enrolled in an MES program students must have achieved sufficient depth of knowledge in an appropriate branch of an approved academic discipline.

(a) The minimum entry requirement is (i) an Honours bachelor degree in a life science, an earth science, chemistry, physics, mathematics, economics, political science or sociology, or (ii) a professional degree in law, architecture, medicine or engineering, or (iii) equivalent academic qualification.

(b) Students with a pass degree may gain admission by completing an additional year, with suitable academic standing, in an approved qualifying program registered in the Faculty of Graduate Studies. This program would direct the student into intensive study of one of the disciplines specified in (a) and would normally bring the student to the academic level of a Dalhousie Honours graduate.

Priority consideration for admission and financial assistance will be given to applications received by 31 March.

**Program Duration and Minimum Requirements**

(a) *The one-year program.* (Note: one year is understood to mean one calendar year, not one winter session.) Only students with a well-rounded background may enter a one-year MES program. A "well-rounded background" is defined as an acceptable professional degree, e.g. BEng or BArch with a concentration in environmental studies. Professional experience following honours graduation may be taken into consideration when evaluating entrance requirements. The requirements for the one-year program are:

1. ES 5000R and 5001B
2. One graduate-level class related to an environmental theme in the student's area of specialization.
3. Thesis

(b) *The two-year program.* For all other students the minimum program will occupy two years. Those accepted with an Honours bachelor degree, or a professional degree without environmental content, are required to complete, not later than the end of their first year, three half-credit classes selected from the disciplines of life sciences, earth sciences, chemical and physical sciences, engineering (group A), and social sciences, law, architecture (group B). An approved class in statistics as related to the environment may be accepted in either group A or B.

Students whose specialization was in group A should take at least two subjects in group B, and vice versa. Each credit must be in a different discipline and must be in subjects other than the major subject of the student's first degree. The approved classes from which these three half-credits may be selected will include a meaningful introduction to environmental questions as related to the discipline. The requirements for the first year of a two-year program are:

1. Completion of the three half-classes specified above
2. ES 5000R and 5001B
3. An approved graduate class in an area designed to relate the undergraduate major to an environmental theme
4. Introduction to thesis

The requirements for the second year of a two-year program are:

1. An approved graduate level class
2. Thesis, and participation in the development of interdisciplinary team solutions for the general problem of which the thesis forms one component.

Class work beyond the minimum load is generally required and is specified by the program coordinator after discussions with the student and thesis supervisor.

**Classes**

All courses except ES5002A and ES9000 are open to students in other programs by permission of the instructor.

ES 5000R Introduction to Environmental Studies: F. Cohen and staff.

ES 5001B Environmental Assessment: G. Beanlands.

ES 5002A Environmental Studies Joint Project: A.J. Hanson.

ES 5004A/B Management of Toxic Substances: R. Côté.

ES 5005A. Ecosystems and Social Systems; a Field Approach: F. Cohen, P. Taschereau.

ES 5020A Resource Systems and Economic Development: A.J. Hanson. (Cross-listed with Biology 4650A/5650A)

ES 5021B Fisheries Resource Management: staff.

ES 5030A/B to 5039A/B Special Topics in Resource and Environmental Studies: staff.

*Admission Requirements:* BA in French with Honours and BEd from Dalhousie or the equivalents. Prospective students must show evidence of proficiency in spoken and written French. Students with less than the above may be provisionally accepted into the program and required to complete such additional classes as the Department feels warranted.

## MA Degree Program

(For general rules see the Faculty Regulations above.)

Classes and research leading to the MA degree in French are offered in the areas of French literature, linguistics and civilization.

Candidates must satisfy the general requirements for admission to the Faculty of Graduate Studies and must show evidence of proficiency in spoken and written French.

Students may be accepted on a full-time or a part-time basis. A full-time student must spend a minimum of one year in full-time graduate study. In the first year of residency, a full-time student is carrying more than two full-credit classes. The time normally required to complete the full-time program is one year for holders of a French Honours degree or equivalent, and two years for holders of a general degree.

In a one-year full-time program, the equivalent of at least five university credits is required. This will consist of thesis (usually equivalent to two credits) plus three 5000-level credits. In a two-year full-time program, students have to attain the equivalent of Honours status (see Undergraduate Calendar) and to obtain the additional five credits as required in a one-year full-time program.

In addition to the five credits, all MA students are normally expected to take a half-year class in Research Methods. When appropriate, up to one additional undergraduate or graduate credit may be required in order to improve the student's proficiency in French. Part-time students carry only two or less full-credit classes during one year. A one-year full-time program corresponds to three years part-time. A two-year full-time program corresponds to six years part-time.

The thesis, written in French, is to be submitted and approved within five years from the first time of registration in the full-time or part-time program (within six years for part-time study).

Students who wish, eventually, to go on to the PhD are advised to do this MA thesis degree.

## PhD Program

For information on the forthcoming PhD program in French Literature, Linguistics and Acadian Studies write to the Graduate Coordinator, Department of French, Dalhousie University, Halifax, N.S., B3H 3J5.

## Selection of Classes and Registration

It is the responsibility of students admitted to one of the graduate programs to report to the MA or MAT coordinator in the week preceding the beginning of classes, or earlier. The purpose is a pre-registration briefing and interview, the final selection of classes, completion of class approval forms and the drawing up of the program of graduate studies. All graduate students should be duly registered before classes begin.

## Classes

(What follows is a list of both MA and MAT classes. Classes required in particular cases will be specified in each student's Program of Graduate Studies.) Only a limited number of classes is offered in any given year. Descriptions of the graduate classes are available on request from the secretary of the department.

5002A/5002B/5002C Méthodes de recherche/Research Methods: H. Runte.

5005A Philologie française: Séminaire d'ancien français/French

Philology: Old French Seminar H. Runte.

5006B Philologie française: Séminaire du français moderne/French Philology: Seminar on the History of Modern French: H. Runte.

5010R Aspects des études phonétiques/Topics in Phonetic Studies: H. Aikens.

5016A/5016B Aspects de la traduction/Topics in the Science of Translating: W.T. Gordon.

5040R Stylistique avancée/Advanced Stylistics: M. Sandhu.

5120R Analyse Linguistique/Linguistic Analysis: R. Kocourek.

5121A/5121B Fonctionnalisme en linguistique moderne/Functionalism in Modern Linguistics: R. Kocourek.

5122A/5122B Créativité Lexicale/Lexical Creativity: R. Kocourek.

5123A/5123B Terminologie et langue de spécialité/Terminology and Specialized Language: R. Kocourek.

5124R Séminaire de linguistique (Etudes contrastives)/Linguistics Seminar (Contrastive Studies): R. Kocourek.

5125A/5125B Sémantique/Semantics: W.T. Gordon.

5140A/5140B Dialectologie acadienne et sociolinguistique/Acadian Dialectology and Sociolinguistics: B.E. Gesner.

5190A/5190B Analyse Linguistique des manuels de français/Linguistic Analysis of Textbooks: R. Kocourek.

5250A/5250B Fondements de l'enseignement des langues secondes/Foundations of Second Language Teaching: P. De Méo.

5260A/5260B Enseignement des compétences orales et écrites/Teaching of Oral and Written Skills: P. De Méo.

5270A/5270B Pédagogie du texte écrit/Pedagogy of the Written Text: P. De Méo.

5280A/5280B Enseignement de la culture francophone/Teaching of Francophone Culture: staff.

5281A/5281B Culture française/French Culture: J. Brown.

5285A/5285B Sémiotique appliquée/Applied Semiotics: J. Brown.

5290A/5290B Analyse, exploitation et développement de matériaux pédagogiques/Analysis, Exploitation and Development of Curricular Materials: P. De Méo.

5295A/5296B Séminaire: Didactique des langues secondes/Seminar: Second-Language Teaching: staff.

5300A Séminaire: littérature médiévale/Seminar in Mediaeval French Literature: H. Runte.

5301B Lectures: littérature médiévale/Supervised Readings in Mediaeval French Literature: H. Runte.

5400A/5400B Rabelais et son temps/Rabelais and his Time: N.

Trèves-Gold

5401A/5401B Montaigne et son temps/Montaigne and his Time: N. Trèves-Gold.

5402A/5402B La Poésie de la Renaissance/Renaissance Poetry: N. Trèves-Gold.

5500A/5501B L'Aventure intellectuelle du Grand Siècle/The Intellectual Adventure of French Classicism: K. Waterson.

5700A La Révolution romantique/The Romantic Revolution: M. Sandhu.

5701B Le Roman du dix-neuvième siècle/Nineteenth-Century Novel: M. Sandhu.

5705A/5705B Le Poème en prose au 19e siècle/The Prose Poem in the 19th Century: J. Brown.

5706A/5706B Impressionnisme et symbolisme/Impressionism and Symbolism: M. Bishop.

5800A Le Théâtre de Camus et de Claudel/The Theatre of Camus and Claudel: D. Lawrence.

5801B Anti-romans du vingtième siècle/Anti-Novels of the 20th Century: D. Lawrence.

5802A La Poésie moderne de Char à Bonnefoy/Modern Poetry from Char to Bonnefoy: M. Bishop.

5803B La Littérature contemporaine/Contemporary Literature: M. Bishop.

5804A/5804B Art et Littérature/Art and Literature: M. Bishop.

5805A/5805B La Stylistique structurale/Structural Stylistics: J. Brown.

5806A/5806B Poétique et théorie de la littérature/Poetics and Theory of Literature: J. Brown.

5807A/5807B Culture contemporaine, littérature contemporaine/Contemporary Culture, Contemporary Literature: M. Bishop.

5876A/5876B Aspects de la littérature du Canada français /Studies in French Canadian Literature: B. Bednarski.

5910A/5910B Lecture de textes acadiens contemporains/Supervised Readings in Acadian Literature since 1968: H. Runte.

5920A/5920B Femmes écrivains et images de femmes dans la littérature française à travers les siècles/French Women Writers and Images of Women through the Centuries: N. Trèves-Gold.

5990R Projet indépendant/Independent Projet (MAT): Subject to independent completion of study.

5996A/5997B L'Oeuvre romanesque de Jean Giono/The Novels of Jean Giono: D. Lawrence.

5998A/5999B Recherches indépendantes/Independent Research: Subject to approval by graduate coordinator and department chairperson.

9000R Thèse/Thesis

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# Geology

(Tel. 424-2358)

**Chairperson of Department**  
M. Zentilli

**Graduate Coordinator**  
P.J.C. Ryall

**Professors Emeritus**  
H.B.S. Cooke, MSc, DSc (Witwatersrand)  
C.G.I. Friedlaender, PhD (Zurich)

**Professors**  
D.B. Clarke, BSc, MA (Tor.), PhD (Edin.)  
J.M. Hall, BSc (Wales), PhD (Lond.), DIC (Lond.)  
F. Mediolli, PhD (Parma)  
P.T. Robinson, BSc (Mich.), PhD (Calif.)  
M.H. Salisbury, BSc (MIT), MSc, PhD (Wash.), (Research)  
P.E. Schenk, BSc (W.Ont.), MSc, PhD (Wisc.)

**Associate Professors**  
R.A. Jamieson, BSc (Dal.), PhD (MUN)  
G.K. Muecke, BSc, MSc (Alta.), DPhil (Oxon.)  
P.H. Reynolds, BSc (Tor.), PhD (UBC) (jointly with Physics)  
P.J.C. Ryall, BSc (Dal), MSc (Alberta), PhD (Dal)  
M. Zentilli, BSc (Chile), PhD (Queen's)

**Assistant Professors**  
S.O. Akande, BSc (Ibadan), MSc (Western), PhD (Dal)  
R. Boyd, BSc, PhD (Sydney)  
M.R. Gibling, BA (Oxon.), PhD (Ottawa)  
D.B. Scott, BSc (Wash.), MSc (Wash. State), PhD (Dal), CIDA/NSERC Research Fellow

**Senior Instructor**  
P. Wallace, BSc, MSc (McMaster)

**Research Associate**  
C. Beaumont (Major appointment in Oceanography Department)

**Honorary Research Associates**  
P.S. Giles, BSc, MSc (Acad.), PhD (Western Ont.), Nova Scotia Department of Mines  
C.E. Keen, BSc, MSc (Dal), PhD (Cantab.), Atlantic Geoscience Centre, Energy, Mines & Resources

C.T. Schafer, BSc, MS, PhD (NY), Atlantic Geoscience Centre, Energy, Mines & Resources

#### Honorary Adjunct Professors

J.S. Bell, BA (Oxon.), PhD (Princeton), *Atlantic Geoscience Centre, BIO*  
F.M. Gradstein, BA, MSc, PhD (Utrecht U.), *Atlantic Geoscience Centre, BIO*

P.A. Hacquebard, BSc, MSc (Leiden), PhD (Groningen), LLD (Dal)  
L.F. Jansa, BSc, MSc (Masaryk), PhD (Charles), *Atlantic Geoscience Centre, Energy, Mines & Resources*

D.J.W. Piper, BA Hons. (St. Catharine's Coll., Cantab.), MA (Cantebury), PhD (Darwin Coll., Cantab.), *Atlantic Geoscience Centre, BIO*

Students with good degrees in any of the sciences or mathematics who wish to study some aspect of the earth are welcome. Graduate work leading to the degrees of MSc and PhD is possible in a number of different fields. These include for example: marine geology and geophysics, Appalachian geology, isotope geology, economic geology, petrology, geochemistry and mineralogy, geophysics, sedimentology, micropaleontology and coastal sedimentation.

Interdisciplinary studies are encouraged, and there is active cooperation among the science departments (including Oceanography) at Dalhousie University. Students are urged to take full advantage of the opportunities this affords. Research is often done in cooperation with government laboratories such as the Nova Scotia Department of Mines and Energy, Nova Scotia Research Foundation and the Atlantic Geosciences Centre at the Bedford Institute of Oceanography and members of these laboratories frequently serve on supervisory committees. The complex of departments and laboratories in Halifax and Dartmouth concerned with various aspects of the earth make graduate study in earth sciences very attractive.

## Admission Requirements

Candidates must satisfy general requirements for admission to the Faculty of Graduate Studies.

## MSc Degree Program

The minimum time for completion of the MSc degree is 12 months of full-time study (see Faculty Regulation 2.6). Experience has shown that most students take about 30 months to complete their work. Financial support is available for no more than 24 months.

Part-time study is also possible. Students must complete course requirements within 4 years, and all degree requirements within 6 years of registration for the first time. Conditions for admission to this program are the same as those for full-time students. Financial support is not normally available for part-time study.

The equivalent of five graduate classes are required, of which the thesis normally counts as three.

Graduate students are required to participate in the presentation of papers in the Geology seminar.

Research and preparation and oral defence of a thesis are required.

## PhD Degree Program

The minimum time required to complete this program is two years from an MSc; normally three years are required (see Section 2.6).

For coursework required, see Section 2.10.2. The preliminary examination (see Section 2.11) is normally an oral examination in a seminar format.

Students must demonstrate ability in one language other than English. Participation in the Geology seminar is required.

Research and preparation and oral defence of a thesis are required.

## Classes

The following classes are designed primarily for undergraduates in their final year; they may be taken by graduate students for general interest, because the material is needed to help in their research, or because the student's background may be inadequate. Classes marked \* or † are offered routinely only in alternate years (†1987-88, \*1986-87) but may be taught as graduate-only classes in any year if numbers warrant.

At the time of printing, additional course offerings were being considered. Please consult department for courses offered.

5150R Economic Geology: M. Zentilli.

5270A Applied Geophysics: P.J.C. Ryall.

\*5280B Marine Geophysics: staff.

†5290B Solid Earth Geophysics: C. Beaumont.

5350B Tectonics: R.A. Jamieson, J.M. Hall.

5380A Advanced Geochemistry: G.K. Muecke.

\*5390B Advanced Igneous Petrology: D.B. Clarke, R.A. Jamieson, G.K. Muecke.

†5400B Advanced Metamorphic Petrology: R.A. Jamieson.

The following classes are designed specifically for graduate students.

6100C Seminar in Sedimentology and Stratigraphy

6110C Research Topics in Micropalaeontology

6120A/6220B Seminar in Mineralogy, Petrology and Geochemistry

6130C Seminar in Geophysics

6140A/B Advanced Topics in Geophysics

6150 Metallogeny in Mineral Exploration

6160R Research Topics in Soft Rock Geology I

6170R Research Topics in Soft Rock Geology II

6250C Directed Studies

All graduate students must be registered in one of:

9000 MSc Thesis

9530 PhD Thesis

The following two full credit courses are required for all graduate students intending to specialize in sedimentology and micropaleontology:

6160R Research Topics in Soft Rock Geology I

6170R Research Topics in Soft Rock Geology II

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# German

(Tel. 424-2161)

**Chairperson of Department**  
F.W. Gaede

**Professors**

F.W. Gaede, PhD (Freib.)  
P. Michelsen, PhD (Gott.)

**Associate Professors**

H.G. Schwarz, MA (Munich), PhD (McG)  
D.H. Steffen, PhD (Gott.)

**Assistant Professor**

E. Spence, MA, PhD (UBC)

Graduate classes leading to the degree of MA are offered in the history of German literature and thought. Research in the Department is concerned principally with the Baroque Age, the literary and philosophical tradition of German Idealism, and the culture of the twentieth century.

Graduate students may concentrate their work in any of the periods or in any particular aspect of the history of German literature and thought.

## Admission Requirements

Applicants who do not meet the standards of an Honours degree may be required to take additional classes.

## MA Degree Program

Candidates should be prepared to spend two academic years towards completion of their classes and thesis.

Candidates are expected to have a reading knowledge of a third modern or ancient language.

A thesis is required.

## Classes

- 550 Literature and Thought from Reformation to Enlightenment
- 552 Goethe and the Enlightenment
- 553 Hegel's Aesthetics and the Ancients
- 554 Kant and the History of German Idealism
- 555 Hegel: Phenomenology of Spirit
- 557 Goethe and Romanticism
- 558 Goethe's Faust
- 559 Studies in German Idealism
- 560 Heidegger and German Idealism
- 561 Literature of the 19th Century

562 Modern German Literature

563 Aesthetic Theory

564 Ancient and Modern Dialectics

566 History and Theory of the German Novel

567 Hegel's Philosophy of Nature

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# Health Services Administration

(Tel. 424-7097)

**Director of School**  
Lawrence J. Nestman

**Professors**

L. Nestman, BComm (Sask.), CA (Alta.), MHA (Alta.)  
A. Peter Ruderman, BS, MA, PhD (Harv.), MBA (Chic.)

**Associate Professors**

M.G. Brown, BA (W Ont.), MA (Qu.), AM, PhD (Chic.)  
A.D. Thompson, MB, ChB (Aberdeen), MSc (Social Medicine) (Lond.)

**Assistant Professors**

G. Ross Baker, BA (McG), MA, PhD (Tor.)

**Lecturers**

W.D. Cochrane, BA Hons, LLB (Dal)  
A.M. MacIntosh, BA, LLB, (Dal), MPH (Harvard)

The following faculty from the School of Public Administration teach classes that are required in the Master of Health Services Administration.

**Professor**

Peter Aucoin, BA (SMU), MA (Dal), PhD (Queen's)

**Associate Professor**

W.J. Coffey, AB (Dartmouth), MA, PhD (Western)

**Assistant Professor**

Barbara Jamieson, BA (UBC), MA, PhD (Tor.)

**Lecturer**

Murray G.K. Davidson, BComm (Tor.), MPA (Dal), CA

Students seeking further information or help in planning courses of study in the School of Health Services Administration should address themselves to:

Graduate Coordinator  
 School of Health Services Administration  
 1234 Seymour Street  
 Halifax, N.S. B3H 3M3  
 (902) 424-7097

## Objectives

The School of Health Services Administration offers a Masters degree which meets the needs of those pursuing administrative careers in the Canadian Health Care Delivery System. The Program is designed to prepare individuals for careers in Hospital Administration, Nursing Administration, Long Term Care Administration, Public and Community Health Administration and Administration in Municipal, Provincial and Federal Governments in health and health-related areas. Opportunities for individuals with an MHA are excellent in policy, planning, evaluation, administration and research areas.

The Program seeks to provide a conceptual background for the increasingly complex managerial tasks that need to be performed in health institutions and health related governmental departments. An effort is made to balance political, social, cultural, medical and psychological approaches to understanding the health care delivery system with those of the management sciences.

The emphasis in the program is on an academic, multidisciplinary and professional education. It is academic in that it emphasizes knowledge of current research findings and treats the practice of health services administration as phenomena subject to social scientific analysis. It is multidisciplinary in that faculty are drawn from traditional social and administrative sciences. It is a professional program in the sense that it will attempt to broaden the social perspectives of the student emphasizing the feature that a professional has a social responsibility to society and must have an appreciation of the ethical standards appropriate to a career in health services administration.

## Applications Procedure

Application forms are available from the Admissions Office of Dalhousie University. Applications should be submitted as early as possible.

Application forms must be accompanied by the following:

- transcripts of all previous work;
- at least two letters of reference;
- a statement of career interests and reasons for seeking admission to the School and Resume;
- GMAT (see below);
- TOEFL for Foreign Students (see below).

