

**GRADUATE
STUDIES
CALENDAR
1990/91**

DALHOUSIE
UNIVERSITY

DALHOUSIE

U N I V E R S I T Y

GRADUATE STUDIES

1990/91
CALENDAR



IMPORTANT NOTICES

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

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

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

Inquiries regarding Academic Matters should be directed to:

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

**PLEASE NOTE THAT THE TELEPHONE EXCHANGE 494 TAKES EFFECT
APRIL 14, 1990; PRIOR TO THAT DATE THE 424 EXCHANGE WILL BE IN
EFFECT.**

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4 Application Dates

Final Dates for Receipt of Applications for Admission

Regular Session

College of Arts & Science

Foreign Students (except USA)	May 1
BEd Program	June 1
Students entering from Canada or US	July 1

Health Professions

BSc (Nursing), Outpost and Community Health Nursing, Occupational Therapy, Physiotherapy, Pharmacy, Social Work	March 1
BSc (Nursing) for Post RN ²	June 1
Recreation, Physical & Health Education	July 1

Management

Foreign Students (except USA)	May 1
Students entering from Canada or US	July 1

Dentistry	December 1
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Dental Hygiene	February 1
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Medicine

MD	November 15
Post-Graduate	December 1

Law ¹	March 1
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Graduate Studies ³ (except as below)	August 1
Non-Canadian Students (except as below)	June 1
Marine Affairs	January 1
Human Communication Disorders and Social Work	March 1
Health Services Administration	May 1
Nursing	June 1
Oral and Maxillofacial Surgery ³	July 1

Second Term

BA, BSc ⁴ and BCom programs only	November 15
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¹ Application date for class entering in January is October 1.

² Late applications may be considered up to August 1.

³ Of year preceeding commencement of program.

⁴ Part-time and transfer students only.

⁵ All supporting documentation must be submitted by the appropriate deadline.

Almanac 1990-91

Classes offered at Dalhousie have one of the letters "A", "B", "C" or "R" following the number. "A" classes are given in the first term of any session, "B" classes are given in the second term of any session, and "R" and "C" classes are given throughout the entire session ("R" classes carry one full credit or more, "C" classes less than one full credit).

1990

May

- 9 Last day to register, Spring Session.
- 14 Spring session begins.
- 18 Last day to add "A", "C", and "R" classes, Spring session.
- 18-26 Spring Convocations.
- 21 Victoria Day - University closed.
- 23 Last day to withdraw without academic penalty from "A" classes, Spring session.

June

- 6 Last day to withdraw without academic penalty from "R" and "C" classes, Spring session.
- 13 Last day to add "B" classes, Spring session.
- 18 Last day to withdraw from "B" classes without academic penalty, Spring session.
- 27 Last day to register, Summer session.
- 29 Spring session ends.

July

- 1 Canada Day.
- 2 University Holiday - University closed.
- 3 Summer session begins.
- 9 Last day to add "A", "R" and "C" classes, Summer session.
- 12 Last day to withdraw without academic penalty from "A" classes, Summer session.

- 25 Last day to withdraw without academic penalty from "R" and "C" classes, Summer session.

August

- 1 Last day to add "B" classes, Summer session.
- 3 Last day for those expecting PhD degrees in October to submit unbound theses to departments.
- 6 Halifax and Dartmouth Natal Day - University closed.
- 7 Last day to withdraw from "B" classes without academic penalty, Summer session.
- 17 Last day of classes, Summer session.
- 28 First year MBA orientation begins.
- 31 Last day for those expecting Masters degrees in October to submit unbound theses to departments.

September

- 3 Labour Day - University closed.
- 4 Registration ends in Law and Library and Information Studies.

Registration ends and classes begin in MBA.

Orientation begins, Human Communication Disorders (first year).
- 5 Classes begin in Library and Information Studies and Law.
- 7 Last day to register, Regular session.
- 10 Classes begin unless otherwise specified, Regular session.
- 14 Last day for those expecting to receive graduate degrees in October to submit approved unbound copies of theses to Faculty of Graduate Studies Office.
- 24 Last day to add "A", "C", and "R" classes.

Last day to register with late fee.

6 Almanac

October

- 8 Thanksgiving Day - University closed.
- 20 Fall Convocation.
- 22 Last day to withdraw from "A", "R" and "C" classes without academic penalty.

November

- 11 Remembrance Day.
- 12 University holiday - University closed.
- 13 Last day for those expecting PhD degrees by approval of Senate in February to submit unbound theses to departments.
- 30 Last day to change status (PT to FT or FT to PT), graduate students.

December

- 6 Last day of classes.
- 7 Last day of classes, School of Library and Information Studies.
- 10 Examinations begin.
- 14 Last day for those expecting Masters degrees by approval of Senate in February to submit unbound theses to departments.
- 18 Examinations end.

1991

January

- 1 New Year's Day.
- 7 Classes resume, Regular session.

Last day for those expecting to receive graduate degrees by approval of Senate in February to submit approved unbound copies of theses to Faculty of Graduate Studies office.

- 21 Last day to add "B" classes.

February

- 1 Munro Day - University closed.
- 15 Last date to withdraw from "B" classes without academic penalty.
- 18 Study break begins.
- 20 Last day for those expecting PhD degrees in May to submit unbound theses to departments.
- 25 Classes resume.

March

- 25 Last day for those expecting Masters degrees in May to submit unbound theses to departments.
- 29 Good Friday - University closed.

April

- 12 Last day of classes, Regular session.
- 15 Last day for those expecting to receive graduate degrees in May to submit approved unbound copies of theses to Faculty of Graduate Studies Office.
- 17 Examinations begin, Regular session.

May

- 1 Examinations end, Regular session.

Definitions

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

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

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

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

Corequisite: Requirement which must be fulfilled prior to or concurrently with the class being considered.

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

Credit: A unit by which University class work is measured. A full year class is normally worth one credit.

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

Full-time Undergraduate 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.

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

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

Part-time Undergraduate 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.

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

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

Undergraduate: Students who are candidates for an undergraduate degree, diploma or certificate.

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

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

Academic sessions

Regular session:	September - April
First term:	September - December
Second term:	January - April
Spring session:	May - June
Summer session:	July - August

Dalhousie University

For over 125 years, Dalhousie University has played a crucial role in Nova Scotian higher education. Building upon a strong undergraduate base, the University has developed internationally recognized programs of graduate and professional studies. The scope of its research is far-reaching, as is its public and community service. The range of the University's programs, and in particular the obligations it has assumed for professional and graduate education, give it a unique role in higher education in Nova Scotia and in the Maritime region.

Dalhousie's enrolment stands at over 11,000 students. To accommodate them, Dalhousie occupies more than 60 acres in a residential area of Halifax. University facilities include buildings for teaching and research, libraries, residential housing for students, a Student Union Building, an Arts Centre for music, theatre, and an art gallery and facilities for physical recreation. The Nova Scotia Archive building, the Atlantic Regional Laboratory of the National Research Council, major provincial hospitals, and the Dr. D.J. MacKenzie Laboratories are located close to the University. Dalhousie benefits from a variety of arrangements for teaching and research: collaboration with hospitals and federal and provincial research laboratories.

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

Dalhousie University is a non-denominational co-educational university. Founded in 1818, the University is a member of the Association of Universities and Colleges of Canada, the Atlantic Association of Universities, and the Association of Commonwealth Universities.

Executive and Administrative Officers**President and Vice-Chancellor**

Howard C. Clark, BSc, MSc, PhD, ScD, FRSC

Vice-Presidents

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Student Services: Eric A. McKee, BA, MA

Associate Vice-President

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Assistant Vice-President

Development and Alumni Affairs: Winfield F. Hackett, BA, BEd, LLD

Deans of Faculties

Arts and Social Sciences: Rowland J. Smith, BA, MA, PhD

Dentistry: Kenneth Zakariassen, BA, DDS, MS, PhD

Graduate Studies: Kenneth T. Lefkewitz, BSc, PhD, FCIC

Health Professions: Ronald deBurger, BA, CPH, CPHI (C)

Law: Innis Christie, BA, LLB, LLM

Management: James D. McNiven, BA, MA, PhD

Medicine: T.J. (Jock) Murray, MD, FRCP(C)

Science: Donald D. Betts, MSc, PhD, FRSC

Henson College of Public Affairs and Continuing Education

Dean: J. Douglas Myers, BA, BEd, MA, PhD

College of Arts and Science

Provost: Rowland J. Smith, BA, MA, PhD

Administrative Officers

University Secretary and Legal Counsel: Brian C. Crocker, QC, BA, LLB

University Librarian: William F. Birdsall, BA, MA, PhD

University Registrar: Gudrun E.L. Curri, MA
Executive Director, Computer and Information Services: H.S. Peter Jones, BSc, MSc, FBICS, FIMA

Executive Director, Instructional Development and Technology: W. Alan Wright, BA, MA, PhD

Director of Alumni Affairs: Elizabeth Flinn, BSc

Director of Arts Centre: Robert C. Reinholdt

Director, Athletics and Recreational Services: F.A. (Tony) Martin, BSc, MA

Director, Counselling and Psychological Services: Judith Hayashi, BA, MA

Director, Financial Services: Mike Wright

Director, Health Services: Rosemary Gill, MD

Director of Housing and Conferences: Heather Sutherland, BSc, MEd

Director, Office of Institutional Planning and Analysis: Brian Christie, BSc, MA

Director, Personnel Services: Michael J. Roughneen, CPIR, BA, MSc, FIPM
 Director, Physical Plant and Planning: William Lord, BAsC, PENG
 Director, Public Relations: Marilyn MacDonald, BA, MA
 Coordinator, Chaplaincy: Grace Caines-Corkum, BA, MDiv
 International Student Advisor: Lynn Atwell, BSc, MSc

Board of Governors

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

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

Chancellor

H. Reuben Cohen, QC, BA, LLB, LLD

Chancellor Emeritus

Lady Beaverbrook, LLD

President and Vice-Chancellor

Howard C. Clark, BSc, MSc, PhD, ScD

Board of Governors

Mr. David J. Almon
 Dr. D. Wayne Bell
 Mr. Barrie Black
 Dr. Mary R. Brooks
 Mr. Aubrey Browne
 Dr. Mona L. Campbell
 Mr. George T.H. Cooper
 Mr. James S. Cowan
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 Mr. Stephen Davis
 Mr. Louis Deveau
 Mr. Fred J. Dickson
 Mr. H. Lawrence Doane
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 Dr. Albro D. MacKeen
 Mr. E. Nell McKelvey
 The Hon. Jacqueline Matheson
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 Mrs. Ruth Pulsifer
 Dr. Cedric E. Ritchie
 Dr. Judith A. Ritchie
 Mr. W. Struan Robertson, Chairperson
 Mr. David Shannon
 Mr. Allan C. Shaw, Honorary Treasurer
 The Hon. Robert L. Stanfield
 Mr. George C. Thompson
 Ms. Maxine N. Tynes
 Dr. Thomas C. Vinci
 His Worship Ronald Wallace, Mayor of Halifax
 Miss Barbara Walker
 Mrs. Peggy Weld, Vice-Chairperson

Secretary

Elizabeth A. Christian

Observer for Faculty Association

Dr. David A. Tindall

Senate

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.

Subject to the general approval of the Senate, eight 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.

10 Academic Programmes

Academic Degrees, Diplomas and Certificates

College of Arts and Science

Bachelor of Arts

- Major 3 years, Advanced Major 4 years, Honours 4 years

Bachelor of Science

- Major 3 years, Advanced Major 4 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

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 (Kinesiology)

- 4 years

Bachelor of Science (Nursing)

- 4 years

Bachelor of Science (Nursing) with previous RN

- 3 years

Bachelor of Nursing (with previous RN)

- 3 years

Diploma in Outpost and Community Health

Nursing

- BN, 9 months; RN 15 months

Bachelor of Science in Pharmacy

- 4 years

Residency Program Pharmacy (post BSc Pharm)

- 1 year

Bachelor of Science (Physiotherapy)

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

Certificate in Community Health

Faculty of Dentistry

Doctor of Dental Surgery

- 4 years

Postgraduate Certificate in Periodontics

- 2 years

Diploma in Dental Hygiene

- 2 years Dental Hygiene following one year of Arts and Science

Faculty of Law

Bachelor of Laws

- 3 years

Bachelor of Laws with Master of Business

Administration

- 4 years

Faculty of Medicine

Bachelor of Science (Medical)

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, Computing Science, Economics, Education, English, French, German, Health Education, History, Leisure Studies, Mathematics, Philosophy, Political Science, Psychology, and Sociology and Social Anthropology

Master of Science

- 1 or 2 years with thesis in: Anatomy, Biochemistry, Biology, Chemistry, Computing Science, Geology, Human Communication Disorders (Audiology or Speech Pathology)(3 years), Kinesiology, Mathematics, Microbiology, Oceanography, Oral and Maxillofacial Surgery (4 years), Pathology, Pharmacology, Pharmacy, Physics, Physiology and Biophysics, Psychology, and Statistics

Doctor of Philosophy

- 2 or 3 years, with thesis in: Anatomy, Biochemistry, Biology, Chemistry, Classics, Economics, Education, English, French, Geology, History, Interdisciplinary Studies, Mathematics, Microbiology, Oceanography, Pharmacology, Pharmacy, Philosophy, Physics, Physiology and Biophysics, Political Science, Psychology, and Statistics

Doctor in the Science of Law

- 1 year, with thesis

- Master of Arts in Teaching (French)
 - 2 years
- Master of Business Administration
 - 2 years
- Master of Business Administration with Bachelor of Laws
 - 4 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 and Information Studies
 - 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 Aquaculture
 - 1 year
- Diploma in Marine Affairs
 - 1 year
- Diploma in Public Administration
 - 1 year

Special Institutes

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

Atlantic Institute of Biotechnology
 Executive Director: W.E. MacLennan, BScA
 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 in the processes of commercialization and the management of research leading directly to commercialization and sourcing of technological information for competitive improvement. The Institute is an intermediary agency for the Canadian Patent Office and offers a broad range of patenting services and advice.

Atlantic Institute of Criminology
 Director: R. C. Knull, 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 are available.

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.

Atlantic Region Magnetic Resonance Centre

Director: J.C.T. Kwak, BSc, MSc, PhD
 Manager: D.L. Hooper, BSc, 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 and a Bruker MSL 200 NMR for solid state studies.

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

12 Special Institutes

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 fields of mental retardation and human genetics. It also provides education in these fields to undergraduate and graduate students and the general public. Special tests and consultative services for the prevention and treatment of diseases causing 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 Dalhousie Medical Research Foundation, the governments of the three Maritime provinces, and by private donations.

Centre for African Studies

Director: J.E. Flint, MA, PhD

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

Centre for Foreign Policy Studies

Director: D. W. Middlemiss, BA, MA, 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 Canadian, African, Soviet, 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.

Centre for International Business Studies

Director: P.J. Rosson, DipMS, MA, 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.

Centre for Marine Geology

Director: Paul T. Robinson, BSc, PhD

The Centre for Marine Geology was founded in 1983 to promote the interdisciplinary study of the continental margins and the sea floor. The Centre draws on the faculty and resources of the Departments of 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.

Lester Pearson Institute for International Development

Executive Director: A. Tillet, BA, MA

The Pearson Institute was founded in 1985 to promote Dalhousie's involvement in international development activities. In mid-1987, the Institute was merged with the Centre for Development Projects and, at the same time, was given responsibility for oversight of all externally financed development programs and projects at Dalhousie. In addition to its administrative functions in the university, the major activities of the Institute include development education activities for the community, a lecture and seminar series, conferences, research, and input to public policy on Canada's role in international development. The Institute does not participate directly in academic degree programs but does seek to advance such programs in the field of international development and hosts the Lester B. Pearson University Chair in Development Studies. The Institute may directly undertake non-degree training activities and operate and manage international development projects.

**Oceans Institute of Canada/Institut
canadien des océans**

Executive Director: Edgar Gold, BA, LLB, PhD,
ACI Arb, MCIT, FNI, MRIN

Associate Director: Cynthia Lamson, BA, MS,
MA, MES

The Oceans Institute of Canada/Institut canadien des océans is a federally incorporated, not-for-profit organization. The Institute, formerly the International Institute for Transportation and Ocean Policy Studies (ITOPS), represents the amalgamation of two university-based centres devoted to ocean and marine studies, the Dalhousie Oceans Studies Programme (DOSP) and the Canadian Marine Transportation Centre (CMTC).

While the Oceans Institute is independent, it maintains an affiliation with Dalhousie University, and works cooperatively with several schools and institutes including the Law School, School for Resource and Environmental Studies, the School of Business Administration, the Marine Affairs Programme, and the Centre for Foreign Policy Studies.

The Institute is strategically located in Halifax, the centre of oceans excellence in Canada but the network of Associates from all regions of the country and around the globe make the Institute a truly national and international organization.

Trace Analysis Research Centre

Director: L. Ramaley, BA, MA, PhD

With the assistance of a grant from the National Research Council, the Centre was established in 1971 to train analytical chemists and, through research, to contribute to the advancement of analytical chemistry. A major facility of the Centre is a low-power nuclear reactor (SLOWPOKE) which is available to researchers within Dalhousie and elsewhere.

Continuing Studies

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

Note: For general information, particularly with regard to credit studies and degree programs, students may call the Centre for Continuing Studies, 494-2375.

**Henson College offers Adult and Part-time
Students:**

- assistance in planning credit and degree programs
- information about evening and summer classes
- non-credit, general interest classes
- training for managers in the private sector and for municipal administrators
- community outreach
- distance education courses in business
- and much more ...

The creation of Henson College signals Dalhousie's commitment to make itself more accessible to those who have special educational needs: those who can study only on a part-time basis; those who cannot attend classes during the working day; those who are returning to study after an absence from formal education; those seeking to improve skills and qualifications through credit, non-credit or special programs.

Part-time and adult students are encouraged to contact Henson College in order to take advantage of the services which we can offer. In addition to pre-admission counselling on an individual basis, the College sponsors the University Exploration program and a "Returning to Learning" orientation each September, in cooperation with Counselling Services. The Centre for Continuing Studies offers advice to those with special needs and our hours have been extended to assist those who work during the day. A variety of brochures are available, describing summer school and evening credit classes, non-credit and general interest courses, and all of the other continuing education offerings of Henson College.

Henson College is located at the corner of University Avenue and Seymour Street. The main telephone number is 494-2526.

Officers

Dean, Douglas Myera, BA, BEd, MA (Toronto),
PhD (Edinburgh), Professor of Education

Advanced Management Centre

Director, Greg Trask, BComm (St. Mary's), MBA
(Dal)

Associate Director, Ann O'Neill, BCom, MBA
(Dal)

14 Continuing Studies/Transition Year Programme

Centre for Continuing Studies

Director, Stephen Frick, BA (Toronto), PhD
(Cornell)

Associate Director, Lloyd Fraser, BA, BEd (Mt.
Allison), MEd (Dal)

Community Development and Outreach

Director, Mary Morrissey, BA (Western Ont.),
MSW (Dal)

Municipal Administration Programme

Director, Jack Novack, BComm, MPA (Dal)
Associate Director, Roger MacMillan, BA, MPA
(Dal)

Academic Credit Programmes

Part-time students are admitted to many of Dalhousie's credit programmes, either to work toward a degree or simply to take individual classes. Admission requirements and regulations generally are the same for all students, although special provision is made for the admission of mature persons through the University Exploration programme. For information on admission and registration procedures, degree requirements, fees, etc. see the entries elsewhere in this Calendar. For regulations concerning graduate study, consult the appropriate section of this Calendar.

Scholarships and Financial Aid

Certain awards and scholarships are available for part-time students who qualify.

Non-Credit Courses

A wide variety of non-credit courses is available in such areas as computers, language programs, (Mini-Immersion in French, plus a variety of self-instructional programs), the arts, law, health, social issues, career development and career change. Call the Centre for Continuing Studies at 494-2375.

Distance Education Courses

The Advanced Management Centre, in cooperation with Dalhousie's School of Business Administration, has developed a series of credit and non-credit distance education courses in over 15 areas of business administration: accounting, business law, marketing management, finance, plus many others. Call the Advanced Management Centre at 494-2410 or 494-2526.

Henson College, in cooperation with Dalhousie's School of Public Administration offers a series of credit courses by distance education leading to a certificate in Public administration for additional information call 494-8885 or 494-2526.

Transition Year Programme

In 1982, the Transition Year Programme became a department in the Faculty of Arts and Science. In 1988, it became an independent department. It is a special one-year programme designed for Black and Native students.

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

The Programme's staff are drawn from the Dalhousie University Community as well as the Nova Scotian Black and Native Communities. Guest lecturers come from all parts of the world.

Black, non-status Indian and Metis students accepted into the Programme are eligible for comprehensive bursaries during their transition year. If they successfully complete this qualifying year, they become eligible for continued partial support as long as they remain in good academic standing and progress towards a first degree.

Status Indian students attending the Programme are fully funded through the Department of Indian Affairs' "University and College Entrance Preparation Program", or the Mainland Confederacy, or from their individual Band Councils.

Although enrollment is limited to ensure that each student receives considerable personal attention, highly motivated Native and Black students of all ages and educational backgrounds are encouraged to apply. The TYP welcomes applications from student who did not complete high school or the courses required for university entrance, students who completed a general or mixed high school program and those who, although they may have received low grades in any type of program, can demonstrate intellectual potential in other ways.

The Programme has no absolute entrance requirements. Admission criteria are flexible, and the Admissions Committee considers each case comprehensively on its own merits. The candidate's overall maturity and seriousness of purpose are vitally important.

For further information or application forms, please contact:

Director, Transition Year Programme
Dalhousie University
Halifax, N.S. B3H 3J5
(902) 494-3730

Deadline for receipt of applications for the following September: May 1st.

The President's Leadership Class

The President's Leadership Class is an innovation in learning at Dalhousie University through which a select number of students study the concept of service to society and combine service in a practical way with academic learning and research.

Dalhousie has a long tradition of graduating students who have become leaders in the public life of their country. Building on that tradition, the President's Leadership Class now offers students the chance to acquire the practical skills needed to translate ideals into realities in their own communities and the world.

It is a program for students who are challenged by the idea of pushing beyond the conventional barriers of learning to become tomorrow's skilled problem solvers, innovators and leaders.

Ten students will be selected for the President's Leadership Class each year. The President's Leadership Class permits students to pursue the degree of their choice. Each student will need the academic ability, enthusiasm and energy to be involved in a wide range of service experiences and the commitment to spend five years getting her/his degree. The fourth year is spent overseas in a developing country.

This program has been designed to provide a compelling demonstration that study and service can exist together in a university program. Both the quality of the learning and the community service is enhanced. In future there may be other opportunities for more students to become involved in study/service experiences.

Further information and application forms are available from:

The Coordinator
President's Leadership Class
Dalhousie University
6136 University Avenue
Halifax, N.S. B3H 4J2
(902) 494-1315

Resources and Services

Advisory Committee on Sexual Harassment

Dalhousie University is committed to an environment free of sexual harassment. A policy and procedures exist to deal with complaints of sexual harassment at Dalhousie. If a student feels she or he may be involved in a situation of sexual harassment, or if a student is concerned about such a situation, the Sexual Harassment Advisory Committee can be consulted, confidentially, through the Sexual Harassment phone line, 422-0884. The Student Counselling service can also provide advice.

Alumni Association

The Alumni Association is composed of over 56,000 former students.

The Association coordinates a number of programs including reunions, branch meetings, sports events, information lectures, a tutoring service, a Student Leadership Conference, Scholarships and Bursaries, and the Alumni Award for Teaching Excellence and the Outstanding Alumnus Award. The Association publishes the Dalhousie Alumni Magazine which is sent to all alumni and friends.

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

Athletics

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

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.

Canada Employment Centre on Campus

The main function of the Employment Centre is to aid Dalhousie students during the academic year in their efforts to obtain permanent, summer, or part-time employment. It is located on the fourth floor of the Student Union Building, and operates Monday through Friday from 8:00 am to 4:30 pm (telephone 494-3537).

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

Interviews for graduating students are arranged with over 80 employers who visit Dalhousie each year (mid-October to mid-November are usually the busiest months).

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

Students are encouraged to visit the Employment Centre on a weekly basis throughout the school year for any type of employment assistance.

Chaplaincy at Dalhousie

The University provides facilities for chaplains appointed by various churches. There are five chaplains at Dalhousie, representing the Anglican, Baptist, Roman Catholic, Lutheran, and United Church traditions. In addition, contact ministers are designated by the Jewish, 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, telephone 494-2287. Office hours are Monday to Friday 9 - 4. Appointments can be made for other convenient times. The chaplains are available at any time for emergencies. Outside office hours, chaplains may be reached by calling the SUB Enquiry Desk 494-2140.

Counselling and Psychological Services

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. Interest testing for those individuals who have been out of school for a period of time is available on a fee for service basis.

The Counselling and Psychological Services offices and its Frank G. Lawson Career Information Centre are located on the 4th Floor of the Student Union Building. Inquire or make appointments by dropping in or calling 494-2081.

Dalhousie Arts Centre

The region's major performing arts theatre and the highly regarded Dalhousie Art Gallery, housed in the Dalhousie Arts Centre, are active places indeed.

The 1,041 seat Rebecca Cohn Auditorium presents a wide variety of programs ranging from ballet to rock, classical music to children's performances.

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

The Dalhousie Association of Graduate Students

DAGS, the Dalhousie Association of Graduate Students, represents the interests and concerns of over 1600 graduate students at Dalhousie University, and has done so for over 20 years.

DAGS is a registered society incorporated under the Nova Scotia Societies Act and has special society status with the Dalhousie Student Union (DSU). Society fees for DAGS (\$20 for full-time and \$10 for part-time students) are collected as part of the student fees you pay with your tuition, automatically buying you membership in the association, and in The Graduate House, your own private club on campus.

As a member of DAGS, you can benefit from a variety of services it has to offer, from the above mentioned membership in the Grad House, to funding for academic or social functions put on by departmental graduate societies, to advocacy on issues important to grad students. DAGS also funds entertainment events in the Grad House.

DAGS Council consists of an executive - the president, a vice-president, a secretary, and a treasurer - and 33 councillors-at-large. The president and councillors are elected each year in March, while the vice-president, secretary and treasurer are appointed positions. Council meets bi-weekly during the academic year (a little less frequently in the summer). Meeting times are posted on a bulletin board in the foyer of the Graduate House. All meetings are open to the public.

DAGS Committee

Your special interests and concerns are the Associations' primary responsibility. DAGS handles this role with representation on several University committees, and through a number of standing committees, as follows:

Academic Affairs, which represents DAGS on the University's Library Committee, Computer Committee, the Committee on Teaching and Learning, and on Graduate Faculty Council;

Communications, which produced the Handbook and handles the DAGGER, the Association's newspaper;

Entertainment, which sponsors and organizes regular entertainment events at the Graduate House;

External Affairs, which represents DAGS on the DSU, the Students' Union of Nova Scotia (SUNS), the Canadian Federation of Students (CFS), and the National Graduate Council (NGC);

Finance, which prepares the DAGS budget and determines policy concerning funding applications subject to the approval of Council and;

Student Welfare, which is primarily concerned with housing, campus security, sexual harassment, the special concerns of international students and the orientation of new graduate students.

The DAGS office is located on the third floor of the Graduate House, 6154 University Avenue, corner of LeMarchant. The telephone number is 422-6943. Give us a call and get involved.

The Graduate House

The Graduate House opened in February, 1975, as a private club operated for the Dalhousie Association of Graduate Students. All graduate students are automatically members of the club at no extra cost. Services include meals, entertainment, private parties, and a bar. Further information can be obtained by contacting the House Manager, Alex Austin at 494-2549/3816.

Dalhousie Student Union

President: David Shannon

Vice-President: Terry Crawley

Treasurer: Janice Plumstead

General Manager: Steve Gaetz

Every Dalhousie student is automatically a member of the Dalhousie Student Union. The Student Union is recognized by an agreement with the University Administration and by an Act of the Nova Scotia legislature as the single voice of Dalhousie students. All student activities on campus are organized through the Student Union, and the Student Union is the focus of all student representation. The business of the Student Union is conducted by a Council made up of 40 members. Every student is represented by one or more representatives of their faculty, elected within their faculty in the spring. As well, students

who live in residence and international students also elect their own representatives because they are uniquely affected by certain university policies. Also on the Council are the student representatives elected to the Senate and Board of Governors.

One of the most important resources of the Student Union is the Student Union Building located on University Avenue between Seymour and LeMarchant Streets. The SUB, which is exclusively operated by the Student Union and is paid for through Student Union fees, was opened in 1968 as a centre for student activity on campus. Every student has the opportunity to take advantage of the Union's financial, physical and organizational resources. 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 4:30 p.m. Monday through Friday, phone number 494-1106. Council members have mail boxes located in that office. Union Executive officers also have offices in the SUB.

Housing/Residence Services

For the 55 per cent of Dalhousie University students whose homes are outside the Halifax Metropolitan area, where to live while attending university is a major question. The supply of University owned housing does not meet the demand and the vacancy rate in the various private, commercial units is 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

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him/herself of the living 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

The centrally located men's residence on campus, Howe Hall, provides accommodation for 520 undergraduate students. The sprawling, grey ironstone complex is divided into five houses: Henderson, Smith, Bronson, Cameron and Studley. Each house has its own distinctive identity and student government. The ratio of seniors to first-year students is approximately 50/50, except in Henderson house which is predominantly for freshmen. Howe Hall is the only on-campus residence option for male students in their first year.

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

Howe Hall is accessible to handicapped students.

Shirreff Hall

The largest women's residence on the Dalhousie campus, providing accommodation for 445 female students, is Shirreff Hall. Located in a quiet corner of the campus, it is minutes from classes, the library, Dalplex and other facilities as well as from the scenic Northwest Arm. It is divided into four sections - Old Eddy and New Eddy, with predominantly double rooms for first-year students, and Newcombe and the Annex, with single rooms reserved for senior students.

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

Eliza Ritchie Hall

Opened in 1987, Eliza Ritchie Hall is the University's newest women's residence. It provides traditional residence accommodation for 84 female students in predominantly single rooms.

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

B. Off Campus, University Owned Housing Fenwick Place

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

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

Fenwick also has a number of unfurnished bachelor, one and two-bedroom apartments which are rented to married and single students. Each of these apartments has a full kitchen and bathroom. Heat, hot water and cable television are included in the rent.

Laundry facilities are available on every floor of Fenwick Place. The front desk is open 24 hours a day with staff available to provide security, information and advice to students. Fenwick is also totally accessible to handicapped students.

Glengary Apartments

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

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

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

Co-ed Apartment Units

Dalhousie has two co-ed apartment buildings which are open to students in graduate programs. Located on University Avenue, close to the main campus, the building includes bachelor, one and two-bedroom apartments and accommodates a total of 25 students.

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

Residence Houses

Dalhousie also has 14 residence houses, all of which were once single family homes, with their own kitchens, living rooms and bathrooms. The character of these homes has been maintained as much as possible. The houses are all on campus. Although they are generally occupied by female students in graduate programs or professional schools, a few of the 100 spaces are reserved for undergraduates.

One of the houses is designated as a 24-hour quiet area for students who want a particularly quiet environment in which to live and study. Two of the houses are French houses, reserved for male and female students who would like to live in a French-speaking environment. A fourth house is set aside for the President's Leadership Class and is occupied by a group of ten male and female students in their first year of study. The students are selected by the President's Leadership Committee for their commitment to develop a service ethic and benefit from a cooperative living experience.

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

International Student Homes

Dalhousie reserves two special houses for international students arriving in Canada for their first year of study. Located close to the main campus, these houses consist mainly of single rooms with shared bathroom and kitchen areas. Rooms are furnished with a bed, desk, drapes and a chair as well as linen. Although cooking facilities are provided, utensils are not.

Living Off-Campus

Dalhousie's Off-Campus Housing Office assists students who do not want to live on campus or who have been unable to find a place in residence or in University apartments and houses. Located in the Student Union Building, this office is designed to help students find privately-owned accommodation.

The Off-Campus Housing Office provides centralized information on available housing in the Halifax metro area, including apartments, rooms, condos and houses. Up-to-date computerized printouts of these listings are available as well as

telephones for calling landlords and material such as maps and transit schedules.

Although the housing staff cannot arrange, inspect or guarantee housing, they will do everything they can to help students find accommodation that is pleasant, inexpensive and close to campus.

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

General Information

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

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

Director of Housing and Conferences
Room 122, Student Union Building
Dalhousie University
Halifax, N.S. B3H 4J2
(902) 494-3365

Dean of Women
Shirreff Hall Women's Residence
Dalhousie University
6385 South Street
Halifax, N.S. B3H 4J4
(902) 494-2577

Dean of Men
Howe Hall Men's Residence
Dalhousie University
6230 Coburg Road
Halifax, N.S. B3H 4J5
(902) 494-1054

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

Instructional Development and Technology

At Dalhousie, the responsibility for co-ordinating distance education falls under the mandate of the newly created Office of Instructional Development and Technology (located at the entrance to the Killam Library, telephone 494-1622). A Director of distance education operates from this office. Working in cooperation with those departments which offer courses at a distance the Director is responsible for:

- professional support in developing and planning of course offerings
- advice in the design, production, and presentation of quality instructional materials.

The University recognizes the importance of distance education as one way of discharging its responsibilities to the region, particularly in fields (for example, the Health Professions) where its programmes are unique. Distance education is especially popular with busy professionals who might not otherwise have the opportunity to upgrade their university education.