The application *must* be complete by no later than August 01.

Candidates are required to sit for the Graduate Management Admission Test (GMAT). This requirement may not be waived without explicit permission of the Admissions Committee. GMAT results will be considered with other information submitted by applicants, in deciding on eligibility for admission.

The Test may be taken at conveniently-located centres throughout North America and in many other parts of the world. In the case of North American candidates, applications for the test are accepted by the ETS in Princeton until approximately six weeks before test dates. For candidates in other countries, closing dates are eight weeks before test dates.

School of Health Administration GMAT Number is 0690.

Applicants for the test should use an order form obtainable from the Registrar's Office of the nearest University, Dalhousie University, or you

may write to the address below to obtain an information bulletin and registration form for the GMAT. If the order form is lost or omitted from the materials you receive, you should write directly to:

Graduate Management Admission Test  
 Educational Testing Service  
 Box 966  
 Princeton, N.S., 08540, U.S.A.

Every student is required to demonstrate at an early stage in his studies that he is proficient in writing reports and essays in English. Candidates from countries outside Canada whose mother tongue is not English will be required to take the Test of English as a Foreign Language as a requirement for admission. Further information may be obtained by writing.

Test of English as a Foreign Language  
 Box 899  
 Princeton, N.S., 08540, U.S.A.

CANDIDATES ARE ADVISED TO TAKE THE TEST(S) AT THE EARLIEST POSSIBLE DATE.

For foreign students it is strongly recommended that all documents (transcripts and references) be submitted prior to April 30.

Any applications received after this date will be considered on a first-come first-served basis because of limited class size. Applications received after June 30 cannot be guaranteed normal processing.

## Grading System and Good Standing

Under the regulations of the Faculty of Graduate Studies, MHA students are required to achieve a grade of B- or better in all classes taken. One C grade is permitted in any year if an overall B average is maintained for that year, but the C class must be repeated or replaced, and passed (i.e. B- or better), depending on whether a required or elective class is involved. This special exception is available to full-time students only.

Students who do not meet these requirements may not continue in the program unless their application for readmission is approved by the Faculty of Graduate Studies.

For further information, contact the Administrative Secretary of the School.

## Course Requirements

The two-year program leading to a Master of Health Service Administration degree features both an academic and results-oriented curriculum. It requires the successful completion of 11 credits which must include:

Required: 6 ½ full credits

- MPA 5100A Government Structure & Organization
- MPA 5130R Applied Economics
- MPA 5140R Quantitative Methods
- MPA 5150R Financial Management & Accounting
- HSA 5300A Canadian Health Care Delivery System
- HSA 5310B Health Institutional Management
- HSA 5330B Health Services Organization & Management
- HSA 6380B Advanced Seminar Health Services Administration
- HSA 6390R Health Services Residency

## Electives — Health

7 half-credit courses must be chosen from the following courses:

- HSA 6300A Health & Government Management Accounting
- HSA 6315A Advanced Seminar in Structure & Process of Health Care Organization.
- HSA 6320A Epidemiology
- HSA 6330B Health Care Planning
- HSA 6340A Health Economics
- HSA 6350B Advanced Health Economics
- HSA 6365B Quality Assurance & Risk Management
- HSA 6370B International Comparative Health Care Systems
- HSA 6375A Problems of Remuneration in Health Care
- HSA 6360B Health Care Law

## Electives — Other 1 full credit

The remaining one-credit requirement may be made up from any of the courses offered by the School of Health Services Administration or any other graduate studies program, subject to approval of a faculty advisor.

**Note:** "A" indicates first-term ½ credit course;  
 "B" indicates second-term ½ credit course;  
 "R" indicates full-term 1 credit course.

Depending upon previous education and experience, advanced standing of up to five credits may be granted to students. Advanced standing may be in the form of credits or course exemptions. Permission for advanced standing must be obtained from the Director of the School.

The program can be completed on a full or part-time basis.

## Part-time Study

The Program offered through the School is available to students on a part-time basis. A part-time student may enrol in up to two full classes (or equivalent) in any one year.

In order to ensure that graduate students benefit from a reasonable concentration of their studies, part-time studies must normally be completed within six years.

## Further Information

Prospective applicants who do not meet the academic admission requirements of a graduate program may wish to consider improving their qualification by means of a no-degree program or the Certificate in Public Administration in the Faculty of Administrative Studies.

It should be emphasized that any such undertaking carries no assurance of subsequent admission to a graduate program.

## General Admission Requirements

Candidates must satisfy the general requirements for admission to the Faculty of Graduate Studies. Enrolment in the School is limited. In general, successful applicants should have attained a good second class standing in their previous university work.

Admission is based on an assessment of:

- professional experience and/or promise;
- all previous academic work;
- letters of reference;
- GMAT;
- TOEFL

In certain circumstances the School may consider applications from individuals who do not satisfy the general requirements for admission to the Faculty of Graduate Studies. Individuals with a minimum of ten years

work experience in administrative positions who either have completed a full year of university study, or possess a relevant professional certification or have completed a relevant correspondence program (such as the Canadian Hospital Assoc. Health Services Management Course) can be considered for a special one year undergraduate course of study leading to a CPA. Successful completion of the year with an average grade of B+, with no grade below B-, would constitute a basis for a recommendation from the School for admission to the Faculty of Graduate Studies. Please direct enquiries to the Graduate Co-ordinator of the School in regard to the above.

## Advanced Standing

Advanced standing for applicants to the MHSA program of up to five credits (one year) may be granted to students admitted with an Honours BA, BComm, DPA, Masters, or other professional degree (MBA, MPA, MLS, MSW, LLB, etc.). This is the maximum that may be granted. The actual number of credits will be recommended by the Graduate Coordinator and approved by the Dean.

Where a student has the equivalent of a required class but is not admitted with advanced standing, a more suitable class may be substituted for the required class. To be considered for advanced standing they should include with their applications for entrance to the program a formal request for advanced standing, together with syllabuses for those courses previously taken which they consider to be equivalent to Dalhousie MHSA courses.

## Classes

MPA 5100A Government Structure & Organization: P. Aucoin

MPA 5130R Applied Economics: B. Jamieson

MPA 5140R Quantitative Methods: W. Coffey

MPA 5150R Financial Management & Accounting: M. Davidson

MHSA 5300A Canadian Health Care Delivery System: A.P. Ruderman

MHSA 5310B Health Institutional Management: G.R. Baker

MHSA 5330B Health Services Organization and Management: G.R. Baker

MHSA 6300A Health Management Accounting: L. Nestman

MHSA 6315A Advanced Seminar in Structure & Process of Health Care Organization: G.R. Baker

MHSA 6320A Epidemiology: A.D. Thomson

MHSA 6330B Health Care Planning: A.D. Thomson

MHSA 6340A Health Care Economics: M.G. Brown

MHSA 6350B Advanced Health Economics: M.G. Brown

MHSA 6360B Health Care Law: W. Cochrane

MHSA 6365B Quality Assurance and Risk Management: A. MacIntosh

MHSA 6370B International Comparative Health Systems: A.P. Ruderman

MHSA 6375A Problems of Remuneration in Health Care: A.P. Ruderman

MHSA 6380B Advanced Seminar Health Services: L. Nestman

MHSA 6390R Health Services Residency: L. Nestman

MHSA 6800R Project: staff.

MHSA 6900R Directed Reading: staff.

MHSA 6310B Management Control and Reimbursement for Health: L. Nestman.

Not all classes are offered each year. Consult Department for current year offerings. In addition to the above, classes may be selected from other schools, departments, or faculties, subject to the approval of a faculty advisor.

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# History

(Tel. 424-2011)

Chairperson of Department  
N.G.O. Pereira

## Professors

P. Burroughs, BA, PhD (Lond.), FR Hist S  
M.S. Cross, BA, MA, PhD (Tor.)  
J. Fingard, BA (Dal), MPhil, PhD (Lond.)  
J.E. Flint, MA (Cantab.), PhD (Lond.), FR Hist S  
P. Fraser, BA (Cantab.), PhD (Lond.), FR Hist S  
H.S. Granter, BA (Dal), MA (Harv.)  
R.M. Haines, MA, M.Litt. (Durh.), DPhil (Oxon.), FR Hist S, FSA  
N.G.O. Pereira, BA (Williams), MA, PhD (U.C. Berkeley)  
P.B. Waite, MA (UBC), PhD (Tor.), FRSC  
J.B. Webster, MA (UBC), PhD (Lond.)

## Associate Professors

J.E. Crowley, AB (Princ.), MA (Mich.), PhD (Johns Hopkins)  
J.F. Godfrey, BA (Tor.), B.Phil., DPhil (Oxon.)  
J.T. O'Brien, Jr., BA (Wisconsin), MA, PhD (Rochester), *Graduate Studies Coordinator*  
L.D. Stokes, BA (Tor.), MA, PhD (Johns Hopkins)  
D. Sutherland, BA (Mt. A.), MA (Dal), PhD (Tor.)  
G.D. Taylor, BA, PhD (Penn.)  
M. Turner, BA, MA (Manc.), PhD (Lond.)  
D. Wootton, MA (Cantab.)

## Assistant Professors

R. Bleasdale, BA, MA, PhD (Western Univ.)  
J.L. Parpart, BA (Brown), MA, PhD (Boston)

## Admission Requirements

Candidates for the one year MA degree must hold a BA Honours degree in history. Those with general history BA degrees or degrees in fields other than history may be placed in a two year MA program or in

a qualifying year program. Candidates for doctoral study must hold an MA degree in history or in a cognate field.

## MA Degree Program

Students admitted into either a qualifying year or a two year MA program must in the first year take five upper level undergraduate history courses and secure at least a B grade in each course before entering the one year MA program. Students in the one year MA program are required to attend and pass the Graduate Seminar which meets weekly during the academic year. In addition they must choose one of the two paths to the degree. The first path consists of preparing two fields (see below for the fields offered by the staff), passing written examinations in the two fields, and successfully defending a thesis not exceeding 50,000 words. The second path consists of passing two full-year graduate courses (or four half-year, or one full-year and two half-year graduate courses) and successfully defending a thesis of approximately 30,000 words.

Candidates writing theses in Canadian history must demonstrate a competent reading knowledge of French; those writing theses in other fields must demonstrate an adequate reading knowledge of the language required for the successful completion of their research.

## PhD Degree Program

For minimum time required to complete the program, see Section 2.6.

In order to be considered a candidate for the PhD degree, students must prepare three fields, at least one of which must be outside the student's primary research area, and pass written and oral examinations in all three fields. Students must demonstrate an adequate reading knowledge of the language required for the successful completion of their research. All students engaged in Canadian history research must demonstrate a reading competency in French.

A thesis is required which shall not exceed 100,000 words in length, excluding footnote references and bibliography. While students may offer fields in any of the areas listed below, doctoral theses are confined to Canadian, British and British Imperial, and African history topics.

To qualify for the award of the PhD degree, the thesis must make a significant and original contribution to historical study by the discovery of new information, or by the original interpretation of known information, or both.

## Fields for Graduate Study

### 1. Canadian History

The following fields are offered: history of the Maritimes, with emphasis on the late-18th to mid-20th century; Canadian social history, in particular such areas as poverty and philanthropy, urban and rural social disorder, labour history, and the rise of the city; Canadian political history, particularly the 19th and 20th centuries; Canadian-American relations, particularly since 1867.

### 2. British Imperial and Commonwealth History

Three separate fields are available: one covering the period to 1783; the second extending from the American Revolution to 1870; and the third from 1870 to the present. With the approval of the graduate Committee, students may offer two of these fields. Students may concentrate their studies on the self-governing colonies or the tropical territories, according to their thesis interest.

### 3. African History

This field may be studied with special attention to precolonial history during the period of oral tradition, the colonial period since 1800, processes of decolonization in Anglophone Africa, and African labour history in the 19th and 20th centuries.



#### 4. British History

The following fields are offered: aspects of British history 1560-1680; British history before 1867; colonial and imperial policy, including tariff reform, 1868-1914; imperial defense after 1900; and Britain in the two world wars.

#### 5. United States History

Fields are offered in colonial and revolutionary America, 19th century American social, labour, and ethnic history, and 20th century American political and business history.

#### 6. European History

Several types of fields may be offered, depending on the student's previous work and thesis topic. In some cases the field will need to be concentrated (e.g. Europe 1870-1914); in others a broader field will be advised. Only one field in general European History may be offered.

#### 7. German History

Two fields are available in German History during the nineteenth and twentieth centuries; Germany 1815-1918, and Germany 1870-1945. Within these fields, students may concentrate upon particular topics or periods especially relevant to their thesis work. A reading knowledge of German is highly desirable.

#### 8. Medieval History

Fields are available in English and medieval European history.

#### 9. Russian History

Two fields are available; one in nineteenth-century Russian history and one in twentieth-century Russian and Soviet history.

#### 10. History of Political and Social Theory

Fields may be offered in the broad history of political and social theory (including historiography) or in more specific areas: Renaissance and Reformation political theory, the Enlightenment, and Marxism (including special reference to the Third World).

#### 11. Caribbean and Latin American History

Fields may be offered in aspects of labour (including slave labour history), the impact of Imperialism in the 19th and 20th centuries, and transitions to socialism.

#### 12. Women's History

Fields are offered, both as single units and in combination, on women in developed industrial societies (North America), in developing societies (Africa), and in socialist societies (including Cuba and China).

# Human Communication Disorders, School of

(Tel. 424-7052)

**Director of the School**  
W.B. Green

**Full-time Faculty  
Professor**  
W.B. Green, BS, MA, PhD (Syracuse)

**Assistant Professors**  
E. Allard, MA (West Mich. U.)  
P. Doyle, BA, MA, (Univ. Cal.)  
R. Seewald, BS, MA, PhD (U. Conn.)  
E. Skarakis-Doyle, BS, MA, PhD (Univ. Cal.)  
C. Sloan, BS, MA, PhD (U. Minn.)  
S. Stager, BSc, MS, MSc, PhD (U. Texas)

**Part-time Faculty  
Professor**  
G.T. Mencher, BA, MA, PhD (U. Mich.), FASHA

**Clinical Instructors**  
L. Campbell, MSc  
A. Godden, MSc, Appl.  
R. Morehouse, MSc  
C. Tompkins, MSc  
G. Whitehead, MA

**Honorary Faculty  
Associate Professor**  
G.M. Novotny, MD, FRCS(C), FACS

**Lecturer**  
M.N. Wali, MD

**Practicum Supervisors**  
B. Anvar, MSc  
S. Barrett, MSc  
S. Clarke, MS  
M.A. Colgan, MSc  
S.A. Delva, MSc  
A. Grantmyre, MSc  
D. Lyon, MA  
C. Dobbelsteyn, MSc  
H. MacLean, MSc  
S. Maxwell, MA  
M. Merchant, MSc

D. Merritt, MA  
 E. Pass, MA  
 V. Roda, MSc  
 C. Santilli, MSc  
 E. Shaw, MS  
 B. Stoesz, MA  
 S. Stuttard, MSc  
 N. Wood, MSc  
 L. Wozniak, MA

The School of Human Communication Disorders provides a 2-year program of studies and clinical experiences leading to a MSc degree in either Speech Pathology or Audiology. The School invites applications from students possessing a baccalaureate degree in Psychology, Educational Psychology, Linguistics, Special Education, Natural Science, Nursing, Health Sciences and other behavioural or health related disciplines. Applications must indicate the student's preference for either Audiology or Speech Pathology.

## Admission Requirements

All applicants must possess a minimum of a baccalaureate degree from a recognized institution of higher education. This program is designed for students with either minimal or no previous academic experience in the area of speech pathology or audiology. Students whose undergraduate degree is in either speech pathology or audiology may be considered for entrance into the program at a more advanced level under *exceptional* circumstances only.

Preference will be shown to students whose academic background includes at least one course in each of the following five categories:

1. **Research Methods**, eg. Statistics, Research Design.
2. **Physical and Biological Sciences**, eg. Anatomy, Physiology, Physiological Psychology, Human Biology, Neurophysiology, Physics, Acoustics.
3. **Linguistics**, eg. Language Development, Phonetics, Psycholinguistics, Neurolinguistics, Sociolinguistics.
4. **Psychology**, eg. Developmental Psychology, Abnormal Psychology, Learning Theory, Motivation.
5. **Perception and Psychophysics**, eg. Sensation, Perception, Speech Perception, Psychoacoustics.

Undergraduate grade requirements should exceed the equivalent of a "B" in the student's major and be at least the "B" level overall. Two letters of recommendation, from Professors in the student's undergraduate major, will be required as well as a statement from the applicant indicating personal reasons for pursuing graduate work in Speech Pathology or Audiology.

## MSc Degree Program

This degree program is a full-time two year course with summer practicum experiences at the end of the first and second years of study. Currently the School does not offer any part-time studies.

Students will be required to attain a minimum of 12 credits (10 academic, 1 final project and 1 clinical practicum) over a two year period. It should be noted that the individual special needs of students, especially with regard to practicum experiences, final project requirements, and possible inadequate baccalaureate course work, might dictate credit requirements in excess of twelve.

Extensive supervised clinical practice is required throughout the two year program. Much of this requirement is met by attending a practicum

held during the summer months.

A final project is required of all students in order to graduate from the program. In consort with a Faculty advisor, the student designs, executes, and reports a research project. Depending upon the nature and extent of the project, students may be required to also take additional course work. Successful completion of this requirement results in the equivalent of 1 academic credit.

## Core Curriculum

While students may pursue a course of study that leads to specialization in either Speech pathology or Audiology, during the first semester of the program they will be required to take classes that contain information that is basic to both professions. These classes will be described under "core curriculum" in the class listings that follow.

## Classes

### Core Curriculum

HC 5110A Anatomy and Physiology of the Communication System

HC 5120A Introduction to Audiology

HC 5130A Introduction to Speech Pathology

HC 5140B Aural Rehabilitation I

HC 5150A Normal Speech and Language Development

HC 5060R Practicum: open to independent completion of study.

HC 6310B Hearing and Speech Science

HC 6600B Seminars in Human Communication Disorders

HC 7060R Practicum: open to independent completion of study.

### Speech Pathology Curriculum (above and beyond core)

HC 5210A Tests and Measurements: Communication Disorders.

HC 5250B Management Strategies in Speech Pathology

HC 5270B Management Strategies in Language Pathology

HC 6350B Neurogenic Disorders I

HC 6370B Fluency Disorders

HC 6390A Voice Disorders

HC 5260B Hearing Disorders

HC 6410B Cleft Palate and Cranio-Facial Anomalies

HC 6450B Neurogenic Disorders II

HC 6470B Interdisciplinary Seminar

HC 7000R Final Project

### Audiology Curriculum (above and beyond core)

HC 5220B Clinical Audiology I

HC 5240A Aural Rehabilitation II

HC 5260B Hearing Disorders

HC 5280B Strategies in Clinical Audiologic Investigation

HC 6320A Paediatric Audiology

HC 6340B Aural Rehabilitation III

HC 6360B Hearing Aids

HC 6380B Advanced Principles of Clinical Investigation in Audiology

HC 6420A Clinical Audiology II

HC 6440B Noise in Industry and the Community

HC 6470B Interdisciplinary Seminar

HC 7000R Final Project

### Additional Classes Available

HC 6500 Tutorial Readings

HC 6700 Research

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## Law

(Tel. 424-3495)

### Dean of Law

Innis M. Christie, BA, LLB (Dal), LLB (Cantab.), LLM (Yale), Richard Chapman Weldon Professor of Law.

### Associate Dean

W. Brent Cotter, BComm (Serk.), LLB, LLM (Dal)

### Professors

Christopher S. Axworthy, BA (CNA), LLM (McG), *Leave of Absence 1984-7*

Clare Beckton, BA, LLB (Sask.), *Leave of Absence 1984-6*

Alastair Bissett-Johnson, LLB (Nottingham), LLM (Mich.)

Christine L.M. Boyle, LLB (Qu. U. Belf.), LLM (Qu.)

William H. Charles, BA (Sir Geo. Wms.), LLB (Dal), LLM (Howard), LLM (Mich), Sabb. Leave 1985-86

Peter E. Darby, BA (Mt. Allison), LLB (Dal)

Arthur L. Foote, QC, BA, LLB (Dal), BCL (Oxon.), LLM (Mich.)

Edgar Gold, BA, LLB, (Dal), PhD.(Wales), MCIT, FNI, MRIN, Master Mariner (FG), Executive Director, Dalhousie Ocean Studies Program

Edwin C. Harris, QC, BComm, LLB (Dal), LLM (Harvard), RIA, CA

Douglas M. Johnston, MA, LLB (St. Andrews), MCL (McG), LLM, JSD (Yale)

Hugh M. Kindred, LLB (Bristol), LLM (London), LLM (Illinois), *Sabb. Leave 1985-1986*

Ronald St. John Macdonald, QC, BA (StFX), LLB (Dal), LLM (London), LLM (Harvard)

A. Wayne MacKay, BA (MtA), MA (Flor.), BEd (MtA), LLB (Dal), Sabb. Leave 1985-86

H. Leslie O'Brien, QC, BComm, LLB (Dal), LLM (Chicago)

Paul Thomas, LLB (Wales), LLM (Yale)

Leon E. Trakman, BComm, LLB (Cape Town), LLM SJD (Harvard)

Christian L. Wiktor, LLM (U. of Wroclaw, Poland), MS in LS (Col.) Law Librarian

Bruce H. Wildsmith, BSc (Guelph), LLB (Dal), LLM (Harvard)

John A. Yogis, QC, BA (St. Mary's), LLB, LLM (Dal), LLM (Mich.)

### Professors Emeritus

George V.V. Nicholls, QC, BA, BCL, LL.D (McG)

John Willis, QC, BA (Oxon.), LL.D (Ottawa, Queen's, Dal, York)

### Associate Professors

Bruce Archibald, BA, MA, LLB (Dal), LLM (Col.), Sabb. Leave 1985-86

Charles M. Arymowicz, BA (Queen's), LLB (Tor.), LLM (Mich.), Leave of Absence 1985-86

Jennifer K. Bankier, BA (Tor.), LLB (Osgoode), Sabb. Leave 1985-86

Brian C. Crocker, BA, LLB (Dal)

W. Brent Cotter, BComm (Sask.), LLB, LLM (Dal)

Thomas A. Cromwell, BMus, LLB (Qu.), BCL (Oxon.)

R.L. Evans, BA (Tor.), LLB (York)

Stephen J. Mills, LLB (Hons.) (Auckland), LLM (U. of Pa.)

Ian Townsend-Gault, LLB (Dundee)

Faye L. Woodman, BA (Dal), LLB (Queen's)

### Assistant Professors

Richard W. Bauman, BA, LLB, MED (Alberta), LLM (Dal), Leave of Absence 1985-86

Vaughan Black, BA, MA (Carl.), LLB (Tor.), LLM (Calif., Berk.)

Joan M. Dawkins, BA (Queen's), LLB (Dal), Ex. Dir. Dalhousie Legal Aid Services

David Fraser, LLB (Laval), LLB (Dal), LLM (Yale)

Philip V. Girard, BA (Brock), LLB (McG)

H. Archibald Kaiser, BA, LLB (Dal), LLM (London)

Thomas H. Kemsley, BA, LLB (Queen's), *Assistant Director, Dalhousie Legal Aid Service*

Norman G. Letalik, MA (Kent St.), LLB, LLM (Dal)

Wade MacLauchlan, BBA (UPEI), LLB (UNB), LLM (Yale)

Sheila Noonan, BA, LLB (Alta.), LLM (Harvard)

D.A. Rollie Thompson, BA (McG), LLB (Dal)

### Post-Retirement Professors

Clayton Hutchins, QC, BA, LLB (Dal)

Arthur J. Meagher, QC, BA, LLB (Dal)

R. Graham Murray, QC, BA, LLB (Dal), LLM (Harvard)

### Part-time Faculty

Claude E. Bourque, BA (StFX), MPA, LLB (Dal)

S. David Bryson, BA, LLB (Dal)

Peter MS Bryson, BA, MA (Dal), BA (Juris.) (Oxon.), LLB (Dal)

Felix Antonio Cacchione, BA (Loyola), LLB (Dal)

Alan M. Crowe, BA (Acadia), LLB (Dal)

Judge Timothy T. Daley, BA (Ottawa), BEd, MSW (StFX), LLB (Dal)

Eric B. Durnford, BA, LLB (Dal)

David S. Ehrlich, LLB (Dal)

Dana W. Giovannetti, BA (St. Mary's), LLB (Dal), LLM (Col.)

Lawrence A. Graham, BA (StFX), LLB (Dal)

Hugh Haley, BA (StFX), PhD, MBA (Alberta)

Michael J. Iosipescu, BA (Sir Geo. Wms.), BSc, MS, LLB (Dal)

The Hon. Mr. Justice M.C. Jones, QC, LLB (Dal)

D. William MacDonald, BComm, LLB (Dal)

His Honour Judge Elmer J. MacDonald, BA (King's), LLB (Dal)

Rose Anne MacGillivray, BA Hons (StFX), LLB (Dal)  
 Kenneth MacInnis, BA (St. Dunstan's), LLB (Dal), LLM (London)  
 Charles W. MacIntosh, QC, LLB (Dal)  
 Robert B. MacLellan, BComm (Acadia), LLB (Dal)  
 Evelyne S. Meltzer, BA, LLB (Dal), LLM (Wash.)  
 David A. Miller, BA (Waterloo), LLB (Dal)  
 Alan V. Parish, BA, LLB (Tor.), LLM (Victoria U. of Wellington, N.Z.)  
 F. Van W. Penick, AB (Princeton), LLB (Dal)  
 Darrel I. Pink, BA (Acadia), LLB (Dal), LLM (London)  
 Joel E. Pink, BA (Acadia), LLB (Dal)  
 Lorne E. Rozovsky, QC, BA (UNB), LLB (Tor.), *Adjunct Associate Professor*  
 Douglas J. Sampson, BComm (St. Mary's), LLB (Dal), CA  
 Alan M. Sinclair, LLB (Dal), LLM (Southern Methodist), LLM, SJD (Mich.),  
*Professor*  
 W.W. Spicer, BA (Carleton), LLB (Dal)  
 David Lee VanderZwaag, BA (Calvin), MDiv (Princeton), JD (Arkansas),  
 LLM (Dal)  
 Graham D. Walker, QC, BA (St. Mary's), LLB (Dal), MCL (Southern  
 Methodist)  
 R. James Williams, BSc (Alberta), MSW (Mar. Sch. Soc. Work), LLB (Dal)

#### Special Lecturers

The Hon. Mr. Justice A.G. Cooper, QC, BComm (Dal), BCL. (Oxon.)  
 The Hon. Mr. Justice G.S. Cowan, QC, LLB (Dal), BA, (Juris.), BCL., MA  
 (Oxon.)  
 W.J. MacInnes, QC, LLB (Dal)  
 The Hon. Ian M. MacKeigan, QC, MA, LLB (Dal), MA (Tor.)  
 His Honour Peter J. O'Hearn, BA (St. Mary's), LLB (Dal)

## Master of Laws (LLM)

A graduate program in law leading to the Master of Laws degree is offered to well-qualified candidates by the Faculty of Law of the University. The program is primarily intended for prospective law teachers and professional specialists. The program may consist of either a combination of course work, seminars and a thesis, or a combination of course work and seminars involving substantial written papers, in either case taken on a full-time basis over one full calendar year, or on a part-time basis over two full calendar years. Applicants who plan to take the degree on the basis of course work, seminars and a thesis are required to submit outlines of their proposed thesis topic at the time of the application. Thesis topics may concentrate on any area of law in which faculty supervisors and library resources will support substantial and useful work. In recent years, thesis supervision has been provided in the following fields, among others: international law, administrative law, labour law, commercial law, tax law, tort law, criminal law and criminology, domestic relations law, law of the sea, maritime law, and environmental law. A special interest has been developed in marine and environmental law which has been designated as a field of special emphasis in the Faculty of Law. The Sir James Dunn Law Library collection for the Marine and Environmental Law Program is now one of the best in North America.

## Admission Requirements

Applicants for admission to the LLM program should hold a first degree in law equivalent to the Dalhousie LLB, passed with at least a "B" average (or Upper Second Class Honours). The ability to conduct independent research and to work easily in the English language is a prerequisite for admission. Some candidates may be required to pass the TOEFL (Test of English as a Foreign Language) to the satisfaction of the Graduate Studies Committee of the Faculty of Law prior to admission.

## Residency Requirements

The degree may be taken on the basis of either one calendar year (September 1 to August 31) of full-time residence at Dalhousie, or two calendar years of part-time residence at Dalhousie, after registration for the LLM degree. (It should be noted that the two year residence requirement for part-time candidates differs from that required elsewhere in the calendar of the Faculty of Graduate Studies.)

## Course Requirements

The degree may be taken on the basis of either course work, seminars and a thesis, or course work and seminars only. Applicants are required to indicate at the time of formal application on which basis they would prefer to take the degree, but the Graduate Studies Committee of the Faculty of Law, at the time an offer of a place is made, will decide on which of the two alternatives bases a place is offered. The availability of places for the thesis alternative is governed by the availability of adequate faculty supervision and library resources. All class work for the degree, whichever of the two alternative bases is decided upon, must be completed at an average of not less than B, with no grade below B-

All candidates for the degree are required to take a special graduate seminar especially designed for our graduate students in law. This seminar, which is led by at least two senior teachers in the Faculty of Law, is normally given in the fall term and requires from the student a comprehensive class presentation based on a substantial written paper.

If the degree is taken by course work, seminars and thesis, a candidate is required to (a) in addition to the graduate seminar, complete at least two additional one-term classes from the course and seminar offerings of the Faculty of Law, the choice of courses to be determined by the Law School's Graduate Studies Committee, and (b) present a well-researched substantial thesis of scholarly quality produced under the continuous supervision of a member or members of the law faculty. In most cases, advancement to the thesis stage is permitted only if the student has completed all course work for the degree with the required average.

Such a thesis would normally be 150-300 typescript pages in length (double-spaced). The thesis for the degree must be submitted within two years of the date when an applicant first registers for the program. Five copies of the thesis, temporarily bound, must be submitted to the supervisor on or before the dates given in the almanac. The thesis requirements and regulations of the Faculty of Graduate Studies must be met. A thesis may be graded as either "Approved," or "Failed." In order to be "Approved," a thesis must normally be approved by (i) the thesis supervisor, (ii) the Chair of the Graduate Studies Committee of the Faculty of Law, (iii) the Dean of the Faculty of Law, and (iv) by one of the following: (a) an external reader from another university, (b) an external reader from another department or faculty of Dalhousie, or (c) an additional reader within the Faculty of Law at Dalhousie.

If the degree is taken by course work and seminars without thesis, in addition to the graduate seminar, candidates are required to take at least an additional five one-term courses from the advanced course work and seminar offerings of the Law Faculty considered to be suitable as graduate courses and seminars by the Law Graduate Studies Committee. Of those five courses, at least three must be designated as "major paper courses" by the Faculty of Law, or be approved by the Graduate Studies Committee as having a substantial written component. A "major paper" or "substantial written component" would normally be independently supervised by a faculty member, and would usually consist of a well-researched work of 15,000 — 20,000 words in length, based on a seminar/class presentation.

At the discretion of the Graduate Studies Committee of the Faculty of Law, a candidate may be required to submit to an oral examination by the Committee or its nominees in the field of the thesis or that of any written paper presented by the candidate. The Graduate Studies

Committee of the Faculty of Law may recommend the substitution of not more than two seminars or graduate level classes in a discipline other than law, which may be highly relevant to the candidate's thesis topic or area of specialization, provided that any such substituted course or seminar has, in the opinion of the Committee and the Dean of Graduate Studies, equivalence to the law classes being substituted.

Before deciding on the course work and seminars, or course work, seminars and thesis option, candidates who are contemplating future doctoral studies should note that some doctoral programs may require the completion of a Master of Laws degree which includes a thesis.

## General

The Graduate Studies Committee of the Faculty of Law may at any time require any candidate for the degree to show cause, in such manner as it may determine, why such candidate should be permitted to continue his or her candidacy.

It should be noted that candidates taking the degree on a part-time basis are not eligible for graduate scholarships.

A student is required to comply with the directions of the supervisor and the decision of the Graduate Studies Committee of the Faculty of Law, as well as the rules and regulations of the Faculty of Graduate Studies.

## Combined LLB and MBA Program

See under "Business Administration" (page 40).

## Doctor in the Science of Law Degree (JSD)

An advanced graduate program in law leading to the JSD (Juris Scientiae Doctor) degree is offered to a very limited number of highly qualified candidates by the Faculty of Law of the University. Applicants who meet the admission requirements are invited to submit a detailed outline of their proposed thesis and a detailed description of their research plans with their application forms. Such topics will have to be limited to those areas of law for which faculty and library resources will support original and useful work. It is expected that such resources will normally be available in four subject areas:

- (i) Marine Law
- (ii) Environmental Law

These areas of the curriculum have been designated as a priority development by the Faculty of Law since 1974. As a result, considerable faculty expertise, library holdings, research projects and course offerings in these areas has been created. Consequently, the Faculty's Marine and Environmental Law Program has achieved international prominence.

- (iii) International Law
- (iv) Comparative Law

Although not formally designated, these areas of specialization have grown with additional seminars in comparative criminal law and comparative marine law and policy. In addition, the Faculty also offers a course in Quebec law, and participates as the common law component of a joint summer program in Canadian comparative law sponsored by the Federal Department of Justice. Other areas of comparative legal studies are being developed. A number of courses in international law are offered by faculty members of international repute.

## Admission Requirements

Applicants for admission to the JSD program must have demonstrated superior academic ability during their previous legal education. Normally it will be necessary to have (i) attained at least the equivalent of a Dalhousie A- average grade at the LLB level and (ii) completed successfully a Master's degree in law. Preference will be given to applicants with established credentials in published scholarship of a professional calibre. The ability to conduct independent research and work easily in the English language is a prerequisite for admission. Foreign candidates are required to pass the TOEFL (Test of English as a Foreign Language) to the satisfaction of the Graduate Studies Committee of the Faculty of Law prior to admission.

## Residency Requirements

Applicants must be prepared to spend at least one full calendar year in continuous residence at Dalhousie after registration for the JSD program. The Graduate Studies Committee of the Faculty of Law reserves the right in certain cases to require the completion of a second year of residency.

## Course Requirements

Candidates for the JSD degree may be required by the Graduate Studies Committee of the Faculty of Law, on the recommendation of their thesis committee, to carry out advanced course work in the area of their thesis, or in a cognate area of a more general field of law, or in a discipline other than law, which is deemed to be highly relevant to their thesis topic. When undertaking such course work, JSD candidates must obtain an average standing of at least B+ in all classes designated as "required by the thesis committee," with no grade falling below B. A student who fails to meet these requirements is automatically dropped from the program, but may apply for readmission immediately.

## Preliminary Examination Requirements

Each candidate will also be required to pass a preliminary examination not less than 1 year before submitting the thesis. The preliminary examination may be oral, written, or both, at the discretion of the thesis committee, and will cover the subjects relevant to the general area of the candidate's research. Failure to pass this examination may result in dismissal. However, the student may be permitted to repeat the examination within the subsequent 12 (twelve) months.

## Special Skill Examination Requirements

A candidate may, at the discretion of the thesis committee, be required to pass a special examination designed to demonstrate the examinee's proficiency in a foreign language, statistical method, computer analysis, or other skill deemed to be important for successful completion of the candidate's thesis in the chosen area.

## Thesis Requirements

The primary requirement for the JSD degree is the completion of a substantial thesis which should not only display original scholarship of high standard, but also represent a significant and professional contribution to the literature of the chosen subject. In applying for admission, an applicant is required to satisfy the Graduate Studies Committee of the Faculty of Law that the suggested topic is suitable for development as a doctoral thesis. Normally, a JSD thesis should be between 350 and 500 typescript pages in length (double-spaced). After an applicant has been accepted, a thesis committee consisting of a

supervisor and two advisors will be appointed by the Graduate Studies Committee of the Faculty of Law. All candidates are required to comply with the decisions of their thesis committees. In normal circumstances, the completed JSD thesis must be submitted to the Graduate Studies Committee of the Faculty of Law within five years of the date of original registration in the program. Submission of the thesis must follow the rules and regulations laid down by the Faculty of Graduate Studies.

## Thesis Defence Requirements

Each JSD candidate is required to defend the completed thesis in an oral examination. This defence shall be conducted in accordance with the Faculty of Graduate Studies Regulations for Oral Examination of a Doctoral Candidate.

## Teaching Activities

The Graduate Studies Committee of the Faculty of Law may give permission to a JSD candidate to engage in teaching activities during the period of residency, if such activities are deemed to fall within the field of the candidate's thesis topic. In no circumstances shall any JSD candidate be permitted to spend more than six hours per week in teaching activities and related preparations.

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# Library Service

(Tel. 424-3656)

**Director of School**  
N. Horrocks

### Professors

J.R.T. Ettlinger, MA (Oxon.), BLS (McG)  
N. Horrocks, BA (W.Aust.), MLS, PhD (Pitt.), FLA, ALAA  
L.G. Vagianos, BA (Hiram), MA (Suffolk), MSLS (Western Reserve), LLD (P.E.I.)

### Associate Professors

L.J. Amey, BSc, BEd (Acad.), MEd (UNB), MS (Col.), PhD (Tor.)  
M. Dykstra, BA (Calvin), MLS (Dal)  
E. Frick, BA (Tor.), MSLS (Syracuse)  
B. Raymond, MA, MLS (Berkeley), MA (Man.), PhD (Chic.)

### Assistant Professor

L. Siegert, BSc (Auckland), MSc (Auckland), Dip. NZL's (New Zealand Library School)

### Lecturers

C. Armour, BSc (MtA), MSc (Dal), PhD (Lond.)  
D.L. Burt, BPE, MEd (Alta.), EdD (Indiana)  
A. Manning, BSc (Acadia), AMLS (Michigan)

### Associated Instructional Staff

R. MacG. Dawson, MA (Tor.), BLitt (Oxon.), Associate Professor, English Department  
J. Dunn, B Math (Waterloo), MLS (Dal)  
A.W. Harrison, BA (Northwestern), MS (Ill.), MST (Atlantic School of Theology)  
S. Plant, BA (McG), MLS (Dal)

**Administrative Assistant and Graduate Coordinator**  
J. Brownlow, BA (St. Mary-of-the-Woods), MLS (Tor.)

Students seeking further information or help in planning courses of study in the School of Library Service should address themselves to:

J. Brownlow  
Administrative Assistant, School of Library Service  
Room 3621 Killam Library  
Dalhousie University, Halifax, N.S. B3H 4H8  
Telephone 424-3656

The Dalhousie School of Library Service is guided by a concept of librarianship as an evolutionary profession that must stimulate, interpret and respond to the changing patterns of human communication. The School has acknowledged this professional commitment by developing a program that integrates its introductory and continuing education programs, and by its policy of insisting upon work experience during the period of study. The objective is the preparation of librarians for service in every kind of information centre.

The student, therefore, is introduced to the historical development and significance of librarianship, to the underlying principles of the profession, and to the techniques of information organization. Each student is challenged to explore and question through a curriculum which attempts to balance professional studies with supervised practical experience and advanced academic study or individual research with faculty and colleagues.

The School's program is accredited by the American Library Association, the agency recognized for this purpose by the Canadian Library Association. Students interested in programs for certification as health sciences librarians or teacher-librarians should consult the *Information for Prospective Students* handbook.

The School's program has been built around three considerations:

1. Acknowledgement of the underlying principles and historical development of the profession.
2. Appreciation of the qualitative changes imposed on the profession by the proliferation of information resources.
3. Awareness of the technological developments already changing the character of the profession.

## Admission Requirements

Candidates must hold a Bachelor's Degree with at least a second class standing from a university recognized by the Senate of Dalhousie University.

Applications from candidates within North America must be *complete* before August 01. Applications and documentation from outside North America must be *complete* before May 01. All applicants are urged to submit initial applications early in the year. After April 30, successful applicants will be placed on a waiting list in case of withdrawals as places are normally allotted by that date. Students are admitted only in September. Students should have had the equivalent of two years of university study in a major language other than English or be prepared to demonstrate a reading knowledge of such a language before graduation from the School's program. Candidates whose native language is other than English must demonstrate a working as well as reading knowledge of English prior to Admission. A TOEFL score of 550 or the equivalent is the minimum accepted level.

The School's booklet, *Information for Prospective Students*, which describes the program in detail, is distributed to all applicants by the Registrar's Office. Write for a copy if one is not received with the application form.

## MLS Degree Program

The degree of Master of Library Service is awarded upon satisfactory completion of:

1. Sixteen credit half-classes.
2. Two short non-credit courses offered during Orientation: LS 056 — Introductory Module I and LS057 — Introductory Module II. The first year students take Module I. Second year students do Module II. The correct grade is a P.
3. Work experience of 100 hours in a selected library under the supervision of a qualified librarian. This experience is designed to provide the student with exposure to everyday library routines and problems as well as the opportunity to test and evaluate class theory, to contribute by actual participation, and to discover and explore areas of particular interest for course specialization and future employment. Students may also elect to meet this requirement by such employment prior to graduation. Further details are available in *Information for Prospective Students*.

In addition to the Core Classes in the first term, students are required to:

1. attend the scheduled Friday lecture series given by visiting experts in library, information and publishing fields;
2. participate in the scheduled trips to libraries and other relevant institutions within or near the metropolitan area of Halifax/Dartmouth.

## Term Timetables

Certain classes are scheduled in the evening to enable working librarians to attend. Certain workshops will involve evenings and Saturdays.

The School operates on a 4-term system, which may be varied as follows:

**Two-Year Program:** Full-time attendance during the Fall and Winter terms of two years.

**Part-Time Program:** The degree is to be completed within six years; full-time attendance during two 15 week terms is required by the School during this period, accounting for a minimum of 8 half-classes for credit. One of the two required terms of full-time residence must be the first term of entry into the School.