To date distance education courses have been concentrated in the Faculty of Health Professions (eg. Nursing, Physiotherapy, Occupational Therapy, Social Work). However, such courses are also available from some other departments including the School of Public Administration. Students interested in taking distance education courses from these schools should contact them directly. General enquiries should be directed to the Registrar's Office.

International Student Centre

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

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

The Centre has a lounge where students can meet and a reading room where students can study or read international publications. For further information, contact: The Advisor, International Student Centre, Dalhousie University, Halifax, N.S., Canada, B3H 3J5 or phone (902) 494-7077.

Libraries

The Dalhousie University Library System is organized to accommodate the needs of the undergraduate teaching programs, graduate and faculty research projects, and professional schools. The system is made up of the following components: the Killam Memorial Library - Humanities, Social Science, and Sciences, the Sir James Dunn Law Library, and the Kellogg Health Sciences Library.

As of April 1, 1989, the total Dalhousie University Library System holdings include over 1,312,714 volumes of books, bound periodicals, documents, and bound reports, 403,105 microfiche microcards, maps, and other media. Approximately 12,000 serials titles are currently received, and dead title holdings number over 6,000.

The Killam Library alone has a collection of over 689,671 volumes of books and bound serials, as well as a periodical collection of more than 5,900 current subscriptions, and a government documents collection of over 365,591 items. In addition to the traditional printed materials, the library is developing its resources in forms such as records and microforms.

Ombud's Office

The Dalhousie Ombud's Office offers assistance and advice to students facing university-related financial or academic problems. The Ombud's Office can help students resolve particular grievances and also attempts to ensure that existing policies are fair and equitable. Jointly funded by the University and the Dalhousie Student Union, the Ombud can provide information and direction to students on any University-related complaint.

The Dalhousie Ombud's Office is located in the Student Union Building, Room 403. Telephone No. 494-6583.

Registrar's Office

The office is responsible for high school liaison, admissions, awards and financial aid, registration, maintenance of student records, scheduling and coordinating formal examinations and convocation. Of greater significance to students, however, is the role played by members of the staff who provide information, advice, and assistance. They offer advice on admissions, academic regulations and appeals and the selection of programs. In addition, they are prepared to help students who are not quite sure what sort of assistance they are looking for, referring them as appropriate to departments for advice about specific major and honours programs or to the office of Student Services or to specific service areas such as the Counselling Services Centre.

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

The summer advising program for first year students in Arts and Social Sciences, Management,

Engineering and Science is directed from the Registrar's Office. Prospective students may arrange a tour of the campus through this office.

The fact that the Registrar's Office is in contact with every student and every department means that it is ideally placed to provide or to guide students and prospective students to the source of the advice or assistance they need.

Student Advocacy Service

The Student Advocacy Service was established by the Dalhousie Student Union and is composed of qualified students from the University. The main purpose of the Service is to ensure that the student receive the proper information when dealing with the various administrative boards and faculties at Dalhousie. An Advocate may also be assigned to assist students with appeals or in a disciplinary hearing for an academic offence. Our goal is to make the often unpleasant experience of challenging or being challenged by the University less intimidating.

The Advocates may be contacted through:

Student Advocacy Service
Room 404
Dalhousie Student Union Building
Telephone: (902) 494-2205

Student Clubs and Organizations

Students seeking information on clubs and societies should call the GET INVOLVED LINE 494-3527.

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

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

Some are decades old with long traditions, others arise and disappear as students' interests change.

The Student Handbook publishes a list of clubs, societies and organizations, and every fall new students are encouraged to select and participate.

Student Services

Located in Room 410 of the Student Union Building, this office provides a point of referral for any student concerns. The Vice-President is the chief Student Services officer and coordinates the activities of Athletics and Recreational Services, Student Counselling and Psychological Services, Chaplaincy, Health Services, Housing and Conferences, Office of the Registrar, Writing Resource Centre, International Student Centre, and the Ombud Office. Students who experience difficulties with their academic programs or who are uncertain about educational goals, major selection, workload management, financial, social or personal matters affecting their academic performance, inadequate study skills, or conflicts

with faculty and regulations can seek the assistance of the Academic Advisors in the Vice-President's office.

University Bookstore

The Univealty Bookstore, owned and operated by Dalhousie, is a service and resource centre for the university community and the general public. The Bookstore has all required and recommended texts, reference books and supplies, as well as workbooks, self help manuals and other reference material. The general book (trade) department has on of the largest selections in the city, including classics, bestsellers, new releases, and books by Dalhousie authors.

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

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

The Bookstore is situated on the lower level of the Student Union Building on University Avenue, and is open year round, Monday to Friday.

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 four divisions. "Facilities and Operations", located in the basement of the Killam Library building, is responsible for operating and managing the central mainframe and minicomputers.

"Communications Services", also located in the basement of the Killam, is responsible for voice (telephone) and data communications and related hardware services, including a microcomputer maintenance service.

"Academic Computing Services" provides consulting, education and documentation services for users of central and some departmental computers. It is responsible for support and maintenance of applications software for academic users. It also manages a Personal Computer Purchase Centre (PCPC) where micro computer users may obtain advice and assistance and may purchase selected products. Academic Computing Services is located in the basement of the Killam

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Library building.

"Administrative Computing Services" is responsible for the selection, installation, development and maintenance of administrative computing systems, for providing advice and education to users of administrative systems, and for office systems support. Administrative Computing Services and the Office of the Executive Director of UCIS are located in Rooms 21A to 21K in the Arts & Administration Building.

UCIS manages a Digital VAX 8800 mainframe computer which is used primarily for academic purposes, an IBM 4381 computer for administrative systems, several smaller minicomputers for Computing Science and the School of Business, and microcomputer laboratories in the Computer Centre (basement of the Killam), Engineering, English, Sociology, Biology, Geology and in the Dentistry building. A wide range of computer languages and applications software is available and supported by UCIS on these systems.

Access to on and off campus computing facilities is provided by means of a campus data communications network of data switches and ethernet connections. Dalhousie is attached to the Canadian Universities network NetNorth.

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.

Appointments are made during the clinic's open hours, from 9 a.m. to 10 p.m. In the event of emergency, students should telephone the University Health Service at 494-2171 or appear at the clinic in person. The university maintains health services on a 24-hour basis with a physician on call.

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 the doctor.

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

Writing Workshop

The Writing Workshop program recognizes that students in all disciplines are required to write clearly to inform, persuade, or instruct an audience in term papers, laboratory reports, essay examinations, critical reviews and more. This English language resource centre offers classes in writing skills, a tutorial service, guidelines for acceptable standard language usage, and provides information about sources for reference. For more information about the Writing Workshop, please call 494-3379.

FEES 1990 - 1991

Student Accounts Office

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

Address: Dalhousie University
Financial Services
Room 29
Arts & Administration Building
Halifax, Nova Scotia
B3H 4H6
(902) 494-3998

Office Hours

8:30 - 4:30 Monday to Friday
(or by appointment)

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

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

All fees are subject to change by approval of the Board of Governors of Dalhousie University. In order to provide you with an idea of the costs involved, we have outlined in Tables 1 and 2 on pages 31 and 32, fees for the 1989/90 academic year. In addition a list of miscellaneous fees is included in Appendix II on page 28.

Students should make special note of the registration deadlines contained in the calendar on pages 5 and 6. Students should also be aware that additional fees and/or interest will be charged when deadlines for payment of fees as contained herein are not met.

For the convenience of students, registration material and non-cash payments are accepted by mail. Registrations with cheques postdated to September 7, 1990 will also be accepted. Please allow sufficient time to ensure that material sent by mail is received on or before the specified dates. Please note that after August 24th we are unable to retrieve post-dated cheques.

General Regulations

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

- * Fees must be made in Canadian funds by cash or negotiable cheque.

- * If payment is by cheque and returned by the bank as non negotiable, there will be an additional fee of \$15.00 and the account will be considered unpaid. Furthermore, if the bank returns a cheque that was to cover the first payment of tuition, the student's registration will be cancelled and, if permitted to re-register, a late fee will apply.

- * Bills for fees will not be issued. The receipt obtained from Student Accounts each time a payment is made will show the date and amount of the payment as well as the balance outstanding.

Admission Deposit

A deposit of \$100.00 is required by all new students in Specified Limited Enrollment Programs (except in Law where the required deposit is \$200.00) within three weeks of receiving an offer of a place at Dalhousie. (Please refer to Appendix I on page 28 for the definition of Specified Limited Enrollment Programs.) Further information on the regulations governing the refund of admission deposits is contained in the section below on Changes, Refunds and Withdrawals.

Foreign Students

Students registering at Dalhousie University who are not Canadian citizens or permanent residents are required to pay an additional fee referred to as a "Differential Fee" in the amount of \$1700.00. There is a proportionate charge for part-time foreign students. The payment of the differential fee is payable with the first installment of fees each year.

Academic Fees

Academic fees are comprised of: (a) the University fee for tuition; and (b) an incidental fee comprised of Student Union, and Society fees. Table 1 contains the academic fees approved for the 1989-90 academic year.

For purposes of this section of the Calendar a full-time undergraduate student is one who is registered for the fall and winter terms for more than three full credits, or if registered for only one term, for more than three half credits. Students other than those registered in Law, Medicine, Dentistry or a graduate program may be registered full-time in one term and part-time in the other. In addition, students registered in two degree programs are required to pay separate academic fees for both programs.

Registration

The final step in registration is the payment of fees. A student is considered registered only after financial arrangements have been made with Student Accounts.

All students:

- must submit to the Student Accounts Office on or before the specified registration dates the first installment of academic fees unless they are receiving a scholarship, fellowship, Canada Student Loan, a fee waiver, or their fees are paid by external organizations;
- those holding external scholarships or awards paid by or through Dalhousie University must provide at registration documentary evidence of the scholarship or award;
- those whose fees are to be paid by a government or other agency must provide a signed statement from the organization at registration;
- those whose fees are to be paid by Canada Student Loan must indicate as such on the appropriate section of the registration form. (Please note: Students registering by Canada Student Loan must negotiate the Loan or provide the letter of declination issued by Student Aid by November 1. In any event, a reinstatement fee and/or interest may be charged after September 24. Failure to comply or arrange an alternative method of payment may result in deregistration).
- those whose fees are paid by a Dalhousie University staff tuition fee waiver must present the approved waiver form and pay the Student Union, and Society Fee at registration.

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

Payment of Academic Fees

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

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

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

- i) Should students prefer to pay in two installments, the first installment is due on or before September 7 and the second installment is due January 31.
- ii) Students registering for either the fall or winter terms only must pay fees on or before September 7 and January 7, respectively.
- iii) Scholarships or awards paid by or through Dalhousie University will be applied to tuition and residence fees in that order.
- iv) When Canada Student Loan or co-payable bursary is presented at the Student Accounts Office, any unpaid academic, residence fees and/or Temporary Loans will be deducted.
- v) Fees cannot be deducted from salaries paid to students who are employed at Dalhousie University.
- vi) Regrettably, subsequent to August 24, 1990 we are unable to retrieve post-dated cheques.
- vii) Any payments received will first be applied to overdue accounts.

Audit Classes

Full-time students may audit classes which are related to their programs without additional fees. In such cases, the student is required to complete the usual registration process.

A student registered to audit a class and 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 day for withdrawal without academic penalty, as shown on pages 5 and 6 of the Calendar. The same deadline applies for a change from credit to audit.

Late Registration

Students are expected to register on or before the specified registration dates. Students wishing to register after these dates must receive the approval of the Registrar and pay a late registration fee of \$50.00. This fee is payable at the time of registration and will be in addition to the first installment of fees.

Changes, Refunds and Withdrawals

Please consult Student Accounts for all Financial charges and the Office of the Registrar for Academic regulations.

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

NON-ATTENDANCE AT CLASSES DOES NOT CONSTITUTE WITHDRAWAL.

- i) Written notification of withdrawal must be submitted to the Office of the Registrar.
- ii) After the approval of the Registrar has been obtained, (in the case of graduate and professional school, the appropriate Dean)

application for a refund or adjustment of fees should be requested from the Student Accounts Office immediately. For students withdrawing in person the withdrawal process is official on the date that application for withdrawal is made at the Student Accounts Office. Therefore, the calculation of the refundable portion of fees will be based on this date. (Retroactive withdrawals will not be permitted.)

- iii) No refunds will be made for 30 days when payment has been made by personal cheque.
- iv) A student who is dismissed from the University for any reason will not be entitled to a refund of fees.
- v) Refunds will not be made to a student who has paid an admission deposit for a Specified Limited Enrollment Program.
- vi) In any Specified Limited Enrollment Program (See Appendix I) the first installment of fees is not refundable except on compassionate grounds (eg. illness).
- vii) Refunds will be made to the Bank for fees paid by Canada Student Loans.
- viii) Refunds will be prorated on fees paid by Scholarships.
- ix) A valid Dalhousie University ID must be presented in order for the student to receive a refund cheque.

Dates for Refund - Regular Session

A student withdrawing or changing a class after September 24 will be charged full incidental fees and may receive a refund of the balance on a proportional basis (See Appendices III and IV on pages 29 and 30).

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

A student changing from full-time to part-time status before February 1 (Graduate students see item 2.5 on page 39), must have the approval of the Registrar and will then be eligible for an adjustment in fees for the remainder of the session.

No refunds will be made to students withdrawing after January 31.

Dates for Refund - First Term

A student withdrawing or changing a class after September 24 will be charged full incidental fees and may receive a refund of the balance on a proportional basis as specified in Appendices III and IV on pages 29 and 30.

No refunds will be made to students withdrawing or changing a class after October 22.

Dates for Refund - Second Term

A student withdrawing or changing a class after January 18 and before February 12 will be charged full incidental fees and may receive a refund of the balance on a proportional basis as

specified in Appendices III and IV on pages 29 and 30.

Delinquent Accounts

Accounts are considered delinquent when the balance of fees has not been paid by September 24 (January 31 for students registered for the winter term only). Where payment in two installments is permitted the remaining balance is due January 31.

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

At the time of printing the monthly rate of interest is 1.33% (16% per annum).

A student whose account is delinquent for more than 30 days will be denied University privileges including access to transcripts and records of attendance, Dalplex and the libraries. The student will be reinstated upon payment of the fees outstanding, the arrears interest and a \$50.00 reinstatement fee. Students will not be permitted to register for another session until all outstanding accounts are paid in full.

Students whose accounts are delinquent on March 15 may not be eligible, at the sole discretion of the University, for graduation at the May convocation. For October or February graduation the dates are Sept. 1 and Jan. 1 respectively.

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

Canada Student Loans

Students planning to pay the first installment of fees from a Canada Student Loan should apply to the Province in April or May so that funds will be available in time for registration. The University will deduct fees/charges from the loan at the time of endorsement.

Provincial Bursaries and University Scholarships

These cheques are distributed by the Student Accounts Office. Any unpaid Fees and/or Temporary Loans along with charges, if applicable, are deducted and a University cheque will be issued within one week of endorsement for any balance remaining. A valid Dalhousie University ID and Social Insurance Number must be presented in order to receive these cheques. For more information on Student Loans, Bursaries or Scholarships inquiries should be directed to the Awards Office located on the first floor of the Arts & Administration building, Room 125. Telephone (902) 494-2416.

Income Tax Credit from Academic Fees

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

For all eligible fees, a special income tax certificate will be available at Student Accounts annually on February 28. Replacement tax receipts will be provided within 3 weeks of the request, for an additional charge of \$5.00 per receipt.

Identification Cards

All full and part-time students should obtain identification cards upon registration and payment of proper fees. If a card is lost, a fee of \$12.00 is charged. Regular academic year ID cards remain valid until the beginning of the following academic year (including summer session).

Laboratory Deposits

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

Dalplex Recreational Fee

Membership at Dalplex is available for all full-time students at Dalhousie and all part-time students at Dalhousie taking three full credit courses for \$30.00 payable at registration. Membership in Dalplex for ALL other part-time students at Dalhousie may be obtained at the office of Dalplex at the prevailing rates.

Student Union Fee Distribution

Every student registered at Dalhousie is automatically a member of the Student Union and is therefore required to pay a Student Union fee as part of their registration procedure. These fees have been approved by students in referenda and, along with other revenue of the Union, are allocated each year by the Student Council in a budget.

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

1989 - 90 Student Union Fee
(For Information Only)

	Full-Time (3 credits or more)	Part-Time (Per credit)
General Income		
For Operations	\$40.50	\$16.00
Student Health		
Plan Insurance	\$29.00	0.00
Contributions to		
Capital Campaign	\$15.00	4.00
Capital Payback for		
Student Union Building	\$10.00	.00
C K D U - FM	\$ 9.00	\$ 2.00
Yearbook Fee	\$ 5.00	\$ 0.50
Canadian Federation of		
Students' Membership	\$ 4.00	\$ 0.00
Students' Union of		
Nova Scotia Membership	\$ 2.50	\$ 0.00
Course Evaluation	\$ 1.00	\$ 0.50
TOTAL	\$116.00	\$23.00

Residence Fees

Please note that the following are general statements. Because of the diversity of the residence facilities available practices do vary slightly from locale to locale.

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

When students, who have chosen to live in residence and succeeded in securing a room, withdraw from residence before the end of the school year, there are serious financial penalties. Written notice to withdraw is always required by the Dean or Residence Manager. Complete information on withdrawal from residence is available from the Dean or Manager and is detailed in the residence lease agreement to be signed by all residence students. No refund will be made to any resident who is dismissed for misconduct. Discretionary power in exceptional circumstances remains with the Director of Housing and Conferences or designate. Confirmation of accommodation will not be granted until the student has been accepted by the University for the coming session, and the \$125.00 residence application fee and deposit have been received.

All residents, new and returning, who have accepted a room assignment, will be required to pay a second rent deposit of \$200.00 by July 15 to reconfirm the assigned space. Failure to make a second deposit by July 15 will result in automatic cancellation of room assignment. Once paid, the \$200.00 deposit is not refundable, it is our guarantee of your intention to live in residence.

Deposits may be made by cheque, bank draft or money order in Canadian funds and payable to Dalhousie University. No reservations will be held on postdated or "NSF" cheques. Deposits cannot be deducted from scholarships, fellowships or similar awards.

Payment of Residence Fees

Payment may be made in full at registration, or for an extra charge of \$10.00, in two installments. 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 September 30. Interest at a monthly rate as set by the University will be charged on all accounts outstanding after September 30. Interest at a monthly rate as set by the University will be charged on the second installment outstanding after January 31. At the time of printing the monthly rate of interest is 1.33% (16% per annum). The student will not be permitted to register for another session until all accounts are paid in full. A student whose account is delinquent for more than 30 days will be denied University privileges including access to transcripts and records of attendance, Dalplex and the libraries. The student will be reinstated upon payment of the fees outstanding, the arrears interest, and a \$50.00 reinstatement fee.

A student should make an appointment as soon as possible with the Dean, Residence Manager or the Supervisor of Student Accounts if the student is having financial difficulties.

Regulations and Additional Charges

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

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

Residence students may apply to the Dean for permission to stay in residence over the Christmas holidays if they are unable to return home due to the distance involved. Dining rooms are closed during Christmas break from the last day of College of Arts and Science examinations in December to the evening before the first day of classes in January.

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

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

Room Per Night: \$15.50

Room Per Week: \$85.00

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

Appendix I

Definition of Specified Limited Enrollment Programs

Master of Business Administration
 Master of Library Service
 Master of Public Administration

All programs in the following faculties:

Faculty of Dentistry
 Faculty of Law
 Faculty of Medicine
 Faculty of Health Professions

Appendix II

Miscellaneous Fees - Quick Reference

Fees	Amount	Payable To
Replacement Tax Receipt	\$ 5.00	Student Accounts
Late Registration	\$ 50.00	Student Accounts
Returned Cheque	\$ 15.00	Student Accounts
Reinstatement Fee	\$ 50.00	Student Accounts
Admission Deposit	\$ 100.00	Registrar
Admission Deposit - Law	\$ 200.00	Registrar
Application Fee	\$ 20.00	Registrar
Late Graduation Application	\$ 50.00	Registrar
Letter of Permission * per class - maximum \$ 50.00	\$ 10.00	Registrar
Reassessment Fee	\$ 10.00	Registrar
Replacement ID	\$ 12.00	Registrar
Supplemental Examination	\$ 25.00	Registrar
Transcript	\$ 4.00	Registrar
Priority Transcript Fee	\$ 10.00	Registrar
FAX Fee	\$ 5.00	Registrar
Application Fee - Residence	\$ 25.00	Residence

Appendix III

Fee Refunds

All Faculties (except Specified Limited Enrollment Programs), including Graduate Studies.

- Student Union: Non Refundable after Sept. 24 (Second term Jan. 7)
- Dalplex Recreational Fee: Non Refundable after Sept. 24 (Second term Jan. 7)
- Society Fee: Non Refundable after Sept. 24 (Second term Jan. 7)
- University Fee: As follows:

Withdrawal Date	Regular Sessions ¹	First Term Only ²	Second Term Only ³	Thesis only Graduate Studies	Part Time Degree Graduate Studies	½ Credit Full Year
Up to Sept. 24	95%	95%	95%	95%	95%	95%
Sept. 25 - Oct. 22	85%	67%	95%	85%	85%	85%
Oct. 23 - Nov. 13	70%	0%	95%	70%	70%	70%
Nov. 14 - Dec. 31	50%	0%	95%	50%	50%	50%
Jan. 1 - Jan. 18	2nd Inst.	0%	95%	43%	2nd Inst.	43%
Jan. 21 - Jan. 31	2nd Inst.	0%	67%	43%	2nd Inst.	43%
Feb. 1 - Feb. 18	0%	0%	67%	0%	0%	0%
After Feb.18	0%	0%	0%	0%	0%	0%

¹ Applicable to all students except those registered for one term.
² Applicable to all students registered full-time one term (first) and part-time undergraduate students taking only "A" classes.
³ Applicable to all students registered full-time one term (second) and part-time undergraduate students taking only "B" classes.

Appendix IV

**Fee Refunds
Specified Limited Enrollment Programs**

Admission Deposit: Non Refundable (after July 1 for School of Nursing, College of Pharmacy, and School of Recreation, Physical and Health Education).

Student Union: Non Refundable after 1st day of classes (Second term Jan. 7)

Dalplex Recreational Fee: Non Refundable after Sept. 24 (Second term Jan. 7)

Society Fee: Non Refundable after 1st day of classes (Second term Jan. 7)

University Fee: As follows:

<u>Withdrawal Date</u>	<u>Regular Session</u>	<u>First Term Only</u>	<u>Second Term Only</u>	<u>½ Credit Full Year</u>
1st day of class to Jan. 15	2nd Inst.	0%	0%	0%
Jan. 16 - Jan. 31	2nd Inst.	0%	0%	0%
After Jan. 31	0%	0%	0%	0%

ACADEMIC FEES 1989-90

IF PAID IN TWO INSTALLMENTS

FACULTY	UNIVERSITY FEE \$	STUDENT UNION FEE \$	SOCIETY FEE \$	TOTAL (\$) FEE \$	DALPLEX RECREATION FEE \$	TOTAL WITH DALPLEX \$	FIRST INSTALLMENT WITH DALPLEX \$	WITHOUT DALPLEX \$	PAYABLE AT JANUARY 31 \$
Arts & Social Sciences	1710.00	116.00	5.00	1891.00	30.00	1961.00	1130.00	1100.00	731.00
Science	1710.00	116.00	5.00	1891.00	30.00	1961.00	1130.00	1100.00	731.00
School of Education	1710.00	116.00	5.00	1891.00	30.00	1961.00	1130.00	1100.00	731.00
King's (Payable to Dalhousie)	1710.00	-	5.00	1715.00	30.00	1745.00	1130.00	1100.00	615.00
Engineering	1805.00	116.00	10.00	1991.00	30.00	1991.00	1130.00	1100.00	831.00
Health Professions									
Nursing	1805.00	116.00	20.00	1941.00	30.00	1971.00	1130.00	1100.00	841.00
Outpost Nursing 2nd Year	1805.00	-	20.00	1825.00	30.00	1855.00	1130.00	1100.00	725.00
Pharmacy	1805.00	116.00	33.00	1994.00	30.00	1994.00	1130.00	1100.00	854.00
Clinical Residence - Pharmacy	435.00	-	-	435.00	30.00	465.00	465.00	435.00	-
Phys Ed, Health Ed, Rec.	1805.00	116.00	10.00	1991.00	30.00	1991.00	1130.00	1100.00	831.00
Physio, Occ. Therapy	1805.00	116.00	13.00	1994.00	30.00	1994.00	1130.00	1100.00	834.00
B.S.W.	1710.00	116.00	10.00	1896.00	30.00	1896.00	1130.00	1100.00	736.00
Management									
B.Comm.	1805.00	116.00	30.00	1961.00	30.00	1991.00	1130.00	1100.00	851.00
C.P.A.	1710.00	116.00	10.00	1896.00	30.00	1896.00	1130.00	1100.00	736.00
Graduate Studies									
Full Time	1830.00	116.00	20.00	1996.00	30.00	1996.00	1280.00	1250.00	716.00
Full Time M.B.A.	1830.00	116.00	35.00	1991.00	30.00	2011.00	1280.00	1250.00	731.00
Part Time for Degree	630.00	46.00	10.00	686.00	-	686.00	-	400.00	286.00
Part Time for Degree - M.B.A.	630.00	46.00	17.50	693.50	-	693.50	-	400.00	293.50
Thesis - Only Full Time	285.00	116.00	20.00	421.00	30.00	451.00	451.00	421.00	-
Thesis - Only Part Time	285.00	58.00	10.00	353.00	-	353.00	-	353.00	-
M.Sc. Dentistry - Oral Surgery	2125.00	116.00	20.00	2261.00	30.00	2291.00	1280.00	1250.00	1011.00
LL.M. (Full Time); J.S.D.	1866.00	116.00	20.00	2002.00	30.00	2121.00	1280.00	1250.00	841.00
LL.M. (Part Time for Degree)	960.00	58.00	10.00	1046.00	-	1046.00	-	850.00	396.00
Law									
Full Time	1955.00	116.00	20.00	2091.00	30.00	2121.00	1280.00	1250.00	841.00
Part Time (1st & 2nd Year) (1)	990.00	58.00	10.00	1048.00	30.00	1078.00	1078.00	1048.00	-
Legal Aid Clinic	875.00	58.00	10.00	943.00	30.00	973.00	973.00	943.00	-
Term after Legal Aid Clinic	1080.00	58.00	10.00	1148.00	30.00	1178.00	1178.00	1148.00	-
Medicine									
M.D.	2125.00	116.00	25.00	2266.00	30.00	2296.00	1280.00	1250.00	1016.00
Postgraduate, Interns, Residents	435.00	-	-	435.00	30.00	465.00	465.00	435.00	-
Dentistry									
D.D.S. (6)	2125.00	116.00	70.00	2311.00	30.00	2341.00	1280.00	1250.00	1081.00
D.D.S. Advanced Standing (2)	4250.00	116.00	70.00	4436.00	30.00	4466.00	2530.00	2500.00	1836.00
Dental Hygiene (7)	1805.00	116.00	35.00	1956.00	30.00	1986.00	1380.00	1350.00	606.00
Dental Hygiene Adv. Standing (2)	3610.00	116.00	35.00	3781.00	30.00	3791.00	2280.00	2250.00	1511.00
Postgraduate Periodontics	2125.00	116.00	70.00	2311.00	30.00	2341.00	1280.00	1250.00	1081.00
Full Time - One Term Only more than 3 one-half credits	850.00	56.00	-	906.00	30.00	936.00	936.00	906.00	-
Part-Time - Session and Term (3)									
1 Full Credit	360.00	23.00	(4)	383.00	-	383.00	-	225.00	158.00
2 Full Credit	705.00	46.00	(4)	751.00	-	751.00	-	450.00	301.00
3 Full Credit	1040.00	116.00	(4)	1156.00	30.00	1186.00	706.00	675.00	481.00
1/2 Credit	180.00	12.00	-	192.00	-	192.00	-	182.00	-
1/3 Credit	120.00	12.00	-	132.00	-	132.00	-	132.00	-
Audit - Session and Term									
1 Full Audit	180.00	-	-	180.00	-	180.00	-	180.00	-
1/2 Course for Audit	90.00	-	-	90.00	-	90.00	-	90.00	-
1/3 Course for Audit	60.00	-	-	60.00	-	60.00	-	60.00	-
Differential Fees - All Vis Students (5)									
Full Time	1700.00								
Full Term	850.00								
1 Credit	340.00								
1/2 Credit	170.00								
Health Insurance - All Vis Students									
Single	450.00								
Married	900.00								

(1) Subsequent years Part Time Law fees are calculated on a percentage of credit hours divided by 31.50 credit hours and multiplied by the Full Time Law fees.
 (2) Candidates with advanced standing admitted to special programs in D.D.S. and DENTAL HYGIENE that meet Provincial Professional Qualifications are required to pay double the University fee paid by students in regular programs.

(3) Registered for a total of three (3) credits, or less for sessions or three one-half credits, or less for term.

(4) Society Fee for the appropriate faculty is an additional charge. (+)

(5) Foreign Students - Students registering at Dalhousie University who are not Canadian citizens or permanent residents are required to pay an additional fee referred to as a "Differential Fee" in the amount of \$1,700.00. There is a proportional charge for part-time foreign students. The payment of the differential fee is payable with the first installment of fees each year. Graduate students see Section 2.7 of Graduate Studies Calendar to determine the number of years of differential fee requirement.

(6) D.D.S. - 1st. Installment to include \$600.00 User Fee and Instrument Fee (see schedule below).

Year # 1 - \$1840.00

Year # 2 - \$2279.00

Year # 3 - \$ 81.00

(7) Dental Hygiene - 1st. Installment to include \$500.00 User Fee.

Dalplex Recreational Fee - Membership at Dalplex is NOT included in the University Fee. Any full-time student or part-time student at Dalhousie taking three full credits may purchase a Dalplex membership by paying the Dalplex Recreational Fee. Membership in Dalplex for ALL other part-time students at Dalhousie may be obtained at the Office of Student Activities at the prevailing rates.

Changes, Refunds and Withdrawals - For all financial charges please contact Student Accounts or consult the Dalhousie University Calendar. Please note that non-attendance at classes does not constitute withdrawal. Written notification of withdrawal is required.

Dalhousie University Residence Room and Board Rates 1989-1990

The residence term for Howe Hall, Shirreff Hall, Eliza Ritchie Hall, Glengary Apartments and the Women's Residence Houses covers the time period from the Wednesday in September before classes begin in the College of Arts and Science to the last regularly-scheduled examination in the College of Arts and Science in April.

The residence term for Fenwick Place is as follows: First semester - Labour Day to December 31, 1989; and second semester - January 1, 1990, to April 28, 1990.

NOTE: Those students wishing to stay past the end of the residence term may stay longer for a daily or weekly rate. Please contact the residence in question regarding the specific rate and the amount of notice required.

	FIRST DEPOSIT AND APP. FEE	SECOND DEPOSIT AT JULY 15	BALANCE IF PAID IN FULL BY SEPT. 30	OR	PAY IN PART AT SEPT. 30	BALANCE DUE BY JAN. 31	TOTAL (Includes \$10 Service Charge)
Howe Hall							
Single Room	\$125	\$200	\$3,780	Or	\$1,900	\$1,900	\$4,125
Double Room	\$125	\$200	\$3,455	Or	\$1,900	\$1,685	\$3,780
Shirreff Hall and Eliza Ritchie Hall							
Single Room	\$125	\$200	\$3,785	Or	\$1,900	\$1,875	\$4,100
Double Room	\$125	\$200	\$3,535	Or	\$1,900	\$1,845	\$3,870
Residence Houses							
Single Room	\$125	\$200	\$2,105	Or	\$1,080	\$1,055	\$2,440
Double Room	\$125	\$200	\$1,800	Or	\$1,080	\$ 750	\$2,135
Glengary Apartments							
Single Room	\$125	\$200	\$2,110	Or	\$1,080	\$1,080	\$2,445
Double Room	\$125	\$200	\$1,825	Or	\$1,080	\$ 775	\$2,180
Bachelor Apts.	\$125	\$200	\$3,030	Or	\$1,520	\$1,520	\$3,385
Fenwick Place							
Student-Shared Apts.							
2-Person (2 Bdrm.)	\$125	\$200	\$2,942	Or	\$1,371	\$1,571	\$3,142
3-Person (2 Bdrm.)	\$125	\$200	\$2,214	Or	\$1,007	\$1,207	\$2,414
3-Person (3 Bdrm.)	\$125	\$200	\$2,588	Or	\$1,194	\$1,394	\$2,788
4-Person (4 Bdrm.)	\$125	\$200	\$2,282	Or	\$1,041	\$1,241	\$2,482
Meals Only - Special Rate for Season							
3 Meals Per Day	\$1,729						
2 Meals Per Day	\$1,674						

Meals Only Plans may be purchased from the Office of the Dean of Men or the Office of the Dean of Women.

Please note the following:

- (1) The above fees will be superseded on July 1, 1990, when the 1990/1991 residence fee schedule will be published.
- (2) Howe Hall, Shirreff Hall and Eliza Ritchie Hall rates include a residence council membership fee.
- (3) For all residences the prepaid deposit of \$125 includes a \$25 application fee which is nonrefundable.
- (4) The balance paid in January includes a service charge of \$10.
- (5) At Fenwick Place \$100 of the \$125 prepaid deposit is a damage deposit. See application form for details. The \$10 service charge is not applicable.
- (6) The second deposit due on July 15 is a \$200 nonrefundable deposit to confirm the room.