**Special Program Extending Over One Academic Year or One Calendar Year Where Indicated:** Applicants will be considered for a special program, if they meet the requirement of the Faculty of Graduate Studies by possessing "an honours undergraduate degree in the same field as their graduate program," i.e. BLS (Honours) or, in the opinion of Faculty, an equivalent qualification.

During each academic year the School of Library Service schedules field trips for the purpose of visiting various types of libraries. Some visits will be made to libraries in the Halifax-Dartmouth area. In addition, the School of Library Service plans to schedule a field trip to a city of major importance with regard to library activity. Students are urged to take this field trip. Approximately \$500-\$600.00 will be required to cover expenses involved in the field trip. Consult *Information for Prospective Students*.

## Classes

In the following list the Core classes are number 501-504. These and classes numbered in the 500 and 050 series are required of all students. 600 and 060 classes are electives. All classes with the

'O' prefix are non-credit; 700 classes are experimental or occasional classes. The curriculum has been organized with sufficient flexibility to allow students to pursue an individual research project, or to develop a subject specialty through reading classes for further academic work.

If a student chooses as an elective a class offered by a department other than the Library School approval must be obtained from the head of the relevant department and the Library School.

Class descriptions are in *Information for Prospective Students*.

LS 056 Introductory Module I

LS 057 Introductory Module II

LS 510 Administration

LS 520-521 Information Sources I, II: (Both sections run for one term and carry one half credit each).

LS 550 The Information Environment

LS 551 Organization of Information

LS 552 Systems Analysis

LS 553 Information Sources & Retrieval

LS 554 Research Issues & Methods

LS 555 Classification & Subject Access

LS 600 Machines and Libraries

LS 601 Computers and Information Systems

LS 602 Information Networks, Data Banks and Systems

LS 605 Comparative Librarianship

LS 610 Collections Development

LS 615 History of the Printed Book

LS 620 Technical Services Administration

LS 625 Young Adults' Literature and Media Interests

LS 630 Government Documents and Legal Bibliography

LS 635 Classification and Indexing Systems

LS 637 Records Management

LS 645 Children's Literature and Media Interests

LS 650 User Services

LS 655 Bibliography

LS 665-668 Academic Courses

LS 670-671 Reading Courses

LS 675 Health Sciences Literature & Information Sources: (alternate years).

LS 680 Archives

LS 690 Non-print Media in Libraries: (alternate years).

LS 707 Library Management and Current Problems in Librarianship

LS 713 Seminar in Classification and Indexing

LS 724 Bibliographic Instruction

LS 730 Libraries and Continuing Education

LS 9000 Thesis: (Four ½ credits)

LS 060 Practical Printing: (Offered through Office of Continuing Education)

LS 063 Conservation of Library Materials: (alternate years), (Offered through Office of Continuing Education).

LS 064 Hand-Binding: (Offered through Office of Continuing Education).

ED 5552 Planning and Development of School Library Programs and Services

School Publications

Information for Prospective Students: (annual) *Newsletter* (twice a year).

Occasional Papers Series

Y-A Hotline: (Irregular).

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# Mathematics, Statistics and Computing Science

(Tel. 424-2572)

Chairperson of the Department  
K.A. Dunn

Professor Emeritus

M. Edelstein, MSc (Jerusalem), DSc (Technion-Haifa)

## Professors

J. Borwein, MSc, PhD (Oxford)  
A. Buckley, MSc (Alta), PhD (UBC)  
M.A.H. Dempster, MSc, PhD (Carnegie Mellon)  
C.A. Field, MSc, PhD (Northwestern)  
P.A. Fillmore, MSc, PhD (Minn.), FRSC  
R.P. Gupta, MSc (Agra), PhD (Delhi)  
P. Keast, PhD (St. Andrews)  
K. Moriarty, MSc (Dal), PhD (Imp. Coll.)  
R. Paré, MSc, PhD (McG)  
J. Phillips, MA, PhD (Ore.)  
H. Radjavi, MA, PhD (Minn.)  
R. Rosen, MA (Col.), PhD (Chic.)  
P.N. Stewart, MA (Berk.), PhD (UBC)  
W.R.S. Sutherland, MSc, PhD (Brown)  
S. Swaminathan, MA, MSc, PhD (Madras)  
K.K. Tan, PhD (UBC)  
H.J. Thiébaux, MA (Ore.), PhD (Stanford)  
A.C. Thompson, PhD (Newcastle upon Tyne)  
A.J. Tingley, MA, PhD (Minn.)

## Associate Professors

P. Borwein, MSc, PhD (UBC)  
J.C. Clements, MA (UBC), PhD (Tor.)  
K.A. Dunn, MSc, PhD (Tor.)  
B.W. Fawcett, MSc, PhD (McM)  
G. Gabor, PhD (Eotvos)  
J.B. Garner, MSc, PhD (Nott.)  
L. Grunenfelder, PhD (ETH Zurich)  
C.S. Hartzman, MS (Purdue), PhD (Colo.)  
R. Rosenberg, MSc (Tor.), PhD (Mich.)  
R.J. Wood, MSc (McM), PhD (Dal)

## Assistant Professors

J. Barzilai, MSc, DSc (Technion-Haifa)  
A. Coley, PhD (Lond.)  
J. Gribble, PhD (St. Andrews)  
D. Hamilton, MA, PhD (Queen's)  
R. D. Holmes, MS (Princeton), PhD (Dal)  
K. Johnson, MA, PhD (Brandeis)  
J. Mulder, MSc, PhD (UBC)  
R. Nowakowski, MSc, PhD (Calgary)  
C.C.A. Sastri, MSc (Andhra), PhD (N.Y.)  
A. Sedgwick, PhD (Tor.)  
D.P. Wiens, MSc, PhD (Calgary)

## Postdoctoral Fellows

K. Dilcher, MSc, PhD (Queen's)  
R. Gentle, MSc, PhD (UBC)  
J. Roessler, PhD (Alberta)

The department offers programs leading to the degrees of MA, MSc and PhD in the following areas:

algebra, approximation theory, differential equations, functional analysis, numerical analysis, operator theory, optimization, probability and statistics, relativity theory, stochastic modeling, topology

The Department also offers graduate programs in the areas of Biomathematics and Health Evaluation Studies in cooperation with other departments.

## Admission Requirements

Candidates must satisfy the general requirements for admission to the Faculty of Graduate Studies.



Candidates will normally be expected to hold a degree recognized by Dalhousie University as the equivalent of a Bachelor's degree with Honours in one of its own faculties.

GRE Aptitude and Advanced Mathematics scores are required of all applicants for graduate studies whose undergraduate work has been completed outside of Canada, and TOEFL scores are required for applicants whose native language is not English. Valid score reports must be received directly from the Educational Testing Service. To ensure consideration for scholarship funds, application should be made early and in any case, before March 31.

Graduate students receiving financial support from the University may be required to perform some department duties.

## Masters Degree Program Requirements

1. At least three full-credit classes, not including seminar classes, at the graduate level to be chosen in consultation with a department adviser. In addition, students whose preparation is deficient will be required to complete appropriate classes which will be designated by the adviser.
2. Attendance and participation in seminars.
3. A satisfactory thesis.
4. Students are required to give an oral presentation of their thesis and at that time to answer questions about the thesis. This presentation will be made after the thesis is in the hands of the student's committee and will be taken into account when the committee makes its decision.

## PhD Degree Program

For minimum time required to complete this program see Section 2.6. A comprehensive examination must be taken which is in two parts. Part I should be completed shortly after entering the program. Part II should be completed within one calendar year of initial registration in the PhD program.

Candidates must demonstrate reading competence in at least one foreign language from the following list: French, German, Russian. Attendance and participation in seminars are required. Preparation and defence of a research thesis are required.

## Classes

A selection of the following graduate classes, most of which are 1/2 classes, will be offered subject to demand.

501 Abstract Measure Spaces

502 Time Series

503 Topics in Algebra

504 Homological Algebra

505 Lattice Theory

506 Multivariate Distributions

507 Multivariate Analysis

510 Topics in Advanced Probability and Statistics

512 Topics in Ordinary Differential Equations

513 Categorical Algebra

516 Data Analysis

517 Algebraic Topology

519 Topics in Topology and Functional Analysis

521 Topics in  $C^*$  - Algebra

522 Topics in Partial Differential Equations

523 Operator Theory

524 Topics in Banach Spaces

529 Advanced Topics in Operator Theory

530 Topics in Optimizaton

531 Convexity and Convex Programing

533 Topics in Graph Theory

535 Advanced Numerical Analysis

538 Approximation of Functions

540 Topics in General Relativity

553 Selected Topics in Biomathematics

600-699 Reading Classes for Advanced Graduate Students

703 Algebra Seminar

719 Topology and Functional Analysis Seminar

723 Operator Theory Seminar

732 Statistics Seminar

752 Biomathematics Seminar

767 Optimization Seminar

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# Microbiology

(Tel. 424-3587)

Acting Head of Department  
K.B. Easterbrook

Professors  
K.B. Easterbrook, PhD (ANU), (Structure and Function in  
Microorganisms; Bacterial Spines)

J.A. Embil, MD (Havana), FRCP(C), FACTM, PhD (Dal), *Pediatrics* (Clinical Virology; Herpes, Cytomegalovirus, Slow Virus; Epidemiology), Community Health Epidemiology

G.C. Johnston, PhD (York), *Graduate Studies Coordinator* (Genetic Control of Cell Division)

L.S. Kind, PhD (Yale), (Immunology, Reaginic Antibody Synthesis)

S.H.S. Lee, PhD (Dal), (Virology; Interferon)

D.E. Mahony, PhD (McG), (Bacteriology; Bacteriocins and plasmids of Clostridia)

E.S. McFarlane, PhD (Dal), (Herpesviruses HSV and CMV; Cancer Viruses)

C.E. van Rooyen, DSc (Edin.), MD, ChB, FRCP, FRCP(C), FRC Path. (Lond.), (Virology)

K.R. Rozee, PhD (Dal), Dip. Bact. (Tor.), (Viral Pathogenesis; Epidemiology)

D.B. Stoltz, PhD (McM), (Electron Microscopy; Insect Viruses; Insect Tissue Culture)

C. Stuttard, PhD (Dublin), (Microbial Genetics; Streptomyces)

#### Associate Professors

T. Ghose, PhD (Calc.), Pathology (Immunopathology; Cancer Immunotherapy)

R. Rajaraman, PhD (Dal), Medicine (Cell Adhesion; Growth Regulation; Malignancy)

#### Lecturer

G. Faulkner, PhD (Dal), Ultrastructure

## Admission Requirements

In conjunction with the general requirements for admission, candidates must have received sound basic instruction in Chemistry and Biology and four credits in Microbiology or their equivalent, with at least second class standing.

New students are required to write a placement examination to assist in the appropriate design of a program of study.

## MSc Degree Program

For minimum time required to complete this program, see Section 2.6.

Normally, study at the graduate level equivalent to five credits is required. At least one credit will be taken in an allied department.

Attendance and participation in seminars is required.

A research project must be completed, the result of which will be embodied in a thesis.

Part-time study is also allowed. Students must complete course requirements within 4 years and all degree requirements within 6 years of registration. Conditions for admission to this program are the same as for full-time students.

## PhD Degree Program

For minimum time required to complete this program, see Section 2.6.

Class requirements as for the MSc program. Attendance and participation in seminars is required. A comprehensive knowledge of the whole area of microbiology and immunology must be demonstrated and will be tested by oral examination.

Research of a high calibre is required, the results of which must be embodied in a thesis which makes some significant contribution to the understanding of the subject.

#### 5001R Microbiology Seminar

5002A/B/R Advanced Topics in Microbiology: seminar, G.C. Johnston.

5004R Pathobiology of Cancer: lecture 2 hours, T. Ghose.

5022A/B Microbial Ultrastructure Project: lab 5 hours, K.B. Easterbrook, D.B. Stoltz.

5024B Microscopy: Easterbrook, Stoltz, Willison, Faulkner.

5026A The Mammalian Cell: lecture 2 hours, lab 3 hours, R. Rajaraman.

5027B The Cancer Cell: lecture 2 hours, R. Rajaraman.

5033B Advanced Microbial Genetics: lecture/seminar 3 hours, C. Stuttard and G.C. Johnston.

5114B Topics in Virology: lecture 2 hours, lab 3 hours. E.S. McFarlane, D.B. Stoltz, K.B. Easterbrook, S.H.S. Lee.

5115B Immunology: lecture 2 hours. L.S. Kind.

5117C Advanced Topics in Immunology: seminar 1 hour, L.S. Kind.

5300R Cellular Immunology: lecture 3 hours, L.S. Kind, W.R. Duncan, R.I. Carr.

9000 MSc Thesis

9530 PhD Thesis

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# Nursing

(Tel. 424-2535)

#### Professor and Director

P.N. Stern, RN, DNS (UCSF)

#### Professor

J.A. Ritchie, BA (UNB), MN (U. Pitts), PhD (U. Pitts), RN, Coordinator of Graduate Program

#### Associate Professors

F. Gregor, BN (Dal), MN (Dal), RN

M.J. Horrocks, BSN (UBC), MS, Psych. N, MS, Post Masters Diploma CMHN (UCSF)

R. MacKay, BA (McM.), MN, MA (Emory), PhD (Kentucky), RN

P.L. Sullivan, BScN (MSVU), MS (Boston), PhD (U. of A.), RN

## Admission Requirements

All applicants must be licensed to practice as registered nurses in a province in Canada or in a foreign country. Applicants must have a Bachelor's degree with a minimum "B" standing. The Graduate Record Examination (Aptitude Test) must be taken and the results forwarded to the Graduate Studies Coordinator before a decision on admissibility can be made. Basic preparation for the clinical specialization study is required as is an introductory class in research and statistics. Three letters of reference are also required.

## MN Program

Dalhousie University School of Nursing offers a two year program leading to a Master of Nursing degree, with specialization in a selected clinical area. A functional focus in either nursing education or administration is also offered as an elective.

The program consists of 8 credits, made up of core nursing classes (2 ½ credits), clinical classes (2 credits), statistics (½ credit), elective class(es) (1 credit), and the thesis (2 credits).

The MN Program is accepted by MPHEC as the regional program for the Maritime Provinces. Non-nursing electives may be taken at other universities (prior approval must be obtained from the School of Nursing). Some graduate nursing courses within the Program are also offered at other Maritime universities.

Part-time studies are permitted.

Required classes: N5000A, N5100A/N5120B, N5220B, N5300A/N5320B, and one of N5400R or N5500A/N5520B or N5700A/N5720B plus N9000. The elective (R or A/B) is chosen in consultation with the academic advisor.

## Classes Offered

**N5000A (M209) Intermediate Statistics:** C.A. Field (Math Dept.) (½ credit).

**N5100A/N5120B Research Methods:** R. MacKay (1 credit).

**N5220B Systems & Trends in Health Care Delivery:** M.J. Horrocks (½ credit).

**N5300A/N5320B Theoretical Bases of Nursing I & II:** Faculty (1 credit).

**N5400R Community Health Nursing I & II:** M.J. Horrocks (2 credits), open to independent completion of study.

**N5500A/N5520B Nursing of Young Families I & II:** J.A. Ritchie & P.L. Sullivan (2 credits) Open to independent completion of study.

**N5700A/N5720B Nursing of Adults I & II:** F. Gregor (2 credits), open to independent completion of study.

**N5800A/N5820B Reading Class:** (1 credit).

**N5900A/N5920B Reading Class:** (1 credit).

**N9000 Thesis .**

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# Oceanography

(Tel. 424-3557)

**Chairperson of Department**  
A.J. Bowen

**Professors**  
C. Beaumont, BSc (Sussex), PhD (Dal)

A.J. Bowen, MA (Cantab.), PhD (Calif.)  
C.M. Boyd, MA (Ind.), PhD (Calif.)  
R.O. Fournier, MSc (Wm. & Mary), PhD (URI)  
C.J.R. Garrett, BA, PhD (Cantab.), FRSC  
D.A. Huntley, BA (Cantab.), PhD (Bristol)  
E.L. Mills, BSc (Carl.), MS, PhD (Yale), FLS  
G.A. Riley, MS (Wash.), PhD (Yale), DSc (URI), FRSC *Emeritus Professor*  
P.J. Wangersky, ScB (Brown), PhD (Yale)

### Associate Professors

R.C. Cooke, B.S. (Randolph-Macon), PhD (Dal.)  
K.E. Loudon, BA (Oberlin), M.Ed. (Temple), PhD (MIT)  
R.M. Moore, BA (Oxon.), PhD (Southampton)

### Assistant Professors

B.D. Johnson, BSc (North Carolina State), PhD (Dal)  
J.A. Koslow, BA (Harv.), BA (Wash.), PhD (Calif.)  
M.R. Lewis, BS, MS (U.Md.), PhD (Dal.)  
L.A. Mayer, B.S. (URI), PhD (Calif.)  
B.R. Ruddick, BSc (U. Vic.), PhD (MIT)

### Assistant Professor (NSERC Research Fellow)

K.R. Thompson, BSc, MSc (U.Manc.), PhD (Liv.)

### Research Associate

N.E. Balch, PhD (Dal), *Manager, Dalhousie Aquatron*

### Honorary Research Associates

R.J. Conover, AB (Oberlin), PhD (Yale), Marine Ecology Laboratory, Fisheries & Environment  
J.S. Craigie, BA, MA, PhD (Qu.), Atlantic Regional Laboratory, NRC  
L.M. Dickie, BSc (Acadia), MSc (Yale), PhD (Tor.), Ocean & Aquatic Sciences, BIO  
F.W. Dobson, BSc, MSc (Dal), PhD (UBC), Atlantic Oceanographic Laboratory, Environment Canada  
R.W. Doyle, MSc (Dal), PhD (Yale), Dept. of Biology, Dal  
J.A. Elliott, BSc (U. of S.), MSc, PhD (UBC), Atlantic Oceanographic Laboratory, BIO  
C.E. Keen, BSc, MSc (Dal), PhD (Cantab.), Atlantic Geoscience Centre, Energy, Mines & Resources  
W.D. Jamieson, BSc, MSc (Dal), PhD (Cantab.), Atlantic Research Laboratory, NRC  
S.R. Kerr, BSc (Carl.), MSc (Qu.), PhD (Dal.), Marine Ecology Laboratory, Fisheries & Environment  
J.A. Novitsky, BSc (Penn. St.), PhD (Ore. S.U.), Dept. of Biology, Dal  
B.D. Petrie, BSc (StFX), MSc (McG), PhD (Dal), Atlantic Oceanographic Laboratory, Environment Canada  
M. Sinclair, BSc Hon. (Qu.), MSc (Southampton), PhD (Scripps Instit.), Fisheries & Oceans  
P.C. Smith, BSc MS (Brown), PhD (MIT/Woods Hole Oceanography Instit.), Atlantic Oceanographic Laboratory, Environment Canada  
S.D. Smith, B.Eng. (McG), PhD (UBC), Atlantic Oceanographic Laboratory, BIO  
R.L. Stephenson, BSc (Trent), PhD (Canterbury), Fisheries & Oceans  
F.C. Tan, BSc (Taiwan), MSc (McG), PhD (Penn. St.), Atlantic Oceanographic Laboratory, Environment Canada  
D.G. Wright, BSc (Laurentian), PhD (UBC), Atlantic Oceanographic Laboratory, BIO

### Honorary Adjunct Professors

B.T. Hargrave, BSc, MSc (Dal), PhD (UBC), Marine Ecology Laboratory, Fisheries & Environment  
S. Pearre, BSc (Virginia), MSc, PhD (Dal)  
D.J.W. Piper, BA, MA, PhD (Cantab), Atlantic Geoscience Centre, Energy, Mines & Resources

## Admission Requirements

A good Honours degree, or its equivalent, is required for admission to the Oceanography Department.

Undergraduate preparation may be in any of the basic sciences — Biology, Chemistry, Physics or Geology. Degrees in Mathematics or Engineering are also acceptable if the undergraduate work includes a reasonably good background in relevant basic science.

## MSc Degree Program

For minimum time required to complete this program, see Section 2.6.

Introductory classes 5110A-5140B, one or more advanced classes, ordinarily in the area of the candidate's special interest, are required.

Additional classes may be required to strengthen a student's background in basic science.

Research and a thesis are required.

## PhD Degree Program

For minimum time required to complete this program, see Section 2.6.

Introductory classes 5110A-5140B and two or more advanced classes, ordinarily in the area of the candidate's special interest are required.

Candidates must demonstrate competence in their speciality and related fields in a comprehensive written examination.

Research and a thesis are required.

## Classes

Classes marked \* are not offered every year. Please consult the timetable on registration to determine if this class is offered.

5110B Introduction to Geological Oceanography: K.E. Loudon, L.A. Mayer.

5120A Introduction to Physical Oceanography: B. Ruddick.

5130A Introduction to Chemical Oceanography: R.C. Cooke, R.M. Moore.

5140B Introduction to Biological Oceanography: E.L. Mills.

5150A Introduction to Biological Oceanography: M.R. Lewis.

5160A Fisheries Oceanography: J.A. Koslow.

\*5210B Time Series Analysis: D.A. Huntley.

5221A Ocean Dynamics: K. Thompson.

5222B Estuary, Coast and Shelf Dynamics: A.J. Bowen.

\*5223B Ocean Waves: D.A. Huntley.

\*5230B Biology of Phytoplankton: M. Lewis.

\*5260B Biology of Zooplankton: C.M. Boyd.

5270R Special Topics in Biological Oceanography: staff.

5290B Advanced Chemical Oceanography: R.M. Moore.

5291A Organic Materials in Seawater: B. Johnson.

5311A Fluid Dynamics I: D.A. Huntley.

5312B Fluid Dynamics II: C.J.R. Garrett.

\*5330B Benthic Ecology: E.L. Mills.

\*5331B History of Oceanography: E.L. Mills.

5340B Marine Geology: L.A. Mayer.

5350B Marine Geophysics: K.E. Loudon.

\*5380B Marine Modelling: staff.

\*5390A Experimental Design in Biological Oceanography: C.M. Boyd.

5410R Dynamic Meteorology: C.J.R. Garrett.

5440A Advanced Topics in Geophysics: staff.

\*5450A Physics of the Earth: C. Beaumont.

5500R Oceanography Departmental Seminar.

In addition, each of the oceanographic subdisciplines has a regular seminar in its specialty. At the seminar, topics of specific interest are discussed and examined.

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# Oral and Maxillofacial Surgery

(Tel. 424-2280)

Head of Division  
D.S. Precious

### Professors

C.E. Hope, MBChB (Edin.), FFARCS (Eng.), FRCP(C), *Head, Department of Anaesthesia*

F.W. Lovely, DDS, MSc, FRCD(C) FICD, *Head, Division of Oral and Maxillofacial Surgery, Acting Chairman, Dept. of Oral Diagnosis and Oral Surgery*

M.M. Cohen Jr., AB (Mich.), DMD (Tufts), MSD, PhD (Minn.), FCCMG

### Associate Professors

B.B. Harsanyi, DDS, MS, FRCD(C)

D.S. Precious, DDS, MSc, FRCD(C), *Program Director*

### Assistant Professors

A.K. Bhardwaj, BDS, DDS, FRCD(C)

S.G.J. Fitch, DDS, MSc, (McG & Dal)  
 P.F.G. Stirling, DDS, MSc, FRCD(C)  
 J.G.L. Lovas, BSc (Tor), DDS (Tor), MSc (UWO)  
 R.E. Howell, DDS (Loma Linda), Cert. Oral Path (USC Med. Ctr.)  
 R.A. Barker, MB, ChB, FRCP(C)  
 R.H. Yabsley, MD, BSc, (Med), FRCS(C), FACS

The four-year program in Oral and Maxillofacial Surgery which starts on June 1st each year is designed to provide graduate students with a comprehensive background for the practice and teaching of Oral and Maxillofacial Surgery, and to qualify them for examination by the Royal College of Dentists of Canada.

Particular emphasis is placed upon the basic sciences and clinical hospital surgery practice.

## Admission Requirements

Candidates to be considered must possess both a DDS or DMD and the National Dental Examination Board Certificate to be eligible for Licensure in the Province of Nova Scotia.

Candidates must register for the entire four years of the program and pay full tuition for the first three years and thesis only registration for the fourth year.

Application must be completed prior to June 30 of the year preceeding commencement of the program.

## MSc Degree Program Requirements

1. Satisfactory completion or credit for the prescribed courses.
2. Possess satisfactory knowledge and skills in all the phases of clinical oral and maxillofacial surgery.
3. Satisfactory completion of a research study and submission of the results in the form of a thesis acceptable to the Director of the program.

## Classes

<b>Year I</b>	
500 Anatomy	1 credit
501 Surg. Anatomy	1 credit
502 Physical Diagn.	Audit
503 Clinical Lab. Medicine	Audit
504 Pharmacology	Audit
506 Oral Pathology	1 credit
507 Seminar	Audit
508 Clinical Oral Surgery	1 credit
509 Microbiology	1 credit
510 Development Oral Biology	Audit
511 Pathobiology	Audit
<b>Year II</b>	
600 Anaesthesia	1 credit
601 Medicine	Audit
602 Clinical Physiology	Audit
603 Oral Pathology	1 credit
604 Seminar	Audit
605 Clinical Oral Surgery	1 credit
606 Orthopedics	Audit
607 Infectious Diseases	Audit
608 Emergency Medicine	Audit
<b>Year III</b>	
700 Oral Pathology	1 credit
701 Seminar	1 credit
702 Clinical	1 credit
703 Research	1 credit

<b>Year IV</b>		
800 Clinical Oral Surgery		1 credit
801 Seminar		1 credit

# Pathology

(Tel. 424-2091)

## Head of Department

M.A. MacAulay

## Professors

J.H. Cooper, MB, ChB (Glas.), FRC Path., FRCP(C)  
 B.E. Favara, BS, MD, (St. Louis), FACP(AP&CP)  
 T. Ghose, MB, BS, PhD (Calc.), FRC Path. (U.K.)  
 D.T. Janigan, BSc, MD (Dal)  
 M.A. MacAulay, MD (Dal), FRCP(C)  
 G. Rowden, BSc (Exeter), MSc, PhD (London), MRC Path.

## Associate Professors

M.L. Givner, BSc, MSc, PhD (McG), *Graduate Studies Coordinator*  
 A.A. Trillo, MD, (Nat'l. Univ. Mexico), PhD (W.Ont.)

## Assistant Professors

C.L. Cousins, MSc, PhD (Dal), FACB  
 K.C. Dooley, PhD (UBC)  
 L.C. Dymond, BSc (Memorial), MSc, MD (Dal), FRCP(C)  
 A.D. Fraser, BA (Houghton), PhD (Boston), FACB  
 S.J. Luner, BS (Calif. Inst. of Tech.), PhD (UCLA)  
 B.L. Sheridan, MB, BS (New.), MRCP. (U.K.), MRC Path., FRCP(C)  
 R.F. McCurdy MPH, MSc (Minn.), PhD, (TUNS)

## Lecturers

D.E.C. Cole, BSc, MD (Tor.), PhD (McG), FCCMG  
 M.A. Moss, MB, BS (London), MSc (Dal), FRCP(C)  
 E.Z.M.A. Zayed, MB, BCh (Egypt) FRCP(C)

Research for the MSc degree may be conducted in experimental pathology and/or allied fields of medical sciences (e.g. clinical chemistry, hematology or histopathology) for those planning a career as a laboratory scientist.

## Admission Requirements

Candidates must satisfy the general requirements for admission to the Faculty of Graduate Studies. In addition, candidates with the degree MD may be admitted.

## MSc Degree Program

This program is intended to give the student a strong background in the experimental approach in pathology. Although the course may be completed in 12 months, most students take 24 months.

General Pathology 500 and one other class in a subject related to the thesis research, or the laboratory field chosen. Other classes may be required depending upon the background preparation of the student, the nature of their thesis, or the student's career goals.

Candidates must participate as appropriate in the weekly series of conference seminars in Pathobiology, Laboratory Medicine, Surgical and Autopsy conferences.

Research and a thesis are required. The thesis must be defended by oral examination which covers the candidate's area of study and research

## Classes

Classes marked with an asterisk are normally offered in alternate years. Pathology 500, 502 and 503 will be taught in the 1985-86 academic year.

**500 General Pathology:** This is the class given to the first year medical class and is described in the Faculty of Medicine Calendar.

**\*501 Clinical Medical Biochemistry:** Sessions: Two lectures and one problem solving session weekly throughout the academic year. Dr. L.C. Dymond and Dr. C.L. Cousins.

**\*502 Pathobiology:** Sessions: 50 lecture-seminar sessions will be given throughout the year. Dr. D.T. Janigan.

**\*503 Principles of Instrumentation:** Sessions: Three one hour lectures including problem session weekly, plus assigned laboratory sessions throughout the academic year. Dr. C.L. Cousins and Dr. R.F. McCurdy.

**\*504 Pathobiology of Cancer:** Sessions: Two sessions weekly throughout the academic year. Dr. T. Ghose.

**\*505 Special Topics:** Sessions: One session weekly to review students progress as required.

## Seminars — Conferences

A series of weekly seminars, journal clubs, and conferences is conducted throughout the year in various areas of pathology, including immunopathology, and laboratory medicine.

## Areas of Specialization for MSc Thesis

**Amyloidosis:** cardiovascular pathology, connective tissue histochemistry and diagnostic histochemistry: J.H. Cooper.

**Histiocytosis syndromes, pediatric pathology:** B.E. Favara.

**Immunopathology of lung, kidney, and skin diseases.** Application of immunological markers. Cancer diagnosis and treatment with antibody-linked radionuclides and cytotoxic agents: T. Ghose.

**Lung injury mechanisms:** D.T. Janigan.

**Transplantation of pancreatic segments and islets:** Experimental models of pancreatitis related to prevention of pancreatitis and long term survival of grafts.

**Dermatopathology with respect to the immune system of the skin.** Pigment cell biology. Immuno-electronmicroscopic staining methods. Dendritic cells of the mononuclear phagocyte system: G. Rowden

**Immunodiagnosis of cancer, antihormonal therapy of hormone-dependent cancers, new endocrine and Cyclosporin A assays:** M.L. Givner.

**Atherosclerosis, cardiovascular pathology, nephropathology:** A.A.

Trillo.

**Enzymes and isoenzymes in diagnosis and therapy; two-dimensional electrophoresis of urine proteins:** C.L. Cousins.

**Computerization and instrumental methods in the clinical chemistry laboratory, diagnostic enzymology, clearance of proteins in renal disease:** K.C. Dooley.

**Forensic toxicology, new analytical procedures for drug analysis, pharmacokinetics, drug metabolism, drug interactions, and toxicity:** A.D. Fraser.

**The malignant cell surface, blood cell membranes:** S.J. Luner.

**Trace metals, natural radionuclides and environmental health:** R.F. McCurdy.

**Hemopoietic microenvironment, in vitro studies of erythropoiesis:** B.L. Sheridan.

**Interference in digoxin assays, hypouricemic states:** L.C. Dymond.

**Environmental pathology, trace metals and disease, biochemical aspects of forensic medicine, investigation of porphyrias:** M.A. Moss.

**Platelet antibody investigations, myelodysplastic syndromes, blood transfusion (blood bank):** E.Z.M.A. Zayed.

**Biochemical genetics and inherited metabolic disease; metabolism of inorganic macronutrients — calcium, phosphorus, sulfur:** D.E.C. Cole.

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# Pharmacology

(Tel. 424-3435)

## Head of Department

P.E. Dresel

## Professors

J.W. Downie, BSc, PhD (Man.)

P.E. Dresel, BSc (Antioch), PhD (U. Rochester)

G.R. Ferrier, BSc, PhD (Man.) *Graduate Studies Coordinator*

M.M. Vohra, BPhm, MPhm, PhD (Ban.)

T.D. White, BSc, MSc (UWO), PhD (Bristol)

## Associate Professors

J.D. Gray, BSc, MD, (Alta.), FRCP(C), *Medicine*

G.M. McKenzie, BSc (U. Windsor O.), MSc, PhD (Dal)

K.W. Renton, BSc (Sir Geo. Wms.), PhD (McG)

H.A. Robertson, BA, MSc, (UWO), PhD (Cantab.)

## Assistant Professors

C.R. Dean, BSc (MtA), MSc (Dal), DPhil (Oxon.), MD (Dal) *Medicine*

M. Karmazyn, BSc (Loy.), MSc, PhD (McG)  
 B.L. Pope, BSc, PhD (UBC)  
 J. Sawynok, BSc, MSc (Melb.), PhD (Queen's)

**Assistant Professor Research**  
 M.G. Murphy, BSc, MSc, PhD (Dal)

## Admission Requirements

Candidates must satisfy the general requirements for admission to the Faculty of Graduate Studies. Students registered in the Faculty of Medicine may, upon completion of the second year of studies, be admitted to a PhD program.

## MSc Degree Programs

For minimum time required to complete this program, see Section 2.6. Candidates must complete satisfactorily the following classes or their equivalents: 5403 (or 5402), 5404, and a minimum of three half credit courses in the 5600 series. An ancillary course chosen from courses offered by this department or other departments in the Faculty of Graduate Studies may be required. Candidates must also satisfactorily complete short research projects in two departmental laboratories (5501, 5502). Students are expected to attend research seminars within the department. Thesis research, and preparation and oral defense of a thesis are required.

## PhD Degree Program

For minimum time required to complete this program, see Section 2.6. A qualifying examination for entrance into the PhD program may be required. Candidates must complete satisfactorily the course requirements listed for the MSc degree plus two additional half credit courses in the 5600 series and one additional short research project (5503). An ancillary course chosen from courses offered by this department or other departments in the Faculty of Graduate Studies may be required. Students are expected to attend research seminars within the department. A comprehensive examination is required. Thesis research, and preparation and oral defense of a thesis are required.

## Areas of Research Specialization

Faculty research interests include: cardiac electrophysiology and pharmacology, prostaglandins, interferon, tumor immunology, neurotransmitter receptor mechanisms, autonomic physiology and pharmacology, behavioral pharmacology, mechanisms of analgesia, drug metabolism, and experimental therapeutics.

## Classes

The 5501-5503 classes are normally for graduate students in Pharmacology, but available to others by special arrangement.

Two classes in the 5600 series are offered each year as announced by the Department.

5401 Introduction to Pharmacology

5402 Systematic Pharmacology

5403 Systematic Pharmacology: (includes laboratory).

5404 Experimental Design and Interpretation

5501 (A or B) Introduction to Research in Pharmacology I

5502 (A or B) Introduction to Research in Pharmacology II: Same as 5501 (A or B)

5503 (A or B) Introduction to Research in Pharmacology III: Same as 5501 and 5502. Required only of students in the PhD program.

5601 (A or B) Cardiovascular Pharmacology I

5602 (A or B) Cardiovascular Pharmacology II

5603 (A or B) Neuropharmacology I

5604 (A or B) Neuropharmacology II

5605 (A or B) Drug Disposition

5606 (A or B) Cellular Pharmacology

5607 (A or B) Selected topics in Pharmacology

9000 MSc Thesis

9530 PhD Thesis

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# Pharmacy

(Tel. 424-2378)

**Director of College**  
 D.K. Yung

**Professors**  
 R.F. Chandler, BSc Pharm, MSc (Alta.), PhD (Syd.), *Graduate Studies Coordinator*  
 J.G. Duff, BSP, MSc (Sask.), PhD (Fla.)  
 K.M. James, BSP, MSc (Sask.), PhD (Alta.)  
 M. Mezei, Dipl Pharm (Bp), PhD (Oregon State)  
 R.S. Tonks, BPharm, PhD (Wales), FPS FI Biol., *Major appointment Dean of Health Professions*  
 D.K. Yung, BA, BSP, MSc (Sask.), PhD (Alta.)

**Associate Professors**  
 P.S. Farmer, BSP, MSc (Sask.), PhD (Portsmouth)  
 M.E. MacCara, BSc (Pharm) (Dal), PharmD (Minn.)  
 W.A. Parker, BSc (Pharm), PharmD (Minn.), MBA (Dal)  
 I.S. Sketris, BSc (Pharm) (Tor.), PharmD (Minn.)  
 R.M. Sparkman, BSc (Northwestern), MBA (William and Mary), PhD (Houston)

**Assistant Professor**  
 I. Abraham, BPharm, MPharm (UST Ksi.), PhD (Neb.)

**Lecturers**  
 R.A. Merrett, BSc (Pharm) (Tor.), MSc (Tor.)  
 B. Smith, BSc (Pharm) (Dal.), PhC  
 J. Taylor, BSP (Sask.)

The College of Pharmacy offers an MSc program in the areas of

pharmacokinetics, biopharmaceutics, drug disposition and metabolism, medicinal chemistry, pharmacognosy, physical pharmacy and toxicology. For more detailed information on the administration of these programs applicants and students are referred to the Handbook for Graduate Studies in the College of Pharmacy which is available from the Graduate Studies Coordinator, College of Pharmacy.

## Admission Requirements

Candidates must satisfy the general requirements for admission to the Faculty of Graduate Studies (see Section 2.2). Applicants from outside of Canada must submit the results of the Graduate Record Examination (GRE, Aptitude). Canadian applicants also are advised to submit GRE scores, and the College reserves the right to make this a precondition to consideration of the student's application for admission. A score of at least 550 on the TOEFL is required of applicants whose native language is not English (Section 2.2).

Students entering with a BSc (Pharm) Degree or its equivalent will be registered in the 1-year MSc program. Students entering with an Honours BSc Degree in a field other than pharmacy (e.g., biology or chemistry) may be required to register in the 2-year MSc program, although candidates with suitable academic backgrounds will be registered in the 1-year program. Applicants holding a Pass BSc Degree may exceptionally be eligible for admission to the 2-year MSc program. In certain circumstances, a student may be admitted to a Qualifying Year program of preliminary work in order to meet admission standards for the MSc program.

An MSc in pharmacy is normally required for entry directly into the PhD program, although students in the MSc program may apply to transfer to the PhD program subject to the conditions described in the Handbook for Graduate Students in the College of Pharmacy. Ultimate approval of a student's transfer to the PhD program must be made by the Dean of Faculty of Graduate Studies.

## MSc Degree Program

For minimum times required to complete this program see Section 2.6.

Experience has shown that most candidates require an additional 6-12 months to complete the thesis requirement. A Graduate Advisory Committee chaired by the research supervisor and comprised of two other members will be appointed for each student.

Candidates must complete satisfactorily a minimum of two advanced classes, the actual program of classes required to be determined by each student's Graduate Advisory Committee. To determine courses in which a student should enrol, an oral and/or written examination may be required by the Graduate Advisory Committee prior to registration of a new student coming from outside of the College. Additionally candidates must participate in the weekly graduate seminars (Pharmacy 5000C) during each year in the program. A major part of the requirements for the MSc Degree is the preparation and oral defence of a thesis (Pharmacy 9000) describing research done by the student. The primary purpose of the MSc Degree program is to develop in the student research skills in an area of the pharmaceutical sciences at a level which will enable the student to carry out research relatively independently. The dissertation is expected to be of such scope and skillful presentation as to indicate that the candidate has acquired a command of the subject, has the demonstrated ability to contribute fresh knowledge or a fresh outlook to the subject, and has mastered the research methodology of the discipline.

Candidates are normally required to demonstrate in an undergraduate Pharmacy class for at least one year.

Financial assistance is generally available for no more than two years.

## PhD Degree Program

For minimum times required to complete this program see Section 2.6.

It is expected that most candidates will require an additional 12 months to complete the thesis requirement. A Graduate Advisory Committee chaired by the research supervisor and comprised of two other members will be appointed for each student. Candidates must complete satisfactorily a minimum of two graduate classes in addition to those required for the MSc program, the actual program of classes required to be determined by each student's Graduate Advisory Committee. To determine courses a student should enrol in, an oral and/or written examination may be required by the Graduate Advisory Committee prior to registration of a new student coming from outside of the College. Additionally candidates must participate in the weekly graduate seminars (Pharmacy 6000C) during each year in the program. Reading comprehension of a foreign language and/or proficiency in an ancillary research skill such as computer programming is required. Students are required to pass a preliminary oral examination not less than one year before defending the thesis.

The PhD Degree program prepares the student to conceptualise, design and execute sound independent research. Thus the completion of an extensive, original investigation and the preparation and oral defence of a thesis (Pharmacy 9530) describing this research constitutes the major part of the requirements for the PhD Degree. The PhD research project is of more substantial dimensions than that for the MSc Degree, and the demonstration of a definite advance of knowledge is expected.

Candidates are required to obtain some teaching experience by demonstrating in an undergraduate Pharmacy laboratory class for at least one year and by presenting in the order of three lectures per year in an undergraduate Pharmacy class.

Financial assistance is generally available for no more than four years post-baccalaureate or three years for a student entering with an MSc Degree.

## Classes

**4230A Dermopharmacy:** M. Mezei, lecture 2 hours. Prerequisite: Consent of the instructor.

**4330C Herbal Remedies:** R.F. Chandler, lecture 2 hours first term, 1 hour second term.

**5000C/6000C Pharmacy Seminar**

**5290 Topics in Biopharmaceutics:** M. Mezei, lecture 2 hours. Prerequisite: Consent of the instructor.

**5320A or B Topics in Medicinal Chemistry:** D.K. Yung and P.S. Farmer, lecture 2 hours. Prerequisite: Pharmacy 3300.

**5330C Topics in Phytochemistry, Part I:** R.F. Chandler, lecture 2 hours. Prerequisite: Consent of the instructor.

**5350C Topics in Phytochemistry, Part II:** R.F. Chandler, lecture 2 hours. Prerequisite: Consent of the instructor.

**5980A (M2090A) Intermediate Statistics:** C.A. Field (Math Dept.)

**9000 MSc Thesis**

**9530 PhD Thesis**

## Areas of Specialisation

1. Studies on dose-dependent disposition kinetics of drugs; kinetics of enterohepatic circulation of drugs; drug-drug kinetic interactions. (I.