University Regulations

General

1. The Senate is charged with the internal regulation 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.
2. All students must agree to obey all the regulations of the University already made or to be made; in addition to the above University regulations, students must also comply with the regulations of the Faculty in which they are registered, and pay the required fees and deposits before entering any class or taking any examinations. Additionally, students are advised that this Calendar is not an all-inclusive set of rules and regulations but represents only a portion of the rules and regulations that will govern the student's relationship with the University. Other rules and regulations are contained in additional publications that are available to the student from the Registrar's office and/or the relevant Faculty, Department or School.
3. For the purpose of admission to the University, the place of residence of a student is the place of domicile. This is normally presumed to be the place (country, province, etc.) where the parents' or guardian's home is located. That place remains unchanged unless the Registrar is satisfied that a place of residence is established elsewhere. No person under sixteen years of age is admitted to any class except by special permission of the Senate.
4. All students must report their local address while attending the University to the Office of the Registrar, on registration or as soon as possible thereafter. Subsequent changes must be reported promptly.
5. Students taking classes in another Faculty as part of an affiliated course must conform to the regulations of that Faculty with respect to these classes. It should be noted, however, that regulations pertaining to the degree programme are those of the "home" Faculty.
6. 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.
7. Except for university purposes, transcripts, official, or unofficial, will be issued only on the request of the student on payment of the required fee. A student may receive only an unofficial transcript. Official transcripts will be sent at a student's request to other universities, or to business organizations, etc. on payment of the required fee.
8. Students withdrawing voluntarily from the University should consult the individual faculty regulations and the Fees section of this Calendar.
9. When the work of a student becomes unsatisfactory, or a student's attendance is irregular without sufficient reason, the Faculty concerned may require withdrawal from one or more classes, or withdrawal from the Faculty. If a student is required to withdraw from a Faculty such a student may apply to another Faculty. However, in assessing the application, previous performance will be taken into consideration.
10. Any graduating student who is unable to appear at the convocation is expected to notify the Registrar in writing prior to May 6, for Spring convocations (or October 12 for Fall convocations), giving the address to which the diploma is to be mailed. Students whose accounts are delinquent on March 15 may not be eligible, at the sole discretion of the University, for graduation at the May convocation. For October or February graduation the dates are Sept. 1 and Jan. 1 respectively.
11. Students should be aware that certain classes at the University involve required laboratory work where radioactive isotopes are present and are used by students. Since there are potential health risks associated with the improper handling of such radioactive isotopes, Dalhousie University requires that, as a condition of taking a class where radioactive isotopes are to be used, students are required to read and agree to comply with the instructions for the safe handling of such radioactive isotopes. In the event that students do not wish to agree to comply with the instructions for the safe handling of radioactive isotopes, then students will receive no credit for the required laboratory work unless other acceptable alternatives are arranged with the instructor. In many cases, alternate arrangements are not possible and students should consider enrolling in a different class.

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Release of Information About Students

1. Disclosure to students of their own records

- (a) Students have the right to inspect their academic record. An employee of the Registrar's Office will be present during such an inspection.
- (b) Students will, on submission of a signed request and payment of the appropriate fee, have the right to receive transcripts of their own academic record. These transcripts will be marked "ISSUED TO STUDENT". Such right will not apply to students in debt to the University.

2. Disclosure to Faculty, Administrative Officers, and Committees of the University
Information on students may be disclosed without the consent of the student to University officials or committees deemed to have a legitimate educational interest.

3. Disclosure to Third Parties

- (a) The following information is considered public information and may be released without restriction:
 - Name;
 - Period of Registration;
 - Certificates, Diplomas, Degrees awarded.
- (b) Information will be released without student consent to persons in compliance with a judicial order or subpoena or as required by federal or provincial legislation.
- (c) Necessary information may be released without student consent in an emergency, if the knowledge of that information is required to protect the health or safety of the student or other persons. Such requests should be directed to the Registrar.
- (d) Other than in the above situation, information on students will be released to third parties only at the written request of the student, or where the student has signed an agreement with a third party, one of the conditions of which is access to her/his record (e.g., in financial aid). This restriction applies to requests from parents, spouses, credit bureaus and police.

Intellectual Honesty

1. A University should epitomise the quest for intellectual honesty. Failure to measure up to the quest for such a standard can involve either academic offences at one end of the spectrum or substandard work warranting lowered or failing grades at the other. The seniority of the student concerned, the presence of a dishonest intent, and other circumstances may all be relevant to the seriousness with which the matter is viewed.

2. Plagiarism or Self-Plagiarism

Dalhousie University defines plagiarism as the presentation of the work of another author in such a way as to give one's reader reason to think it to be one's own. Plagiarism is a form of academic fraud.

Plagiarism is considered a serious academic offence which may lead to loss of credit, suspension or expulsion from the University, or even the revocation of a degree.

In its grossest form plagiarism includes the use of a paper purchased from a commercial research corporation, or prepared by any person other than the individual claiming to be the author.

Self-plagiarism is the submission of work by a person which is the same or substantially the same as work for which he or she has already received academic credit.

3. Irregularities in the Presentation of Data from Experiments, Field Studies, etc.

Academic research is predicated on the presentation of accurate and honestly derived data. The falsification of data in reports, theses, dissertations and other presentations is a serious academic offence, equivalent in degree to plagiarism, for which the penalties may include revocation of degrees, loss of credits or suspension or expulsion from the University.

4. Inaccurate or Inadequate Attribution.

The University attaches great importance to original thought in scholarship and attaches equal importance to the correct attribution of authorities from which facts and opinions have been derived.

The proper use of footnotes and other methods of attribution varies from discipline to discipline. Failure to abide by the standards of the discipline concerned in the preparation of essays, term papers and dissertations or theses can result, at the discretion of the instructor or faculty member involved, in lowered grades. It can also lead to the requirement that an alternative assignment be prepared. Such grading penalties can be involved even in the absence of any INTENTION to be dishonest.

Students who are in any doubt about the proper forms of citation and attribution of authorities and sources should discuss the matter in advance with the faculty member for whom they are preparing assignments. In many academic departments, written statements on matters of this kind are made available as a matter of routine or can be obtained on request.

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 (as delegated to the Senate Discipline Committee), as well as with certain other offences that are incompatible with constructive participation in an academic community.

3. Examples of Academic Offenses

Plagiarism

As indicated above, plagiarism and self-plagiarism are considered serious academic offences which can lead to loss of credit and suspension from the University.

Irregularities in Presentation of Data

As defined above, the presentation of falsified data in reports, theses, dissertations and other presentations is a serious academic offence, equivalent in degree to plagiarism for which the penalties may include revocation of degrees, loss of credits, or suspension or expulsion from the University.

Irregularities in Admissions Procedures

A person who gains admission or assists any other person in gaining admission by any irregular procedure, for example, by falsifying an academic record or by forging a letter of recommendation or by impersonating any other person, commits an academic offence and is liable to a penalty (see Senate Discipline Committee).

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:

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

(b) attempting to secure or accepting assistance from any other person at any examination or test, or,

(c) having in one's possession or using any unauthorized material during the time that one is writing any examination or test, or,

(d) without authorization procuring a copy of an examination, test or topic for an essay or paper, or,

(e) in the absence of any enabling statement by the Faculty member in charge of that course, submitting any thesis, essay, or paper for academic credit when one is not the sole author, or,

(f) without authorization submitting any thesis, essay or term paper that has been accepted in one course for academic credit in any other course in any degree, diploma or certificate program.

4. 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.

5. No refund of fees will be made to any student required to lose credit for any course taken, required to withdraw or who is suspended or dismissed from any class or any Faculty of the University.

Senate Discipline Committee

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, 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 penalties as indicated in 3. below.

(d) 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).

(e) If the member of the University found to have committed an offence or irregularity is a student, she/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.

3. Academic Penalties

- (a) loss of all credit for any academic work done during the year in which the offence occurred;
- (b) suspension of rights to attend the University for a specified period;
- (c) dismissal from the University;
- (d) such lesser penalty as the Committee deems appropriate where mitigating circumstances exist.

Faculty of Graduate Studies

Location: Arts & Administration Building,
Room 314
Halifax, N.S. B3H 4H6
Telephone: (902) 494-2485
Fax: (902) 494-8797

Administrative Officers

Dean, K.T. Leffek, BSc, PhD (Lond.)
Assistant Dean, J. Fingard, BA (Dal), MPhil, PhD
(Lond.)
Secretary, W.K. Honig, BA (Swarthmore), PhD
(Duke)
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

B. Archibald	'90 Law School
P. Farmer	'90 Pharmacy
R. Klein	'90 Psychology
J. Novitaky	'90 Biology
B. Crowley	'90 Political Science
W. Honig	'91 Psychology - Secretary
D. McNeil	'91 English
G. Gabor	'91 Math, Stats. & Computing Science
J. Stolzman	'91 Sociology/Social Anthropology
D. House	'91 Classics
R. Stephens	'91 Chemistry
M. Cross	'92 Economics
E. Frick	'92 Library & Information Studies
A. Manicom	'92 Education
W. Mitle	'92 Recreation, Phys & Health Ed.
S. Sherwin	'92 Philosophy
W. Birdsall	University Librarian
N. Wintrip	Anatomy (DAGS Rep.)
K. Hahn	Microbiology (DAGS Rep.)
J. Fingard	Assistant Dean
K.T. Leffek	Dean

(Each discipline to have only one elected member on Council at a given time.)

Scholarship Committee

P. Pacey	'90 Chemistry
A.M. Simpson	'90 Physics
R.P. Gupta	'90 Math, Stats & Computing Science
A.H. Blair	'91 Biochemistry
M. Stone	'91 English
R. Bleasdale	'92 History
R. Lee	'92 Biology

Killam Postdoctoral Fellowship

P. Borwein	'90 Math, Stats & Computing Science
C. Marfels	'90 Economics
K.R. Thompson	'90 Oceanography
P. Dolphin	'91 Biochemistry
R. Apostle	'91 Sociology/Social Anthropology
P.H. Reynolds	'92 Geology
R. Bérard	'92 Education
J. Pincock	'92 Chemistry
E. Angelopoulos	'92 Biology

Research Development Fund

Social Sciences & Humanities

T. Vinci	'90 Philosophy
C. Marfels	'90 Economics
B. MacDonald	'90 Library & Information Services
S. Shaw	'91 Recreation, Phys. & Health Ed.
J. Barkow	'91 Sociology/Social Anthropology
D.P. Varma	'92 English
C.T. Sinclair-Faulkner	'92 Comp. Religion

Research Development in the Sciences

G. Elder	'90 Recreation, Phys. & Health Ed.
P.C. Jackson	'90 Anatomy
Chairperson	Biology
Chairperson	Chemistry
Chairperson	Geology
Chairperson	Math, Stats. & Computing Science
Chairperson	Oceanography
Chairperson	Physics
Chairperson	Psychology
K.T. Leffek	Dean - Chair

Killam Lecture Committee

H. Bednaraki	'90 French
J. Cornwall	'90 Economics
J. Smith	'90 Political Science
J. Kreuzer	'91 Physics
G. Gabor	'92 Math, Stats. & Computing Science
A. Barton	'92 Education

University Library Committee

A.H. Blair	'90 Biochemistry
S. Swaminathan	Math, Stats. & Computing Science

Human Ethics Review Committee

H. Poole	'90 Education
N. Brett	'91 Philosophy
P. Dunham	'91 Psychology
H. Robertson	'91 Pharmacology
A. Young	'90 Recreation, Phys & Health Ed
M. Arkle	'92 Nursing
J. Fingard	Assistant Dean (Coordinating Chair)

Academic Appeals Committee

T. Ghose	'90 Pathology
R.D. Guy	'91 Chemistry
R. Bérard	'92 Education

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Reserve Panel for Academic Appeals Committee

A. Bonen	'90 Recreation, Phys. & Health Ed.
T. Vinci	'91 Philosophy
M. Cassin	'92 Public Admin

Library Representatives on Faculty

J. Coughlan-Lambly	'92 Kellog Library
Lai Halung	'92 Killam Library
P. Lutley	'92 Macdonald Science Library
H. Melanson	'92 Killam Library

Studley Audio-Visual Ad Hoc Committee

Ron Hoffman Psychology - Faculty's Rep.

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 (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 and Information Studies (MLIS)
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 Aquaculture (Dip A)
Diploma in Marine Affairs (Dip MA)
Diploma in Public Administration (Dip PA)

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 11 for Fall convocation, giving the address to which the diploma is to be mailed.

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
MLIS: 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.

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.

MBS

- 2 year residency, 1 year if entering with advanced professional qualifications, e.g. BEng or BArch with a concentration in environmental studies.

MLIS

- 2 year residency.

MBA

- 2 year residency.

Dip A

- 1 year residency.

Dip MA

- 1 year residency.

Dip FA

- 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.

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; refer to departmental listing. 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 year of full-time residency completed in the Master's program will be counted towards the PhD residency requirement.

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 Dip A - 1 year
- From Bachelor's degree to Dip MA - 1 year
- From Bachelor's degree to Dip FA - 1 year

From Honours Bachelor's degree to MA or MSc - 1 year

From Pass Bachelor's degree to MA or MSc - 2 years

(MSc in Human Communication Disorders and in Oral and Maxillofacial Surgery - 3 years).

From BEd to MEd - 1 year

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 MLIS - 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

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 BEd to MEd - 3 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 MLIS - 6 years From Bachelor's degree to MN - 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 above thereafter he/she pays annually a thesis-only or continuing fee. The fee is the same for all programs except MBA, MSc Oral and Maxillofacial Surgery, 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

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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 LL.M 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 except in an LL.M program where the students may take up to three (3) full credit classes in a 12 month academic year.

Graduate students 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 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 "special" 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 for complying 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. One credit is allowed in each Summer School session within the limits allowed by the student's program. 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 year of resident study at Dalhousie University is a minimum requirement for the Master's degree.

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

*Except interdisciplinary programs in African Studies and Environmental 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).

Ancillary: Classes which a department recommends as advisable additional background to the degree program, but not specifically required for that program, are termed ancillary classes and must be taken in a department other than the one in which the student is registered. The pass grade in these is the same as for the undergraduate faculty unless otherwise specified by the department.

Audit: Students may take one audit for each year of residency fee requirement in their program. Audits must be listed on the Program of Graduate Studies form.

Examinations will normally be the method of grade assessment in graduate classes. There are no supplementary examinations.

Pass Standard: Graduate students must achieve a minimum, or passing, grade of "B-" in all classes required as part of their degree program. A grade of "C" will be recorded as a failure. A student who fails to meet these requirements in any year is automatically withdrawn from the program. However, such a student may apply for readmission immediately.

In a professional program not more than one "C" grade in a class not regarded as ancillary is allowable. However, no credit will be granted for the "C" grade and the class must be repeated and a grade of "B-" or better obtained. A part-time student must obtain a pass mark in each class.

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 (Spring session) and September 1 (Summer 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', 'C', 'R' classes - 22 October, for 'B' classes - 11 February; 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

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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 25, for Spring Convocation, or August 31, 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 \$55.00* 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

Please note that the contents of this awards section are subject to change without notice.

The University reserves the right to publicize the recipients of merit awards.

3.1 Graduate Scholarships and Fellowships

(a) General Disciplines

Dalhousie Graduate Scholarships: Dalhousie graduate scholarships are offered in the various fields of the liberal arts, science and interdisciplinary studies.

Applications for scholarships must be made on the form "Application for Admission" which is obtainable from the Registrar. Graduate scholarships 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. Scholarships are

not offered to anyone on leave from a job with salary continuation. In order to be eligible for a Dalhousie Graduate Scholarship, 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 scholarship assistance are advised to submit their applications no later than March 31.

In general, the Dalhousie Graduate Scholarship will be paid to the student in regular monthly payments on the 27th of each month, after University fees have been deducted. Cheques are available from the Office of the Dean of Graduate Studies, Rm. 314, Arts & Administration Building upon presentation of a current valid Dalhousie Student identification card. 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.

Applicants for graduate scholarships should write to the head 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 also receive Dalhousie supplements within the limits set down by the agencies offering the awards.

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.

Only those students registered in a program with a thesis requirement are eligible to be recommended for the Izaak Walton Killam Memorial Scholarship.

Scholarships may be renewed annually upon evidence of satisfactory completion of work leading toward the Master's or Doctoral degree, subject to the following maxima; Masters students may hold a Killam Scholarship for up to 24 months and PhD students for up to 36 months, plus reconsideration in the general competition for a further 12 months (maximum 48 months). The scholarships are valued at \$13,500 (1989-90) for a Masters program and \$14,300 (1989-90) for a

Doctoral program. 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.

Killam scholarships are open to both Canadians and non-Canadians. Please note that candidates do not apply for these Scholarships. On the basis of the information in a completed application for admission the graduate department concerned may nominate the student to the selection committee. Applications for admission to the University for Graduate Studies are available from the Office of the Registrar, Dalhousie University, Halifax, NS, B3H 4H6.

The Izaak Walton Killam Postdoctoral Fellowships: Killam funds also provide for postdoctoral fellowships in most fields of study. The annual stipend is \$27,000 (1989-90) 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. Qualifying applicants should have recently completed a PhD degree at a recognised university, or expect to obtain a degree before taking up the award. Fellows may engage in teaching or other similar duties in the University. These awards are tenable only at Dalhousie University and may be taken up 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, B3H 4H6. Applications and supporting documents should be received at Dalhousie University no later than December 15th. The results of the competition are usually announced mid-February, and all applicants are notified of the results.

(b) Specific Disciplines

Business Administration

Goldberg-Schullich Award for Entrepreneurship: The Nevada Capital Corporation in 1984 donated the sum of \$29,000 to establish an award in memory of Meyer Goldberg of Halifax, N.S. This award is available to a student entering the second year of Dalhousie University's MBA program.

The Scotiabank Scholarships: The Bank of Nova Scotia has established at Dalhousie University two scholarships valued at \$12,500 each. These are open to Canadian and Caribbean citizens and permanent residents who fulfill the normal requirements for admission to the Faculty of Graduate Studies and to the MBA program.

Candidates will be well-rounded individuals with a clear record of outstanding scholastic achievements during undergraduate studies. The awards are renewable contingent upon maintaining a high level of scholastic achievement and continuing full-time studies in the program. Applications for Scotiabank Scholarships are available from Graduate Admissions, Dalhousie University, Halifax, N.S., B3H 4H6. Completed applications are to be received no later than 15 April. Please note that the MBA program application must also be completed by the same date.

The Department of External Affairs Fellowships in International Business: Fellowships of \$3,000 to \$4,000 per annum are awarded to full-time second-year students specializing in the field of International Business. Candidates must be Canadian citizens or permanent residents, and have a strong academic record. Fellowship recipients will be selected on the basis of a career interest in international business and academic performance to date. For further information contact the Centre for International Business Studies, School of Business Administration.

English

C.L. Bennet Memorial Scholarship: The Department of English has designated that one University scholarship in the amount of \$500 be awarded annually as a memorial to the late Professor of English, Dr. C.L. Bennet. This award will be made to an outstanding graduate of a Maritime or Newfoundland university (other than Dalhousie) who wishes to pursue an MA in English at Dalhousie. Eligible students should apply for Graduate Study in English in the usual way, by March 31st, indicating a desire to be considered for the Bennet award. Further details may be obtained from the Department of English, Dalhousie University, Halifax, NS, B3H 3J5.

The James W. Tupper Graduate Fellowship in English: This fellowship, of an annual value of approximately \$5,500 is awarded by the faculty of the Department of English to a student who proposes to do graduate work in English at a university approved by the faculty. The award need not be held at Dalhousie. Further information may be obtained from the Department of English.

Environmental Studies

The Gerald and Margaret Godsoe Scholarship: This scholarship has been established by the Godsoe family to support a highly qualified and motivated individual entering the Master of Environmental Studies (MES) program at Dalhousie. The recipient must hold an honours degree in natural or social sciences, engineering, architecture or its equivalent, and have first class standing in his/her course of study or have proof

of exceptional merit. Further, the recipient must have made significant contributions through community service, leadership, and education on environmental issues. Eligibility is limited to Canadian citizens and permanent residents of Canada living in the country. The award is valued at \$10,000 per year and may be renewable. The recipient will be selected by the Admissions Committee at the School for Resource and Environmental Studies. Additional information about application procedures is available from the School for Resource and Environmental Studies.

Library

The H.W. Wilson Scholarship: Sponsored by the H.W. Wilson Foundation, the scholarship, valued at \$1,000 US, is intended to attract exceptional young men and women who would not otherwise be able to make librarianship the choice for a career. Apply to the Director, School of Library & Information Studies, Dalhousie University.

Oceanography

The Professor F. Ronald Hayes International Scholarship: This scholarship fund was established in memory of Professor F. Ronald Hayes, founder and first director of the Institute of Oceanography of Dalhousie University, and in commemoration of the Joint Oceanographic Assembly which was held at Dalhousie during August 1982. The purpose of the scholarship is to provide financial support for a new graduate student in the first year of an MSc or a PhD program in the Department of Oceanography. The recipient must be from a developing country, as stipulated in the terms of reference, and will be nominated through the normal screening process by the Departmental Graduate Admission Committee. For further information contact the Department of Oceanography.

Oral and Maxillofacial Surgery

John P. Laba Memorial Research Award: The income, earned from a fund established in memory of John P. Laba by family, friends, patients and colleagues, will provide for this award which may be given annually. The recipient will be the dentist accepted in the Graduate Program in Oral and Maxillofacial Surgery and will be given exclusively for the presentation, dissemination and/or publication of research related to Oral and Maxillofacial Surgery. For further information please contact the Department of Oral and Maxillofacial Surgery.

Pharmacy

The Parke, Davis Pharmacy Research Fellowship: Parke, Davis Canada Inc. annually sponsors a fellowship of \$2,000 to a graduate student in the College of Pharmacy. For further information contact the College of Pharmacy.

The Novopharm Pharmacy Research Fellowship: Novopharm Limited sponsors an annual fellowship of \$500 to a graduate student in the College of Pharmacy who demonstrates superior research achievements in biopharmaceutics or drug metabolism. For further information contact the College of Pharmacy.

Physics

The William Leiper Memorial Scholarship: An endowment has been established to provide an annual scholarship to a deserving graduate student in physics. Awarded at the discretion of the Physics Department, the scholarship is normally granted to a student already engaged in graduate study at Dalhousie.

The James Gordon MacGregor Memorial Teaching Fellowship in Physics: One fellowship of the value of \$2,500 is offered. To be eligible, the candidate must have the necessary qualifications for admission to the Master's program in Physics. The holder of this fellowship is expected to give instruction in the laboratory during the academic season. Nominees will be selected by the Department from those who apply for Dalhousie Graduate Fellowships; no separate application is necessary.

The Dr. A. Stanley MacKenzie Teaching Fellowship in Physics: One fellowship of the value of \$600 is offered. To be eligible, the candidate must have the necessary qualifications for admission to the Master's program in Physics. The holder of this fellowship is expected to give instruction in the laboratory during the academic season. Nominees will be selected by the Department from those who apply for Dalhousie Graduate Fellowships; no separate application is necessary.

Psychology

The Dr. Mabel E. Goudge Scholarship in Psychology: In her Will the late Dr. Mabel Goudge bequeathed a sum of money with which to endow scholarships to qualifying graduate psychology students at Dalhousie. The scholarship in graduate studies is restricted to experimental or clinical psychology. For further information contact the Department of Psychology.

(c) Of Interest to Women

Eliza Ritchie Doctoral Scholarship for Women: The Eliza Ritchie Doctoral Scholarship has been established to commemorate Women's Centennial Year and to recognize the contribution to Dalhousie of one of its most important nineteenth-century graduates. After completing her undergraduate studies at Dalhousie in 1887, Eliza Ritchie (1856-1933) became one of the first Canadian women to receive a PhD degree (Cornell University, 1889). She cut short her

professional career at Wellesley College to return to Halifax in 1899, where she devoted her energies to feminist and cultural causes, and to Dalhousie, for the rest of her life. She was the first warden of a Dalhousie women's residence (Forrest Hall, 1912-13), the first woman to serve as a member of the Dalhousie Board of Governors (1919-25), a founding member of the editorial board of the *Dalhousie Review*, and the first woman to receive an honorary degree from Dalhousie (LL.D., 1927). Scholarships will be awarded to Canadians and permanent residents only and preference will be given to candidates from the Atlantic Provinces. Among such applicants preference will be given to those in disciplines in which women are underrepresented. The award will have a value of \$14,300 (1989-90) for a 12-month academic period at Dalhousie. One scholarship may be awarded each year. The deadline for the receipt of the prescribed applications is 1st March. Additional information and application forms are available from the Faculty of Graduate Studies, Dalhousie University.

3.2 Bursaries

General Studies

The John and Lina Graham Commonwealth Bursary: The donors established this fund to mark the 75th anniversary in 1988 of the Association of Commonwealth Universities. The net annual income may be used to assist one or more graduate students who find themselves in need of financial aid while in Nova Scotia. Recipients will be residents of Commonwealth countries, other than Canada, who in the opinion of the selecting body demonstrate need.

3.3 Teaching Assistantships

Some departments may offer Teaching Assistantships. The number, amounts and conditions vary. Please enquire of your department or school.

4. University Services

4.1 University Computing and Information Services

University Computing and Information Services provides graduates students with mainframe and microcomputer facilities and services. Authorization to use the facilities must be arranged through course instructors or a student's thesis advisor. Mainframe computing is provided by a Digital Equipment Corporation VAX 8800 (VMS operating system). Terminal and microcomputers labs are located in the Computer Centre, the School of Business, and Carleton Campus. Students with a terminal or microcomputer at home can access the mainframe by telephone.

4.1.1 Computer Centre

The Computer Centre, in the basement of the Killam Library, houses labs that provide terminals, IBM-PC compatible and Apple Macintosh microcomputers for general student access. It is also the location of the offices of Academic Computing Services, Facilities and Operations, and Communications Services.

4.1.2 Personal Computer Information Centre

The Personal Computer Information Centre, in the basement of the Killam Library, provides assistance in the evaluation and selection of microcomputer hardware and software. Demonstration machines and programs are on display from time to time.

4.1.3 School of Business

The School of Business lab is equipped with terminals and IBM-PC compatible microcomputers. These may be used to access several MicroVAX microcomputers used by the School of Business or the VAX 8800 mainframe. The MicroVAX can also be accessed by telephone.

4.1.4 Carleton Campus

The Carleton Campus Computer Laboratory, in Dentistry room 2602, is equipped with IBM-PC compatible and Apple Macintosh microcomputers. These may also be used to access the VAX 8800 mainframe.

4.1.5 Consulting

Assistance is available at each lab from both student assistants and full time staff of Academic Computing Services. The student assistants provide assistance with common problems with the operating systems, editors, and frequently used languages and packages. Staff may provide further assistance to faculty, staff, and thesis students.

4.1.6 Non-credit Courses

Students should plan ahead to be sure they know how to make use of the facilities available to them. Academic Computing Services, in conjunction with Henson College, offers a series of non-credit courses. Topics include the use of the mainframe and microcomputers programs for word processing and statistical analysis; skills useful during thesis preparation. Interested students should investigate these at the beginning of term.

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 more than 5,900 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, the Sprott Modern Australian Literature 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.

4.3.3 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.

4.3.4 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.

4.3.5 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 Atkins' 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 undergraduates 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. The same residency requirements apply to the Interdisciplinary PhD as all other PhD programs.

(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.'

Anatomy

Location: Sir Charles Tupper Medical Building
Halifax, N.S. B3H 4H7
Telephone: (902) 494-2051

Head of Department

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

Professors

D.M. Chapman, MSc (Man.), PhD (Cantab.)
D.H. Dickson, BA, MSc, PhD (W.Ont.)
D.A. Hopkins, BSc (Alta.), MA, PhD (McMaster)
D.M. Nance, BS, Ms, PhD (Oklahoma)
R.J. Wasseraug, BSc (Tufts), PhD (Chicago)

Associate Professors

J.R. Asuncion, Jr., MD, CM (Santo Tomas), AA
(Philippines)
R.E. Clattenburg, BSc, MSc (Acadia), PhD
(W.Ont.)
R.W. Currie, BSA, MSc, PhD (Man.)
M.M. Hansell, BSc (Tor.), PhD (Calif.)
I.G. Mobbs, BSc (Aberdeen), MSc (McMaster),
PhD (W.Ont.)
J.C. Penny, MSR, FSR, TE (Lond.)
J.G. Rutherford, BA (Cornell), MS (Syracuse),
PhD (SUNY)
K. Semba, Bed, MA (Tokyo), PhD (Rutgers)

Assistant Professors

P.C. Jackson, PhD (McMaster)
W.B. Mathieson, MSc (Carleton), PhD (Ottawa)

Instructor

C. Marshall, MD, BSc, MSc (Dal)

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 an MSc program but, after 1 year, may transfer to a PhD program. 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 up to 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).

Combined MD/PhD Program

For information on the combined MD/PhD program see section 6 on page 51.

Classes

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

504R Microanatomical Techniques: one credit, co-ordinator D.M. Nance.

505C Seminar: half credit (alternate years), co-ordinator Staff.

507R Histochemistry: one credit, co-ordinator D.M. Chapman.

509B Cellular Development in the Nervous system: half credit, co-ordinator P. C. Jackson.

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.W. Wassersug.

517C Special Topics: half credit, co-ordinator arranged according to research topic.

9000 MSc Thesis

9530 PhD Thesis

Biochemistry

Location: Sir Charles Tupper Medical Building
5859 University Avenue
Halifax, N.S. B3H 4H7

Telephone: (902) 494-2480
Fax: (902) 494-1355

Head of Department

W. Carl Breckenridge, Carnegie and Rockefeller Professor

Professors

A.H. Blair, MSc (UBC), PhD (Calif.) - Graduate

Coordinator (Telephone: 494-2407)

W.C. Breckenridge, BSc (Kingston), MSc, PhD (Tor.)

R.W. Chambers, BA, PhD (Calif.)

P. J. Dolphin, BSc, PhD (Southampton)

W.F. Doolittle, AB (Harv.), PhD (Stan.)

M.W. Gray, BSc, PhD (Alta.)

C.W. Helleiner, BA, PhD (Tor.)

C.B. Lazier, BA (Tor.), MSc (UBC), PhD (Dal)

C. Mezel, Dipl.Pharm.(Hung.), MSc, PhD (UBC)

F.B. Palmer, BSc, PhD (W. Ont.)

D.W. Russell, B.Pharm. PhD, DSc (Lond.), BEd (Dal)

M.W. Spence, MD (Alta.) PhD (McG.)

S.D. Wainwright, BA (Cantab.), PhD (Lond.)

J.A. Verpoorte, Drs (Utrecht), DSc (Pretoria)

Associate Professors

H.W. Cook, BSc, MSc (McG), PhD (Dal)

E.A. Faust, BSc, PhD (McGill)

F.I. Maclean, MA (Tor.), DPhil (Oxon.)

R.A. Singer, AB (Princeton), PhD (Harv.)

C.J.A. Wallace, MA, DPhil (Oxon)

Assistant Professors

D.E.C. Cole, BSc, MD (Tor), PhD (McG)

P.X-Q. Liu, BSc (Wuhan), PhD (Cornell)

M.H. Tan, BSc, MD (Dal), FRCP(C), FACP

C.G. Waghorne, BSc (Guelph), PhD (Tor.)

Lecturers

D.M. Byers, BSc, MSc (Dal), PhD (Alta.)

S.S. Reddy, BS, MD (Memorial), FRCP (C)

D.C. Riddell, BSc, PhD (Kingston)

Admission Requirements

General requirements for admission to the Faculty of Graduate Studies are given in section 2.2. In addition, foreign applicants must 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 without an honour BSc or MSc in Biochemistry are asked to demonstrate a basic knowledge at an introductory level of all aspects of Biochemistry. Students develop 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 assessment tests (which may be open-book) in four areas: general biochemistry with emphasis on proteins; 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 component is developed by formal classes and/or guided study arranged for each student through consultation with his or her advisory committee. Students also participate in the Biochemistry Seminar series (Biochemistry 5900-5903). 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. Scholarship support is available and additional information can be obtained by contacting the department.

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.

Combined MD/PhD Program

For information on the combined MD/PhD program see section 6.2 page 51.

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. Organization, expression and evolution of mitochondrial DNA; ribosomal RNA structure, synthesis and evolution; biochemical mechanisms of transcription and RNA processing (M.W. Gray).
6. Insulin action in skeletal muscle (M.H. Tan).
7. Myelin gene expression in the developing, regenerating and demyelinated peripheral nerve (C. Mezel).
8. Metabolism of physiologically active membrane phospholipids (F.B. Palmer).
9. Molecular biology of biological clocks with special reference to neurohormones in chick pineal gland and retina (S.D. Wainwright).
10. Mechanism of estrogen action: estrogen receptors and gene expression, antiestrogenic drugs (C.B. Lazier).
11. Chemical and physicochemical studies on enzymes and cell membrane proteins (J.A. Verpoorte).
12. 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).
13. Metabolism of unsaturated fatty acids and membrane phospholipids in cultured cells (H.W. Cook).
14. Membrane-bound enzymes of lipid metabolism, local membrane remodeling and bulk turnover in eukaryotic cells in culture. Human inherited metabolic diseases (M.W. Spence).
15. Mathematical programming, game theory and metabolic oscillations (F.I. Maclean).
16. Mutagenesis and carcinogenesis. Nucleic Acid Chemistry. Site-specific mutagenesis. The molecular mechanisms of mutations by carcinogens (R.W. Chambers).
17. Protein engineering by semisynthesis and site-directed mutagenesis. Control and branching of mitochondrial electron transport (C.J.A. Wallace).
18. Mechanism and regulation of fatty acyl transferases and synthetases; bacterial bioluminescence; diseases of intracellular cholesterol metabolism (D.M. Byers).
19. Catalytic mechanisms of lipid metabolizing enzymes (P.J. Dolphin).
20. Enzymology of DNA replication in

mammalian cells; DNA polymerase alpha-primase; parvovirus DNA replication (E.A. Faust).