Abraham)

2. Phytochemical and pharmacological investigation of the medicinal aspects of maritime flora. (R.F. Chandler)
3. Design and synthesis of drugs, particularly of nonpeptidic peptidomimetics and of structurally rigid bioactive compounds. (P.S. Farmer)
4. Design and evaluation of selective drug delivery systems. (M. Mezei)

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# Philosophy

(Tel. 424-3810)

**Chairperson of Department**  
S. Sherwin

## Professors

D. Braybrooke, BA (Harv.), MA, PhD (Corn.) FRSC, *also in Political Science*  
R.M. Campbell, BA (Harv.), PhD (Corn.)  
W.F. Hare, BA (Lond.), MA (Leic.), PhD (Tor.) - *Major appointment in Education Dept.*  
F.H. Page, MA (Tor.), DD (Pine Hill)  
R.P. Puccetti, BA (Ill.), MA (Tor.), Docteur de l'Université de Paris (Sorbonne)  
P.K. Schotch, PhD (Wat.)

## Associate Professors

N.C. Brett, BA (New Hampshire), MA, PhD (Wat.)  
S.A.M. Burns, BA (Acad.), MA (Alta.), PhD (Lond.)  
R.M. Martin, BA (Col.), MA, PhD (Mich.)  
S.B. Sherwin, BA (York), PhD (Stanford)  
T. Tomkow, BA (SFU), PhD (Cantab.)  
T. Vinci, BA (Tor.), PhD (Pitts.)

## Assistant Professors

B. Brown, BA (Trent), PhD (Pitts.), Visiting  
D. MacIntosh, BA (Queens), PhD (Tor.)

Candidates are expected to have some acquaintance with several areas of philosophy, including modern logic and the history of philosophy. Each student's program is arranged individually in consultation with the department in relation to the student's interests and preparation. Enquiries should be addressed to the Graduate Studies Coordinator, in the Department.

## Admission Requirements

Candidates must satisfy the general requirements for admission to the Faculty of Graduate Studies.

## MA Degree Program

For minimum time required to complete this program, see Section 2.6. Normally, study at the graduate level equivalent to five classes is required. A thesis is required. Students may achieve a MA degree on a

part-time basis by satisfying, over a five year period, the class and thesis requirements of a full time program. Admission requirements for part-time programs are identical with the full time requirements.

## PhD Degree Program

For minimum time required to complete this program, see Section 2.6. Normally, the doctoral student will be required to attend three graduate seminars beyond the requirements for the MA. Reading knowledge will usually be required in one language other than English in which a significant body of philosophical literature exists. There are three comprehensive examinations to be completed in (1) ethics and political philosophy; (2) metaphysics, epistemology, philosophy of language and science; (3) logic and philosophy of logic. Completion of the program requires original research on a project of substantial dimensions, culminating in the submission and oral defence of a thesis. This research should be in an area already well-established as a specialty by members of the department, such as, political and social philosophy, ethics, philosophy of mind, epistemology, philosophy of language, or logic.

## Classes

The Philosophy Department offers four kinds of graduate classes: adjunct, general, seminar, and directed reading. *Adjunct* classes presuppose no prior preparation in the area covered by the class. Thus, a graduate student with no previous training in modern symbolic logic could take the combination 5130 and 5140 which provides a comprehensive introduction to this subject. These classes, since they are not intended for advanced study in the area designated, are open to graduate students in philosophy only in special cases and by permission of the Department. *General* classes cover a wide range of topics and presuppose some previous study in the area covered by the class. They are suitable for graduate students who want to deepen their understanding for a general area of study but have not specialized in it as an undergraduate. *Seminar* classes are relatively narrow in focus and presuppose extensive previous study in the area. These are the classes normally taken for credit by MA candidates in the last year of their program and by PhD candidates. *Directed Reading* classes are developed jointly by a student and an instructor in special cases to suit individual interests and needs. These are subject to departmental approval.

Note that the classes listed are half-year, unless otherwise indicated, and not all are given in any one year. Instructors in seminar classes are likely to vary from year to year. Consult the department for further information.

## Adjunct Classes

5130 Logic: Deduction: P.K. Schotch.

5140 Logic: Logical Theory I: P.K. Schotch.

5160 Philosophical Issues of Feminism: S. Sherwin.

5180 Ethics and Education: W. Hare.

5260 Philosophy and Art: S.A.M. Burns.

5350 History of Philosophy: Ancient Philosophy I: S.A.M. Burns.

5370 History of Philosophy: Ancient Philosophy II: S.A.M. Burns.

5410 Philosophy of Psychology: R. Puccetti.

5420 Philosophy of Biology: R. Campbell.

- 5520 Philosophy of Social Science: D. Braybrooke.  
 5550 Marxist Theory: S.A.M. Burns.  
 5610 History of Philosophy: The Rationalists: S.A.M. Burns.  
 5620 History of Philosophy: The Empiricists: S.A.M. Burns.  
 5700 Philosophy in Literature (full-year): R. Martin.  
 5800 Ethics in Medicine (full-year): S. Sherwin.  
 5810 Open Mindedness in Education: W. Hare.  
 5820 Philosophy and Educational Administration: W. Hare.
- General Classes**  
 5051 Theory of Knowledge: T. Vinci.  
 5060 Logic: Logical Theory II: P.K. Schotch.  
 5100 Ethics (full-year): R. Campbell.  
 5170 Theories of Feminism: S. Sherwin.  
 5211 Philosophy of Law: N. Brett.  
 5300 Philosophy of Language: R. Martin.  
 5440 Philosophy of Mind: R. Martin.  
 5460 Mind and Brain: R. Puccetti.  
 5530 Freedom, Action and Responsibility: P.K. Schotch.  
 5630 History of Philosophy: Kant: T. Vinci.  
 5640 History of Philosophy: 20th Century Philosophy: S.A.M. Burns.  
 5670 Philosophy of Science: staff.  
 5851 Metaphysics: T. Tomkow.  
 5910 Logic: Logic and Philosophical Analysis: staff.

**Seminar Classes**

- 5055 Topics in Epistemology  
 5070 Topics in Philosophical Psychology  
 5080 Topics in Logical Theory  
 5115 Topics in Ethics  
 5120 Theory of Rational Decision  
 5190 Topics in the History of Philosophy I  
 5191 Topics in the History of Philosophy II  
 5192 Topics in the History of Philosophy III  
 5200 Topics in Normative Theory

- 5215 Topics in Philosophy of Law  
 5220 Contemporary Philosophical Issues  
 5430 Game Theory as a Foundation for Ethics & Politics  
 5470 Utilitarianism, Liberalism, & Democracy  
 5480 Social Choice Theory  
 5510 Topics in Philosophy of Language  
 5600 Philosophy of Religion Seminar  
 5680 Topics in Philosophy of Science  
 5855 Topics in Metaphysics
- Directed Reading Classes**  
 5960 and 5980 (half-year); 5970 and 5990 (full-year)
- 9000 MA Thesis  
 9530 PhD Thesis

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# Physics

(Tel. 424-2337)

**Chairperson of Department**  
 D.J.W. Geldart

**Professor Emeritus**  
 W.J. Archibald, MA (Dal), PhD (Virg.), DSc (UNB), FRSC

**Killam Research Fellow**  
 H.J. Kreuzer, MSc, DSc (Bonn)

**Professors**

D.D. Betts, MSc (Dal), PhD (McG), FRSC, *Dean of Faculty of Arts & Science*  
 M.G. Calkin, MSc (Dal), PhD (UBC)  
 D.J.W. Geldart, BSc (Acad.), PhD (McM)  
 C.K. Hoyt, MSc (Dal), PhD (MIT)  
 M.H. Jericho, MSc (Dal), PhD (Cantab.), *George Munro Professor of Physics*  
 D.B.I. Kiang, BSc (Mt. A), MSc, PhD (McM)  
 G.F.O. Langstroth, BSc (Alta.), MSc (Dal), PhD (Lond.)  
 R.H. March, BSc, MSc (Dal), DPhil (Oxon.)

**Associate Professors**

B.L. Blackford, BSc (Acad.), MSc (MIT), PhD (Dal)  
 J.G. Cordes, MSc (Dal), PhD (Cantab.)  
 D.F. Goble, BSc, MSc (Alta.), PhD (Tor.)  
 S.T. Nugent, BSc (Mem.), BE (NSTC), MSc (Tor.), PhD (UNB), PEng

B.E. Paton, BSc, MSc (Waterloo), PhD (McG)  
 P.H. Reynolds, BSc (Tor.), PhD (UBC)  
 A.M. Simpson, BA (Cantab.), MSc, PhD (Dal), *Graduate Student Coordinator*  
 G. Stroink, BSc, MSc (Delft), PhD (McG)  
 C.G. White, BSc, MSc (Dal)

#### Assistant Professors

R. A. Dunlap, BS (Worcester), AM (Dartmouth), PhD (Clark)  
 D.A. Tindall, BA, PhD (Cantab.)

#### Assistant Professor (NSERC Research Fellows)

G.A. Gumbs, BSc (Cantab.), MSc, PhD (Tor.)  
 K. De'Bell, BSc, MSc, PhD (London)

#### Research Associates

A.K. Das, DPhil (Oxon.)  
 S. Fujiki, PhD (Tohoku)  
 S.H. Payne, PhD (Cantab.)

#### Killam Postdoctoral Fellows

D. Dahn, PhD (UBC)  
 S. Daté, PhD (Waseda)

#### Senior Instructor

F.M. Fyfe, MSc (Dal)

#### Instructor

W. Zukauskas, BSc (Dal)

#### MacGregor Postdoctoral Fellow

K. Dini, PhD (Sheffield)

#### Adjunct Professors

H.W. Jones, BSc, PhD (Lond.), F.Inst.P., PEng Technical University of Nova Scotia  
 H.W. King, BSc, PhD (Birm.), DIC (Lond.), FRSA, F.Inst.P., F.I.M., CEng, PEng, Technical University of Nova Scotia  
 A.D.J. O'Neill, MSc (McG), PhD (Sask.)  
 R. Ravindra, BSc (Kharapur), MA, PhD (Tor.)

#### MacGregor Teaching Fellows

P. Hargraves  
 M. Mieszkowski  
 K. Nath  
 C. Purcell  
 G. Tan  
 S. Zhou

## Admission Requirements

Candidates must satisfy the general requirements for admission to the Faculty of Graduate Studies. An MSc is the normal admission requirement for the PhD program.

It is recommended that all foreign students provide the Department with an official copy of the Advanced Graduate Record Examination in Physics. In some cases this will be made a precondition to consideration of the student's application for admission.

## MSc Degree Program

For minimum time required to complete this program, see Section 2.6.

At least two and one half graduate classes are required.

An oral examination on the subject matter of the thesis is required.

A research thesis is required.

## PhD Degree Program

For minimum time required to complete this program, see Section 2.6.

Normally, a minimum of three graduate classes is required.

Within the first year of a PhD program (and as soon as possible after a Dalhousie MSc), the candidate must take a preliminary oral examination.

Research and the preparation and oral defense of a thesis are required.

The PhD degree will be granted primarily on the basis of the candidate's ability to carry through original investigation. Part of the evidence of this will be acceptance of scientific material for publication in refereed journals and the preparation of a satisfactory thesis.

## Classes

5000-level classes are fourth-year undergraduate classes which may be taken for graduate credit in certain circumstances. They are normally taken by new graduate students having background deficiencies in specific areas. 6000-level classes are full graduate classes.

All graduate students will normally take a Problems Class (6320C or 6330C) once in each degree program.

All graduate students are required to attend regular departmental seminars.

**5090A/5100B Advanced Classical Mechanics and Electrodynamics:** lecture, 3 hours. Prerequisite: Physics 2110, 2120, 3150B or the permission of the instructor.

**5150A/5155B Quantum Mechanics:** lecture 2 hours. Prerequisite: Physics 3140A.

**5160A/5170B Mathematical Methods of Physics:** lecture 3 hours.

**5180A/B Nuclear Physics:** lecture 3 hours.

**5220A Microcomputer Based Instrumentation:** lecture 3 hours.

**5230A/B Introduction to Solid State Physics:** lecture 3 hours. Prerequisite: Physics 3140A.

**5300A Applied Acoustics:** lecture 3 hours.

**5311A/5312B Fluid Dynamics I/II:** lecture 3 hours. Cross listed with Oceanography 5311A/5312B.

**5330A Materials Science:** lecture 3 hours. Prerequisite: Physics 3150B.

**5350B Energy, Sources and Conversion:** lecture 3 hours.

**5440A Optics:** lecture 3 hours. Prerequisites: Physics 2330B or Physics 2210, or Physics 2210B, and Mathematics 2200.

**5460A/B Optics:** lecture 3 hours. Prerequisite: Physics 5440A.

**5480A Applied Group Theory:** lecture 3 hours. Offered when there is sufficient demand.

**5500A/5510B Atmospheric Physics I/II:** lecture 3 hours. Prerequisite: at least 1 third year level physics.

5520A/5530B General Meteorology I/II: lecture 3 hours. Prerequisite: at least 1 third year level physics.

5540A/5550B Synoptic Meteorology I/II: lecture 3 hours. Prerequisite: at least 1 third year level physics.

6100 Nuclear Physics: lecture 2 hours.

6120 Quantum Theory: lecture 3 hours. Prerequisite: Physics 4150A or its equivalent.

6140 Advanced Quantum Theory: lecture 3 hours. Prerequisite: Physics 6120, which may be taken concurrently.

6200 Solid State Physics: lecture 2 hours. Prerequisite: Physics 5230B, 4150A.

6240 Advanced Solid State Physics

6260 Statistical Mechanics: lecture 3 hours. Prerequisite: Physics 3210B, 4150A or their equivalent.

6320C Advanced Problems

6330C Advanced Problems

The following 6000 level classes are more specialized than the above and, consequently are not offered as frequently.

6270A Order-Disorder Phenomena and Phase Transitions: Prerequisite: A basic knowledge of quantum statistical mechanics is assumed.

6271B Field Theoretical Methods in Critical Phenomena

6280A Superconductivity: lecture 2 hours.

6350B Selected Topics in Physical Metallurgy: lecture 2 hours.

6370A Ultrasound Imaging Technique: lecture 3 hours

6470A Underwater Acoustics: lecture 3 hours.

6500C Magnetism: lecture 1 1/2 hours.

6600B Topics in Physics

6970 Selected Topics in Particle Physics: lecture 2 hours.

9000 MSc Thesis

9530 PhD Thesis

# Physiology and Biophysics

(Tel. 424-3517)

**Head of Department**  
K.B. Ruf, MD (Basle), FRCP(C)

**Professors Emeritus**  
Bela Issekutz, Jr., MD (Szeged), Dr Med (Bud.)  
Enid MacLeod, MD (Dal)  
C.B. Weld, MA (UBC), MD (Tor.), FRSC

## Physiology Section

**Professors**  
J.A. Armour, BSc (McG), MD (W Ont.), PhD (Loyola U)  
M. Cynader, PhD (MIT), *Major appointment, Department of Psychology*  
J.D. Hatcher, MD, PhD (UWO), FRCP(C)  
M. Horackova, MSc, PhD (Prague)  
W.T. Josenhans, MD (Tubingen)  
G.A. Klassen, MD (UBC), FRCP(C), *Major appointment Dept. of Medicine*  
T.F. McDonald, BSc (U of Alta.), PhD (Dal)  
W.H. Moger, BS (Cornell), PhD (U of Calif.)  
K.B. Ruf, MD (Basle), FRCP(C)  
J.C. Szerb, MD (Munich), FRCP(C)  
M. Wilkinson, BSc (Southampton), PhD (Lond.)

**Associate Professors**  
J.D. Dudar, MSc (Alta.), PhD (Dal)  
J.G. Holland, BSc, MD (Dal)  
W. Ling, BSc (Acad. U), MSc, PhD (McG), *Major appointment, Obstetrics/Gynecology*  
J. Love, DVMS (Glasgow), PhD (Tor.), MRCVS, *Major appointment Director, Animal Care Centre*  
D. Rasmusson, BA (Colo. C), PhD (Dal)

**Assistant Professors**  
C. Baker PhD (U. of Calif.)  
A. Bonen, PhD (U of Ill.), *Major appointment, School of Physical Education*  
J.E. Bustamanté, PhD (Havana U.)  
M. Dickie, BA, MA, PhD (Tor.)  
D. Hirsch, MD (Dal), *Major appointment, Department of Medicine*  
D.E. Johnstone, B.Sc, MDCM (McG), FRCP(C), *Major appointment, Department of Medicine*  
S. Martin, PhD (U of Calgary), *Major appointment, Department of Biology, Mt. St. Vincent*  
T.J. Montague, BSc (StFX), MD (Dal), FRCP(C), *Major appointment, Department of Medicine*  
N. Morgunov, BSc, MSc, PhD (U of Tor.)  
M.R. Oulton, BA (Acad. U), PhD (Dal), *Major appointment, Obstetrics/Gynecology*  
R. Rittmaster, MD (Tufts Med. Sch.), *Major appointment, Dept. of Medicine*  
G. Stroink, PhD (McG), *Major appointment, Dept. of Physics*  
N. Swindale, PhD (U of Sussex)

**Lecturer**

A. Corvin, MD (Heidelberg), *Major appointment, Psychiatry*

**Biophysics Section****Professors**

B.M. Horacek, MSc (Eng.) (Prague), PhD (Dal)

P.M. Rautaharju, MD (Helsinki), PhD (Minn.)

R. Rosen, BSc (Brooklyn College), MA (Col.), PhD (U of Chic.)

H. Wolf, Dipl Eng (Munich), PhD (Dal)

A.Y.K. Wong, MSc, PhD (Dal)

Information on research interests in the Department and openings for graduate and post-PhD or post-MD study should be requested from the Graduate Coordinator of the Department.

An interdisciplinary program in the area of Biomathematics is offered (refer to Section 5.3 of this calendar).

**Admission Requirements**

Candidates must satisfy the general requirements for admission to the Faculty of Graduate Studies. For those without a background in physiology, the introductory course in human physiology must be passed with a mark of 65% before permission to submit a thesis is granted.

Unless exempted, applicants must provide the Department with an official copy of the results of the Graduate Record Examination General (Aptitude) Test and one Subject (Advanced) Test.

**MSc Degree Program**

Students without previous training in physiology should expect to spend two years working toward the MSc

Normally, study at the graduate level equivalent to five classes is required.

A research thesis which constitutes two of the five credits is required.

**PhD Degree Program**

For minimum time required to complete this program, see Section 2.6.

Selected classes of this or other departments may be required.

An examination in the field of thesis research is required.

Research and the preparation and defense of a thesis are required.

A candidate must demonstrate the ability to carry out research of high quality leading to an advance in knowledge in the areas of physiology and/or biophysics.

**Classes****Physiology**

5503R Respiratory Physiology: W.T. Josenhans.

5403 Human Physiology: J. Dudar.

5459 Activity of the Cardiac Muscle: A. Wong (offered alternative years, next offered Sept. 86)

5494B Synaptic Transmitters: J.C. Szerb, M. Wilkinson (offered alternate years, next offered in Jan. 1988).

5501/5502 Advanced Human Physiology: seminar class for graduate students in the department.

5505R Surgical Techniques: J. Love.

5506 Endocrine and Reproductive Physiology: W. Moger, M. Wilkinson, W. Ling (given in alternate years, next given in 87/88).

5507A Cerebral Cortex: D. Rasmusson, M. Cynader (offered every second year, next offered in 86/87).

5508A Selected Topics in Physiology: staff.

**Biophysics**

5452C/5453C/5454C Biophysics-Biomathematics Seminar: M. Horacek.

5455B Biological Control Systems: H. Wolf (offered every second year, next offered in 86/87).

5481B Topics in Biomathematics: R. Rosen.

5400A/B Introduction to Biophysics: H. Wolf.

5510 Biophysics Tutorial: H. Wolf.

9000 MSc Thesis

9530 PhD Thesis

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# Political Science

(Tel. 424-2396)

**Chairperson of Department**

G.R. Winham

**Professors Emeritus**

J.H. Aitchison, BA, BEd (Sask.), BSc (Lond.), PhD (Tor.)

J.M. Beck, BA (Acad.), MA, PhD (Tor.)

G. Grant, BA (Queen's), DPhil (Oxon.), LLD (Trent), D Lit (Mt. A), LLD (Dal), LLD (Queen's), LLD (Tor.), FRSC, *jointly with Classics and Religion.*

**Professors**

P.C. Aucoin, BA (SMU), MA (Dal), PhD (Queen's), *jointly with Public Administration, Associate Director, School of Public Administration*

R. Boardman, BSc, PhD (Lond.), *Director, Centre for Foreign Policy Studies*

E. Mann Borgese, *Professor of International Ocean Affairs*

D. Braybrooke, BA (Harv.), MA, PhD (Cornell), FRSC, *jointly with Philosophy*

D.M. Cameron, BA (Queen's), MA, PhilM, PhD (Tor.), *jointly with Public Administration*

J.G. Eayrs, BA (Tor.), AM, PhD (Col.), FRSC, *Eric Dennis Memorial Professor*

K.A. Heard, BA, MA, PhD (Natal)

P. Pross, BA, MA, PhD (Tor.), *jointly with Public Administration*

T.M. Shaw, BA (Sussex), MA (Prin.-E Africa), PhD (Prin.)