21. Molecular mechanisms of tumour progression and metastasis (C.G. Waghorne).
22. Insulin receptor function and its changes due to membrane alterations (S.S. Reddy).
23. Human molecular genetics (D.C. Riddell).
24. Gene regulation in the biosynthesis of chloroplast and mitochondrial enzyme complexes; structure, function, and evolution of ribosomal proteins (P.X.-Q. Liu).

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.

4301B Biochemical Communication: Membranes, Neurotransmitters and Hormones: lecture 2 hours, C. Mezel, C. Lazier.

4302A Biochemistry of Lipids: lecture 2 hours, H.W. Cook, F.B. Palmer, P.J. Dolphin, M.W. Spence.

4304B Integration and Control of Metabolism: lecture 2 hours, F.I. MacLean and F.B.St.C. Palmer. Prerequisites: Biochemistry 3200 and 3300 (Biology 3012 and 3013) or equivalent.

4403A (Microbiology 4403A) Structure, Organization and Replication of Genes: lecture 2 hours, W.F. Doolittle/M.W. Gray.

4404B (Microbiology 4404B) Gene Expression: lecture 3 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.

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.

***5401B Transcription and RNA Structure:** lecture/seminar and guided reading 2 hours, M.W. Gray.

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

5601C and 5602C Selected Topics in Advanced Biochemistry: guided reading and tutorial, Biochemistry faculty members.

5603A: Advanced Laboratory in Biochemical Techniques: Lab: 72 hours total approx. The class will consist of a series of laboratory modules (each of 4 weeks' duration, 6 hours per week) organized collaboratively by the Departments of Biochemistry, Biology, and Microbiology. Several modules will be offered in 3 sections covering techniques used in the study of molecular biology, protein structure-function, and specific metabolic processes. Graduate students may select their three modules from any section or sections, subject to availability of space. Such students should consult the department regarding prerequisites. Biochemistry, Biology, and Microbiology faculty members. Coordinator for Biochemistry: C.J.A. Wallace.

***5800R (Pathology 501) Clinical Medical Biochemistry:** Lecture 2 hours, case studies 1 hour, lab by arrangement. Pathology faculty members.

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

5900-5903 Biochemistry Seminar: seminars dealing with topics of current interest for Biochemistry graduate students. Coordinator: D.M. Byers.

9000 MSc Thesis

9530 PhD Thesis

Biology

Location: Life Sciences Centre
1335 Oxford Street
Halifax, N.S. B3H 4J1
Telephone: (902) 494-3515
Fax: (902) 494-3736

Chair

W.C. Kimmins

Professors

R.G. Brown, MSc (McG.), PhD (Rutgers)
A.R.O. Chapman, PhD (Liv.)
R.W. Doyle, MSc (Dal), PhD (Yale) Director,
Gene Probe Laboratory
J. Farley, MSc (W.Ont.), PhD (Man.)
J.C. Fentress, PhD (Cantab.) Major appointment
in Psychology
E.T. Garalde, MA, PhD (Tor.)
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, PhD (UBC) - Director, Aquatron
J.G. Ogden, III, MA (Tenn.), PhD (Yale)
D.B. Stoltz, PhD (McMaster), Microbiology Dept.
L.C. Vining, MSc (Auck.), PhD (Cantab.), FRSC
J.H.M. Willison, PhD (Nottingham)
E. Zouros, MSc, PhD (Agr. College Athens), PhD
(Chc.)

Associate Professors

E.W. Angelopoulos, MS, PhD (Minn.)
R.G. Boutilier, MSc (Acadia), PhD (East Anglia)
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)
T.H. MacRae, MSc, PhD (Windsor)
R.P. McBride, MSc (UBC), PhD (Edin.)
J.A. Novitsky, BSc (Penn. St.), PhD (Oregon SU)
D.G. Patriquin, MSc, PhD (McG)
R.E. Scheibling, BSc, PhD (McG)
S.R. Shaw, BSc (London), PhD (St. Andrews),
Psychology Dept.

Associate Professor (Research)

G.F. Newkirk, PhD (Duke)

Assistant Professors

A. Pinder, PhD (U. Mass), NSERC Res. Fellow
B. Pohajdak, PhD (Manitoba)
S. Walde, PhD (Calgary), NSERC Res. Fellow
H. Whitehead, MA, PhD (Cambridge), NSERC
Res. Fellow
J.M. Wright, PhD (Memorial)

Adjunct Professors

R.G.S. Bidwell, MA, PhD (Queens), FRSC
J.D. Castell, MSc (Dal), PhD (Oregon St.),
Fisheries and Oceans
J.S. Craigie, MSc, PhD (Queens), Atl. Reg. Lab,
NRC
K.H. Mann, PhD (Reading), DSc (Lond.), FRSC,
BIO
J.L. McLachlan, MA, PhD (Oregon State
College), Atl. Reg. Lab, NRC
M. Schrempf, PhD (Stuttgart-Hohenheim),
Universität Osnabrück, W. Germany
M. Silver, PhD (Syracuse)

Research Associates

C.M. Herbing, MSc (DEA Paris), PhD (Dal),
Gene Probe Laboratory
E. Retalack, MSc (Dal), PhD (Manchester)
J. Zhu-ge, (Wuxi)

Honorary Research Associates

D.Aiken, MSc (New Hamp.), PhD (Alberta),
Fisheries and Oceans
W.D. Bowen, PhD (UBC), BIO
C.D. Caldwell, PhD (East Anglia), N.S. Agric.
Coll.
S.E. Campana, PhD (UBC), BIO
A.T. Charles, PhD (UBC), St. Mary's University
D.K. Cone, MSc (Guelph), PhD (UNB), St.
Mary's Univ.
M.L. Connor, PhD (Manitoba), N.S. Agric. Coll.
R.J. Conover, PhD (Yale), BIO
D.C. Crober, PhD (UBC), N.S. Agric. Coll.
S.R.V. Durvasula, MSc, PhD (Andhra)
R.W. Elner, PhD (UC North Wales), Fisheries
and Oceans
K.T. Frank, PhD (Toledo), BIO
A.H. Fredeen, PhD (McGill), N.S. Agric. Coll.
A.B. Gray, MSc, PhD (McG)
B.T. Hargrave, MSc (Dal), PhD (UBC), Fisheries
and Environment
W.G. Harrison, PhD (North Carolina, Raleigh),
BIO
H.Y. Ju, PhD (McGill), N.S. Agric. Coll.
J.J. Kerekes, MSc (Alberta), PhD (Dal), Canadian
Wildlife Environment Canada
S.R. Kerr, MSc (Queens), PhD (Cal.), BIO.
S.P. Lal, MSc, PhD (Guelph)
J.P. LeBlanc, PhD (McG), N.S. Agric. Coll.)
I.A. Meinertzhagen, PhD (St. Andrews),
Psychology Dept., Dalhousie
J. Nowak, PhD (Olsztyn), PhD (Dal), Fisheries
and Oceans
A.R. Olson, PhD (Alberta) N.S. Agric. Coll.

- D.L. Patterson, MSc (Guelph), PhD (Guelph),
N.S. Agricultural College
T.C. Platt, MA (Tor.), PhD (Dal), BIO
R.K. Prange, MSc (UBC), PhD (Guelph)
J.D. Pringle, MSc (Victoria), PhD (Dal), Fisheries
and Oceans
M. Ragan, PhD (Dal)
M. Sinclair, MSc, (Southampton), PhD (Scripps
Inst.) (Fisheries and Oceans) Appt. through
Oceanography
T. Tennessen, PhD (Alberta), N.S. Agric. Coll.
J.P. van der Meer, PhD (Cornell), Atl. Res. Lab,
NRC
R.J. Wasseraug, PhD (Chic.), Dept. of Anatomy,
Dalhousie
J.L.C. Wright, PhD (Glasgow), Atl. Reg. Lab,
NRC

Postdoctoral Fellows

- F. Bentzen, MSc (UBC), PhD (McG)
J. Bertram, MSc (UBC), PhD (Chicago)
A.C. Burke, MA, PhD (Harvard)
A. Graveson, BSc (Bishop's)
P. Mabee, PhD (Duke)
R. McGarvey, MA (Oregon)
T. Miyake, MS (Michigan), PhD (Texas A & M)
G. Popsion, PhD (UBC)
B. Ramsey, MSc (Guelph), Gene Probe
Laboratory
C. Stacler, MSc (NAU)
E. Taylor, MSc, PhD (UBC)
B. Tufts, MSc (Acadia), PhD (UBC)

The Department encourages applications from prospective postdoctoral fellows. Financial support is available on a competitive basis from a variety of sources (e.g. individual professors, Killam, NSERC). Inquiries should be made before November and can be addressed to the Chair of Biology.

Admission

The Biology Department has facilities for advanced study and research leading to the MSc and PhD degrees.

Candidates must satisfy the general requirements for admission to the Faculty of Graduate Studies and normally a student will not be permitted to earn all three degrees (BSc, MSc, and PhD) at Dalhousie. All inquiries for admission to the graduate program should be addressed to Dr. Finn Sander, Biology Department.

Diploma in Aquaculture

The program normally requires one year to complete if pursued full time, but may be completed in a longer time on a part-time basis. The minimum entrance requirement is a 3-year BSc degree or its equivalent from a recognized institution of higher education.

Classes and directed individual study programs will be chosen for each student to provide an

understanding of the experimental methods needed to solve problems that arise in the development of aquaculture systems.

During the academic year students will be expected to take a total of 8 (eight) half classes at the graduate level in the areas of genetics, physiology, and fish biology. The following classes will be required by all students in the diploma program (credits given in parentheses):

- Seminar in Current Topics in Fisheries and Aquaculture (½)
- Statistics and/or Computer Programming Classes (total 1 credit)
- Nutrition (Biology 5072C) or Physiology (Biology 5070C) (½)
- Aquaculture Genetics (½)
- Fisheries Oceanography (Oceanog. 5160B) or Fish Biology or Bivalve Biology and Culture (½)
- Introductory Fisheries Population Dynamics or Aquaculture Management (½)
- At least one elective from Biology, Oceanography or Resource & Environmental Studies (½)

During the final three months of the course individual directed study will be carried out for an additional credit. The directed study will be supervised by a faculty member and will usually entail the preparation of an extensive paper based on library research but may also be a report of a study or research project undertaken in industry or in the laboratory. Interaction with the local aquaculture industry, research laboratories and government agencies will be encouraged in this final stage.

The program for the Diploma in Aquaculture will normally start in September and be completed within 11 months (8 months of class work and 3 months of independent study). A total of 5 graduate credits will be required as specified above (4 class credits and one project credit).

Inquiries regarding admission should be directed to the Chair of the Biology Department.

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, and in the case of students supervised at Nova Scotia Agricultural College, may include classes given at the College (see Stream E, below). 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 (or 5701C) and Biology 5705C (or 5706C/5707C) 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 one year, and must be admitted to candidacy before submitting a thesis.

A thesis reporting original research must be defended orally. Students are expected to participate in weekly departmental seminars.

Streams

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

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

Graduate credit in MSc and PhD programs will be granted for the following NSAC classes: AS475 Ruminant Digestive Physiology and Metabolism (A.H. Freeden, A. Lirette); B475 Agricultural Biology (J. Nowak); PS475 Plant Biotechnology (J. Nowak).

Graduate credit may be obtained for other NSAC classes on request to the Graduate Coordinator. Some modules in the Dalhousie classes 5705C, 5706C and 5707C will normally be given at Nova Scotia Agricultural College.

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.

5024A **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.W. Lee.

5060B **Environmental Ecology:** lecture 2 hours, lab/tutorial, 3 hours, B. Freedman.

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

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

5070C **Advanced Topics in Animal Physiology:** lecture 2 hours, open lab 3 hours, R.K.O'Dor, R. Boutillier; instructor: M.J. O'Halloran.

5072R **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, M. Silver.

5102A **Developments in Biotechnology:** lecture, seminar 2 hours, L. Vining.

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

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

5490B **Topics in Human and Medical Genetics*:** lecture, seminar 2 hours, S.R. Blecher, J.T.R. Clarke, O.P. Kamra (Coordinator), R.S. Tonka, J.P. Welch, B. Winsor, E. Zouros and others.

5600A **Aquaculture*:** lecture, seminars, group study and 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.

5652C **Ecology Evolution Seminar:** seminar and discussion 1 hour, staff.

5654A **Plant Ecology:** lecture 2 hours, lab 3 hours, 1 or 2 field trips on weekends, B. Freedman

5700C **Communications Skills for Scientists:** 1 hour, R.P. McBride.

5701C **Communication Assignment:** 1 hour, R.P. McBride.

5705C **Graduate Module Class I:** 2 hours, staff.

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

5707C Graduate Module Class III: 2 hours, staff.

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

9000 MSc Theses

9530 PhD Theses

Areas of Specialization

Stream A - Ecology/Evolution/Marine Biology
Biology and culture of lobster and scallops (D.E. Alken)

Population dynamics and management of seals (W.D. Bowen)

Incremental growth of fish otoliths (S.E. Campana)

Population and community ecology of seaweeds (A.R.O. Chapman).

Ecological, economic and social interactions in fisheries (A.T. Charles).

Ecology; Zooplankton physiology and population studies (R.J. Conover).

Ecological genetics of marine organisms (R.W. Doyle).

Phytoplankton ecology and primary production (S.R.V. Durvasula)

Ecology and population dynamics of lobsters and crabs (R.W. Elnor).

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.T. Frank).

Marine benthic ecology (B.T. Hargrave).

Marine phytoplankton (W.G. Harrison).

Chemical and biological effects of lake acidification; primary production and nutrient-trophic relationships in lakes (J.J. Kerekes).

Marine population studies; ecology (S.R. Kerr).

Seal biology (W.C. Klimmins).

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).

Marine botany (J.L. McLachlan).

Population, evolutionary ecology of zooplankton, birds and seals (L.A. McLaren).

Biological oceanography, benthic invertebrates (E.L. Mills).

Environmental distribution of Sr90; radiocarbon dating; pollen stratigraphy (J.G. Ogden III).

Dynamics and spatial properties of phytoplankton. (T.C. Platt).

Ecology of crustacea and marine plants. (J.D. Pringle).

Foraging and life history strategies of marine invertebrates; population and community

ecology of marine benthos (R.E. Schelbling).
Fisheries biology (M. Sinclair).
Genetics of marine algae (J.P. van de Meer).
Predator-prey relationships (S. Wakde).
Evolutionary biology; anatomical adaptation (R.J. Wassersug).
Sperm whale social organization (H. Whitehead).
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).

Physiology and biochemistry of marine algae (J.S. Craigle).

Forest ecology, pollution and resource management, ecology (B. Freedman).

Plant biosystematics and biogeography; grass systematics (M.J. Harvey).

Development of cloning technologies for propagation of needle-leaved trees *in vitro* (G.S. Hicks)

Regeneration and reproduction in lower plants. (K.E. von Maltzahn).

Plant anatomy, taxonomy (A.R. Olson).

Electron microscopy; plant cell wall structure and development (J.H.M. Willison).

Stream C - Cell/Molecular/Genetics/Microbiology

Structure and function of plant cell wall glycoproteins. Control of expression in yeast and other fungi - role of glucose analogues (R.G. Brown).

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).

Marine Microbiology, microbial response to low nutrient conditions (J.A. Novitsky).

Isolating, cloning and identifying genes expressed in killer cells (B. Pohajdak).

Molecular biology of marine plants (M. Ragan).

Molecular genetics (H. Schrempf).

Bacterial leaching and environmental microbiology (M. Silver)

Viruses and parasitism in insects (D.B. Stoltz).

Microbial biochemistry; biotechnology; biosynthesis of antibiotics; metabolic controls (L.C. Vining).

Chemistry of marine natural products (J.L.C. Wright).

The molecular biology of the nuclear matrix (J.M. Wright).

Stream D - Development/ Animal Physiology/ Aquaculture

- Respiratory and acid-base physiology in lower invertebrates (R.G. Bout)
- 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. Garalde).
- Fish nutritional research (S.P. Lall)
- Invertebrate nervous systems: Their structural organization and development (L.A. Meinertzhagen).
- Aquaculture genetics and bivalve culture (G.F. Newkirk).
- Reproductive physiology and bioenergetics of molluscs, especially cephalopods. The life cycle of the squid (R.K. O'Dor).
- Development, nutrition, pathology of marine invertebrates (R. Scheibling).
- Optics of arthropod compound eyes (S.R. Shaw).
- Functional morphology of amphibian larvae (R. Wassersug).
- Ultrastructure of trypanosomes and Trichomonas (E. Angelopoulos).
- Developmental biology, cell differentiation, organ regulation (B.K. Hall).
- Comparative animal physiology (A. Pinder).

Stream E - Agricultural Biology

- Investigation of tacer movement in plant translocation systems (C.D. Caldwell).
- Melatonin and Reproduction in Fur Bearers (M.L. Conner).
- Effects of physiological parameters and hormone levels on egg production and fertility in the domestic fowl (D.C. Crober).
- Relationship of feeding and management to milk yield (A.H. Fredeen).
- Plant pathology in Nova Scotia (A.B. Gray)
- Effect of boron nutrition on glucosinolate content in crucifers (H.-Y. Ju).
- Pest management and pollination ecology (J.-P.R. LeBlanc).
- 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).
- Quantitative genetics of broiler chickens (D.L. Patterson).
- Ethology in Canadian Animal Science and its applications to research on cattle (T. Tennessen).
- Electron microscopy; plant cell wall structure and development (J.H.M. Willison).

Business Administration

Location: 6152 Coburg Road
Halifax, N.S. B3H 1Z5
Telephone: (902) 494-7080

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.

Director of the School

Leonard C. MacLean

Director, International Business Centre

Philip J. Rosson

Coordinator, MBA Program

M. Eileen MacDougall

Emeritus Professors

C.R. Brookbank, BA, MA, PhD (Toronto)
R.E. George, BSc (London), MS (Bristol), PhD (London)

Professors

M.A.H. Dempster, BA (Toronto), MS, PhD (Carnegie), MA (Oxford) (Roy A. Jodrey Chair)
C.R. Dipchand, BComm (Queen's), MBA (Sask.), PhD (Western).
L.C. MacLean, BA, Bed (St.FX), MA, PhD (Dal)
M.J.C. Martin, BSc (Nottingham), PhD (Sheffield)
J.R.E. Parker, B Comm (Dal), MBA (Wash.), CPhil (Mich.), CA
G.S. Roberts, AB (Oberlin), MA, PhD (Boston College)
P.J. Rosson, Dip. MS (Salford), MA (Lancaster), PhD (Bath.)
Y. Sankar, BA(McG), MA (Tor), PhD (Johns Hopkins)

Associate Professors

B.C. Archibald, BA (Queen's), MSc (Stanf.), PhD (Wat.)
R.G. Blunden, BComm (Dal), MM (Northwestern)
M.R. Brooks, BOT (McG.), MBA (Dal), PhD (Wales)
R. Carroll, BBA, BEd (St. FX), MBA (Dal), CGA
D.C. Cherry, B Comm (Dal), MBA (McM), CMA
J.E. Courod, BCom (Dal), MBA (Tor), CA

- F.G. Crane, BA (Acadia), DPA, MPA (Dal.), P. Adm. (P.A.D.I.C.S.A.), PhD (Bradford)
- 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.)
- L. Fooladi, BSc (Iran), MA (Tehran), MS, PhD (Ore.)
- R.E. Klapstein, BSc (Calg.), BA (Alta.), MBA, LLB (Dal), LLM (Osgoode Hall), CMA
- S.O. Larsson, BSc (SGW), MSc (Alta.), PhD
- R.N. Maddox, BA, MBA, PhD (Ohio)
- L.W. Mealica, AB, MBA (Rutgers), PhD (Mass.)
- A. Opong, BSc (Ghana), MBA (Chic.), PhD (Iowa), CGA
- D.J. Patton, BA (UNB), MA (Tor.), DBA (Indiana)
- A.C. Peacock, BA, MA, PhD (UWO)
- R.S. Sandhu, BSc, BCL, LLM (Delhi), LLM (Yale), MBA (Dal)
- D.A. Schellinck, BSc, MBA (Dal), PhD (Ill.)
- E.W. Scott, BComm (Dal), MBA (Col.), CA, CMA
- Y. Shafai-Sahrail, BSc, MPA (Tehran), MBA, PhD (Mich.)
- D.P.J. Sheridan, CD, BA, BEd, MEd (Admin.)(Sask.), PhD (Alta.)
- R.A. Street, BComm, LLB, LLM (Dal), MBA (Western)

Assistant Professors

- R.G. Baltazar, BSc (Ateneo de Manila), MIM, AGSIM
- H.I. Gassmann, Vordiplom (Stuttgart), MS (Oregon), PhD (UBC)
- J.K. Grude, BA (Alta), MSc, PhD (London)
- L.P. Hendry, BSc (SMU), MBA (Dal)
- B.W. MacLean, BComm, MBA (Dal), CA
- F.S. Skinner, BComm (MUN), MBA (Tor)

Visiting Professor

- D.I. Riddle, BA (Colorado), MBA (Arizona), PhD (Duke)

Lecturer

- P.S. Burton, BSc (Sask), MA, PhD (UBC)

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 contact:

M. Eileen MacDougall
Coordinator, MBA Program
School of Business Administration
6152 Coburg Road
Halifax, N.S. B3H 1Z5
Telephone: (902) 494-7080

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. Applications for the test are accepted by the E.T.S. in Princeton until approximately 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 to continue in the program with one C grade if an overall B average is maintained for the year. This special exception is available only to full-time students. No credit towards a degree is granted for any class in which a grade of less than B⁻ is obtained.

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 I classes must be repeated and passed at the earliest opportunity; failed elective or core II 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 only 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.

Most core classes and a selection of electives are offered at night each year, and any summer classes offered are scheduled at night.

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. Only Graduate level classes approved for Summer Session offering will be eligible for 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).

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 Strategic Management of International Operations, 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 Ocean Shipping Seminar

6805 A or B Seminar on Marine Resources and Ocean Industry
6806 A or B International Marketing
6807 A or B International Financial Management
6808 A or B International Banking
6809 International Trade in Services
6315 A or B Intercultural and Comparative Management

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

Combined LLB and MBA Program

This is a four-year program which enables students to select classes leading to the degrees of Bachelor of Laws and Master of Business Administration. The usual 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: Three half classes from the MBA program plus 25 hours of classes from the LLB program, including 7/9 hours from the Business Law area.

Year IV: Two half classes 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.

Special Students

Individuals who are not registered in any graduate program may take MBA classes only if they meet normal admission standards. Such "Special Students" and students in other graduate programs, will be admitted to MBA classes on a space available basis, and only with the approval of the MBA program co-ordinator.

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

Core I Classes

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

Core I Classes

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 (see below).

Depending on background, some students may take Operations Research in the second term, replacing it with a Core II or elective class in the first term.

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: New Venture Creation
or
MBA 6003 A or B: Managing Diversification

(MBA/LLB candidates - one of: 6801, 6902, 6002, 6003.)

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 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 School for up-to-date information.

Students may also elect to take a limited number of approved graduate classes in other faculties and departments, such as Mathematics, Statistics and Computing Science (e.g. CS5201), Environmental Studies, 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

Note: It may not be possible to offer every elective class each year. Please consult the university timetable for a list of current offerings.

Accounting

MBA 6101A or B Public 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 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 or B Advanced Financial Accounting 1: lecture. Prerequisite: MBA 5101 or permission of the instructor.

MBA 6109A or B 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.

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 Canadian 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 6207 A or B Insurance and Risk Management: lecture. Prerequisite: MBA 5101, 5201 and 5701.

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

Management

MBA 5321A or B Introduction to Human Resource Management: 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 Intercultural and Comparative Management: lecture. Prerequisite: MBA 5311, MBA 5312 (may be taken concurrently), MBA 6801 strongly recommended.

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

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

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

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

**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: 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 Transportation Management: 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).

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

MBA 6904 A or B Systems Analysis and Design: seminar. Prerequisite: MBA 6903.

MBA 6905 A or B Special Topics in Management Information Systems: seminar. Prerequisite: MBA 6903.

MBA 6906 A or B Database Management: lecture/seminar. Prerequisite: MBA 6903.

International Business

MBA 6802A or B Strategic Management of International Operations: seminar. Prerequisite: MBA 6801 and two other International Business courses.

MBA 6803A or B International Transportation: seminar. Prerequisite: MBA 6801 recommended.

MBA 6804A or B Ocean Shipping Seminar: seminar. Prerequisite: MBA 6803.

MBA 6805A or B Seminar on Marine Resources and Ocean Industry: seminar.

MBA 6806A or B International Marketing: seminar. Prerequisite: MBA 5401, MBA 6801 is strongly recommended.

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

MBA 6808A or B International Banking: seminar. Prerequisite: MBA 5701, 5702, MBA 6801 is strongly recommended.

MBA 6809A or B International Trade in Services: Lecture/Seminar.

MBA 6553A or B Managing Technological Innovation: seminar.

General

MBA 6901A or B Business Law: seminar.

MBA 6902A or B Business and Government: lecture.

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

Chemistry

Location: Chemistry Building
Dalhousie University
Halifax, N.S. B3H 4H3
Telephone: (902) 494-3305

Chairperson of Department
J.C.T. Kwak

Emeritus Professors

W.J. Chute, BSc (Acadia), MA, PhD (Tor.)
D.E. Ryan, BSc (UNB), MA (Tor.), PhD, DSc (Lond.), DIC

Professors

D.R. Arnold, BS (Bethany College), PhD (Roch.)
W.A. Auc, PhD (Vienna)
R.J. Boyd, BSc (UBC), PhD (McG) Senior Killam Fellow
T.S. Cameron, BA, MA, DPhil (Oxon.), Associate Dean of Faculty of Science
A. Chatt, BSc (Calcutta), MSc (Roorkee), MSc (Wat.), PhD (Tor.)
H.C. Clark, BSc, MSc, PhD (Auckland), PhD, ScD (Cambridge), President, Dalhousie University
J.A. Coxon, MA (Cantab.), MSc, PhD (East Anglia)
T.P. Forrest, BSc (MtA), MSc (Dal), PhD (UNB)
W.R. Jones, BSc, MSc (MtA), PhD (McG),
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
P.D. Pacey, BSc (McG), PhD (Toronto)
J.A. Pincock, BSc, MSc (Man), PhD (Tor)
R. Stephens, MA (Cantab.), MSc (Bristol), PhD (London), DIC
R.E. Wasylishen, BSc (Wat.), MSc, PhD (Man.)

Associate Professors

T.B. Grindley, BSc, MSc, PhD (Queen's)
J.S. Grossert, BSc, MSc, PhD (Natal)
K.R. Grundy, BSc, MSc, PhD (Auckland)
R.D. Guy, BSc (SFU), PhD (Carleton)
D.L. Hooper, BSc, MSc, PhD (UNB)
L. Ramaley, BA (Col.), MA, PhD (Prin.)
C.H. Warren, BSc (UWO), PhD (McM)
M.A. White, BSc (UWO), PhD (McM)

Assistant Professors

N. Burford, BSc (Univ. of Wales College, Cardiff), PhD (Calgary)
P.F. Kusalik, BSc (Lethbridge), MSc, PhD (UBC) NSERC University Research Fellow
P.D. Wentzell, BSc (Dal), PhD (Mich. State)

Visiting Scientists (1989)

T.C. Chang, National Cheng Univ., Tainan, Taiwan
A. Jarczewski, Adam Mickiewicz Univ., Poznan
Hua De Liang, Nanjing Oil Refinery, Nanjing, China
Aiqiu Liu, Shandong Inst. of Chemistry, China
J. Ou, Zhong Shan Univ., China
J.M. Ugalde, Euskal Herriko Unibertsitatea, Spain
Liang Chen Wang, B. China Univ. of Chem. Tech., Shanghai, China

Instructors

C.D. Burkholder, BSc (Wat.)
C.M. Byers, BSc Honors (Dal)
J. Gabor, MSc (Budapest)
S.A. Sawier, BSc, (MSVU)
D.J. Silvert, MSc (CWRU)
W.D. Tacreiter, MSc (Krakow)
K.E. Thompson, BSc (Acad.)
M.E. Warren, BSc (Western)

Postdoctoral Fellows (1989)

H. Furuu, PhD (Queen's)
A.M. de P. Nicholas, PhD (Dal)
Ravinutha R. Rao, PhD (IIT, Bombay)
M. Schriver, PhD (UNB)

Research Assistants/Associates

R. Cordes, BSc (Dal), MSc (UBC)
C. Fernando, BSc (Ceylon, Sri Lanka), PhD (Nottingham, England)
P. Hajigeorgiou, BSc, PhD (Dal)
M.F. Hong, BSc (Fujian)
L.C. Wang, BSc, PhD (UNB)
J.Q. Zhang, BSc (Tsinghua), MSc (Sc. & Tech., China), PhD (Queens)

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

- 5210 - Topics in Chemical Separations
- 5220 - Atomic Spectroscopy

Inorganic and Structural

- 5100 - Topics in Solid State Chemistry
- 5110 - Advanced Inorganic Chemistry

- 5111 - Topics in Advanced Transition Metal Chemistry
- 5120 - Advanced Organometallic Chemistry
- 5130 - Topics in Main Group Chemistry

Organic

- 5400 - Synthetic Organic Chemistry
- 5410 - Physical and Theoretical Organic Chemistry
- 5420 - Structure Determination in Organic Chemistry

Physical and Theoretical

- 5000 - Applied Quantum Chemistry
- 5300 - Statistical Thermodynamics
- 5320 - Kinetics and Catalysis
- 5330 - Principles of Magnetic Resonance
- 5340 - Molecular Spectroscopy

Additional specialized classes at the 6000 level 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 classes include: X-ray crystallography, pollution evaluation, organic photochemistry, organic electrochemistry, nuclear chemistry, electronics for scientists, carbohydrate chemistry, analytical flame spectroscopy, electrolyte solutions, heteroatomic chemistry, colloid and surface science, chemical kinetics, and solid state chemistry.

Approved classes from departments outside the Chemistry Department may be taken for credit.

Chemistry Research Interests

Analytical Chemistry

- W.A. Aue: Basic and applied chromatography.
- A. Chait: Nuclear and bioanalytical methods for trace elements and studies on radioactive waste management
- R.D. Guy: Method development for the speciation of toxic metals and organic chemicals.
- L. Ramaley: Electroanalytical chemistry, mass spectrometry and chemical instrumentation.
- R. Stephens: Analytical atomic spectroscopy.
- P.D. Wentzell: Flow injection analysis, kinetics, acoustic emission analysis and chemometrics.

Inorganic and Structural Chemistry

- N. Burford: Synthesis, mechanisms and theoretical study of compounds of the Main Group Elements.
- T.S. Cameron: X-ray structural studies on inorganic, organic and organometallic compounds; hydrogen bonding.
- H.C. Clark: Chemistry of organo and hybrid platinum and palladium compounds.
- 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: Analysis of electron correlation and electron density distributions; theoretical studies of reaction mechanisms and molecular interactions.
 J.A. Coxon: Electronic spectra of small molecules; laser spectroscopy; weak chemiluminescence.
 W.E. Jones: Atomic and molecular spectroscopy; gas phase kinetics; laser enhanced surface chemistry and catalysis.
 P.G. Kusalik: Computer simulation and theoretical studies of polar solvents and electrolyte solutions.
 J.C.T. Kwak: Colloid and polymer chemistry.
 P.D. Pacey: Temperature dependence of reaction rates.
 C.H. Warren: Laser Raman, laser induced fluorescence, and molecular spectroscopy.
 R.E. Wasylshen: Applications of multinuclear nmr spectroscopy: molecular motion in liquids and orientationally disordered solids; isotope effects; conformational studies; nmr studies of solids.
 M.A. White: Thermal properties of solids.

Classics

Location: 1244 LeMarchant Street
 Halifax, N.S. B3H 3P7
 Telephone: (902) 494-3468

Chairperson of Department
 R. Friedrich

Emeritus Professors

J.A. Doull, BA (Dal), MA (Tor.)
 A.H. Armstrong, MA (Cantab), FBA

Adjunct Professor

E. Segelberg, DTh, FK (Upsala)

Professors

J.P. Atherton, MA (Oxon.), PhD (Liverpool) -
 Graduate Studies Coordinator
 R.D. Crouse, BA (Vind.), STB (Harv.), MTh
 (Trin.), PhD (Harv.)
 R. Friedrich, Dr.phil. (Gott.)

Associate Professors

W.J. Hankey, BA (Vind.), MA (Tor.), DPhil.
 (Oxon.)
 D.K. House, MA (Dal), PhD (Liverpool)
 P.F. Kussmaul, PhD (Basle), Dr. phil.habil.
 (Heidelberg)
 C.J. Starnes, BA (Bishop's), STB (Harvard), MA
 (McG), PhD (Dal)

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.