D.W. Stairs, BA (Dal), MA (Oxon.), PhD (Tor.)

G.R. Winham, BA (Bowdoin), Dip in Int Law (Manc.), PhD (N Car.)

**Associate Professors**

H. Bakvis, BA (Hons) (Queen's), MA, PhD (UBC)  
 R.L. Dial, BA (Calif.-SB), MA, PhD (Calif.-Berkeley)  
 R. Eden, BA (Calif.-Berkeley), PhD (Harvard)  
 D.W. Middlemiss, BA, MA, PhD (Tor.)  
 D.J. Munton, BA, MA (UBC), PhD (Ohio St.)  
 D.H. Poel, BA (Calvin), MA (W.Mich), PhD (Iowa)

**Assistant Professors**

D.F. Luke, BSc (Hons.), MSc, PhD (London)  
 J. Smith, BA (McM), MA, PhD (Dal)

**Adjunct Professors**

S.K. Holloway, BA, MA, PhD (Ohio St.)  
 H. Silverstein, BA (Wisc.), MA, PhD (Denver)

**Research Associate**

Joel Sokolsky, BA (Tor.), MA (Hopkins), PhD (Harvard)

The Department of Political Science offers MA and PhD programs. For the PhD degree, the Department at present undertakes to supervise research relating only to (1) political behaviour and institutions in Canada and its provinces, (2) international politics and foreign policy, and (3) other areas of study where faculty interest and resources warrant.

**Admission Requirements**

Candidates must satisfy the general requirements for admission to the Faculty of Graduate Studies.

**MA Degree Program**

For minimum time required to complete this program, see Section 2.6.

The normal program is made up of three full-year class credits.

A thesis, normally worth two credits, is also required.

Students whose background is deficient may be required to take as many as five additional classes.

**PhD Degree Program**

For minimum time required to complete this program, see Section 2.6.

A course program of from three to eight classes is required.

Comprehensive examinations in Political Theory and Methodology and two other fields chosen from Canadian Government and Politics, Comparative Politics with respect to selected states, International Relations and Foreign Policy, Public Administration, and Special Alternative Field, must be prepared. Proficiency in a language other than English, usually French, must be demonstrated.

Preparation and defence of an acceptable thesis are required.

The Department may require students to acquire additional language or methodological skills where these seem necessary in the pursuit of the student's interest.

**Classes**

Classes offered by the Department have, for the purposes of this calendar, been grouped into the following classifications:

Canadian Government and Politics and Public Administration  
 Comparative Politics  
 Political Theory and Methodology  
 International Relations and Foreign Policy

(Note: Classes are not necessarily offered each year. Consult timetable for final listing of course offerings.)

**Canadian Government and Politics and Public Administration**

5204 The Politics, Government, and Constitution of Canada: seminar 2 hours, J. Smith.

5208 Canadian Provincial Politics: lecture and seminar 2 hours, D.H. Poel.

5212B The Politics and Government of Nova Scotia: seminar 2 hours, P.C. Aucoin.

5216A Local and Regional Government: seminar 2 hours, D.M. Cameron.

5220A Intergovernmental Relations in Canada: seminar 2 hours, H. Bakvis.

5221B Case Studies in Intergovernmental Relations: seminar 2 hours, D.M. Cameron.

5224B Canadian Political Parties: lecture and discussions 3 hours, H. Bakvis.

5226A seminar 2 hours, P. Pross.

5240 Policy Formulation in Canada: seminar 2 hours, staff.

5242B Science Policy in Canada: seminar 2 hours, P.C. Aucoin.

5243B Health Care Policy in Canada: seminar 2 hours, P.C. Aucoin.

5245B Urban Policy in Canada: seminar 2 hours, D.M. Cameron.

5254B Canadian Public Administration: seminar 2 hours, A.P. Pross.

5258A Provincial Government and Administration: seminar 2 hours, R. Johnson.

5526A Natural Resource Administration: seminar 2 hours, A.P. Pross.

**Comparative Politics**

5301B Comparative Analysis: seminar 2 hours, D.F. Luke.

5303B Human Rights and Politics: lecture and discussion 2 hours, K.A. Heard.

5304A Comparative Federalism: seminar 2 hours, H. Bakvis.

5315A African Politics: seminar 2 hours, T. Shaw.

5340A Problems of Development: seminar 2 hours, K.A. Heard.

5345A South Africa: The Dynamics of Political Groups and Group Dominations: seminars 2 hours, K.A. Heard.

5370 American Government: lecture and discussion 2 hours, J.H. Aitchison.

**Political Theory and Methodology**

5410 Man, Society, and Politics: The Concept of Community: seminar 3 hours, staff.

- 5430C The Political Philosophy of Plato: seminar 2 hours, R. Eden.
- 5435A Machiavellian Politics: seminar 2 hours, R. Eden.
- 5438B Rousseau and the Founding of Modern Democracy: seminar 2 hours, R. Eden.
- 5451A The Critique of Democracy in Modern Political Philosophy: lecture and seminar 3 hours, R. Eden.
- 5455B Marxist Theory and Its Upshot in the Modern World: seminar 2 hours, R. Eden.
- 5470B Futurology and Politics: seminar 2 hours, D. Munton.
- 5479A Utilitarianism, Classical Liberalism, and Democracy: seminar 2 hours, J. Smith.
- 5480A Social Choice Theory: seminar 2 hours, D. Braybrooke.
- 5485B The Theory of Games as an Approach to the Foundations of Ethics and Politics: seminar in Philosophy, Politics and Economics 2 hours, D. Braybrooke.
- 5495 Problems of Quantification: seminar 2 hours, staff.
- 5490B The Logic of Questions, Policy Analysis, and Issue Processing: seminar 2 hours, D. Braybrooke.
- 5495B Research Methods and Data Analysis: seminar 2 hours, S.K. Holloway.
- 5496C Philosophy of the Social Sciences: seminar 2 hours, D. Braybrooke.
- International Relations and Foreign Policy**
- 5520 Theories of International Relations: lecture and discussion 2 hours, staff.
- 5531A The United Nations in World Politics: seminar 2 hours, R. Boardman.
- 5535A Towards a New World Order: seminar 2 hours, staff.
- 5540B Foreign Policies of African States: lecture and seminar 2 hours, T.M. Shaw.
- 5544B Conflict and Cooperation in Southern Africa: lecture and seminar 2 hours, staff.
- 5570 Canadian Foreign Policy: seminar 2 hours, D.W. Middlemiss.
- 5571 Strategy and Canadian Defence Policy: seminar 2 hours, D.W. Middlemiss.
- 5572 American Foreign Policy: seminar 2 hours, G. Winham.
- 5590 The Politics of the Sea: seminar 2 hours, staff.
- 5595 Theories of War and Peace: seminar 2 hours, D. Munton.
- 5596 Strategic Studies: seminar/lecture 3 hours, staff.
- 5695A Research Methods for Program Evaluation: D.H. Poel.

9000 MA Thesis

9530 PhD Thesis

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# Psychology

(Tel. 424-3417)

**Chairperson of Department**  
R.S. Rodger

## Professors

M. Cynader, BSc (McG), PhD (MIT), *Killam Research Professor*  
P.J. Dunham, BA (DePauw), MA, PhD (Missouri)  
J.C. Fentress, BA (Amherst), PhD (Cantab.)  
D.O. Hebb, BA (Dal), MA (McG), PhD (Harv.), DSc, DHL, LLD,  
*Honourary Professor*  
W.K. Honig, BA (Swarthmore), PhD (Duke)  
R. Klein, BA (SUNY), MA, PhD (Oregon)  
V.M. LoLordo, AB (Brown), PhD (Penn.), *Graduate Studies Coordinator*  
J.A. McNulty, BA, MA, PhD (Tor.)  
I.A. Meinertzhagen, BSc (Aberdeen), PhD (St. Andrews)  
D.E. Mitchell, BSc, M.App.Sc. (Melb.), PhD (Berkeley)  
S. Nakajima, BA (Chiba), MA (Wash.), PhD (McG)  
K.E. Renner, BS (Penn.), MA, PhD (Northwest)  
R.S. Rodger, MA (Edin.), PhD (Belf.)  
B. Rusak, BA (Tor.), PhD (Berkeley)  
M.G. Yoon, BS (Seoul), PhD (Berkeley)

## Associate Professors

J. Barresi, BS (Brown), MA (S Calif.), PhD (Wisc.)  
K. Bloom, BS (Loyola), MA, PhD (N Car.)  
R.E. Brown, BSc (Victoria), MA, PhD (Dal)  
S. Bryson, BA (Guelph), PhD (McG)  
J.W. Clark, BA, MA (McG), PhD (Qu.)  
B. Earhard, BA, MA, PhD (Tor.)  
B.R. Moore, AB (Emory), PhD (Stan.)  
M. Ozier, BA, MA, PhD (Tor.)  
R.L. Rudolph, BA, MA (DePauw), PhD (N Car.)  
S. Shaw, BSc (London), PhD (St. Andrews)

## Assistant Professors

J.F. Connolly, BA (Holy Cross), MA (Sask), PhD (London)  
R. Croll, BSc (Tufts), PhD (McG)  
J. Enns, BA (Winnipeg), MA, PhD (Princeton)  
J. Fisk, BSc, MA, PhD (Western Ont.) *Adjunct*  
D.P. Phillips, BSc, PhD (Monash)  
M. Spetch, BA, MA, PhD (UBC)  
D. Treit, BA, MA, PhD (UBC)  
J.F. Werker, BA (Harv.), MA, PhD (UBC), *On leave*

## Senior Instructors

R.S. Hoffman, BSc (Col. Coll.), MA (Dal)  
L.E. White, BSc (Calgary), MS (Sask.), PhD (Cantab.)

**Research Associate**

A. Froehlich

**Postdoctoral Fellows**

C. Baker  
 C. Edwards  
 G. Eskes  
 K. Grasse  
 S. Kurumiya  
 R. Mistlberger  
 R. Ross  
 N. Swindale

**Admission Requirements**

Candidates must satisfy the general requirements for admission to the Faculty of Graduate Studies.

**MA Degree Program**

Students are expected to complete the MA program within 12 months from their admission.

All candidates for the MA degree in general experimental psychology take Statistics and Experimental Design (6000) and at least two other courses in the 6000 series.

All MA candidates are expected to gain a basic competence in computer programming, and competence in the use of Fortran is a prerequisite to admission to the class Statistics and Experimental Design.

A thesis is required.

Students whose background is inadequate will be required to complete appropriate undergraduate classes designated by the Department.

**PhD Degree Program**

For minimum time required to complete this program, see Section 2.6.

While the PhD thesis is the main focus of the program, the candidate in consultation with his thesis supervisor chooses a minor area of study from the classes offered by other departments in Dalhousie University.

Students are required to pass a preliminary examination at least one year before submission of the thesis. The form of this examination is optional and is conducted by an examination committee of between three and five faculty members.

Candidates are encouraged to enroll in graduate seminars selected from the 8000 series during each year of PhD study.

Research and preparation and oral defence of a dissertation are required.

**Classes**

Not all these classes are offered every year. Please consult the current timetable on registration to determine which classes are being offered.

5000 Research Assignment: staff.

6000 Statistics and Experimental Design: R.S. Rodger.

6020 Application of Experimental Clinical Procedures: K.E. Renner.

6040 Animal Learning: W.K. Honig.

6050 Perception: D.E. Mitchell, M. Cynader.

6070 Physiological Psychology: S. Nakajima.

6090 Biosocial Issues in Development: K. Bloom.

6100 Instrumentation and Computers in Psychology: D. Conrad, R. Hoffman.

6130 Cognitive Psychology: R. Klein.

6160 Comparative Psychology: R. Brown, J. Fentress.

6270 Comparative Neurobiology: I.A. Meinertzhagen, M.G. Yoon.

6370 Neuroscience Laboratory: M.G. Yoon.

8040 Learning: W.K. Honig, V.M. LoLordo.

8050 Selected Topics in Perception: D. Mitchell, M. Cynader.

8070 Selected Topics in Physiological Psychology: S. Nakajima.

8090 Biosocial Processes in Development: K. Bloom.

8100 Methodology in Psychology: R.S. Rodger.

8120 Clinical Methods and Issues: K.E. Renner.

8130 Human Learning/Information Processing: B. Earhard, R. Klein, J. Barresi.

8140 Learning Theory: staff.

8160 Ethology: R. Brown, J. Fentress.

9000 MA Thesis

9530 PhD Thesis

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# Public Administration, School of

(Tel. 424-3742)

**Director of School**

A. Paul Pross

**Professors**

K. Antoft, BA, MA (Dal)  
 Peter Aucoin, BA (SMU), MA (Dal), PhD (Qu.)  
 D.M. Cameron, BA (Qu.), MA, Phil M, PhD (Tor.)  
 A.P. Pross, BS, MA (Qu.), PhD (Tor.)

**Associate Professors**

H. Bakvis, BA (Qu.), MA (UBC), PhD (UBC)  
 M. Paul Brown, BA (MtA), MA (Dal), PhD (Tor.)  
 W.J. Coffey, AB (Dartmouth), MS, PhD (W Ont.)  
 D.H. Poel, BA (Calvin), MA (W Mich.), PhD (Iowa)



**Assistant Professor**

Barbara Jamieson, BA (UBC), MA, PhD (Tor.)

**Lecturers**

F.M. Cleland, BA, (UBC), MPI (Qu.)

Murray G.K. Davidson, B Comm (Tor.), MPA (Dal), CA

R.S. Gunn, B.Comm. (Dal), CA

J.D. Love, BA, MA (Tor.)

**Adjunct Professors**

J.E. Hodgetts, FRSC, BA, MA (Tor.), PhD (Chic.)

T.W. Kent, MA (Oxon.)

Students seeking further information or help in planning courses of study in the School of Public Administration should address themselves to:

Graduate Co-ordinator  
School of Public Administration  
1229 LeMarchant Street  
Halifax, Nova Scotia B3H 3P6  
(902-424-3742)

## The Programs

The graduate programs of the School have been designed to provide the professional education essential to a career in modern public service. They are offered to students who either are preparing for initial employment or are returning to university with work experience.

The programs are professional in that they equip students with both the administrative skills required in public sector management *and* an understanding of the organization, process, and activities of government. Each component is essential, and consequently required of all students. The professional requirements have been developed in consultation with senior officials of all levels of government (including graduates of the School).

Students entering the School will be expected to acquire an education as well as a profession, a matter which is properly of particular concern for a university-based program. Accordingly, admission requirements for the Diploma and the MPA are those of the Faculty of Graduate Studies, and its standards must be maintained throughout the duration of the program. The quantity and quality of work expected in individual classes will reflect the high scholarly standards expected of graduate education.

Taken together, these requirements provide the rationale for the uniquely professional academic preparation for public service upon which the programs of the School are predicated. It is expected that graduates will evince high standards of professional and academic competence, and expanded awareness of the public interest, and a personal appreciation of the ethical standards appropriate to a career in the service of the public.

The curriculum has been structured in order to encompass the essential components of financial, personnel and statistical techniques on the one hand, and economic, organizational and policy analysis on the other. The Diploma program and the first year of the Masters program require students to complete courses in these basic fields. The second year of the Masters program offers the student the opportunity to pursue further studies in one or more of these fields and to concentrate her or his program in light of career plans. The offerings of related programs and disciplines, such as economics, planning, business administration, health services administration, education, social work, law, and resource management, can be used by students as desired and necessary. The second year usually will also include a research project in the field of concentration.

## Applications Procedure

Application forms are available from the Admissions Office of Dalhousie University. Applications should be submitted as early as possible.

Application forms must be accompanied by the following:

transcripts of all previous work;

at least two letters of reference;

a statement of career interests and reasons for seeking admission to the School and Resume;

GMAT (see below);

TOEFL for Foreign Students (see below).

The application *must* be complete by no later than August 01.

Candidates are required to sit for the Graduate Management Admission Test (GMAT). This requirement may not be waived without explicit permission of the Admissions Committee. GMAT results will be considered with other information submitted by applicants, in deciding on eligibility for admission.

The Test may be taken at conveniently-located centres throughout North America and in many other parts of the world. In the case of North American candidates, applications for the test are accepted by the ETS in Princeton until approximately six weeks before test dates. For candidates in other countries, closing dates are eight weeks before test dates.

School of Public Administration GMAT Number is 0957.

Applicants for the test should use an order form obtainable from the Registrar's Office of the nearest University, Dalhousie University, or you may write to the address below to obtain an information bulletin and registration form for the GMAT. If the order form is lost or omitted from the materials you receive, you should write directly to:

Graduate Management Admission Test  
Educational Testing Service  
Box 966  
Princeton, N.J., 08540, U.S.A.

Every student is required to demonstrate at an early stage in his studies that he is proficient in writing reports and essays in English. Candidates from countries outside Canada whose mother tongue is not English will be required to take the Test of English as a Foreign Language as a requirement for admission. Further information may be obtained by writing:

Test of English as a Foreign Language  
Box 899  
Princeton, N.J., 08540, U.S.A.

**CANDIDATES ARE ADVISED TO TAKE THE TEST(S) AT THE EARLIEST POSSIBLE DATE.**

For foreign students it is strongly recommended that all documents (transcripts and references) be submitted prior to May 31.

Any applications received after this date will be considered on a first-come first-served basis because of limited class size. Applications received after August 01 cannot be guaranteed normal processing.

## Grading System and Good Standing

Under the regulations of the Faculty of Graduate Studies, MPA students are required to achieve a grade of B- or better in all classes taken. One C grade is permitted in any year if an overall B average is maintained for that year, but the C class must be repeated or replaced, and passed (i.e.

B- or better), depending on whether a required or elective class is involved. This special exception is available to full-time students only.

Students who do not meet these requirements may not continue in the program unless their application for readmission is approved by the Faculty of Graduate Studies.

For further information, contact the Administrative Secretary of the School.

## Part-time Study

The programs offered through the School are available to students on a part-time basis. A part-time student may enrol in up to two full classes (or equivalent) in any one year.

In order to ensure that graduate students benefit from a reasonable concentration of their studies, part-time programs leading to the DPA must be completed within four years, and part-time programs leading to the MPA must be completed within six years.

## Further Information

Prospective applicants who do not meet the academic admission requirements of a graduate program may wish to consider improving their qualification by means of a no-degree program in the Faculty of Arts and Science or the Certificate in Public Administration in the Faculty of Administrative Studies.

It should be emphasized that any such undertaking carries no assurance of subsequent admission to a graduate program.

## General Admission Requirements for DPA and MPA

Candidates must satisfy the general requirements for admission to the Faculty of Graduate Studies. Enrolment in the School is limited. In general successful applicants should have attained a good second class standing in their previous university work.

Admission is based on an assessment of:

professional experience and/or promise;

all previous academic work;

letters of reference;

GMAT;

TOEFL.

In certain circumstances the School may consider applications from individuals who do not satisfy the general requirements for admission to the Faculty of Graduate Studies. Individuals with a minimum of ten years work experience in administrative positions who either have completed a full year of university study, or possess a relevant professional certification or have completed a relevant correspondence program (such as the Institute of Public Affairs' Municipal Administration course) can be considered for a special one year undergraduate course of study leading to a CPA. Successful completion of the year with an average grade of B+, with no grade below B-, would constitute a basis for a recommendation from the School for admission to the Faculty of Graduate Studies. Please direct enquiries to the Graduate Co-ordinator of the School in regard to the above.

## The Diploma in Public Administration (DPA) Program

The Diploma in Public Administration is a one-year graduate program designed for public servants who hold a first degree, and for students wishing to obtain professional preparation for a career in public administration.

The DPA may also serve as a program qualifying students for subsequent admission to the MPA with advanced standing.

## Course Requirements

The DPA requires the successful completion of five credits:

- PA 5100A Government Structure and Organization
- PA 5110B Public Sector Management
- PA 5120 Policy Formulation
- PA 5130 Applied Economics
- PA 5140 Quantitative Methods
- PA 5150 Public Sector Finance and Accounting

When a student has a demonstrated competence in the area of a required class, an alternate class may be substituted if approved by the Graduate Co-ordinator.

## The Master of Public Administration (MPA) Degree Program

The MPA is a graduate program designed for individuals prepared to undertake advanced professional study. Individual programs will vary in content to reflect each student's background and interests, while at the same time recognizing the central principles and functions of public administration.

## Course Requirements

The MPA will require the successful completion of 10 credits, which must include: PA 5100A, 5110B, 5120, 5130, 5140, 5150 and 6000B. The remaining credits will be elective.

## Areas of Concentration

In the second year, students normally specialize in a concentrated program, consisting of three credits in the field of specialization and two electives, selected in consultation with the student's faculty advisor. Concentrations are currently available in four areas: Personnel Management, Financial Management, Municipal Management and Policy and Program Management.