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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. Before submitting a thesis, the candidate must pass a comprehensive examination (written and oral) in his/her special field: this will normally be taken towards the end of the second or beginning of the third year of study.

Classes Regularly Offered

Greek and Latin Literature

5010 - Seminar on Greek Literature (1): R. Friedrich

5020 - Seminar on Greek Literature (2): R. Friedrich

5030 - Seminar on Latin Literature (1): R. Friedrich/J.P. Atherton

5040 - Seminar on Latin Literature (2): R. Friedrich/J.P. Atherton

Ancient History

5530 - Reading and research in Ancient History (1): P.F. Kussmaul

5531 - Reading and research in Ancient History (2): P.F. Kussmaul

5550 - Reading and research in Ancient History (2): P.F. Kussmaul

5551A - Reading and research in Ancient History: P.F. Kussmaul

5552B - Reading and research in Ancient History: P.F. Kussmaul

Classical Philosophy

5600 - Seminar on the Philosophy of Aristotle: J.P. Atherton

5601 - Seminar on Plato and Neoplatonism: J.P. Atherton

5602 - Seminar on Hellenistic Philosophy: D.K. House

5603 - Seminar on the Philosophy of Plato: D.K. House

Patristics

5700 - Seminar on the Philosophy of the Church Fathers: R.D. Crouse

5701 - Seminar on the Medieval Interpreters of Aristotle: R.D. Crouse

5705 - Seminar on St. Augustine (1): C.J. Starnes

5706 - Seminar on St. Augustine (2): C.J. Starnes

5800 - Seminar on Christian Beginnings: W.J. Hankey

5801 - Seminar on Christianity and Neoplatonism: W.J. Hankey

Classes Occasionally Offered

Greek and Latin Literature

5011 - Seminar on Greek Tragedy: R. Friedrich

5012 - Seminar on Greek Comedy: R. Friedrich

5013 - Seminar on Greek Lyric: R. Friedrich

5031 - Seminar on Roman Satire: Staff

5032 - Seminar on Roman Historians: Staff

5033 - Advanced Seminar on Latin Literature: Staff

5034 - Seminar on Greek Literature

Ancient History

5531 - Seminar on the Roman Empire and the Rise of Christianity: P.F. Kussmaul

5551 - Ancient Law and Jurisprudence: P.F. Kussmaul

Classical Philosophy

5604 - History of the Interpretation of Aristotle: Staff

5605 - Advanced Seminar on Neoplatonism: Staff

- 5606 - Greek Philosophical Texts: Staff
- 5607 - Latin Philosophical Texts: Staff
- 5608 - Reading and Research: Staff
- 5609B - Greek Philosophical Texts: J.P. Atherton
- Patriotics**
- 5707 - Readings in Patriotic Texts: Staff
- 5708 - Reading and Research: Staff
- 5900 - Departmental Seminar: Staff
- 5901 - Reading and Research: Staff
- 9000 - Thesis (MA)
- 9530 - Thesis (PhD)

Economics

Location: 6214 University Avenue
 Halifax, N.S. B3H 1X1
 Telephone: (902) 494-2026

Chairperson of Department
 E. Klein

Emeritus Professor
 Z.A. Konczacki, BSc (Lond.), B. Econ. Hons. (Natal), PhD (Lond.)

- Professors**
- R.L. Comeau, BA, MA (StFX), PhD (Brown)
 - J.L. Cornwall, BA (Iowa), MSc (Lond.), PhD (Harv.), McCulloch Professor of Economics
 - 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.L. McAllister, MA (Oxon.), MA (Cantab.), on leave 1989-92
 - L. Osberg, BA (Hons) (Queen's), MPhil, PhD (Yale)
 - U.L.G. Rao, MA, MSc (Andhra), PhD (W.Ont.)
 - A.M. Sinclair, BA (Dal), MA, BPhil (Oxon.), PhD (Harv.)

- Associate Professors**
- F.M. Bradfield, BComm (McM), PhD (Brown)
 - H.L. Cross, AA (Dawson College), BA (Montana), MA (SFU), PhD (Texas A. & M.) - Graduate Coordinator
 - S. DasGupta, BA (Calcutta), MA (Delhi), PhD (Rochester)
 - D. Gordon, BA (Lethbridge), MA (Saskatchewan), PhD (UBC)

- B. Huber, BA, MA, PhD (Yale)
- B. Lesser, BComm (Dal), MA, PhD (Cam.)

- Assistant Professors**
- P. Burton, BSc (Saskatchewan), MA, PhD (UBC)
 - B. Jamieson, BA (UBC), MA, PhD (Tor.)
 - L. Mazany, BSFS (Georgetown), PhD (UBC)
 - S. Phipps, BA Hons (U. Victoria), MA, PhD (UBC)

Special Lecturer
 T. Pinfold, 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".

E. Program Choices

The department offers the MA in the following areas of specialization:

- Economic Theory
- Econometrics
- Labour Economics
- Public Finance
- Resource Economics
- Monetary Theory
- Industrial Organization
- Regional and Development Economics

Department approval is required for the program of each student.

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.

C. 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 the equivalent of some graduate level training 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 BComm degree, with a minimum of two 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 is also required. Promising students who do not meet these requirements might be admitted to a qualifying year or permitted to take missing classes within the time frame of the two-year

program. Students who excel in the qualifying year may be admitted to a one-year program.

B. Program Choices

The MDE Program permits students to follow one of two paths:

The Canadian Studies Program concentrates on Canadian economic development, with comparative insights from other industrialized countries. Primary emphasis in the program is placed on exploring problems of development in Canada's less developed regions, with special attention to the Atlantic Provinces. Regional development policy initiatives and strategies are stressed.

The International Development Studies Program concentrates both on sectoral themes and on geographic regions. These include rural development, manpower planning, the role of state corporations, international trade and payments, import substitution policies, international and bilateral aid, health and environmental issues, and the problem of helping those in greatest need in Third World countries. Specific country experiences will be extensively drawn upon through links the University faculty has with West Africa, East Africa, Indonesia, Latin America, the Caribbean, China, and India.

For both program options, students should select classes to achieve a blend of the following disciplines, when the program is viewed in combination with their academic background upon entering the course of study: economics, political science, history, sociology. Students should also seek to develop basic skills: the ability to think numerically and interpret data, the ability to apply economic logic to real issues, basic computer literacy, and a sensitivity to human behaviour and different cultures.

For students taking the Canadian studies program option, electives in economics and related disciplines should reflect the regional development focus of this option and/or provide exposure to areas necessary to the student's proposed thesis work. For the International Development Studies program option, elective courses should reflect the international development focus of the program and/or areas relevant to proposed thesis work.

C. Completion of MDE Program

Students in a full two-year program must successfully complete up to eight full-credit classes plus thesis. In some cases, this number of classes may be reduced on the basis of advanced standing granted for previous work.

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 80% (A⁻) 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."

B. Program Choices

The department offers the PhD in the following areas of specialization:

- Economic Theory
 - Microeconomics
 - Macroeconomics
- Mathematical Economics
- Econometrics
- Industrial Organization
- Labour Economics
- Resource Economics

The specialization can be undertaken in one of two basic programs: the General Program or the Mathematical Economics Program. Students admitted to a two year PhD program may follow either program whereas students admitted to a three year PhD program may follow either program after having satisfactorily completed a prescribed course of study during their first year. Departmental approval is required for the program of each student.

The structures of the General and the Mathematical Economics programs are described below.

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. Two fields of specialization.
3. 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."

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:

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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.

C. 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.

5000A/B Economic Theory for MDE - Microeconomics

5238A The Industrial Revolution in Europe: P.B. Huber.

5239B The European Economy in Historical Perspective: After the Industrial Revolution: P.B. Huber.

5250 Applied Development: Policy, Practice and Economics: R.I. McAllister.

5251 Seminar in Development Studies: R.I. McAllister.

5330A International Trade: A.M. Sinclair.

5333A Theories of Economic Development: B. Lesser.

5334B Economic Development: Recent Debates, Controversies and Conflicts.

5336B Regional Development: Post-1945 Canadian and Industrial Countries' Economic Policy Experience: R.I. McAllister.

5431B International Payments: A.M. Sinclair and L. Mazany.

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 5490A and Pol. Sci. 5490A): 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.

5501A/B Economic Theory for MDE - Macroeconomics.

5502A Monetary Theory: Microeconomic Aspects

5505 Public Finance

5506 North American Economic History: B. Lesser.

5508 Government and Business: 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 Resources Economics: M.L. Cross.

5521A Mathematics for Economists: S. DasGupta.

5533 Econometrics: U.L.G. Rao.

5551A Special Topics in Monetary Policy: R.L. Comeau.

5552B Special Topics in Monetary Theory

5558 Special Topics in Industrial Organization: C. Marfela.

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.

5572 Special Topics in International Trade: P.B. Huber.

5575A Applied Statistics and Econometrics I: D.V. Gordon

5576A Applied Statistics and Econometrics II: D.V. Gordon

5600R Special Topics in Macroeconomics: J. Cornwall

5601A/B Special Topics in Macroeconomics: J. Cornwall

5620A Special Topics in Resource Economics: M. Cross

5621B Special Topics in Resource Economics: M. Cross

5659A/B Special Topics in Labour Economics: L. Osberg

5670B Special Topics in Econometrics: G. Rao

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 I

6620B Seminar in Mathematical Economics and Advanced Economic Theory II

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

Location: Education Building
Old Arts Annex, Dalhousie University
Halifax, N.S. B3H 3J5
Telephone: (902) 494-3724 - General Enquiries

Director, School of Education
K.C. Sullivan (Interim Director)

Graduate Secretary
Rose Pritzker
Tel: (902) 494-6508

Emeritus Professor
B.Z. Friedenber, BA (Centenary), MA
(Stanford), PhD (Chicago)

Professors
W.F. Hare, BA (London), MA (Leica), PhD
(Tor.)
J.D. Myers, BA, MA (Tor.), PhD (Edinburgh),
Dean, Henson College
J.B. Roald, BEd (UBC), MA (Wash), EdD
(UBC)

Associate Professors
A. Barton, BA, MA (Trinity)
R.N. Bérard, BA (Antioch.), MA (McM.), BEd
(Dal), PhD (McM) Coordinator, MA/PhD
Programs
R. Gamber, 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) Coordinator MEd Program
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.)
S.W. Semple, BA, Dip Ed (Syd.), MEd, EdD
(Tor.)
S.S. Sodhi, BA, BT, MA (Punjab), Dip. Guid.
(Delhi), BEd, PhD (Alta.)
K.C. Sullivan, BSc, BEd (Dal), MEd, PhD (Alta.)
M. Welton, BA, MA, PhD (UBC)
B.A. Wood, BA (Tor.), MEd (Ottawa), PhD
(Ottawa)

Assistant Professors

M. Crowley, BA (Miami), MAT (Johns Hopkins),
PhD (Maryland) - Coordinator BEd Program
D.A. Manicom, BEd (McG), MEd (AIE), PhD
(Tor) - Coordinator, MEd Programs

Adjunct Professor

M. St. J. Macdonald, BSc (Agr.) (McG), MA
(StFX), EdD (Tor)

Lecturer

M. Crowley, BA (Miami), MAT (Johns Hopkins) -
Coordinator BEd Program

Honorary Research Associates

J. Eaton, BSc (Acadia), PhD (Dal)

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 School. 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 School 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.

For further information see the current edition
of the Graduate Source Book (available from the
School).

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 School 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
(including a thesis equivalent to two credits and
5800R) 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 School the
applicant's academic experience or proposed area
of concentration warrants such. Students in
residence must participate in weekly seminars
sponsored by the School.

For further information see the current edition
of the Graduate Source Book (available from the
School).

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 School 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 School, the applicant's academic
experience or proposed area of concentration
warrants such. A project may be required in some
areas of concentration.

For further information see the current edition
of the Graduate Source Book (available from the
School).

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

A course 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.

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 curriculum in schools 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, and implementation. 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 and the appropriate Coordinator they may elect to take classes from other areas or from other departments of the university. Students should consult the School 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, 1894-1914: A. Wood.

5022B The Development of a Progressive Curriculum in Canadian Public Schools, 1914-1940: A. Wood.

5031A/B Teachers, Their Organizations and Decision Making in Education: R. Bérard.

5061A/B The History of Curricular Thinking: J.B. Roald.

5100R Advanced Studies in Philosophy of Education: W. Hare.

5151B Ethics and Education (crosslisted with Philosophy 5280): W. Hare.

5162A/B Open-Mindedness and Education (crosslisted with Philosophy 5810): W. Hare.

5201A/B Youth as a Social Category: A. Manicom

5221A/B Higher Education and Social Policy: staff.

5222A/B Schools and Social Identity: A. Manicom.

5223A/B Criticism of Public Education: staff.

5231A/B Social Issues in the Curriculum: A. Manicom.

5241A/B Gender Relations: 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.

5260B Education and Development: staff.

5291A/B Multiculturalism and Education: E. Ricker.

5300R Human Learning: S. Sodhi.

5320R Current Issues in Educational Psychology: J. Manos.

5335A/B Childhood into Maturity: H. Poole.

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5341A Special Education Policy Decisions: S. Sodhi.

5342B Learning Disabilities: S. Sodhi.

5350R Contemporary Issues in Childhood Education: S. Sodhi.

5360R Theories of Personality: J. Manos.

5362A Leadership Programming in Childhood Education: H. Poole

5370R Developmental Psychology: T. Laidlaw/J. Manos.

5380R Psychology of Special Education: Resource Teachers: S. Sodhi.

5382A/B Counselling Women: T. Laidlaw.

* 5401A Administration of Public Education in Canada: E. Ricker.

5402B Concepts in Educational Administration: K. Sullivan.

5411A Administration of Educational Personnel: K. Sullivan.

5412B Administration of Educational Programs: staff.

5421A/B Politics of Education: R. Bérard.

5431A 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.

5441B Conceptual Analytical Skills for Educational Administration: staff.

5451A Philosophy and Educational Administration (cross-listed with Philosophy 5820): W. Hare.

5460B Law and the Schools: staff.

5462B Interest Groups in Education: E. Ricker

5470R Local Government and Administration of Education: E. Ricker.

5471A/B Educational Finance: staff.

5481B The Use of Microcomputers in Educational Administration: K. Sullivan.

5484A/B Introduction to the Study of Teaching and Pedagogy: B. Roald.

5500R Curriculum: A. Barton.

5510R Approaches and Issues in Curriculum Design: B. Roald.

5520R Implementation of Curriculum: M. Schoeneberger

5524R Issues in Curriculum Evaluation: J. Murphy/B. Roald.

5552B Organizing and Administering School Library Media Center Programs: staff. (Consult School of Library and Information Studies.)

5560R Canadian and Maritime Studies in the Curriculum: R. Bérard.

5571B Foundations of Second-Language Teaching: P. DeMeo. (Consult the French Department).

5573A/B Visual Pedagogy in Second Language Teaching: J. Brown (consult French Department)

5581A/B Labour Studies in the Curriculum: R. Gamberg.

5601A/B Young Adult Literature and Media Interests: (Consult School of Library and Information Studies.)

5612A/B Children's Literature and Media Interests: (Consult School of Library and Information Studies.)

5624A/5625B New Directions in High School Math Curricula: M. Crowley.

5632A/B Collections Development: (Consult School of Library and Information Studies.)

5633A Computers in Schools: M. Crowley.

5635A/B Logo and Computer Based Learning: M. Crowley.

5637A/5638B Computers and Writing: A. Barton.

5650R Computer Lesson Writing: A. Barton.

5660R Geography in Education: S. Semple.

5670R New Dimensions for Curriculum in Geography: S. Semple.

5680R Science Curriculum: A. Barton.

5800R Graduate Seminar: staff.

- 5801A/B **Qualitative Research Methods:** A. Manicom.
- 5802A/B **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.
- 5920R **Adult Vocational Education:** P. Keane.
- 5921A **Program Design in Continuing Education:** P. Keane.
- 5930R **Continuing Professional Education:** P. Keane.
- 5931A **Critical Perspectives on Adult Learning and Teaching:** M. Welton.
- 5932B **Adult Education Methods:** M. Welton.
- 5933A/B **History of Adult Education:** M. Welton.
- 5935A/B **Twentieth Century Adult Education Thinkers:** 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.
- 5973A/B **Community Education and Development:** M. Welton.
- 5975R **Selected Policy Issues in Continuing Education:** D. Myers.
- 5977A **Coping with and Managing Continuing Education Organizations Part I:** K. Sullivan.
- 5978B **Coping with and Managing Continuing Education Organizations Part II:** K. Sullivan.
- 5981A **Issues in Adult Literacy:** R. Gamberg.
- 5982B **Adult Literacy Needs and Programs:** R. Gamberg.
- 5995R **Special Topics in Adult Education:** staff.
- 6000-6911 **Reading Classes**

- 7974B **Practicum in Community Education and Development:** M. Welton. Open to independent completion of study.
- 7985R **Theory and Practice of Literacy Acquisition for Adults:** R. Gamberg. Open to independent completion of study.
- 7990 **Project - Educational Psychology:** Consult School. Open to independent completion of study.
- 7991R **Project - Curriculum:** Consult School. Open to independent completion of study.
- 7992B **Practicum in Continuing Education:** P. Keane. Open to independent completion of study.
- 7993R **Project - Educational Foundations:** consult School. Open to independent completion of study.
- 7998R **Project - Educational Administration.** Open to independent completion of study.
- 9000R **MA Thesis**
- 9530R **PhD Thesis**

English

Location: 1434 Henry Street
Halifax, N.S. B3H 3J5
Telephone: (902) 494-3384

Chairperson of Department
M.M. Furrow

Professors Emeritus

J. Gray, MA (Aberd.), MA (Oxon), PhD (Mont.), FRSA, FRSC, McCulloch Professor of English
M.M. Ross, OC, BA (UNB), MA (Tor.), PhD (Corn.), DLit (UNB), LLD (St. Thom.), LLD (Dal), DLit (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
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)
M.G. Parks, MA (Dal), PhD (Tor.)
R.J. Smith, BA (Natal), MA (Oxon.), PhD (Natal), Dean of the Faculty of Arts and Social Sciences
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.)
 M.M. Furrow, BA (Dal), MA, MPhil, PhD (Yale)
 V.L.I. BA, MA (UBC), PhD (Cantab)
 D. McNeil, BA (Concordia), MA (UNB), PhD (McM)
 C.J. Myers, BA (Sask.), MA, PhD (Tor.)
 M. Stone, BA (Guelph), MA, MPhil (Waterloo), 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

- L. Diepeveen, BA (Calv. Coll.), MA, PhD (Ill.)
 B.R. Greenfield, BA (York), MA (McG), MPhil, PhD (Columbia)
 A. Higgins, BA (Connecticut), MA (McGill), MA (Mass), PhD (Yale)
 C. Luckyj, BA, MA, PhD (Tor)
 H.E. Morgan, BA (UBC), MA (Wash.), B.Litt. (Oxon.), PhD (Wash.)
 J. Thompson, BA (Western), MA, PhD (Tor.)

Lecturer

- A. Dowdall, BA, MA (Carleton)

Adjunct Professor

- R.L. Raymond, BS (Yale), MA (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. It is recommended that all foreign students submit the necessary documents by February 15th.

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 ten full-year seminars or the equivalent are offered each year. Students should consult the Department about which of the following seminars will be offered in 1990-91.

5110R Middle English Literature: M. Furrow, H. Morgan.

5115R Medieval Romance: H.E. Morgan.

5120R Early English Drama: A. Higgins.

5220R Shakespeare

5225A/B Shakespeare Studies: R. Huebert.

5230R Renaissance Poetry and Rhetoric: J. Baxter.

5235A Milton's Paradise Lost: R. Huebert

5240R Milton and His Age: M.G. Parks.

5245R The Drama From Marlowe to Ford: R. Huebert.

5250R Renaissance Dissident Writers: R. Huebert.

5310R Restoration and Augustan Satire: J. Gray.

- 5315R The Eighteenth-Century English Novel: D. McNeil
- 5320R Samuel Johnson and His Circle: J. Gray.
- 5325R Literature and Society, 1750-1800: J. Gray.
- 5330R The Gothic Romance: D.P. Varma.
- 5410R Innovation and Tradition in Romantic Poetry: R. Tetreault.
- 5411A/B Women and Men in the Romantic Era: R. Tetreault
- 5415R Wordsworth and Coleridge: R. Tetreault.
- 5420R Keats and Shelley: R. Tetreault.
- 5421A/B Keats: R. Tetreault
- 5422A/B Shelley: R. Tetreault
- 5425R Victorian Fiction
- 5430R The Literature of Victorian Social Criticism: C.J. Myers.
- 5435R Victorian Narrative Modes: M. Stone.
- 5510R Traditionalism and Experimentation in English Poetry, 1880-1920: J. Fraser.
- 5515R Literature and Society, 1900-1920: J. Fraser.
- 5520R Joyce and Yeats: M.A. Klug.
- 5525R British Literature, 1920-1945: R.J. Smith.
- 5526A British Literature, 1920-30: R.J. Smith
- 5527B British Literature, 1930-45: R.J. Smith
- 5540R British Fiction Since 1945: R.J. Smith.
- 5610R Nineteenth-Century Canadian Literature: M.G. Parks.
- 5615R Modern Canadian Poetry: P. Monk.
- 5620R Modern Canadian Fiction: J.A. Wainwright.
- 5625A/B Studies in Modern Canadian Poetry: P. Monk.
- 5628R Poet as Novelist/Novelist as Poet in Modern Canadian Literature: A. Wainwright
- 5630A/B Studies in Modern Canadian Fiction: J.A. Wainwright.
- 5710R Studies in Commonwealth Fiction: R.J. Smith.
- 5810R The American Scene: Major Figures of the Nineteenth Century: B. Greenfield.
- 5820R American Poetry 1910-1945: L. Diepveen
- 5825R A/B Recent American Fiction: M.A. Klug.
- 5910R Modern Critical Methods and Theories: A. Kennedy.
- 5915R Post-Structuralism: Criticism of Value: A. Kennedy.
- 5920A/B Deconstructive Figures: A. Kennedy.
- 5925R Prose on the Margin: A Generic Approach to the Essay, the Short Story and the Novel: J. Gray.
- 5930A/B The New Historicism: R. Huebert
- 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)
- 0451A An Introduction to Literary Research
- 3201 The English Language
- 3202 History of the English Language
- 3244 Literary Criticism
- 4251 Sixteenth-Century Non-Dramatic Literature
- 4252 Shakespeare and the Drama of His Time
- 4253 Old English
- 4254 Eighteenth-Century Literature
- 4351 Middle English
- 4352 Seventeenth-Century Non-Dramatic Literature
- 4354 Victorian Novel
- 4355 American Literature to 1900
- 4356 Literature of the Romantic Period

4357 Modern Canadian Literature

4452 Nineteenth-Century Prose and Thought

4453 Twentieth-Century British Literature

4455 Modern American Literature

4457 Victorian Poetry

Environmental Studies

Location: 1312 Roble Street
Halifax, N.S. B3H 3E2
Telephone: (902) 494-3632

Resource and Environmental Studies

Director of School
G.E.E. Beanlands

Associate Director
R.P. Côté

Academic Program Coordinator
F.G. Cohen

Professors

- R. Apostle, BA (SFU), MA, PhD (Calif., Berkeley) Major appointment in Sociology and Social Anthropology
W.H. Charles, BA (Sir Geo. Wms.), LLB (Dal), LL.M. (Harv.), LL.M. (Mich.) Major appointment in Law
F. Cohen, BA, MEd (Harv.), PhD (Minn.)
R.W. Doyle, MSc (Dal), PhD (Yale) Major appointment in Biology
E. Gold, BA, LLB (Dal), PhD (Wales) Major appointment in Law
A.J. Hanson, BSc, MSc (UBC), PhD (Mich.)
L. Kasdan, MA, PhD (Chic.) Major appointment in Sociology and Social Anthropology
P.A. Lane, MSc (SUNY Binghamton), PhD (SUNY Albany) Major appointment in Biology
K.E. von Maltzahn, MS, PhD (Yale) Major appointment in Biology
R.I. McAllister, MA (Oxon.), MA (Cantab.) Major appointment in Economics
E.L. Mills, BSc (Carl.), MS, PhD (Yale) Major appointment in Oceanography
J.G. Ogden III, MA (Tenn.), PhD (Yale) Major appointment in Biology
D.J. Patton, BA (UNB), MA (Tor.), DBA (Indiana) Major appointment in Business Administration
K.W. Renton, BSc (Sir Geo. Wms.), PhD (McG) Major appointment in Pharmacology

Associate Professors

- G.E.E. Beanlands, BSc, MSc (UNB), PhD (Dal)
M.P. Brown, BA (Mt A), MA (Dal), PhD (Tor.) Major appointment in Public Administration
M.L. Cross, AA (Dawson College), BA (Montana), MA (SFU), PhD (Texas A & M) Major appointment in Economics
D.H. Elliott, BA (Yale), PhD (Pitt.) Major appointment in Sociology and Social Anthropology
B. Freedman, BSc, MSc, PhD (Tor.) Jointly appointed with Biology
R.F. McCurdy, MPH, MSc (Minn.), PhD (TUNTS) Major appointment in Pathology
G.K. Muecke, BSc, MSc (Alta.), D.Phil (Oxon.) Major appointment in Geology
D. VanderZwaag, BA (Calvin), MDiv (Princeton), JD (Arkansas), LL.M. (Dal) Jointly appointed with Law

Assistant Professors

- M. Binkley, BA, MA, PhD (Tor.) Major appointment in Sociology and Social Anthropology
L. Mazany, BSFS (Georgetown), PhD (UBC) Major appointment in Economics

Assistant Professors (Research)

- C. Lamson, BA (Skidmore), MS (Simmons), MA (Memorial), MES (Dal)
P. Stokoe, BSc (Dal), MSc, PhD (Stanford)

Research Associates

- A.G. Gray, BA, MES (Dal)
J. Reade, BA (SMU), MLS (Dal)

Honorary Adjunct Professors

- R.F. Addison, BSc, PhD (Queens, Belfast), Department of Fisheries and Oceans
T. Charles, BSc (Carl.), PhD (UBC), Saint Mary's University
P.J. Ricketts, BA (Nottingham), PhD (Southampton), Saint Mary's University
P. Taschereau, BA (Sir Geo. Wms.), MA (Acadia), PhD (Man.)
J.H. Vandermeulen, BSc, MSc (Alta.), PhD (UCLA), Department of Fisheries and Oceans
P.G. Wells, BSc (McG), MSc (Tor.), PhD (Guelph), Environment Canada

International Program Staff

- S. Conover, AB (Oberlin), MSc (Yale), PhD (Dal) (Co-ordinator)
Pauline Lawrence, BSc (Univ. of London)
B. Patton, BA (UNB), MA (McMaster), MLS (Indiana)

The School (formerly the Institute) offers a graduate program leading to the Master of Environmental Studies (MES) degree.

The core faculty of the School is small. It is complemented by cross-appointed faculty whose

major appointments are in other units within Dalhousie, at other universities, or in government agencies.

There are two general MES 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 school. 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 full academic 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. In total, 11 half-credit courses and a thesis are required. During the first year of a two year program, students will generally complete the following requirements:

1. 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. ES 5110A (or appropriate alternative)
5. ES 5200B (or appropriate alternative)

The requirements for the second year of a two-year program are:

1. ES 5002A
2. An approved graduate level class
3. ES 9000 (Thesis)

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 classes 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: R. Côté.

ES 5004A/B Management of Toxic Substances: R. Côté.

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.

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 5180A Coastal Communities: M. Binkley (Cross-listed with SSA 5220A).

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

French

Location: 1315 LeMarchant Street
Halifax, N.S. B3H 3J5
Telephone: (902) 494-2430

Chairperson of Department
M. Bishop

Professors

M. Bishop, BA, BEd, (Manch.), MA, (Man.), PhD (Kent, Canterbury)
J.W. Brown, AB (Miami), MA (Middlebury), PhD (Penn.)
B.E. Geaner, BA, BEd, MA (Dal), Dr. de 3e cycle (Toulouse II)
W.T. Gordon, BA, MA, PhD (Tor.)
R. Kocourek, State Examination, PhD, CSc, (Charles U., Prague) Graduate Coordinator
D.W. Lawrence, BA, MA, PhD (Lond.)
H.R. Runte, MA, MPh, PhD (Kansas)
M. Sandhu, Licence es Lettres (Montpellier), PhD (Yale)

Associate Professors

H.E. Bednarski, BA (Lond.), MA (Dal), PhD (Laval)
P. De Méo, BA, MA, PhD (UCLA), Coordinator of MAT program
M.J. Myers, DUEL, Licence es Lettres, MA, Dr. de 3e cycle (Strasbourg)
N. Trèvea, 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)
I.Z. Oore, BA (Tel-Aviv), MA (Waterloo), PhD (Western Ontario)

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. Délias, BA Hons (New Brunswick), MA (Dal), DTC (Un. Paul Valéry), Mt. St. Vincent Univ.
F.F. Falvo, MA, PhD (Laval), University of P.E.I.
P. Gérin, BA (Lyon), MA (Aix-Marseille-Tananarive), PhD (Lyon), Mount St. Vincent Univ.

- 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)
- L. Lavole, BA (Laurentienne), MA (Laval), PhD (d'Alx-Marseille), College of Cape Breton
- I.R. Lawler, BA Hons., MA Hons. (Melbourne), PhD (Paris), University of Chicago
- H-D Paratte, DUEL, MA, Maîtrise (Straasbourg), PhD (Lille III), Acadia University
- S. Fous-Ridler, BA, L. ès L. (Algiers), L. ès L. & Maîtrise (Aix-en-Provence), DML (Middlebury)
- A.R. Pugh, BA, MA, PhD (Cambridge), University of New Brunswick, Fredericton
- M. Stareta, 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 Department and the School of Education 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.

Coursework is evenly divided among the following four areas: French linguistics, francophone culture, second-language acquisition and teaching, and education. An independent project, supervised by members of the French Department and the School of Education, 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.

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 culture. 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 general rules see the Faculty Regulations above.)

The admission requirements are as follows: an MA thesis degree in French, an excellent French oral and written proficiency, a scholarly interest in one of the areas of French Studies to which PhD thesis research is limited. These areas are: Twentieth Century Literature (includes contemporary literature, poetry, poetics, structural stylistics, and selected novelists and playwrights), Linguistics (includes lexicology and its modern history, lexical formation, semantics, contrastive studies, and terminology), and Contemporary Acadian Studies.

The requirements after admission are the following: two years of Dalhousie residency, four

full graduate credits (from the departmental offerings in the years of residency), a second language examination (within two years after admission), preliminary and comprehensive written and oral examinations (not less than one year prior to submission of thesis), and the PhD thesis (normally written in French) and its oral defence.

Selection of Classes and Registration

It is the responsibility of students admitted to one of the graduate programs to report to the graduate coordinator 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 PhD, 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 and staff.

5005A/5005B Philologie française: Séminaire
d'ancien français/French Philology: Old French
Seminar: H. Runte.

5006A/5006B Philologie française: Séminaire de
l'histoire du français moderne/French Philology:
Seminar on the History of Modern French: H.
Runte.

5016A/5016B Aspects de la traduction/Topics in
the Science of Translating: W.T. Gordon.

5040R Stylistique avancée/Advanced Stylistics: M.
Sandhu.

5120R Linguistique/Linguistics: R. Kocourek.

5121A/5121B Fonctionnalisme et structuralisme en
linguistique/Functionalism and Structuralism in
Linguistics: R. Kocourek.

5122A/5122B Créativité Lexicale/Lexical Creativity:
R. Kocourek.

5123A/5123B Langue et terminologie
savantes/Learned Language and Terminology: R.
Kocourek.

5125A/5125B Sémantique/Semantics: W.T.
Gordon.

5140A/5140B Dialectologie acadienne et
sociolinguistique/Acadian Dialectology and
Sociolinguistics: B.E. Geisner.

5180A/5180B Linguistique de texte/Linguistics of
Texts: R. Kocourek.

5185A/5185B Les Métaphores dans les
textes/Metaphors in Texts: R. Kocourek.

5190A/5190B La Linguistique du français
enseigné/Linguistics in Teaching French: R.
Kocourek.

5250A/5250B Fondements de l'enseignement des
langues secondes/Foundations of Second Language
Teaching: P. De Méo.

5260A/5260B Approches communicatives de
l'enseignement du français langue seconde/
Communicative Approaches to French
Second-Language Teaching: P. De Méo.

5270A/5270B Enseignement de la lecture en
français langue seconde/ Teaching of Reading in
French as a Second Language: 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. Topic varies. Consult Department for
current year's topic.

5300A Séminaire: littérature médiévale/Seminar in
Medieval French Literature: H. Runte.

5301B Lectures: littérature médiévale/Supervised
Readings in Medieval French Literature: H.
Runte.

5400A/5400B Rabelais et son temps/Rabelais and
his Time: N. Trèves.

5401A/5401B Montaigne et son temps/Montaigne
and his Time: N. Trèves.

5402A/5402B La Poésie de la Renaissance/
Renaissance Poetry: N. Trèves.

5500A/5501B L'Aventure intellectuelle du Grand Siècle/The Intellectual Adventure of French Classicism: K. Waterson.

5700A/5700B La Révolution romantique/The Romantic Revolution: M. Sandhu.

5701A/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/5800B Le Théâtre de Camus et de Claudel/The Theatre of Camus and Claudel: D. Lawrence.

5801A/5801B Anti-romans du vingtième siècle/Anti-Novels of the 20th Century: D. Lawrence.

5802A/5802B La Poésie moderne de Char à Bonnefoy/Modern Poetry from Char to Bonnefoy: M. Bishop.

5803A/5803B La Littérature Contemporaine I/Contemporary Literature I: 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/Contemporary Culture: M. Bishop.

5808A/5808B La Littérature Contemporaine II/Contemporary Literature II: M. Bishop.

5876A/5876B Aspects de la littérature du Canada français/Studies in French Canadian Literature: B. Bednarski.

5877A/5877B Analyse de textes littéraires québécois/Analysis of Quebec Literary Texts: L. Gore.

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. Treves.

5990R Projet indépendant/Independent Project (MAT): Subject to independent completion of study.

5996A/5997B L'Oeuvre romanesque de Jean Glonac/The Novels of Jean Glonac: D. Lawrence.

5998A/5999B Recherches indépendantes/Independent Research: Subject to approval by graduate coordinator and department chairperson.

9000R Thèse/Thesis

Geology

Location: Life Sciences Centre
1355 Oxford Street
Halifax, N.S. B3H 4J1
Telephone: (902) 494-2358

Chairperson of Department
Patrick J.C. Ryall

Graduate Coordinator
R.A. Jamieson

Emeritus Professors
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.)
R.A. Jamieson, BSc (Dal.), PhD (MUN)
F. Medolli, PhD (Parma) (on leave)
P.T. Robinson, BSc (Mich.), PhD (Calif.)
P.E. Schenk, BSc (W.Ont.), MSc, PhD (Wisc.)
M. Zentilli, BSc (Chile), PhD (Queen's)

Associate Professors
R. Boyd, BSc, PhD (Sydney)
M.R. Gibling, BA (Oxon.), PhD (Ottawa)
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)
D.B. Scott, BSc (Wash.), MSc (Wash. State), PhD (Dal)

Assistant Professors
N. Culshaw, BA (Univ. of Keele), PhD (Ottawa)

Senior Instructor
P. Wallace, BSc, MSc (McMaster)

CIDA/NSERC Research Fellow

S.O. Akande, BSc (Ibadan), MSc (Western), PhD (Dal)

Research Associates

C. Beaumont (Major appointment in Oceanography Department)

Honorary Research Associates

P.S. Giles, BSc, MSc (Acad.), PhD (Western Ont.), Nova Scotia Department of Mines

P.R. Hill, BA (Oxon.), PhD (Dal), Atlantic Geoscience Centre

F.J. Hein, BSc (Ill.), MSc, PhD (McMaster)

A.J. Hurford, BSc (Kingston Polytechnic), PhD (London), University College of London

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

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

P.J. Mudie, BSc (Cape Town), BSc (Leicester), PhD (Dal), Atlantic Geoscience Centre

D.J.W. Piper, BA Hons. (St. Catharine's Coll., Cantab.), MA (Cantebury), PhD (Darwin Coll., Cantab.), Atlantic Geoscience Centre, BIO

M.H. Salisbury, BSc (MIT), MSc, PhD (Wash.)

Killam Postdoctoral Fellow

J.D.L. White, BA, BSc (Texas Christian U.), MSc (U. of Missouri), PhD (Calif)

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, structural geology, metamorphism, and tectonics.

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 on scientific problems of mutual interest to Dalhousie and 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, is often done.

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.

Candidates seeking financial support should ensure that their applications are complete by February 15.

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 more than 24 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) involves presentation of a thesis proposal to the Department.

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 * are given only as numbers warrant. Classes marked + are given in alternate years.

- 5150R Economic Geology: M. Zentilli.
- 5270A Applied Geophysics: P.J.C. Ryall.
- 5280B Marine Geophysics: K. Loudon (Ocean.)
- *5290B Geodynamics: C. Beaumont (Ocean.)
- 5350A Tectonics: J.M. Hall.
- 5380A Advanced Geochemistry: G.K. Muecke.
- +5390B Advanced Igneous Petrology: D.B. Clarke.
- +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 Micropaleontology
- 6120A/6220B Seminar in Mineralogy, Petrology and Geochemistry
- *6130C Seminar in Geophysics
- *6150R Metallogeny in Mineral Exploration
- 6160R Research Topics in Soft Rock Geology I
- 6170R Research Topics in Soft Rock Geology II
- 6250C Directed Studies

Both 6160R and 6170R are required for all graduate students specializing in sedimentology, stratigraphy, or micropaleontology.

All graduate students must be registered in one of:

- 9000 MSc Thesis
- 9530 PhD Thesis

German

Location: 1355 LeMarchant Street
Halifax, N.S. B3H 3J5
Telephone: (902) 494-2161

Chairperson of Department
H-G. Schwarz

Professors

F.W. Gaede, PhD (Freib.) McCulloch Professor,
Graduate Coordinator
P. Michelsen, PhD (Gott.)
H-G. Schwarz, MA (Munich), PhD (McG)

Associate Professor

D.H. Steffen, PhD (Gott.)

Assistant Professor

E. Spence, MA, PhD (UBC)

Visiting Professor (Spring 1991)

K. Kanzog, Dr.phil.(Berlin), Dr.habil.(Munich)
University of Munich

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

5500R Literature and Thought from Reformation to Enlightenment

5520R Goethe and the Enlightenment

5530R Hegel's Aesthetics and the Ancients

5540R Kant and the History of German Idealism

5550R Hegel: Phenomenology of Spirit

90 German/Health Services Administration

5570R Goethe and Romanticism

5580R Goethe's Faust

5590R Studies in German Idealism

5600R Heidegger and German Idealism

5610R Literature of the 19th Century

5620R Modern German Literature

5630R Aesthetic Theory

5640R Ancient and Modern Dialectics

5660R History and Theory of the German Novel

5670R Hegel's Philosophy of Nature

5700A Special Topics I

5701B Special Topics II

9000R Thesis

Health Services Administration

Location: 1234 Seymour Street
Halifax, N.S. B3H 3M3
Telephone: (902) 494-7097

Director of School

Lawrence J. Nestman

Professors

L. Nestman, BComm (Seak.), CA (Alta.), MHSA (Alta.)
A. Peter Ruderman, BS, MA, PhD (Harv.), MBA (Chic.)

Assistant Professors

G. Johnston, BSc Hons. (McGill), MHSA (Alta.), PhD (W. Ont.)
K. Rondeau, BSc Hons, BLT (Regina), DIA, MA, MBA (Concordia)

Associate Professors

M.G. Brown, BA (W Ont.), MA (Qu.), AM, PhD (Chic.)

Lecturers

A. Boehn, CA, FACHE, MBA
W.D. Cochrane, BA Hons, LLB (Dal)
A.M. Macintosh, BA, LLB, (Dal), MPH (Harvard)
A. Maxwell, BN, MPA (HSA) (Dal)
D. McKillop, BA (York), MIR (Toronto)
D.W. Rice, B.Eng., M.Eng., P.Eng. (TUNS)

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) 494-7097

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 MHSA 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. Application should be submitted as early as possible to the Registrar's Office.

The following supporting documents are to be sent directly to the School:

- (a) transcripts of all previous work;
- (b) at least two letters of reference;
- (c) Resumé/Curriculum Vitae;
- (d) a statement of career interests and reasons for seeking admission to the School;
- (e) GMAT (see below);
- (f) TOEFL for Foreign Students (see below).

The application must be received by May 1.

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 (TOEFL) as a requirement for admission and a minimum score of 550 must be achieved. 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.

The deadline for applying to the School is May 1. For foreign students, it is strongly recommended that all documents (transcripts and references) be submitted prior to March 31.

Grading System and Good Standing

Under the regulations of the Faculty of Graduate Studies, MHSA 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:

92 Health Services Administration

Required courses:

MPA 5130A Applied Economics I
MPA 5140A Quantitative Methods I
MPA 5150A Financial Management & Accounting I
MHSA 5300A Introduction to the Canadian Health System
MHSA 5310B Health Institutional Management
MHSA 5320B Epidemiology for Health Administration
MHSA 5330A Organizational Behaviour in Health Services
MHSA 5335B Information Systems in Health Administration
MHSA 5340B Health Care Economics
MHSA 5350B Health Services Accounting
MHSA 6380B Senior Seminar in Health Services
MHSA 6390R Health Services Residency
MHSA 6500A Intermediate Statistics for Health Services

6 half-credit courses must be chosen from the following courses:

MHSA 6311B Social Organization of Health Care
MHSA 6312A Management Control & Funding Systems
MHSA 6315A Organizational Theory of Health Services
MHSA 6330A Health Care Planning
MHSA 6340A Human Resources in the Health Care Setting
MHSA 6350A Economic Evaluation of Health Services
MHSA 6360B Health Care Law
MHSA 6365B Quality Assurance & Risk Management
MHSA 6370B International Health
MHSA 6375A Current Managerial & Promotional Problems
MHSA 6394A/B/R Directed Project (full or half credit)
MHSA 6395A/B/R Directed Reading (full or half credit)

1 full credit - graduate electives:

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.

Nursing Service Administration Concentration

The School of Health Services Administration, in cooperation with the School of Nursing, also offers a Nursing Service Administration Concentration in the Masters of Health Services Administration Program. Graduates of this program will be prepared to function as Administrators of Nursing Services. A student

admitted to the MHSA Program must declare his/her intention to take the Nursing Administration Concentration and meet with the Associate Director/Graduate Program in Nursing by May 1st of the first year of study. Admission to this Program will be limited to no more than 4 students per year.

This two-year Masters program requires the successful completion of 11 credits which must include:

Required courses:

MPA 5130A Applied Economics I
MPA 5140A Quantitative Methods I
MPA 5150A Financial Management & Accounting I
MHSA 5300A Introduction to the Canadian Health System
MHSA 5310B Health Institution Management
MHSA 5320B Epidemiology for Health Administration
MHSA 5330A Organizational Behaviour in Health Services
MHSA 5335B Information Systems in Health Administration
MHSA 5340B Health Care Economics
MHSA 5350B Health Services Accounting
MHSA 6380B Senior Seminar in Health Services
MHSA 6390R Health Services Residency
MHSA 6500A Intermediate Statistics for Health Services
N 5100A Research Methods I
N 5120B Research Methods II
N 5300A Theoretical Bases of Nursing I
N 5320B Theoretical Bases of Nursing II

1 credit: MHSA electives

1 credit: general graduate electives (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 academic 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 "Special" (no degree) program or the Certificate in Public Administration in the Faculty of Management 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 (when required)

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 & Exemption

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, PhD, MD, MPA, MLS, MSW, LL.B, 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 of Graduate Studies. An individual assessment will be made in each case.

Applicants wishing to receive advanced standing should include course outlines for those courses previously taken which they consider to be equivalent to Dalhousie MHSA courses.

Where it is determined that a student has the equivalent of a required class but is not granted advanced standing, an exemption may be permitted, so that another class is substituted for the required class.

Classes

MPA 5130A Applied Economics I

MPA 5140A Quantitative Methods I

MPA 5150A Financial Management & Accounting I

MHSA 5300A Introduction to the Canadian Health System

MHSA 5310B Health Institution Management

MHSA 5320B Epidemiology for Health Administration

MHSA 5330A Organizational Behaviour in Health Services

MHSA 5335B Information Systems in Health Administration

MHSA 5340B Health Care Economics

MHSA 6500A Intermediate Statistics for Health Services

MHSA 5350B Health Services Accounting

MHSA 6311B Social Organization of Health Care

MHSA 6312A Management Control & Funding Systems

MHSA 6315A Organizational Theory of Health Services

MHSA 6330A Health Care Planning

MHSA 6340A Human Resources in the Health Care Setting

MHSA 6350A Economic Evaluation of Health Services

MHSA 6360B Health Care Law

MHSA 6365B Quality Assurance & Risk Management

MHSA 6370B International Health

MHSA 6375A Current Managerial & Promotional Problems

MHSA 6380B Senior Seminar in Health Services

MHSA 6390R Health Services Residency

MHSA 6394 Directed Project

MHSA 6395 Directed Reading

Note: Not all classes are offered each year; consult the school 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.

History

Location: 1411 Seymour Street
Halifax, N.S. B3H 3M6
Telephone: (902) 494-2011

Chairperson of Department
G.D. Taylor

Professors

P. Burroughs, BA, PhD (Lond.), FR Hist S
M.S. Cross, BA, MA, PhD (Tor.)
J. Fingard, BA (Dal), MPhil, PhD (Lond.)
Assistant Dean of Faculty of Graduate Studies
J.E. Flint, MA (Cantab.), PhD (Lond.), FR Hist S
H.S. Granter, BA (Dal), MA (Harv.)
R.M. Haines, MA, MLitt (Durh.), DPhil (Oxon.),
FR Hist S, FSA
N.G.O. Pereira, BA (Williams), MA, PhD (U.C.
Berkeley)
L.D. Stokes, BA (Tor.), MA, PhD (Johns
Hopkins)
G.D. Taylor, BA, PhD (Penn.)
M. Turner, BA, MA (Manc.), PhD (Lond.)
P.B. Waite, MA (UBC), PhD (Tor.), FRSC
(Emeritus Prof.)
J.B. Webster, MA (UBC), PhD (Lond.)

Associate Professors

J.E. Crowley, AB (Princ.), MA (Mich.), PhD
(Johns Hopkins)
J.T. O'Brien, Jr., BA (Wisconsin), MA, PhD
(Rochester)
J.L. Parpart, BA (Brown), MA, PhD (Boston)
D. Sutherland, BA (Mt. A.), MA (Dal), PhD
(Tor.)

Assistant Professors

R. Bleasdale, BA, MA, PhD (Western Univ.) -
Graduate Coordinator
S.J. Brooke, BA (Dal), MA (McGill), D. Phil
(Oxford)
G. Hanlon, BA, MA (Tor), PhD (Bordeaux)
D.R. Woolf, BA (Queens), PhD (Oxford)

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

Location: 5599 Fenwick Street
Halifax, N.S. B3H 1R2
Telephone: (902) 494-7052

Director of the School

W.B. Green

Full-time Faculty

Professor

W.B. Green, BS, MA, PhD (Syracuse)

Associate Professors

C. Sloan, BS, MA, PhD (U. Minn.)

J. Bedrosian, BA, MA, PhD (U.Wisc)

Assistant Professors

J. Armaon, BSc, MS (Wisc.)

P. Doyle, BA, MA, PhD (U. Cal.)

E. Skaraki-Doyle, BS, MA, PhD (U. Cal.)

Sr. D. Uryase, BA, MA, PhD (U.Conn.)
E. Yang, MD, MCD, PhD, (U. Texas)

Research Assistant
A. Stuart, BEd, BSc, MSc

Part-time Faculty

Professor
G.T. Mencher, BA, MA, PhD (U. Mich.), FASHA

Honorary Faculty

Associate Professor
G.M. Novotny, MD, FRCS(C), FACS

Assistant Professor
G.F. Martin, MD

Lecturers
M.N. Wall, MD
G. Whitehead, MA

Clinical Coordinators
C. Tompkins, MSc
L. Wozniak, MA

Clinical Instructors
B. Anvar
G. Mencher
C. Santilli
S. Stuttard
C. Tompkins
G. Whitehead

Practicum Supervisors
Audiology
B. Anvar
R. Dunphy
M. Gulliver
S. Harvey-Fortier
T. Jalng
D. Lyon
H. Maessen
S. Maxwell
G. Mencher
L. Mencher
D. Moffat
M. Myer
C. Santilli
A. Stuart
S. Stuttard
C. Tompkins
M. Weckman
G. Whitehead

Speech-Language Pathology
C. Andrews
S. Anthony
Lynda Campbell
Lynne Campbell

M. Casey
N. Cieplinski
C. Daniels
S.A. Delva
C. Dobbsteyn
A. Grantmyre
L. Healey
A. Howe
J. Hunt
S. Josza
K. Kennedy
A. MacDonald
C. MacDonald
L. MacDonald
H. MacLean
J. Martin
A. Mason-Browne
M. Merchant
E. Pass
M. O'Leary-Morris
J. Robertson
V. Roda
J. Schmidbauer
C. Scholten
E. Shaw
C. Smith
K. Smith
J. Smith-Lamothe
B. Stoesz
J. Townsend
D. Wilkinson
L. Wozniak

The School of Human Communication Disorders provides a three 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 three 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 13 credits (10 academic, 1 final project and 2 clinical practicums) over a three 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 thirteen.

Extensive supervised clinical practice is required throughout the three 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-Language Pathology or Audiology, during 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 5020B Phonetics
- HC 5060C Practicum
- HC 5110A Anatomy and Physiology of the Speech Mechanism
- HC 5120B Hearing Measurement
- HC 5130A Introduction to Speech-Language Pathology
- HC 5140A Aural (Re)habilitation with Children
- HC 5150B Speech and Language Acquisition
- HC 5230A Human Communication Processes
- HC 5260B Hearing Disorders
- HC 6060A Topics in Clinical Practice
- HC 6310A Audition I
- HC 6600A Seminars in Communication Disorders
- HC 6980B Research Design
- HC 7000R Research Project
- HC 7060R Practicum
- Speech Pathology Curriculum (above and beyond core)
- HC 5210A Speech-Language Analysis
- HC 5250A Speech Disorders - Children
- HC 5270A Language Disorders - Children
- HC 6350B Language Disorders - Adults
- HC 6370B Fluency Disorders
- HC 6390B Voice/Resonance Disorders
- HC 6450B Speech Disorders - Adults
- HC 6470A Speech Perception and Auditory Processing
- Audiology Curriculum (above and beyond core)
- HC 5220A Diagnostic Audiology
- HC 5240A Aural (Re)habilitation - Adults
- HC 5280B Audition II
- HC 6320B Pediatric Audiology

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HC 6360B Amplification

HC 6380B Electrophysiological Audiometric Measures

HC 6420A Advanced Diagnostic Audiology

HC 6440A Noise in Industry and the Community

Additional Classes Available

HC 6500 Tutorial Readings

HC 6700 Research

Law

Location: Weldon Law Building
6061 University Avenue
Halifax, N.S. B3H 4H9

Telephone: (902) 494-3495
FAX: (902) 494-1316

Dean of Law

I.M. Christie, BA, LLB (Dal), LLB (Cantab.),
LLM (Yale), Richard Chapman Weldon
Professor of Law

Associate Dean

S.M. Ashley, BA, LLB (Dal)

Emeritus Professors

C. Hutchins, QC, BA, LLB (Dal)
A.J. Meagher, QC, BA, LLB (Dal)
R.G. Murray, QC, BA, LLB (Dal), LLM
(Harvard)
J. Willis, QC, BA (Oxon), LLD (Ott., Queen's,
Dal, York)

Professors

B.P. Archibald, BA (King's) MA, LLB (Dal),
LLM (Col.)
A. Bissett-Johnson, LLB (Nottingham), LLM
(Mich.)
C.L.M. Boyle, LLB (Queen's, Belfast), LLM
(Queen's, Kingston)
W.H. Charles, QC, BA (Sir Geo. Wms.), LLB
(Dal), LLM (Harvard), LLM (Mich.)
T.A. Cromwell, BMus, LLB (Queen's), BCL
(Oxon)
P.E. Darby, BA (Mt. Allison), LLB (Dal)
E. Gold, BA, LLB (Dal), PhD (Wales), MCIT,
FNI, MRIN, Master Mariner (FG), Executive
Director ITOPS
E.C. Harris, QC, BComm, LLB (Dal), LLM
(Harvard), RIA, CA
H.M. Kindred, LLB (Bristol), LLM (London),
LLM (Illinois)

R.St.J. Macdonald, QC, BA (StFX), LLB (Dal),
LLM (London), LLM (Harvard), LLD
(McGill)

A.W. Mackay, BA (MtA), MA (Flor.), BEEd
(MtA), LLB (Dal)

H.L. O'Brien, QC, BComm, LLB (Dal), LLM
(Chicago)

P. Thomas, LLB (Wales), LLM (Yale)

L.E. Trakman, BComm, LLB (Cape Town), LLM,
SJD (Harvard)

C.L. Wiktor, LLM (U of Wroclaw), MS in LS
(Col.) Law Librarian

B.H. Wildsmith, BSc (Guelph), LLB (Dal), LLM
(Harvard)

J.A. Yogi, QC, BA (St. Mary's), LLB, LLM
(Dal), LLM (Mich.)

Associate Professors

V. Black, BA, MA (Carleton), LLB (Tor.), LLM
(Calif., Berkeley)

J.K. Bankier, BA (Tor.), LLB (Osgoode)

L.M.B. Clark, BA (UBC), BPhil (Oxon), LLB
(York)

W.B. Cotter, BCom (Sask.), LLB, LLM (Dal),
Executive Director Dalhousie Legal Aid Service

R.L. Evans, BA (Tor.), LLB (York)

F.V. Girard, BA (Brock), LLB (McGill), LLM
(Calif., Berkeley)

H.A. Kaiser, BA, LLB (Dal), LLM (London)

W. MacLauchlan, BBA (UPEI), LLB (UNB),
LLM (Yale)

D.A. (Rollie) Thompson, BA (McG), LLB (Dal)

F.L. Woodman, BA (Dal), LLB (Queen's)

Assistant Professors

L. Duncan, BA, LLB (Alta)

M.L. McConnell, BA (Vict.), LLB (Dal)

D.L. Pothier, BA (Dal), MA (Carleton), LLB
(Dal)

D.A. Russell, BA (St. Thomas), MA, LLB (Dal),
LLM (Cambridge)

M.E.E. Turpel, BA (Carleton), LLB (Osgoode),
Dip. Int'l Law (Camb.)

D.L. VanderZwaag, BA, (Calvin), MDiv
(Princeton), JD (Arkansas), LLM (Dal)

Part-Time Faculty

R.P.H. Balcome, BA (St. Mary's), LLB (Dal),
LLM (London)

R.L. Barnes, BA (Acadia), LLB (Dal)

B.J. Beach, BA, (Tor.), LLB (Dal)

S.D. Bryson, BA, LLB (Dal)

V.T. Calderhead, BA (Ulster), MA (Concordia),
MA (Queen's) LLB (Dal)

J. Campbell, BA (Acadia), LLB (Dal)

D.A. Copp, LLB (Dal) BSc (UNB), MEng
(TUNS)

His Hon. Judge T.T. Daley, BA (Ottawa), BEEd,
MSW (StFX), LLB (Dal)

P.E. Darling, LLB (Dal)

M.E. Dunphy, BBA (Notre Dame), MBS (UWO),
LLB (Dal)

- D.P.S. Farrar, BA (St. Thomas), LLB (Dal)
 J.W. Fitt, BA, LLB, MPA (Dal)
 J.A. Gumpert, BCom, LLB (Dal)
 K.D. Harris, BComm, LLB (Dal)
 M.J. Iosipeacu, BA (Sir Geo. Wms.), BSc, MS,
 LLB (Dal)
 His Hon. Judge R.E. Kimball, BA (Kings), LLB,
 LLM (Dal)
 K.D. Latimer, BA (Mt.A), MA (Carleton), LLB
 (Dal)
 His Honour Judge E.J. Macdonald, BA (King's),
 LLB (Dal)
 K. MacInnis, BA (St. Dunstan's), LLB (Dal),
 LLM (London)
 G.W. MacIntosh, BA, LLB (Dal)
 P.C. Martin, LLB (Dal)
 J.P. Merrick, BA, (Acadia), LLB (Dal)
 S.C. Norton, LLB (Dal)
 R.C. Penfound, BPE, LLB (Dal)
 F. Van Penick, AB (Princeton), LLB (Dal)
 D.L. Pink, BA (Acadia), LLB (Dal), LLM
 (London)
 J.E. Pink, BA (Acadia), LLB (Dal)
 A.C. Reid, BA (St. Mary's), LLB (Dal)
 J.M. Rogers, BA (Acadia), LLB (Dal)
 S.W. Rowley, BA (Smith), MA (Yale), BEd, LLB
 (Dal), LLM (UCLA)
 F.A. Rozovsky, AB (Providence), JD (Boston),
 MPH (Harv.), Adjunct Associate Professor
 L.E. Rozovsky, QC, BA (UNB), LLB (Tor.),
 Adjunct Associate Professor
 W.L. Ryan, BCom (St. Mary's), LLB (Dal)
 D.K. Smith, BA, LLB (Dal)
 W. Spicer, BA (Carleton), LLB (Dal)
 G.D. Walker, QC, BA (St. Mary's), LLB (Dal),
 MiCL (Southern Methodist)
 His Honour Judge R.J. Williams, BSc (Alberta),
 MSW (Mar. Sch. Soc. Work), LLB (Dal)
 M.J. Wood, BSc (Acadia), LLB (Dal)

Special Lecturers

- The Hon. Mr. Justice A.G. Cooper, QC, BComm
 (Dal), BCL (Oxon)
 W.J. MacInnes, QC, LLB (Dal)
 The Hon. I.M. MacKeigan, QC, MA, LLB (Dal),
 MA (Tor.)

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 academic year, or on a part-time basis over two full academic 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.

In addition to the Dalhousie Scholarships mentioned on page 41, candidates may be eligible for a special scholarship offered annually by the Nova Scotia Law Foundation to one LLM candidate.

Residency Requirements

The degree may be taken on the basis of either one academic year (September 1 to August 31) of full-time residence at Dalhousie, or two academic 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 alternative 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. Some students who have not had previous exposure to Jurisprudence may be advised to take a graduate jurisprudence course.

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.

Such a thesis would normally be 150-300 typewritten pages in length (double-spaced). 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 "Not Approved." In order to be "Approved," a thesis must normally be approved by the thesis supervisor and two co-readers.

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 decisions of the Graduate Studies Committee of the Faculty of Law, as well as the rules and regulations of the Faculty of Graduate Studies.

A full description of programs available in the Law School which may be of relevance to graduate students can be found in the general Law School Calendar and in its course selection materials.

Combined LLB and MBA Program

See under "Business Administration" (page 64).

Combined LLB/MPA Program

See under "Public Administration" (page 129).

Doctor in the Science of Law Degree (JSD)

An advanced graduate program in law leading to the JSD (Juris Scientias 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

These areas of specialization have grown with seminars in comparative criminal law and comparative marine law and policy. In addition, the Faculty also offers a course in Comparative Civil Law, and participates as the common law component of a joint summer program in Canadian comparative law sponsored by the Federal Department of Justice.

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.

Applicants seeking JSD funding from Dalhousie University should ensure that their completed applications are received by the University no later than January 1 of the year in which they intend to commence their studies.

Residency Requirements

Applicants must be prepared to spend at least one full academic year (12 months) 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.

Library and Information Studies

Location: Killam Library
6225 University Avenue
Halifax, N.S. B3H 4H8
Telephone: (902) 494-3656
ENVOY: DAL LIS
FAX: (902) 494-2319

Director of School
M. Dykstra

Emeritus Professor
J.R.T. Eitlinger, MA (Oxon.), BLS (McG)

Professors
L.J. Amey, BSc, BEd (Acad.), MEd (UNB), MS (Col.), PhD (Tor.)
M. Dykstra, BA (Calvin), MLS (Dal), PhD (Sheffield)

Associate Professors
E. Frick, BA (Tor.), MSLS (Syracuse)
B. Raymond, MA, MLS (Berkeley), MA (Man.), PhD (Chic.)

Assistant Professors
B. MacDonald, BSc (Acadia), MA, MLS (UWO)
E. Toms, BA, BEd (Mem), MLS (Dal)

Adjunct Professors
J. Beaumont, ALA (Brighton), BSc (Carleton)
L.G. Vagianos, BA (Hiram), MA (Suffolk), MSLS (Western Reserve), LLD (P.E.I.)

Lecturers
C. Armour, BSc (MtA), MSc (Dal), PhD (Lond.)
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)

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 and Information Studies should address themselves to:

J. Brownlow
Administrative Assistant, School of Library and Information Studies
Room 3621, Killam Library
Dalhousie University, Halifax, N.S. B3H 4H8

The goal of the School of Library and Information Studies is to provide graduate education within the Atlantic Provinces to qualified candidates which equips them for their first and subsequent positions as information professionals. This will be accomplished by exposing students to the theories, technologies and practices which comprise library and information studies. Within the program, the local professional community is provided with opportunities to acquire new skills and career directions.

The student, therefore, is introduced to the development and significance of librarianship and related information fields, to the underlying principles of the profession, and to the techniques of information organization, analysis, retrieval, and use. 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.

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.

All applicants are urged to submit completed documentation early in the year as this is a limited enrollment program; many more applications are received than there are places to be allotted.

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 graduating 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.

MLIS Degree Program

The degree of Master of Library and Information Studies is awarded upon satisfactory completion of:

1. Sixteen credit half-classes.
2. Two non-credit courses offered during the Fall term: LS 050 - Introductory Module I and LS 051 - Interim 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 or other information agency under the supervision of a qualified information professional. This experience is designed to provide the student with exposure to everyday 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 10 required classes and 6 electives, students are required to:

1. attend the scheduled lectures series given by visiting experts in library, information and publishing fields;
2. participate in the scheduled trips to relevant institutions within or near the metropolitan area of Halifax/Dartmouth.

Term Timetables

Certain classes are scheduled in the evening to enable working information professionals 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 14 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 and Information Studies schedules 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 will be required to cover expenses. Consult *Information for Prospective Students*.

Classes

In the following list the required classes are numbered 550-560. These and classes numbered in the 050 series are required of all students (students have a choice between LS559 and LS560). 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. There is also a thesis option.

If a student chooses as an elective a class offered by a department other than the School of Library and Information Studies, approval must be obtained from the head of the relevant department and the School.

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LS 050 Introductory Module I

LS 051 Interim Module II

LS 550 The Information Environment

LS 551 Organization of Information

LS 552 Research Methods

LS 553 Information Sources & Retrieval

LS 554 Systems Analysis

LS 555 Classification & Subject Access

LS 556 Collections Management

LS 557 Library Management & Organizational Behaviour

LS 558 Database Systems and Management

LS 559 (LS 659) Information Sources in Science, Technology and Business

LS 560 (LS 660) Information Sources in Humanities/Social Sciences

LS 605 Comparative Librarianship

LS 606 Management Information Systems (Cross-listed with School of Business Administration MBA 6903)

LS 615 History of the Printed Book

LS 625 Young Adult 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

LS 680 Archives

LS 681 Bibliographic Instruction

LS 707 Library Management and Current Problems in Librarianship

LS 730 Libraries and the Adult Learner

LS 732 Legal Literature and Librarianship

LS 734 Database Development (cross-listed with MBA 6906)

LS 735 Advanced Online Searching

LS 9000 Thesis: (Four ½ credits)

LS 060 Practical Printing

LS 064 Hand-Binding

ED 5552 Planning and Development of School Library Programs and Services (Cross-listed with the School of Education)

School Publications:

Information for Prospective Students (annual)

Newsletter (annual)

Occasional Papers Series (Write to the Director for a list)

Y-A Hotline (Irregular).

Checklist of Canadian Copyright Deposits in the British Museum. Vols. I-V now available.

Monographic series with Scarecrow Press, Metuchen, NJ.

Marine Affairs

Location: Weldon Law Building
6061 University Avenue
Halifax, N.S. B3H 4H9
Telephone: (902) 494-3555

Directors of the Program

Raymond Côté, BSc (Loyola), MSc (Memorial), Assistant Professor, Associate Director, School of Resource and Environmental Studies
David VanderZwaag, BA (Calvin), MDiv (Princeton), JD (Arkansas), LLM (Dal), Assistant Professor of Law

The Marine Affairs Program is a one-year, graduate-level, interdisciplinary program designed to provide students with concepts and tools allowing them to work effectively in various aspects of ocean management.

Admissions

Applicants will apply to Dalhousie University's Faculty of Graduate Studies. Applications should be completed by the 1st of January of the year of admission. Successful applicants will hold a Bachelor's Degree from a university of recognized standing with honours or its equivalent. Selection criteria also include references, relevant work experience and career objectives. Applicants from outside Canada whose native language is not English must also submit a TOEFL (Test of English as a Foreign Language) score or its equivalent. Dalhousie sets a minimum acceptable score of 550. Enrollment is limited to 20 students.

Classes

The Marine Affairs core course consists of three classes: Marine Affairs 5000, also known as the International Ocean Institute summer training course on the Management and Conservation of Marine Resources; Marine Affairs 5001, the advanced seminar; and Marine Affairs 5002, and independent reading and research class. Together these classes will cover topics including, the multidisciplinary nature of marine affairs, ocean resource uses and conflicts, approaches and tools for ocean management, and regional studies of ocean development and management.

Students will also enroll in two elective classes in each of the fall and winter terms. These electives can be chosen from graduate-level classes at Dalhousie and the co-operating institutions, St. Mary's University and the Technical University of Nova Scotia.