## Advanced Standing

Advanced Standing of up to five credits (one year) may be granted to students admitted with an Honours BA, DPA, Masters, or other professional degree (MBA, MLS, MSW, LLB, etc.). This is the maximum that may be granted; the actual extent of advanced standing depends upon the program of studies in the previous degree and the intended area of concentration within the MPA. Students are advised to seek advanced standing when they apply for admission.

## Classes

School classes include:

5100A Government Structure and Organization: P. Aucoin.

5110B Public Sector Management: D. Love.

5120R Policy Formulation: P. Brown.

5130R Applied Economics: B. Jamieson.

5140R Quantitative Methods: H. Bakvis.

5150R Financial Management & Accounting: M. Davidson.

6000B Senior Seminar in Public Administration: staff.

6100A Financial Administration & Budgeting: M. Davidson.

6110A Government Information Systems and Auditing: R. Gunn.

6140A Applied Research for Public Management: W. Coffey.

6246A Policy Analysis: Jamieson/Pross.

6400A Local Government: D. Cameron.

6410B Municipal Management: P. Brown.

6420B Municipal Financial Administration: K. Antoft.

6500B Business & Government: Cleland/Davidson.

6520R Program Evaluation: D. Poel.

6530A Natural Resource Administration: P. Pross.

6540B Canadian Regional Development Policy: W. Coffey.

6600A Personnel Administration: D. Love.

6610B Compensation & Collective Bargaining: L. Currie.

6750A Intergovernmental Relations: H. Bakvis.

6760B Cases in Intergovernmental Relations: staff.

6800R Project: staff.

6850R Internship: P. Brown.

6900R Directed Reading: staff.

6910A Directed Reading: staff.

6920B Directed Reading: staff.

Not all classes are offered each year. Consult Department for current year offerings. In addition to the above, classes may be selected from other schools, departments, or faculties, subject to the approval of the Graduate Co-ordinator.

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# Recreation, Physical and Health Education

(Tel. 424-2152)

Director of School  
T.L. Maloney

## Professors

E.G. Belzer, Jr., BS (West Chester), MA (Maryland), PhD (Ill.)

A. Bonen, BA (Western), MS, PhD (Ill.)

L.E. Holt, BS, MS (Springfield), PhD (S Ill.)

J.C. Pooley, Teach. Cert. (Bede), Dip PE (Carnegie), MS, PhD (Wisconsin)

A.J. Young, BS (West Chester), MA, PhD (Maryland)

## Associate Professors

R.P. Beazley, BA, BEd (Acadia), BPE (McM), MPE (Dal), EdD (Tennessee)

J.F. McCabe, BPE, BA (NB), MS, EdD (Tenn.)

T.L. Maloney, BPE, BEd (Alta.), MA (West.), PhD (Alta.)

A. Richards, Dip PE (Carnegie Schl. PE, England), Teach. Cert. (Trent Park Coll.), MSc (Dal), EdD (Colo.)

## Assistant Professors

P.D. Campagna, BPHE (Windsor), BEd (Qu.), MEd (SUNY-Buffalo), PhD (Alta.)

G.C.B. Elder, Dip. P.E. adv. (St. Mary's, London), MEd (Georgia Southern College), PhD (McM)

R.F. Lyons, BA (Dal), MEd (Xavier), PhD (Ore.)

W.R. Mitic, BA (W Ont.), MHK (Windsor), EdD (SUNY-Buffalo)

C.A. Putnam, BPE (Man.), MS (Wash.), PhD (Iowa)

J.F. Singleton, BA (Waterloo), MS (Penn. St.), PhD (Maryland)

S.M. Shaw, BPE, MSc (Dal), PhD (Carl.)

L.J. Verabioff, BA, BPHE (Qu.), MS (Mich.), PhD (Ohio St.)

## Lecturer

D.P. McGuire, BA (Wright St.), MS (Cinn.)

The School of Recreation, Physical, and Health Education has ongoing research projects conducted in the areas of health and education, leisure studies (leisure and the family, disabled persons, gerontology, and sports history and sociology), and kinesiology (exercise physiology, motor behaviour, biomechanics).

## Admission Requirements

Candidates must satisfy the general requirements for admission to the Faculty of Graduate Studies.

## MSc Degree Program

One full academic session of resident study at Dalhousie University is a minimum requirement for the Master's degree.

Completion of the Master of Science degree is also possible through part-time study.

In this program students must complete all course work within a five-year period and all degree requirements within a six-year period following initial registration. Financial assistance is not available for students undertaking the degree on a part-time basis.

A thesis proposal must be made to the graduate faculty of the School. A thesis is required of all students for completion of the MSc Degree.

Five credits (30 units) of graduate credit are required for the MSc Degree.

## Ancillary Classes

Students may take a maximum of 6 credit hours of ancillary courses, above and beyond the required program of courses.

## Required Classes

### Health Education

HE 5501 Research Methods for Social Sciences: S.M. Shaw, ½ credit (3 units).

HE 9000R Thesis: 2 credits (12 units).

Total: 2 ½ credits (15 units).

### Leisure Studies

LST 5501 Research Methods for Social Sciences: S.M. Shaw, ½ credit (3 units).

LST 5503 Interdisciplinary Statistics for Health Professions: staff, ½ credit (3 units).

LST 5592 Interdisciplinary Basis of Leisure Science: J.C. Pooley, ½ credit (3 units).

LST 9000R Thesis: 2 credits (12 units).

Total: 3 ½ credits (21 units).

### Physical Education/Kinesiology

PE 5501 Research Methods for Natural Sciences: G.C.B. Elder, ½ credit (3 units).

PE 9000R Thesis: 2 credits (12 units).

Total: 3 ½ credits (15 units).

## Elective Classes

The remaining credits are elected by students from the following class offerings. (Each class is worth three (3) units of credit.) In addition, graduate classes from other departments at Dalhousie University may be used to fulfill degree requirements. In certain instances, undergraduate classes may count toward MSc requirements.

### Health Education

HE 5503 Interdisciplinary Statistics for Health Professions: staff.

HE 5506 Scientific Basis of Health Education: D.P. McGuire.

HE 5514 Status and Trends in Health Education: W.R. Mitic.

HE 5516 Seminars on Health-Related Theories: E.G. Belzer, Jr.

HE 5600-5699 Independent Studies: staff. Class numbers and titles assigned by School — open to independent completion of study.

### Leisure Studies

LST 5512 Lifestyles of Ill and Disabled Persons: R.F. Lyons.

LST 5550 Historical Analysis of Sport and Culture: A.J. Young.

LST 5560 Sociological and Cross Cultural Perspectives on Sport: J.C. Pooley.

LST 5561 Leisure, The Family and Gender Roles: S.M. Shaw.

LST 5562 New Perspectives on Youth: A. Richards.

LST 5563 Leisure Behavior in Older Adults: J.F. Singleton.

LST 5600-5699 Independent Studies: staff. Class numbers and titles assigned by School — open to independent completion of study.

### Physical Education/Kinesiology

PE 5503 Interdisciplinary Statistics for Health Professions: staff.

PE 5510 Cardiorespiratory Dynamics in Exercise: P.D. Campagna.

PE 5511 Regulation of Substrate Metabolism in Muscle: A. Bonen.

PE 5516 Neuromuscular Physiology: G.C.G. Elder.

PE 5520 Advanced Anatomy and Kinesiology: L.E. Holt.

PE 5521 Advanced Movement Analysis: L.D. Holt.

PE 5523 Biomechanics of Human Motion: C.A. Putnam.

PE 5524 Research Techniques in Biomechanics: C.A. Putnam.

PE 5525 Sport Science Seminar: L.E. Holt. (Not offered 1986-87.)

PE 5530 Motor Learning and Performance: J.F. McCabe.

PE 5570 Psychology of Sport and Physical Activity: J.F. McCabe.

PE 5572 Topics in Human Performance: Motor Control: J.F. McCabe.

PE 5580 Principles of Skill Acquisition: L.J. Verabioff.

PE 5600-5699 Independent Studies: staff. Class numbers and titles assigned by School — open to independent completion of study.

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# Social Work, The Maritime School of

(Tel. 424-3760)

Director of School  
F.C. Wien

### Professors

R.W. Carlson, BA, MSW (Penn.), PhD (Chic.)

R.A. Craig, BA (UNB), MSW (MtA)

J.E. Cummings, BA (Dal), MSW (St. FX), DSW (Tor.)

D.P. Kerans, BA (Loyola), MA (St. Louis), STL (Innsbruck), DRS (Strasbourg)

D. O'Brien, BComm, MSW (SMU), Adv. Dip. SW, DSW (Penn.)

#### Associate Professors

M.L. Courtney, BA (Dal), MSW (SMU)

G. Fitzgerald, BA (Dal), MSW (King's)

J. Gilroy, BA (Dal), MSW (King's), MA (Tor.)

D. Moore, Dip. Soc. Stud. (Lond.), BA, MA (Dal), PhD (Boston U)

R. Morris, BComm (Dal), MSW (McG)

R. O'Day, BA (UBC), MA, PhD (Mich.)

F.C. Wien, BA (Qu.), MA, PhD (Cornell)

D. Williams, AB (Chic.), MSW (Calif.)

#### Assistant Professors

J.B. Duplisea, BA, MSW (Mt. A)

J. Harbison, BA, BSS (Dublin), Grad. Dip. SW (Edinburgh)

E. MacDonald, BA (St. Dunstan's), BSW, MSW (Ottawa) (Resident Faculty Member, Charlottetown)

M.J. MacDonald, BA (UNB), MSW (Dal) (Resident Faculty Member, Sydney)

B.K. Richard, BA (Mt. A), MSW (Dal)

E. Ruiz, BA, MA (Boston)

A. Sexton, BA (St. Thomas), MSW (Dal)

R. Williams, BA (Acadia), MA (Tor.)

#### Lecturer

J. Pace, BSW (Dal), MSW (WLU)

#### Sessional Lecturers (1985/86)

J. Williams, BSc (Alberta), MSW (Dal), LLB (Dal)

E.A. Young, BSW, MSW (Tor.) (Resident Faculty Member, Saint John)

#### Field Instructors

Mona Bordage

Barbara Clark

Nona Jessame

Molly Ann Sewell

Paula Vickers

Gail Warriner

Barbara Williams

## Master of Social Work (MSW)

The one-year MSW program is intended to advance knowledge about the resolution of social problems in the Maritime region, and especially to aid in increasing the effectiveness of regional social services. It is intended to offer to professional social workers, and to other persons with a good background for addressing social welfare problems, an opportunity to study in depth subject matter of interest to the student, within one of two specializations.

Specialization topics are community practice, and individual and family practice. The latter is subdivided into concentrations dealing with family and child welfare on the one hand, and social work in physical and mental health settings on the other.

## Admission Requirements

Candidates must hold a Bachelor of Social Work degree from a university of recognized standing, or the equivalent. Candidates with some background in social work learning who do not possess a BSW degree may be admitted to a two year program or to a qualifying year, depending on qualifications. Students registered in a qualifying year

must reapply for admission. Relevant work experience is an important consideration for admission to both specializations.

Applicants must demonstrate a sound plan of study. The plan will indicate the specialization chosen, classes to be taken in other departments of the university, and the applicant's preference for a specific Master's project or thesis. Persons who meet the minimum admissions requirements can obtain help in developing their study plans from faculty members of the School. The deadline for receiving applications to the program is January 31. The study proposal and supporting documentation must reach the Admissions Office by March 1st. Further information may be obtained from the Coordinator of Graduate Program, Maritime School of Social Work of Dalhousie University, 6414 Coburg Road, Halifax, N.S., B3H 3J5.

The program can be taken in the form of one calendar year of full-time study or three calendar years of part-time study.

## The Program

### Individual and Family Practice Specialization: Required Courses

MSW 6335R Theory and Methods of Intervention: 1 credit.

MSW 6340R Social Work in Family and Child Welfare: 1 ½ credits, for students of this concentration.

or

MSW 6345R Social Work in Physical and Mental Health: 1 ½ credits, for students in this concentration.

MSW 6220R Master's Project in Individual and Family Practice: 1 credit, open to independent completion of study.

or

MSW 6230R Thesis in Individual and Family Practice: 1 ½ credits, open to independent completion of study.

### Community Practice: Required Courses

MSW 6355R Theories of Community and Community Level Analysis: 1 credit.

MSW 6360R The Theory and Practice of Community Work: 1 credit.

MSW 6220R Master's Project in Community Practice: 1 ½ credits, open to independent completion of study.

or

MSW 6230R Thesis in Community Practice: 1 ½ credits, open to independent completion of study.

## Electives

In addition to the 3 ½ credits specified above for each specialization, each student is required to complete 1 ½ credits of electives. At least one half-credit elective must be taken outside the School of Social Work. The School currently offers two electives:

MSW 6350A/B Legal Issues in Social Work

MSW 6365A/B Community Socio-Economic Development

### Other

Students are also required to take a non-credit course dealing with contemporary issues in social work. This is:

MSW 5990 Colloquium: (Non-credit).

Students should note that the MSW program includes a field experience component in appropriate agencies for 300-500 hours.

# Sociology and Social Anthropology

(Tel. 424-6593)

## Chairperson of Department

Victor Thiessen

## Professors

J.H. Barkow, AB (Brooklyn), AM, PhD (Chic.)  
D.H. Clairmont, BA, MA (McM), PhD (Wash. U)  
R.C. Kaill, BA (Dal), BD, MA (Tor.), PhD (McG)  
L. Kasdan, MA, PhD (Chic.)  
J.J. Mangalam, PhD (Corn.)  
W.N. Stephens, AB (Colo.), MA (Bost.), EdD (Harv.)

## Associate Professors

R. Apostle, BA (Simon Fraser), MA, PhD (U of Calif. Berkeley), *Graduate Coordinator*  
P.M. Butler, BA, MA, PhD (U of Tor.)  
D.H. Elliott, BA (Yale), PhD (Pitt.)  
J.L. Elliott, BA (Wells), MA (Kan.), PhD (Pitt.)  
H.V. Gamberg, BA (Brandeis), AM, PhD (Princ.)  
V.P. Miller, BA (U. of Calif.-Berkeley), MA, PhD (U of Calif.-Davis)  
J.G. Morgan, BA (Nott.), MA (McM), DPhil (Oxon.)  
J.D. Stolzman, BA (Ore.), MS (Fla.), PhD (Ore.)  
V. Thiessen, BA (Man.), MA, PhD (Wis.)

## Assistant Professors

M. Binkley, BA, MA, PhD (Tor.)  
P.G. Clark, BA, MA (McM), PhD (UBC)  
N.W. Jabbra, BA (U of Calif.-Santa Barbara), MA (Indiana), PhD (Catholic)  
S. Pollock, BN (Manitoba), BA, PhD (Warwick)

## Research Associates

B. Keddy, BScN (MSVU), MA (Dal)  
B. Raymond, MA (U of Calif.-Berkeley), PhD (Chic.)  
S. Shaw, BPE, MSc (Dal), PhD (Carleton)

## Honorary Adjunct Professors

J. Benoit, BA, MA (Univ. of Guelph), PhD (Johns Hopkins)  
A. Davis, BA (SMU), MA (Manitoba), PhD (Toronto)  
J. McMullan, BA, MA (Sir George Williams Univ.), PhD (London School of Economics)

The Department of Sociology and Social Anthropology offers a program of both full-time and part-time study leading to the degree of Master of Arts in Sociology.

## Admission Requirements

All candidates must satisfy the general requirements for admission to the Faculty of Graduate Studies. Candidates will normally be expected to hold a four-year degree in sociology with at least an upper second class (B+) standing. It is expected that a candidate's undergraduate work will have included classes in sociological theory, research methods, and statistics. Promising applicants who fail to meet these requirements may be admitted to a qualifying year which, if successfully completed, would permit subsequent enrolment in the MA program.

## MA Degree Program

For the minimum time required to complete this program, see Section 2.6. The full-time program is normally of one year's duration. Part-time students are expected to complete all requirements within five years of their initial enrolment in the program.

The normal program is made up of five full-year credits. A thesis, worth two credits, is required as are the following classes: Sociology 5050A (½ credit); Sociology 5060B (½ credit); and Sociology 5200 (one credit). An elective class approved by the Graduate Education Committee constitutes the final credit.

An examination in the student's chosen area of specialization as well as defence of a thesis proposal are required.

## Classes

Many of the classes listed below are not offered every year. Please consult the current timetable on registration to determine which classes are to be offered in 1986-87.

5010A Sociology of Work Roles

5020B Comparative Economic Organizations

5030 Social Problems and Social Policy

5050A Advanced Theory

5060B Advanced Methods

5060A Modernization and Development

5070 Human Nature and Anthropology

5090 Population and Society

5120 Social Conflict

5130 Sociology of Health & Illness

5140B Sociology of Mental Disorders

5150 Sociology of Education

5160 Dawn of Civilization

5180 Issues in the Study of Society

5190 Social Movements

5200 Graduate Seminar

5210 Peasant Society and Culture

5220B Coastal Communities

5240 Criminology

5250 Sociology of Science and Ideas

5260 Development of Sociology as a Discipline

5270 Sociology of Careers

5280 Juvenile Delinquency

5290 Penology and Corrections

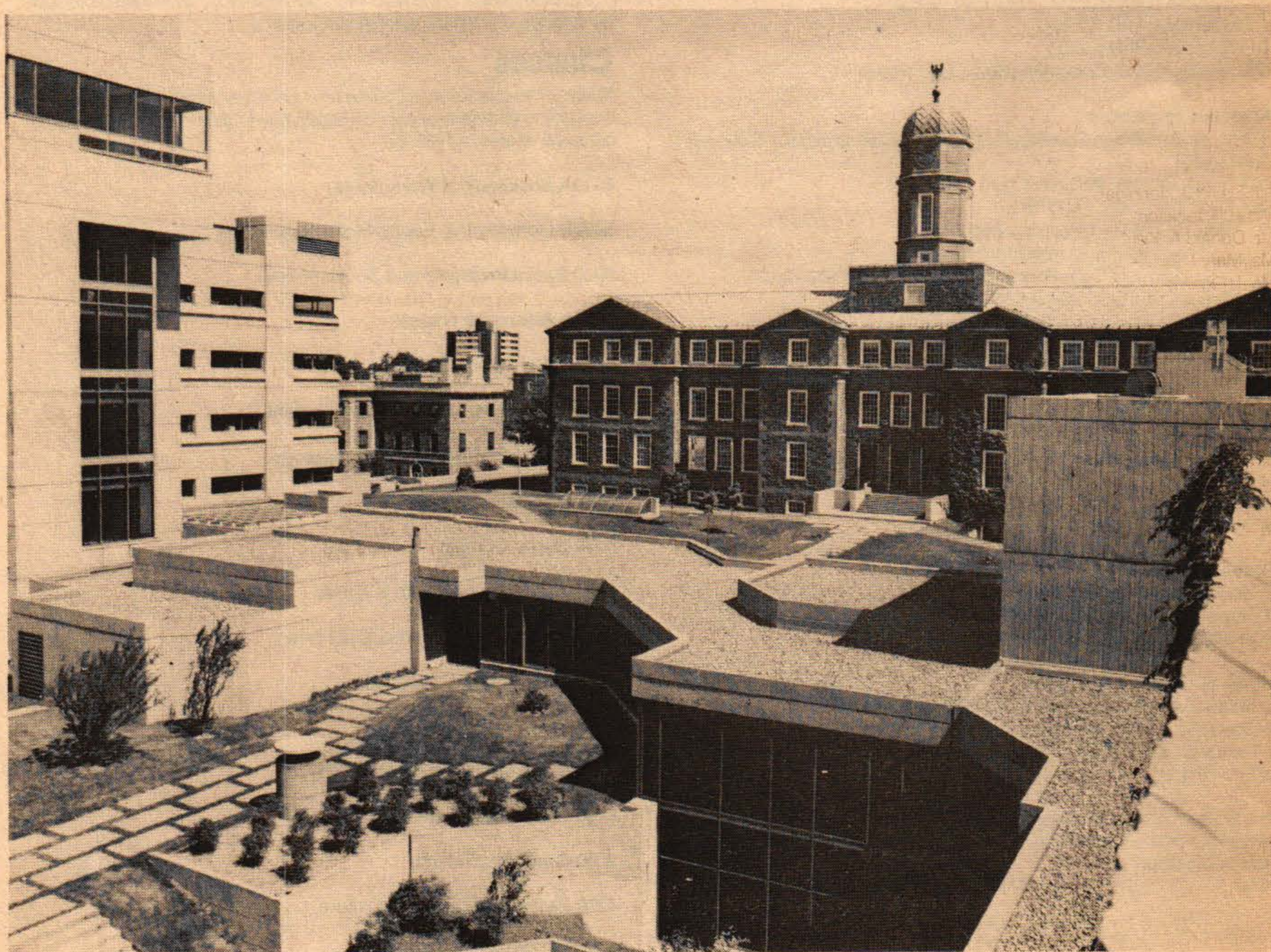
5300 Cross-cultural Study of Socialization

5310 Time and Society

5510A Graduate Readings in Sociology

5520B Graduate Readings in Sociology

9000 MA Thesis



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