Mathematics, Statistics and Computing Science

Location: Chase Building
Halifax, N.S. B3H 3J5
Telephone: (902) 494-2572

Chairperson of the Department
P.A. Fillmore

Emeritus Professors

M. Edelstein, MSc (Jerusalem), DSc
(Technion-Haifa)
A. J. Tingley, MA, PhD (Minnesota)

Professors

J. Borwein, MSc, PhD (Oxford)
J. C. Clements, MA (UBC), PhD (Tor.)
M.A.H. Dempster, MSc, PhD (Carnegie Mellon)
C.A. Field, MSc, PhD (Northwestern)
P.A. Fillmore, MSc, PhD (Minn.), FRSC
G. Gabor, MSc, PhD (Eotvos)
L. Grunenfelder, PhD (ETH Zurich)
R.P. Gupta, MSc (Agra), PhD (Delhi)
P. Keast, PhD (St. Andrews)
K. Moriarty, MSc (Dal), PhD (Imp. Coll.)
R. Paré, MSc, PhD (McG)
H. Radjavi, MA, PhD (Minn.)
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)
A.C. Thompson, PhD (Newcastle upon Tyne)

Associate Professors

P. Borwein, MSc, PhD (UBC)
A.A. Coley, PhD (Lond.)
K.A. Dunn, MSc, PhD (Tor.)
B.W. Fawcett, MSc, PhD (McM)
D. Hamilton, MA, PhD (Queen's)
C.S. Hartzman, MS (Purdue), PhD (Colo.)
K.P. Johnston, MSc (Tor), PhD (Brandeis)
R. Nowakowaki, MSc, PhD (Calgary)
C.C.A. Sastri, MSc (Andhra), PhD (N.Y.)
M.A. Shepherd, MSc, PhD (Western Ontario)
R.J. Wood, MSc (McM), PhD (Dal)

Assistant Professors

K. Bowen, PhD (California)
K. Dilcher, MSc, PhD (Queen's)
A.A. Farrag, PhD (Alberta)
L. Manchester, MSc, PhD (Toronto)
J. Mulder, MSc, PhD (UBC)
I. Putnam, PhD (Berkeley)
A. Sedgwick, PhD (Tor.)
B. Smith, MA (Calgary), PhD (Berk.)
K. Thompson, PhD (Liverpool)
D. Tsang, MAsc (TUNS), PhD (Penn)

Postdoctoral Fellows

S. Czapor, MMath, PhD (Waterloo)
M.P. Lamoureux, MS (Stanford), PhD (Berk.)
S. Lou, PhD (Illinois)
T.A. Loring, PhD (Berk.)
B. Matheis, MS, PhD (UNH)
J. Potvin, MSc (Laval), PhD (Colorado)

Visiting Professors (1989/90)

H. Love (UPBI)
H. Fang (Yangzhou)
E. Eslami (Kerman)

The department offers programs leading to the degrees of MA, MSc and PhD in the following areas:

Mathematics (MSc, MA, PhD) - algebra, approximation theory, differential equations, functional analysis, numerical analysis, operator theory, optimization, relativity theory, stochastic modelling, topology.

Statistics (MSc, PhD) - statistical inference, robust statistics, data analysis, multivariate analysis, linear and nonlinear regression, time series analysis, statistical graphics and computing, information theory.

Computing Science (MSc, MA) - software development, database systems and design, parallel computing, supercomputers, numerical analysis and optimization, artificial intelligence, computer vision.

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 recommended for 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.

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.

Note: For the degrees of MA, MSc in Computing Science, the courses must be chosen from the list of classes in Computing Science.

PhD Degree Program

For minimum time required to complete this program see Section 2.6. Comprehensive examinations are required and must be taken for the first time within 12 months and satisfactorily completed within 16 months of 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 in Mathematics

A selection of the following graduate classes, most of which are ½ classes, will be offered subject to demand. Cross-listed classes are also listed in the Faculty of Science Calendar.

5010/4010 Introduction to Measure Theory and Integration

5020/4020 Analytic Function Theory

5030/4030 Advanced Abstract Algebra

5035 Topics In Algebra

5040 Homological Algebra

5050/4050 Introduction to Algebraic Geometry

5055 Lattice Theory

5120 Topics in Ordinary Differential Equations

5130/4130 Analysis of Algorithms

5135 Categorical Algebra

5140/4140 Introduction to Functional Analysis

5150/4150 Functional Analysis

5160/4160 Operator Theory

5170 Algebraic Topology

5180/4180 Introduction to Algebraic Topology

5185 Topics in Algebraic Topology

5190 Topics in Topology and Functional Analysis

5200/4200 Differential Equations - Qualitative Theory

5210 Topics in C^* - Algebra

5220/4220 Introduction to Partial Differential Equations

5225 Topics in Partial Differential Equations

5230/4230 Partial Differential Equations

5235 Topics in Operator Theory

5240 Topics in Banach Spaces

5270/4270 Numerical Software

5290 Advanced Topics in Operator Theory

5300 Topics in Optimization

5301 Topics in Optimization II

5310/4310 Nonlinear Programming

5315 Convexity and Convex Programming

5320/4300 Optimal Control Theory

5330 Topics in Graph Theory

5360 Advanced Numerical Analysis

5380 Approximation of Functions

5400 Topics in General Relativity

5410 Topics in Cosmology

6000-6990 Reading Classes for Advanced Graduate Students

7030 Algebra Seminar

7190 Topology and Functional Analysis Seminar

7230 Operator Theory Seminar

7670 Optimization Seminar

Classes in Statistics

3060/4060 Advanced Statistical Theory

5070 Multivariate Distributions

5075 Multivariate Analysis

5090/4090 Probability

5100 Topics in Advanced Probability and Statistics

5200 Topics in Advanced Statistics

5210/4210 Advanced Topics in Time Series Analysis

5350/4350 Applied Multivariate Analysis

5390/4390 Time Series Analysis and Forecasting

5620/4620 Data Analysis

7320 Statistics Seminar

Classes in Computing Science

5100/4100 Operating Systems II

5130/4130 Analysis of Algorithms II

5140/4140 Software Design and Development

5150/4150 Theory of Programming Languages

5200/4200 Selected Topics in Artificial Intelligence

5210 Expert Systems

5250/4250 Information Retrieval

5270/4270 Numerical Software

5300/4300 Computational Vision

5330 Topics in Graph Theory

5400/4400 Programming Methodology

5500/4501 Selected Topics in Information Retrieval

5660/4660 Automata and Computability

5700/4700 Advanced Topics in Data Base Design

5900/4900 Computer Systems Modelling

Microbiology

Location: Sir Charles Tupper Building, 7th Floor
5859 University Avenue
Halifax, N.S. B3H 4H7

Telephone: (902) 494-3587

Head of Department

K.B. Easterbrook

Professors

K.B. Easterbrook, PhD (ANU), (Structure and Function in Microorganisms; Bacterial Spines)
G.C. Johnston, PhD (York), Graduate Studies Coordinator (Genetic Control of Cell Division)
S.H.S. Lee, PhD (Dal), (Virology; Interferon)
D.E. Mahony, PhD (McG), (Bacteriology; Bacteriocins and plasmids of Clostridia)
K.R. Rozee, PhD (Dal), Dip. Bact. (Tor.), (Viral Pathogenesis; Epidemiology), on leave
D.B. Stoltz, PhD (McM), Biology (Biology of Parasitic Insects; Insect Virology)
C. Stuttard, PhD (Dublin), (Microbial Genetics; Streptomyces)

Associate Professors

R.L. Carr, MD (Tor.), PhD (Rockefeller),
Medicine (Rheumatology)
T. Ghose, PhD (Calc.), Pathology
(Immunopathology; Cancer Immunotherapy)
R. Rajaraman, PhD (Dal), Medicine (Extracellular Matrix; Cancer Cell Biology)

Assistant Professors

R.A. Bortolussi, MD (Tor.), FRCP(C), Pediatrics
(Neonatal Infection)
G. Faulkner, PhD (Dal), Ultrastructure
S.A. Halperin, MD (Cornell), FRCP(C),
Pediatrics (Diphtheria Vaccine)
D.W. Hoakin, PhD (McG.) (Natural Suppressor Cells)
A.C. Issekutz, MD (Dal), FRCP(C), Pediatrics
(Inflammation)
T.B. Issekutz, MD (Dal), FRCP(C), Pediatrics
(Cell-Mediated Immunity)
T.J. Marrie, MD (Dal), FRCP(C), Medicine
(Infection; Pneumonia Disease)
W.F. Schlech, MD (Cornell), FRCP(C), Medicine
(Listeria; Nosocomial Diarrhea)

Adjunct Professor

C.J. Lucarotti, PhD (McGill), Canadian Forestry Service

Admission Requirements

In conjunction with the general requirements for admission, candidates must have received sound basic instruction in Chemistry and Biology, and four credits with at least second class standing in Microbiology or equivalent.

New students may be required to write a placement examination to assist in the appropriate design of a program of study.

Disciplines within Microbiology

Specified "streams" in Immunology and Molecular Genetics may allow well-qualified students, with minimal training in Microbiology but a background in the appropriate subject area, to concentrate their studies while acquiring peripherally the necessary conceptual understanding of Microbiology.

MSc Degree Program

For minimum time required to complete this program, see Section 2.6.

Normally, study equivalent to five credits at the graduate level is required.

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 and seminar requirements are the same as for the MSc program.

Comprehensive knowledge of microbiology and immunology must be demonstrated and will be assessed by oral examination.

Research of a high calibre is required, the results of which must be embodied in a thesis which makes a significant contribution to knowledge in the chosen field.

MD/PhD Combined Program

For information on the combined MD/PhD program see section 6 page 51.

Classes

5001R Microbiology Seminars

5002A/5003B/5005R 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.

5024A Microscopy: Easterbrook, Stoltz, Willison, Faulkner.

5026A The Mammalian Cell: lecture 3 hours, lab 3 hours, R. Rajaraman.

5027B The Cancer Cell: lecture 3 hours, R. Rajaraman.

5037A Genetics of Industrial Bacteria: lecture/seminar, 3 hours, C. Stuttard. Prerequisite: Microbiology 3033A or equivalent.

5038B Molecular Biology of Yeast: lecture/seminar, 4 hours. G.C. Johnston.

5114B Topics in Basic and Medical Virology: lecture 2 hours, lab 3 hours. D.B. Stoltz, K.B. Easterbrook, S.H.S. Lee.

5115B Immunology: lecture 2 hours. D.W. Hoskin.

5117C Advanced Topics in Immunology: seminar 1 hour. D.W. Hoskin.

5301A Cellular Immunology: lecture 3 hours, R.I. Carr.

5302B Advanced Immunology: lecture 3 hours, R.I. Carr, class coordinator.

5601A Laboratory Techniques in Molecular Biology: lab, 6 hours, G.C. Johnston.

9000 MSc Thesis

9530 PhD Thesis

Nursing

Location: Forrest Building, 1st Floor
5869 University Avenue
Halifax, N.S. B3H 3J5
Telephone: (902) 494-2535

Director

D.L. Tamlyn, BN (McG), MED (Ottawa), PhD (Dal), RN

Professors

B.A. Keddy, BScN (MCSV), MA, PhD (Dal), RN
J.A. Ritchie, BA (UNB), MN (U. Pitts), PhD (U. Pitts), RN
P.N. Stern, DNS, MNS, BS (Calif.), RN

Associate Professors

F. Gregor, BN (Dal), MN (Dal), RN
M.J. Horrocks, BSN (UBC), MS, (Psych. N), MS (PHN), CMHN (UCSF), AED (Toronto), Associate Director/Coordinator, Graduate Program
J.M. Hughes, BN (Dal), MS (Boston) RN

Assistant Professor

G.A. Hart, BN (McG), MSN (UBC), RN

Admission Requirements

All applicants must be licensed to practice as registered nurses (active practitioner) 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 including work experience for the clinical specialization study is required, as are introductory classes in research and statistics. Three letters of reference are also required.

MN Program

Dalhousie University School of Nursing offers a two year research oriented program leading to a Master of Nursing degree, with added preparation in a selected clinical area. The program consists of 8 credits, made up of core nursing classes (2 1/2 credits), clinical classes (2 credits), statistics (1/2 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). Graduate nursing courses within the Program are also offered by distance education modes to other Maritime regional centres.

Part-time studies are permitted.

Required classes: N5000A, N5100A/N5120B, N5220B, N5300A/N5320B, and one of N5400R or N5500A/N5520B, N5600A/5620B, N5700R plus N9000. The elective (R or A/B) is chosen in consultation with the academic advisor.

* The School of Health Services Administration in co-operation with the School of Nursing, offers a Nursing Service Administration Concentration in the MESA program. For details, refer to Health Services Administration.

Classes Offered

N5000A (M209) Intermediate Statistics: Math Dept. (1/2 credit).

N5100A/N5120B Research Methods: P. Stern & B. Keddy (1 credit).

N5220B Systems & Trends in Health Care Delivery: M.J. Horrocks (1/2 credit).

N5300A/N5320B Theoretical Bases of Nursing I & II: J. Hughes & P. Sullivan (1 credit).

N5400R Community Health Nursing: 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.

N5600A/5620B Psychiatric/Mental Health Nursing: (2 credits). Open to independent completion of study.

N5700R Nursing of Adults: G. Hart (2 credits), open to independent completion of study.

N5800A/N5820B Reading Class: (1 credit).

N5900A/N5920B Reading Class: (1 credit).

N9000 Thesis: (2 credits).

Oceanography

Location: Life Sciences Building
1355 Oxford Street
Halifax, N.S. B3H 4J1
Telephone: (902) 494-3557

Chairperson of Department
E.L. Mills

Professors

C. Beaumont, BSc (Sussex), PhD (Dal)
A.J. Bowen, MA (Cantab.), PhD (Calif.)
C.M. Boyd, MA (Ind.), PhD (Calif.)
P. Chylek, Diploma (Physics) (Charles, Prague),
PhD (Calif) Joint appointment in Physics
R.O. Fournier, MSc (Wm. & Mary), PhD (URI)
C.J.R. Garrett, BA, PhD (Cantab.), FRSC
E.L. Mills, BSc (Carl.), MS, PhD (Yale), FLS
R.M. Moore, BA (Oxon.), PhD (Southampton)
P.J. Wangerky, ScB (Brown), PhD (Yale)

Associate Professors

M.R. Lewis, BS, MS (U.Md.), PhD (Dal)
K.E. Loudon, BA (Oberlin), M.Ed. (Temple),
PhD (MIT)
L.A. Mayer, B.S. (URI), PhD (Calif.)
B.R. Ruddick, BSc (U. Vic.), PhD (MIT)

Assistant Professors

B.P. Boudreau, BSc (UNB), PhD (Yale)
J. Grant, BSc (Duke), PhD (South Carolina)
O. Hertzman, BSc (UBC), PhD (Wash.)
B.D. Johnson, BSc (North Carolina State), PhD
(Dal)
D. Kelley, BSc (Mt.A.), PhD (Dal)
G.B. Leana, BSc, MSc, PhD (Tor) Joint
appointment in Physics
C. Taggart, BSc (Carleton), PhD (McGill)
K.R. Thompson, BSc, MSc (U.Manc.), PhD (Liv.)

Research Associates

- N.E. Balch, PhD (Dal), Manager, Dalhousie Aquatron
 S. Sathyendranath, BSc (St. Teresa's College), PhD (Univ. P & M Curie)

Honorary Research Associates

- R.G. Ackman, BA (Toronto), MSc (Dal), PhD (London), TUNS
 J.S. Craigie, BA, MA, PhD (Qu.), Atlantic Regional Laboratory, NRC
 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
 W.G. Harrison, BSc, PhD (North Carolina State), BIO
 W.D. Jamieson, BSc, MSc (Dal), PhD (Cantab.), Atlantic Research Laboratory, NRC
 C.E. Keen, BSc, MSc (Dal), PhD (Cantab.), Atlantic Geoscience Centre, Energy, Mines & Resources
 M.J. Keen, BA (Oxford), PhD (Cambridge), Geol. Survey of Canada, BIO.
 S.R. Kerr, BSc (Carl.), MSc (Qu.), PhD (Dal), BIO, Fisheries & Environment
 K. Kranck, BSc (McGill), PhD (Uppsala), Atlantic Oceanographic Lab, BIO.
 D. Lefavre, BSc (Sherbrooke), MSc, PhD (Laval), Maurice Lamontagne Institute, Fisheries & Oceans, Mont-Joli
 J.W. Loder, BSc (Acadia), PhD (Dal), Dept. of Fisheries & Oceans, BIO.
 J.A. Novitsky, BSc (Penn. St.), PhD (Ore. S.U.), Dept. of Biology, Dal
 N.S. Onkey, BSc (McGill), MSc (Saskatchewan), PhD (McMaster), BIO
 B.D. Petrie, BSc (StFX), MSc (McG), PhD (Dal), Atlantic Oceanographic Laboratory, Environment Canada
 T. Platt, BSc (Nottingham), MSc (Toronto), PhD (Dal), BIO
 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
 R.L. Stephenson, BSc (Trent), PhD (Canterbury), Fisheries & Oceans
 G.S. Stockmal, BSc (Manitoba), BSc (Calgary), PhD (Brown), Atlantic Geoscience Centre, BIO
 B.J. Topliss, BSc (Durham), MSc, PhD (UCNW, Bangor), Physical and Chemical Science Branch, BIO
 D.G. Wright, BSc (Laurentian), PhD (UBC), Atlantic Oceanographic Laboratory, BIO

Honorary Adjunct Professors

- R.C. Courtney, BSc, MSc (Dal), PhD (Cambridge)
 K.T. Frank, BSc, PhD (Toledo), Dept. of Fisheries & Ocean, BIO
 B.T. Hargrave, BSc, MSc (Dal), PhD (UBC), BIO, Fisheries & Environment
 D.A. Huntley, BA (Cantab), PhD (Bristol)
 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 Atmospheric Science, Meteorology, 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.

Minimum course requirements are a total of 5 half-credit classes at the 5000 level or higher, at least three of which must be chosen from the introductory classes.

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. In addition to the four introductory half-classes (5110A-5140B), at least four half-credit classes in advanced classes, ordinarily in the area of the candidate's special interest are normally required. More classes will frequently be desirable.

Candidates must demonstrate competence in their speciality and related fields in a comprehensive written examination, plus write and defend a proposal for thesis research.

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:
 L.A. Mayer, C. Beaumont

5120A Introduction to Physical Oceanography: B. Ruddick

5130A Introduction to Chemical Oceanography: R.M. Moore

5140B Introduction to Biological Oceanography: E.L. Mills.

5150A Introduction to Biological Oceanography: C. Boyd.

5160B Fisheries Oceanography: C. Taggart.

*5210B Time Series Analysis: Staff

5221A Ocean Dynamics: staff.

5222B Estuary, Coast and Shelf Dynamics: A.J. Bowen

*5223B Ocean Waves: staff.

*5230B Biology of Phytoplankton: staff.

*5260B Biology of Zooplankton: C.M. Boyd.

5270R Special Topics in Biological Oceanography: staff.

*5280A Chemical Sedimentology & Early Diagenesis: B. Boudreau.

*5291A Organic Materials in Seawater: staff.

*5292B Chemical Methods: B. Johnson/ R. Moore.

*5293A Advanced Marine Particles: staff.

*5294A Geochemical Cycles: R. Moore, B. Johnson

*5295A Physical Chemistry of Seawater: B. Boudreau

5311A Fluid Dynamics I: C. Garrett

5312B Fluid Dynamics II: C. Garrett

*5330B Benthic Ecology: J. Grant.

*5331B History of Oceanography: E.L. Mills.

5340B Marine Geology: L.A. Mayer.

5350B Marine Geophysics: K.E. Loudon.

*5380B Marine Modelling: staff.

5411A Dynamic Meteorology I: O. Hertzman, G. Lesina. Cross listed with Physics 5441A

5412B Dynamic Meteorology II: O. Hertzman, G. Lesina. Cross listed with Physics 5412B

5440C Advanced Topics in Geophysics: Beaumont, Loudon, Mayer

*5450A Geodynamics: C. Beaumont.

5500A Atmospheric Physics I: Staff. Cross listed with Physics 5500A

5510B Atmospheric Physics II: Staff. Cross listed with Physics 5510B

5520A Introduction to Meteorology: Staff. Cross listed with Physics 5520A

5530B Introduction to Radiation and Climate: P. Chylek. Cross listed with Physics 5530B

5560A Mesoscale Dynamics: O. Hertzman

5570A Light Scattering and Radiative Transfer: P. Chylek

5580B Cloud Physics: G. Lesina

9000 MSc Thesis

9530 PhD Thesis

In addition to the weekly oceanographic departmental seminar, each of the oceanographic subdisciplines has a regular seminar in its specialty. At the seminar, topics of specific interest are discussed and examined.

112 Oral and Maxillofacial Surgery

Oral and Maxillofacial Surgery

Location: 5981 University Avenue
Halifax, N.S. B3H 3J5
Telephone: (902) 494-1679

Chair - Oral & Maxillofacial Surgery
D.S. Precious

Professors

C.E. Hope, MBChB (Edin.), FFARCS (Eng.),
FRCP(C), Head Department of Anaesthesia
F.W. Lovely, DDS (Dal), MS (Mich), FRCD(C)
FICD
M.M. Cohen Jr., AB (Mich.), DMD (Tufts), MSD,
PhD (Minn.), FCCMG
D.S. Precious, DDS, MSc (Dal), FRCD(C), FADI,
Program Director

Associate Professor

B.B. Harsanyi, DDS, MS, FRCD(C)

Assistant Professors

R.A. Barker, MB, ChB, FRCP(C)
A.K. Bhardwaj, BDS, DDS, FRCD(C)
P.L. Cyr, DDS (Dal), MSc (Dal), FRCD (C)
A.A. Drysdale, MDCM, FRCP(C)
R.B. Howell, DDS (Loma Linda), Cert. Oral Path
(USC Med. Ctr.)
J.G.L. Lovas, BSc (Tor), DDS (Tor), MSc
(UWO)
B.A. Wright, BDS (Lon.), LDS, RCS (Eng), DDS
(Dal), MS (Indiana), MD (Dal)
R.H. Yabeley, 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 preceding commencement of the program.

MSc Degree Program Requirements

1. Satisfactory completion or credit for the prescribed courses.
2. 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

Year I

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
511 Pathobiology	Audit

Year II

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

Year III

700 Oral Pathology	1 credit
701 Seminar	1 credit
702 Clinical	1 credit
703 Research 1	1 credit

Year IV

800 Clinical Oral Surgery	1 credit
801 Seminar	1 credit

9000 MSc Thesis

Pathology

Location: Sir Charles Tupper Bldg., 11th Floor
5859 University Avenue
Halifax, N.S. B3H 4H7
Telephone: (902) 494-2091

Head of Department

M.A. MacAulay

Professors

D.E. Favara, BS, MD, (St. Louis), FACP(AP&CP)
T. Ghose, MB, BS, PhD (Calc.), FRC Path.
(U.K.)
M.L. Givner, BSc, MSc, PhD (McG)
D.T. Janigan, BSc, MD (Dal) FRCP(C), FCCP
M.A. MacAulay, MD (Dal), FRCP(C)
G. Rowden, BSc (Exeter), MSc, PhD (London),
MRC Path.

Associate Professors

A.D. Fraser, BA (Houghton), PhD (Boston),
FACB, DABCC, Graduate Studies Coordinator
D.L. Guernsey, PhD (Hawaii)
R.F. McCurdy MPH, MSc (Minn.), PhD, (TUNS)
M.A. Moss, MB, BS (London), MSc (Dal),
FRCP(C)
A.A. Trillo, MD, (Nat'l. Univ. Mexico), PhD
(UWO)

Assistant Professors

D.E.C. Cole, BSc, MD (Tor.), PhD (McG),
FCCMG
C.L. Cousins, MSc, PhD (Dal), FACB
K.C. Dooley, PhD (UBC)
L.C. Dymond, BSc (Memorial), MSc, MD (Dal),
FRCP(C)
S.J. Luner, BS (Calif. Inst. of Tech.), PhD
(UCLA)
C.G. Wagborne, BSc (Guelph), PhD (Tor.)
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 require 24 months.

General Pathology 500 and one other credit in a subject related to the thesis research, or the

laboratory field chosen are required. In addition, all students are required to enroll in and participate in the seminar program (Pathology 509). 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, 501 and 504 were taught in the 1988-89 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. D.E.C. Cole.

***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. R.F. McCurdy.

***504 Pathobiology of Cancer:** Sessions: Two sessions weekly throughout the academic year. Dr. T. Ghose.

***505 Special Topics: General**

506 Special Topics in Morphometrics and Stereology

507 Special Topics in Electron Microscopy

508 Special Topics in Immunocytochemistry and Histochemistry

509 Pathology Graduate Students Research Seminar

Seminars - Conferences

A series of weekly seminars, journal clubs, and conferences is conducted throughout the year in various areas of pathology, and laboratory medicine.

Areas of Specialization for MSc Thesis
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 induced by inhalation of combustion products from plastics and synthetics and occupational lung disease: D.T. Janigan.

Transplantation of pancreatic segments and islets: Experimental models of pancreatitis related to prevention of pancreatitis and long term survival of grafts. Expert computer systems in medicine. M.A. MacAulay.

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.

Placental and Perinatal Pathology: S.A. Heifetz

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 and monoclonal antibodies to tumour cell surface antigens: S.J. Luner.

Trace metals, natural radionuclides and environmental health: R.F. McCurdy.

Interference in digoxin assays, hypouricemic states: L.C. Dymond.

Environmental pathology, trace metals and disease, biochemical aspects of forensic medicine, investigation of porphyria: M.A. Moss.

Coagulation and platelet disorders: E.Z.M.A. Zayed.

Biochemical genetics and inherited metabolic disease; metabolism of inorganic macronutrients - calcium, phosphorus, sulfur: D.E.C. Cole.

Molecular biology of tumour progression and metastasis. C.G. Wagborne.

Molecular mechanisms of oncogenesis and thyroid hormone action.

Pharmacology

Location: Sir Charles Tupper Building, 6th Floor
5859 University Avenue
Halifax, N.S. B3H 4H7

Telephone: (902) 494-3435

Head of Department

K.W. Renton

Professors

J.W. Downie, BSc, PhD (Man.)

G.R. Ferrer, BSc, PhD (Man.) Graduate Studies
Coordinator

K.W. Renton, BSc (Sir Geo. Wms.), PhD (McG)
H.A. Robertson, BA, MSc, (UWO), PhD

(Cantab.)

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)

J. Sawynok, BSc, MSc (Melb.), PhD (Queen's)

Assistant Professor

J. Blay, BSc(Hons), PhD (Cantab)

C.R. Dean, BSc (MtA), MSc (Dal), DPhil
(Oxon.), MD (Dal) Medicine

R.I. Hall, BScPharm (Dal), MD (Dal), Anesthesia

S.E. Howlett, BSc(Hons) (Concordia), MSc, PhD
(Mem)

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 Program

For minimum time required to complete this program, see Section 2.6. Candidates must complete satisfactorily the following classes or their equivalents: 5403, 5404, 5405B, and a minimum of two half credit courses in the 5600

series. An ancillary course chosen from courses offered by another department 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. Laboratory teaching experience is included in the program. 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. An additional short research project (5503) is optional. An ancillary course chosen from courses offered by another department in the Faculty of Graduate Studies is required. Students are expected to attend research seminars within the department. Lecture and laboratory teaching experience is included in the program. A comprehensive examination is required. Thesis research, and preparation and oral defense of a thesis are required.

MD/PhD Combined Program

For information on the combined MD/PhD program see section 6, page 51.

Areas of Research Specialization

Faculty research interests include: cardiac electrophysiology and pharmacology, interferon, polypeptide growth factors and signal transduction, general anesthetics, 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.

Three or four 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

5405B Advanced Pharmacology

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. Available only to students in the PhD program.

5506 MSc Practice Teaching

5507 PhD Practice Teaching

Offered in 1990/91*

5605A Functions of extracellular purines in the central and peripheral nervous system: T. White.

5607A Advanced cardiovascular pharmacology: S.E. Howlett.

5611B Drug metabolism: K. Renton.

5616B Molecular neuropharmacology: H. Robertson.

5617B Pharmacology of cell growth: J. Blay.

5619A Topics in autonomic pharmacology: J. Downie.

5621B Pharmacology of drug abuse (Pharmacy elective): G. McKenzie.

5623C Clinical pharmacology: J. Gray.

Offered in 1991/92*

5602A Mechanisms of cardiac arrhythmias and antiarrhythmic drug action: G. Ferrier.

5603B Neuropharmacology of pain: J. Sawynok.

5610B Anesthesia: R. Hall.

5612A Clinical trial design: J. Gray.

5613A Pharmacology of autacoids: M. Vohra.

5621B Pharmacology of drug abuse (Pharmacy elective): G. McKenzie.

5623C Clinical pharmacology: J. Gray.

* Classes offered are subject to change. Please contact the department.

9000 MSc Thesis

9530 PhD Thesis

Pharmacy

Location: Burbidge Building
5968 College Street
Halifax, N.S. B3H 3J5
Telephone: (902) 494-2378

Director of College
R.F. Chandler

Professors

R.F. Chandler, BSc Pharm, MSc (Alta.), PhD (Syd.)
J.G. Duff, BSP, MSc (Sask.), PhD (Fla.)
M. Mezel, Dipl Pharm (Bp), PhD (Oregon State)
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.)
I.S. Sketris, BSc (Pharm) (Tor.), PharmD (Minn.)

Assistant Professors

I. Abraham, BPharm, MPharm (UST Ksl.), PhD (Neb.)
E. Butler, BSc (Chem), MSc (Chem), PhD (Colloid Chem, Bp)
J.L. Glennie, BSc(Pharm) (Tor.), PharmD (Wayne State, Detroit)
P.K.F. Yeung, BSc (Pharm), MSc (Man.), PhD (Sask.), Graduate Studies Coordinator

Lecturers

M.L. Ackman, BSc(Pharm) (Dal), PhC
R.K. Caldwell, BSc (Pharm) (Dal), PhC
B. Wilson, BSc (Pharm) (Dal.), PhC

The College of Pharmacy offers MSc and PhD programs in the areas of pharmacokinetics, biopharmaceutics, drug disposition and metabolism, medicinal chemistry, pharmacognosy, physical pharmacy and drug analysis. 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. Additionally candidates must participate in the weekly graduate seminars (Pharmacy 3000C) 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. Mezel, lecture 2 hours. Prerequisite: Consent of the instructor.

4330B Herbal Remedies: R.F. Chandler, lecture 3 hours second term.

4340C/5340C Drug Design: P.S. Farmer, lecture 2 hours first term, lab approximately 3 hours second term. Prerequisite: Consent of the instructor.

4930B/5930B Introductory Drug Metabolism and Toxicology: P.K.F. Yeung, lecture 2 hours plus a special project for graduate students. Prerequisites: Pharmacology 3470 or 3480, Biochemistry 3100, Therapeutics 3500.

4910/5910A or B Advances in Drug Metabolism and Disposition: P.K.F. Yeung and M.A. Quilliam, lecture 2 hours. Prerequisite Pharmacy 4930B/5930B. Offered every other year.

5000C/6000C Pharmacy Seminar

5250B/4250B Advanced Pharmacokinetics: I. Abraham. Every other year; consult Department. Prerequisite: Pharmacy 4100C, Pharmacy 3250A.

5290 Topics in Biopharmaceutics: M. Mezel, 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.

5980A (M2050A) Intermediate Statistics: C.A. Field (Math Dept.)

9000 MSc Thesis**9530 PhD Thesis****Areas of Specialization**

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, and evaluation of the safety and effectiveness of herbal remedies. (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. Mezel)
5. Analytical methods development (RIA, HPLC, GC, etc.) with application to pharmacokinetic, pharmacodynamic, and metabolism studies. Emphasis is on the kinetic aspects (*in-vivo* and *in-vitro*) of drug metabolism and its relationship to pharmacodynamic effects in animal species and in humans. (P.K.F. Yeung)
6. Physico-chemical, colloidal and surface characterization of particulate matter. Stability of disperse systems. Interfacial phenomena and application to pharmaceutical systems. Design and Evaluation of controlled release drug delivery systems. Study of bioadhesion and bioadhesive materials. (E. Butler)

Philosophy

Location: 1400 Henry Street
 Halifax, N.S. B3H 3J5
 Telephone: (902) 494-3811

Chairperson of Department
 S.A.M. Burns

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.
 R.M. Martin, BA (Col.), MA, PhD (Mich.),
 Graduate Coordinator - Admissions
 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.)
 S.B. Sherwin, BA (York), PhD (Stanford)
 T. Tomkow, BA (SFU), PhD (Cantab.)
 T. Vinci, BA (Tor.), PhD (Pitt.), Graduate
 Coordinator - Programs

Assistant Professor

D. MacIntosh, BA (Queens), PhD (Tor.)

Adjunct Professor

M. Fry, BA (King's), MA (Dal), BLitt (Oxon)

Post-Doctoral Fellow

K. Vilvelin, BA (Dal), BA (Oxon.), LLB (Dal),
 MA (Dal), PhD (Corn.)

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

One Year: For students with an Honours BA or equivalent in philosophy. Requirements include three classes* and a thesis.

Two Year: For those with a BA in philosophy or an honours degree in a related field. Requirements include four classes* in the first year, three in the second, and a thesis.

Qualifying Year: Students lacking the background for the above programs take five classes* and may apply the following year for an MA program.

Part-Time MA: Students may meet the requirements for a full-time program on a part time basis during a maximum period of six years.

* Note: A "class" means one full-year or two half-year classes.

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 2130 and 2140 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 of 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

- 2130 Logic: Deduction: R.M. Martin.
- 2140 Logic: Logical Theory I: P.K. Schotch.
- 2160 Philosophical Issues of Feminism: S. Sherwin.
- 2260 Philosophy and Art: S.A.M. Burns.
- 2350 History of Philosophy: Ancient Philosophy I: T. Vinci and S.A.M. Burns.
- 2370 History of Philosophy: Ancient Philosophy II: S.A.M. Burns.
- 2410 Philosophy of Psychology: T. Tomkow.
- 2420 Philosophy of Biology: R. Campbell.
- 2510 Philosophy of Social Science: D. Braybrooke.
- 2550 Marxist Theory: D. Braybrooke.
- 2610 History of Philosophy: The Rationalists: D. MacIntosh.
- 2620 History of Philosophy: The Empiricists: S.A.M. Burns.
- 2700 Philosophy in Literature (full-year): R. Martin.
- 2705 Philosophy in Literature (half year): R. Martin.
- 2800 Ethics in Medicine (full-year): S. Sherwin.
- 2810 Open Mindedness in Education: W. Hare.
- 2820 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.
- 5105 Ethics (half year): N. Brett.
- 5170 Theories of Feminism: S. Sherwin.
- 5211 Philosophy of Law: N. Brett.

- 5280 Ethics and Education: W. Hare.
- 5300 Philosophy of Language: T. Tomkow.
- 5438 Rousseau: D. Braybrooke.
- 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: D. MacIntosh.
- 5670 Philosophy of Science: staff.
- 5720 Phenomenology of Literature: M. Fry.
- 5851 Metaphysics: D. T. Tomkow.
- 5900 Logic: Logic and Philosophical Analysis: T. Tomkow
- Seminar Classes**
- 5055 Topics in Epistemology
- 5070 Topics in Philosophical Psychology
- 5080 Topics in Logical Theory
- 5115 Topics in Ethics I
- 5120 Theory of Rational Decision
- 5125 Topics in Ethics II
- 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

120 Philosophy/Physics

5690 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

Physics

Location: Sir James Dunn Science Building
Halifax, N.S. B3H 3J5

Telephone: (902) 494-2337

Chairperson of Department

A.M. Simpson

Graduate Advisor

R.A. Dunlap

Emeritus Professor

W.J. Archibald, MA (Dal), PhD (Virg.), DSc (UNB), DSc (Dal), FRSC

Professors

D.D. Betts, MSc (Dal), PhD (McG), FRSC, Dean of Faculty of Science

B.L. Blackford, BSc (Acad.), MSc (MIT), PhD (Dal)

M.G. Calkin, MSc (Dal), PhD (UBC)

P. Chylek, Physics Diploma (Charles U., Prague), PhD (U. of Calif. at Riverside) Joint appointment with Oceanography

D.J.W. Geldart, BSc (Acad.), PhD (McM), FRSC, A.C. Fales Professor of Theoretical Physics

M.H. Jericho, MSc (Dal), PhD (Cantab.), George Munro Professor of Physics

D.B.I. Kiang, BSc (Mt. A), MSc, PhD (McM)

H.J. Kreuzer, MSc, DSc (Bonn)

G.F.O. Langstroth, BSc (Alta.), MSc (Dal), PhD (Lond.)

R.H. March, BSc, MSc (Dal), DPhil (Oxon.)

B.E. Paton, BSc, MSc (Waterloo), PhD (McG)

A.M. Simpson, BA (Cantab.), MSc, PhD (Dal)

G. Stroink, BSc, MSc (Delft), PhD (McG), PEng

Associate Professors

J.G. Cordes, MSc (Dal), PhD (Cantab.)

R. A. Dunlap, BS (Worcester), AM (Dartmouth), PhD (Clark)

D.F. Goble, BSc, MSc (Alta.), PhD (Tor.), BE (Dal)

S.T. Nugent, BSc (Mem.), BE (NSTC), MASC (Tor.), PhD (UNB), PEng, Joint appointment with Engineering

P.H. Reynolds, BSc (Tor.), PhD (UBC), Joint appointment with Geology

D.A. Tindall, BA, PhD (Cantab.)

C.G. White, BSc, MSc (Dal)

Assistant Professors

D. Labrie, MSc, PhD (McMaster)

G. Lesins, MSc, PhD (Tor), Joint appointment with Oceanography

Research Associates

A.K. Das, DPhil (Oxon.)

P. Mulhern, PhD (UBC)

S.H. Payne, PhD (Cantab.)

M. Shegelski, PhD (UBC)

V. Srinivas, PhD (Indian Inst. of Tech.)

Z. Stadnik, PhD (Jagiellonian)

NSERC Postdoctoral Fellow

N.M. Fujik, PhD (Dal)

Senior Instructors

F.M. Fyfe, MSc (Dal)

W. Zukauskas, BSc (Dal)

Adjunct Professors

J.E. Aldrich, BSc, PhD (Notts.)

D.C. Dahn, BSc, MSc (Dal), PhD (BC)

H.W. King, BSc, PhD (Birm.), DIC (Lond.),

FRSA, F.Inst.P., F.I.M., CEng, PEng, TUNS

A.D.J. O'Neill, MSc (McG), PhD (Sask.)

R. Ravindra, BSc (Kharapur), MA, PhD (Tor.)

M.A. White, BSc (UWO), PhD (McMaster)

MacGregor Teaching Fellows

G. Bednarz

C. Frame

D. McLean

X. Wei

X. Ye

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, of which at least one and a half must be at the 6000 level.

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, of which at least two must be at the 6000 level.

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.

5100A/B Electrodynamics: lecture, 3 hours. Prerequisite: Physics 2110, 2120, 3150B or the permission of the instructor.

5151A Quantum Mechanics: lecture 2 hours. Prerequisite: Physics 3140A or permission of instructor.

5152B Quantum Mechanics: lecture 2 hours. Prerequisite: Physics 5150A.

5160A Mathematical Methods of Physics: lecture 3 hours. Prerequisite: Mathematics 3110A/3120B or permission of instructor.

5170B Topics in Mathematical Physics: lecture 3 hours. Prerequisite: Physics 5160A.

5180A/B Nuclear Physics: lecture 3 hours. Prerequisite: Physics 3140A or permission of instructor.

5220A Microcomputer Based Instrumentation: lecture 2 hours, lab 3 hours. Prerequisite: Physics 3510B or permission of instructor. This class is not given every year.

5230A/B Introduction to Solid State Physics: lecture 3 hours. Prerequisite: Physics 3140A or permission of instructor.

5311A/5312B Fluid Dynamics I/II: lecture 3 hours. Cross listed with Oceanography 5311A/5312B.

5330A Crystallography and Physical Properties: lecture 3 hours. Prerequisite: Physics 3140A or permission of instructor.

5350B Energy, Sources and Conversion: lecture 3 hours. Prerequisite: Physics 3140A.

5411A/5412B Dynamic Meteorology I/II: lecture 3 hours. Prerequisite: permission of instructor. Cross listed with Oceanography 5411A/5412B

5460A/B Optics: lecture 3 hours. Prerequisite: Physics 3440A/B or permission of instructor.

5480A Applied Group Theory: lecture 3 hours. Offered when there is sufficient demand.

5500A/5510B Atmospheric Physics I/II: lecture 3 hours. Prerequisite: permission of instructor. Cross listed with Oceanography 5500A/5510B.

5520A Introduction to Meteorology: lecture 3 hours. Prerequisite: permission of instructor. Cross listed with Oceanography 5520A.

5530B Introduction to Radiation and Climate: lecture 3 hours. Prerequisite: permission of instructor. Cross listed with Oceanography 5530B.

5540A/5550B Synoptic Meteorology I/II: lecture 3 hours. Prerequisite: at least 1 third year level physics.

5650A/5660B Relativity and Cosmology: lecture 3 hours. Prerequisite: Physics 2110 and 2120, Mathematics 3050R, or permission of instructor.

6100 Nuclear Physics: lecture 2 hours.

6120 Quantum Theory: lecture 3 hours. Prerequisite: Physics 4150A or its equivalent.

6141A/6142B Advanced Quantum Theory I/II: lecture 3 hours. Prerequisite: Physics 6120, which may be taken concurrently.

6201A/6202B Solid State Physics I/II: lecture 2 hours. Prerequisite: Physics 5230B, 4150A.

6241A/6242B Advanced Solid State Physics I/II

6261A/6262B Statistical Mechanics I/II: lecture 3 hours. Prerequisite: Physics 3210B, 4150A or their equivalent.

6300R Electromagnetism: lecture 3 hours.

6320C Advanced Problems (MSc students)

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6330C Advanced Problems (PhD students)

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/B Superconductivity: lecture 2 hours.

6290A/B Surface Physics

6350B Selected Topics in Physical Metallurgy: lecture 2 hours.

6500C Magnetism: lecture 1½ hours.

6600B Topics in Physics

6710A/B Introduction to Disordered Materials

6970 Selected Topics in Particle Physics: lecture 2 hours.

9000 MSc Thesis

9530 PhD Thesis

Physiology and Biophysics

Location: Sir Charles Tupper Building, 3rd Floor
Halifax, N.S. B3H 4H7
Telephone: (902) 494-3517

Head of Department
T.F. McDonald

Emeritus Professors

Bela Issekutz, Jr., MD (Szeged), Dr Med (Bud.)
Enid MacLeod, MD (Dal)
C.B. Weld, MA (UBC), MD (Tor.), FRSC

Professors

J.A. Armour, BSc (McG), MD (W Ont.), PhD (Loyola U)
B.M. Horacek, MSc (Eng.) (Prague), PhD (Dal)
M. Horackova, MSc, PhD (Prague)
G.A. Klassen, MD (UBC), FRCP(C), Major appointment Dept. of Medicine
T.F. McDonald, BSc (U of Alta.), PhD (Dal), DIC (Imperial College)
W.H. Moger, BS (Cornell), PhD (U of Calif.)
P.M. Rautaharju, MD (Helsinki), PhD (Minn.)

R. Rosen, BSc (Brooklyn College), MA (Col.), PhD (U of Chic.)

J.C. Szerb, MD (Munich), FRCP(C)
M. Wilkinson, BSc (Southampton), PhD (Lond.)
H. Wolf, Dipl Eng (Munich), PhD (Dal)
A.Y.K. Wong, MSc, PhD (Dal)

Associate Professors

R.E. Brown, BSc (U of Victoria), MA, PhD (Dal)
A. Corvin, MD (Heidelberg)
R.P. Croll, PhD (McGill)
J.D. Dudar, MSc (Alta.), PhD (Dal)
A. Fine, BA (Harvard U), DVM, PhD (U of Pennsylvania)
D. Guernsey, PhD (Hawaii), Major appointment in Pathology
J.G. Holland, BSc, MD (Dal)
W. Ling, BSc (Acad. U), MSc, PhD (McG), Major appointment, Obstetrics/Gynecology
D. Rasmuson, BA (Colo. C), PhD (Dal)
G. Stroink, PhD (McG), Major appointment, Dept. of Physics

Assistant Professors

A. Bonen, PhD (U of Ill.), Major appointment, School of Physical Education
M. Dickie, BA, MA, PhD (Tor.)
M. Gardner, MD FRCP(C), FACC (Dal), Major appointment Dept. of Medicine.
D. Hirsch, MD (Dal), Major appointment, Department of Medicine
D.E. Johnstone, B.Sc, MDCM (McG), FRCP(C), Major appointment, Department of Medicine
A. Kholopov, MSc (Moscow State Univ.) PhD (USSR Acad. of Sci.)
K. Landymore, BSc, MD, PhD (Dal), Major appointment Obstetrics/Gynecology
S. Martin, PhD (U of Calgary), Major appointment, Department of Biology, Mt. St. Vincent
N. Morgunov, BSc, MSc, PhD (U of Tor.)
M.G. Murphy, MSc, PhD (Dal)
P. Murphy, MSc, PhD (Dal)
M.R. Oulton, BA (Acad. U), PhD (Dal), Major appointment, Obstetrics/Gynecology
R. Rittmaster, MD (Tufts Med. Sch.), Major appointment, Dept. of Medicine
A.M. Taylor, BSc (Acad. U), DVM (Ont. Vet. College)

Lecturers

D. Fay, BSc (Mt.A), BEng (TUNS), MSc, PhD (Sussex), MD (Dal)
S.P. Handa, MD (Punjab), FRCP(C), FACP

Instuctor

C. Couture, BA (Dal)

Graduate Coordinator

N. Morgunov

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.

Admission Requirements

Candidates must satisfy the general requirements for admission to the Faculty of Graduate Studies.

The following constitutes the minimum entrance requirements for the graduate program in Physiology and Biophysics:

- a) An average mark of B⁺, with no mark below B⁻ in the following basic undergraduate courses or their equivalent:
 - Mathematics 1000/1010 (differential and integral calculus)
 - Physics 1100 (using differential calculus)
 - Chemistry 110 (general chemistry)
 - Statistics 1060/1070 (basic statistics for scientists)
 - Biology 1000 (general biology)
 - Expository English (essay writing class)
- b) A minimum average mark of A⁻ over the last two years of the student's undergraduate program.

Unless exempted, applicants must also 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

For the minimum time required to complete this program, see Section 2.6. Students should, however, expect to spend two years working toward the MSc.

Students who have not completed upper level classes in human physiology with at least a grade of B⁻ will be required to complete Physiology 4403R Human Physiology. Students are also required to take Cellular and Molecular Physiology 5502R, Graduate Seminar 5517C and two half courses, one of which must be from the classes listed below.

A research thesis which constitutes two 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.

A preliminary 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 of physiology and biophysics.

MD/PhD Combined Program

For information on the combined MD/PhD program see section 6, page 51.

Classes

Physiology

4403R Human Physiology: J. Dudar (Cross-listed with Biomedical Engineering at TUNS, BMB6250)

5459B Activity of Excitable Cells and Tissues: A. Wong (offered every second year, next offered in 1990/91. Cross-listed with Biomedical Engineering at TUNS).

5494B Synaptic Transmitters: J. Szerb and M. Wilkinson (offered every second year, next offered in 1989/90).

5502R Cellular and Molecular Physiology: M. Murphy and A. Fine (offered every year)

5503C Neurophysiology (Part 1): J. Szerb (offered every year)

5505A Lab Animal Medicine: Comparative Physiology: A.M. Taylor (offered every second year, next offered in 1990/91).

5508C/5509C/5510C Directed Reading in Physiology and Biophysics: Staff

5511B Neurophysiology (Part 2): J. Dudar, D. Rasmussen, J.C. Szerb, A. Fine (offered every second year, next offered in 1989/90).

5512B Physiology and Biophysics of the Heart and Circulation: P. Rautaharju and D. Armour (offered every second year, next offered in 1989/90).

5513A Endocrine Physiology: W. Moger (offered every second year, next offered in 1990/91).

5514B Reproductive Physiology: M. Wilkinson (offered every second year, next offered in 1989/90).

5517C Physiology and Biophysics Graduate Seminar: staff.

5608R/5609R/5610R Directed Reading Graduate Seminar: Staff

9000 MSc Thesis

9530 PhD Thesis

The following classes are given by the Biomedical Engineering Institute at the Technical University of Nova Scotia.

124 Physiology and Biophysics/Political Science

Biophysics 5900A Biomedical Engineering I
Biophysics 5910B Biomedical Engineering II
Biophysics 5920B Medical Instrumentation
Biophysics 5930A Digital Signal Processing I
Biophysics 5940B Digital Signal Processing II
Biophysics 5950A Biomechanics I
Biophysics 5960B Biomechanics II
Biophysics 5970A/B Directed Studies in Electrical Engineering

Political Science

Location: Arts & Administration Bldg, 3rd Floor
6299 South Street
Halifax, N.S. B3H 4H6
Telephone: (902) 494-2396

Chairperson of Department

R. Boardman

Faculty Advisor: David M. Cameron (Graduate)

Emeritus Professors

J.H. Aitchison, BA, BEd (Sask.), BSc (Lond.),
PhD (Tor.)
J.M. Beck, BA (Acad.), MA, PhD (Tor.), LL.D
(Dal), FRSC

Professors

P.C. Aucoin, BA (SMU), MA (Dal), PhD
(Queen's), jointly with Public Administration
H. Bakvis, BA (Hons) (Queen's), MA, PhD
(UBC)
R. Boardman, BSc, PhD (Lond.)
E. Mann Borgese, Professor of International
Ocean Affairs
D. Braybrooke, BA (Harv.), MA, PhD (Cornell),
FRSC (McCulloch Professor of Philosophy and
Politics)
D.M. Cameron, BA (Queen's), MA, PhilM, PhD
(Tor.) Graduate Coordinator
J.G. Bayn, BA (Tor.), AM, PhD (Col.), FRSC
(Eric Dennis Memorial Professor of
Government and Political Science)
T.M. Shaw, BA (Sussex), MA (East Africa, Prin.),
PhD (Prin.)
D.W. Stairs, BA (Dal), MA (Oxon.), PhD (Tor.),
FRSC (Vice-President, Academic and
Research)
G.R. Winham, BA (Bowdoin), Dip in Int Law
(Manc.), PhD (N Car.)

Associate Professors

D.F. Luke, BSc (Hons.), MSc, PhD (London)
D.W. Middlemiss, BA, MA, PhD (Tor.) (Director,
Centre for Foreign Policy Studies)

D.H. Poel, BA (Calvin), MA (W.Mich), PhD
(Iowa)
J. Smith, BA (McM), MA, PhD (Dal)

Assistant Professors

B.L. Crowley, BA (McGill), MSc, PhD (London)
R.G. Finbow, BA (Dal), MA (York), PhD
(London)

Assistant Professor (Research)

A. Heard, BA (Dal), MA (London), PhD (Tor)

Admission Requirements

In addition to the regular application requirements, all candidates must provide the Departmental Admissions Committee with (1) a brief statement of their intended program of studies, and, especially, their thesis/dissertation interests; and, (2) a sample of their written work (for applicants to the PhD program, their MA thesis or parts thereof would be desirable). The Admissions Committee will consider an application incomplete until these requirements are met.

Candidates must satisfy the general requirements for admission to the Faculty of Graduate Studies. For admission to the one year MA degree program, candidates must possess an Honours degree in Political Science or the equivalent (at least four full year credits in Political Science), or an Honours degree in a discipline other than Political Science, and with at least four full year credits in Political Science, may apply for a two year MA degree program.

For admission to the PhD degree program, candidates must possess an MA in Political Science, or, in exceptional cases, a Masters degree in a related discipline with a significant component of Political Science, e.g., a Masters in Public Administration or International Affairs. The Department does not admit candidates to the PhD degree program directly from an undergraduate Honours degree.

MA Degree Program

The one year MA degree consists of three full credits of courses, including the core course in their area of specialization, and a two-credit thesis. The two year MA consists of the above requirements for the one-year MA degree and as many as five additional full-year credits of courses. Students may specialize in Political Theory and Philosophy, Canadian Government, Comparative Government, International Relations and Foreign Policy, or Public Administration.

PhD Degree Program

The PhD program requires two years of full time residency. The first year course requirements consist of three full credits of courses, including two core courses in a student's field of

specialization for comprehensive examinations, and one course in Political Philosophy if this is not a field selected for comprehensive examination. Comprehensive papers and examinations must be completed in three fields: Political Theory, Philosophy and Methods; Canadian Government; Comparative Government (in selected areas); International Relations and Foreign Policy; Public Administration; and Special Alternate Field (where faculty interests and resources permit). A dissertation must be prepared and defended in one of the above areas. Candidates will be admitted to the PhD degree program only where the topic of the dissertation can be adequately supervised by Departmental faculty. Proficiency in a language other than English, usually French, must be demonstrated.

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

5204R Advanced Seminar in Canadian Politics: P. Aucoin and D. Cameron.

5205B Canadian Political Thought: J. Smith

5206A Constitutional Issues in Canadian Politics: J. Smith

5208A Canadian Provincial Politics: D. Poel.

5212B The Politics and Government of Nova Scotia: P. Aucoin.

5216A Local and Regional Government: D. Cameron.

5220A Intergovernmental Relations in Canada: H. Bakvis.

5224A Canadian Political Parties: H. Bakvis.

5228B Interest Groups: Representation, Management and Function: H. Bakvis.

5230A Canadian Cultural Policy: staff.

5235B Regional Political Economy in Canada: R. Finbow.

5240A Policy Formation in Canada: P. Brown

5241B Introduction to Policy Analysis: P. Pross

5245A Judicial Systems: A. Heard

5250B Canadian Public Administration: P. Aucoin

Comparative Politics

5301A Comparative Theory: R. Finbow.

5302B Comparative Development Administration: D. Luke

5303B Human Rights and Politics: A. Heard

5304B Comparative Federalism: H. Bakvis

5315B African Politics: staff

5340A Problems of Development: T. Shaw

5345A Politics of South Africa.

5310B Politics in Modern France: staff

5360B Politics in Latin America: staff.

Political Theory and Methodology

5331A The Political Imagination in Literature: B. Crowley.

5430A The Political Philosophy of Plato: B. Crowley.

5435A Machiavellian Politics.

5438B Rousseau and the Founding of Modern Democracy

5451A The Critique of Democracy in Modern Political Philosophy.

5479B Classical Liberalism and Democracy: D. Braybrooke

5480A Social Choice Theory: D. Braybrooke.

5485B The Theory of Games as an Approach to the Foundations of Ethics and Politics.

5490B The Logic of Questions, Policy and Analysis, and Issues Processing

5496B Philosophy of the Social Science: D. Braybrooke

5497A Research Methods and Data Analysis.

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International Relations and Foreign Policy

5520R Theories of International Relations: G. Winham

5531A The United Nations in World Politics: R. Boardman.

5535B Towards a New World Order: E. Borgese

5537 Management and Conservation of Marine Resources: E.M. Borgese.

5540B Foreign Policies of African States: T. Shaw

5544B Conflict and Cooperation in Southern Africa: T. Shaw

5570R Canadian Foreign Policy: D. Stairs.

5571R Strategy and Canadian Defence Policy: D. Middlemiss

5572R American Foreign Policy:

5573R Soviet Foreign Policy: D. Jones

5575B Nuclear Weapons and Arms Control in World Politics: D. Middlemiss

5585B Politics of the Environment: R. Boardman.

5590R The Politics of the Sea: E. Borgese

5595 Theories of War and Peace

5601R Readings in Political Science.

5602A Readings in Political Science.

5603B Readings in Political Science.

9000 MA Thesis

9530 PhD Thesis

Psychology

Location: Life Science Building
1355 Oxford Street
Halifax, N.S. B3H 4J1
Telephone: (902) 494-3417

Chairperson of Department
R.E. Brown

Professors

R.E. Brown, BSc (Victoria), MA, PhD (Dal)
P.J. Dunham, BA (DePauw), MA, PhD (Missouri)
J.C. Fentress, BA (Amherst), PhD (Cantab.)
W.K. Honig, BA (Swarthmore), PhD (Duke)
R. Klein, BA (SUNY), MA, PhD (Oregon),
Graduate Studies Coordinator
V.M. LoLordo, AB (Brown), PhD (Penn.)
P. McGrath, BA, MA (Saskatchewan), PhD
(Queen's)
J.A. McNulty, BA, MA, PhD (Tor.)
I.A. Meinertzhagen, BSc (Aberdeen), PhD (St.
Andrews)
D.E. Mitchell, BSc, M.App.Sc. (Meib.), 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 (Scout), PhD (Berkeley)

Associate Professors

J. Barreal, BS (Brown), MA (S Calif.), PhD
(Wisc.)
S. Bryson, BA (Guelph), PhD (McG)
J.W. Clark, BA, MA (McG), PhD (Qu.)
J.F. Connolly, BA (Holy Cross), MA (Sask), PhD
(London)
R. Croll, BSc (Tufts), PhD (McG)
B. Barhard, BA, MA, PhD (Tor.)
B.R. Moore, AB (Emory), PhD (Stan.)
M. Ozier, BA, MA, PhD (Tor.)
D.P. Phillips, BSc, PhD (Monash)
S. Shaw, BSc (London), PhD (St. Andrews)

Assistant Professors

A.J. Cohen, BA (McG), MA, PhD (Qu.)
M.T. Legerstee, BA (SFU), MA, PhD (Univ.
Québec)
C. Moore, BA (Emory), PhD (Cantab)

Adjunct Professor

J. Fisk, BSc, MA, PhD (Western Ont.)

Senior Instructors

G. Eakes, BA, PhD (Berkeley)
R.S. Hoffman, BSc (Col. Coll.), MA (Dal)

Research Associates

- A. Frollich Dr. Diplom (Freie Univ. Berlin)
- D. Zhang (trained at Beijing Univ. and Shanghai Brain Inst.)

Postdoctoral Fellows

- B. Alsop, PhD (Auckland)
- H. Brandstätter, PhD (Graz)
- A. Kingstone, PhD (Manchester)
- C. Ryan, PhD (Carleton)
- D. Williams, BA (Man.), PhD (Min.)

Admission Requirements

Candidates must satisfy the general requirements for admission to the Faculty of Graduate Studies.

MSc/MA Degree Program

Students are expected to complete the MSc/MA program within 12 months from their admission.

All candidates for the MSc/MA degree in general experimental psychology take Statistics and Experimental Design (6000) and at least two other classes in the 6000 series.

All MSc/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. The Department does not offer a degree in Clinical Psychology at the Masters level.

PhD Degree Program in Psychology

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/her thesis supervisor chooses a minor area of study from the classes offered by other departments in Dalhousie University.

Students are required to pass a comprehensive examination at least one year before submission of the thesis. The form of this examination is flexible 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.

PhD Program in Clinical Psychology

The program in Clinical Psychology is designed according to the "scientist-practitioner" model. It is a structured, 5-year program leading to a PhD degree. During the first 4 years of the program, students complete the required classes, conduct supervised and thesis research and gain clinical experience through field placements. In the fifth

year, students are placed in a full-year clinical internship. In addition to the Clinical Psychology requirements, students must meet all the requirements for the PhD degree program in Psychology.

Classes

Not all these classes are offered every year. Please consult the current timetable on registration to determine which classes are being offered.

5000R Research Assignment: staff.

5001A Independent Study: Staff

5002B Independent Study: Staff

6000R Statistics and Experimental Design: R.S. Rodger.

6020A/B Application of Experimental Clinical Procedures: K.E. Renner.

6040R Animal Learning: W.K. Honig.

6050R Perception: D.E. Mitchell.

6051A/B Neural Basis of Perception: D. Phillips

6060A/B Biological Basis of Mental Illness: J. Connolly, B. Rusak

6070R Physiological Psychology: S. Nakajima.

6081A/B Topics in Personality and Social Psychology: J. Barret

6090R Biosocial Issues in Development: P. Dunham.

6091A/B Topics in Child Development: P. Dunham, C. Moore

6100A/B Instrumentation and Computers in Psychology: D. Conrad, R. Hoffman.

6130R Cognitive Psychology: R. Klein.

6160A/B Comparative Psychology: R. Brown, J. Fentress.

6201A/B Introduction to Psychological Assessment: P. Ritvo

6202A/B Introduction to Psychological Intervention: J. Connolly

6210A/B Introductory Clinical Seminar: P. McGrath

6230A/B Psychology of Reading: R. Klein

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6270A/B Comparative Neurobiology: I.A. Meinertzhagen, S.R. Shaw.

6300R Cognitive Neuropsychology: R. Klein

6313A/B Topics in Cognitive Psychology: R. Klein

6370A/B Neuroscience Laboratory: M.G. Yoon

6470A/B Developmental Neuroscience: I.A. Meinertzhagen, S.R. Shaw

6580R History of Psychology: J.W. Clark

6801A/B Dissociative Disorders: R. Klein

6802A/B Topics in Schizophrenia: J. Connolly

6810A/B Topics in Clinical Research Methods: P. McGrath

6802A/B Topics in Community Psychology: K.E. Renner

8040R Learning: W.K. Honig, V.M. LoLordo

8050A/B Selected Topics in Perception: D. Mitchell.

8070A/B Selected Topics in Physiological Psychology: S. Nakajima.

8081A/B Topics in Personality and Social Psychology: J. Barresi

8090A/B Biosocial Processes in Development: P. Dunham.

8091A/B Topics in Child Development: P. Dunham, C. Moore

8100A/B Methodology in Psychology: R.S. Rodger.

8120A/B Clinical Methods and Issues: K.E. Renner.

8130A/B Human Learning/Information Processing: B. Earhard, R. Klein, J. Barresi.

8160A/B Ethology: R. Brown, J. Fentress.

8231A Field Placements: M. Leiter

8232B Field Placements: M. Leiter

8240A/B Topics in Animal Learning: V. LoLordo

8313A/B Topics in Cognitive Psychology: R. Klein

8801A/B Topics in Clinical Research Methods: P. McGrath

8802A/B Topics in Schizophrenia: J. Connolly

8820A/B Topics in Community Psychology: K.E. Renner

9000R MA Thesis

9530R PhD Thesis

Public Administration

Location: 1229 LeMarchant Street
Halifax, N.S. B3H 3J5
Telephone: (902) 494-3742

Director of School

A. Paul Pross

Professors

P. Aucoin, BA (SMU), MA (Dal), PhD (Qu.)
D.M. Cameron, BA (Qu.), MA, Phil M, PhD (Tor.)

A.A. Kwapong, BA, MA, PhD (Cantab) Lester
Pearson Professor

J.D. McNiven, MSc, PhD (Michigan) Dean,
Faculty of Management

A.P. Pross, BA, MA (Qu.), PhD (Tor.)

Associate Professors

S. Amirkhalkhali, BA (Shiraz, Iran), MA (Dal),
PhD (Dal)

H. Bakvis, BA (Qu.), MA (UBC), PhD (UBC)
M.P. Brown, BA (MiA), MA (Dal), PhD (Tor.)

D.H. Poel, BA (Calvin), MA (W Mich.), PhD
(Iowa)

Assistant Professors

A. M. Casalin, BA (Man), MA (UBC)

D. Naulls, BA, MA (Wilfred Laurier), PhD
(York)

F. Siddiq, BA, MA (Dhaka), PhD (Dal)

Lecturers

K. Antoft, BA, MA (Dal)

L. Currie, BSc (St. FX), MSW, MPA (Dal)

R.S. Gunn, B.Comm. (Dal), CA

J. Houston, BA (Cornell), MPA (Dal)

F. MacKinnon, BA (Mt.A), MA (Harvard)

A. O'Brien, BSc, LLD (Dal)

D. M. Stuewe, BA (Dal), MA (Carleton)

C.L. Tozer, BA (London), MSc (Bath)

T. Vey, CMA

Adjunct Professor

T.W. Kent, MA (Oxon.), LLD (Dal)

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 3J5
(902-494-3742)

The Programs

The graduate programs of the School are 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. They are expected to achieve an 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 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.

The curriculum encompasses 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 may include a research project in the field of concentration.

Joint MPA/LLB

The School and the Faculty of Law offer a joint MPA/LLB program. The program allows students to take the two degrees simultaneously and to complete them in four years, rather than in five years as is the case if each is taken independently.

Students interested in entering the joint program should apply separately to both the School and the Faculty, indicating in their applications that they wish to enter the MPA/LLB program. The closing date for applications for the LLB is the end of February.

Applications Procedure

Application forms are available from the Admissions Office of Dalhousie University. Applications should be submitted as early as possible.

The deadline for admission is August 1. (May 31 is the deadline for Non-Canadian Students.)

The University does not permit January admission.

General Admission Requirement for DPA and MPA

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;
- TOEFL for foreign students (Test of English as a Foreign Language);

Therefore, it is imperative that in addition to your application we receive:

- a statement of career interest (one page should be sufficient);
- a current resumé;
- at least two letters of reference (one of which should be academic);
- a TOEFL score (if applicable)

Students lacking a high second class standing are strongly advised to submit a score from the Graduate Management Admission Test (GMAT) in support of their application.

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:

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

Students are required to demonstrate at an early stage in their studies that they are 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. (See section 2 of this calendar.)

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 academic 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 "special" program in the Faculty of Arts and/or Science or by the Certificate in Public Administration in the Faculty of Management.

It should be emphasized that any such undertaking carries no assurance of subsequent admission to a graduate program.

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 5120A Policy Formulation
- PA 5121B Introduction to Policy Analysis
- PA 5130A Applied Micro Economics
- PA 5131B Applied Macro Economics

- PA 5140A Quantitative Methods I
- PA 5141B Quantitative Methods II
- PA 5150A Public Sector Accounting
- PA 5151B Public Sector Financial Management
- PA 5000A Communication Skills (Non-credit)

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 PA 5000A and 10 credit classes, which must include: PA 5100A, 5110B, 5120A, 5121B, 5130A, 5131B, 5140A, 5141B, 5150A, 5151B and 6000B. The remaining credits will be electives.

Areas of Concentration

In the second year, students normally specialize in a concentrated program, consisting of three credits in the field of specialization and electives, selected in consultation with the Graduate Co-ordinator. 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 degrees (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:

5000A Communication Skills in Business: T. Brownlow

5100A Government Structure and Organization: P. Aucoin.

5110B Public Sector Management: M. Cassin.

5120A Policy Formulation: P. Brown.

- 5121B Introduction to Policy Analysis: P. Pross.
- 5130A Applied Micro Economics: F. Siddiq.
- 5131B Applied Macro Economics: S. Amirthakhal.
- 5140A Quantitative Methods I: H. Bakvis.
- 5141B Quantitative Methods II: F. Siddiq.
- 5150A Public Sector Accounting: T. Vey
- 5151B Public Sector Financial Management: J. Houston
- 6000B Senior Seminar in Public Administration: staff.
- 6100A Financial Administration & Budgeting: D. Stuewe.
- 6110A Public Sector Auditing: R. Gunn.
- 6230A Intermediate Applied Economics I: F. Siddiq.
- 6231B Intermediate Applied Economics II: staff.
- 6235B Issues in Applied Economics: F. Siddiq.
- 6400A Local Government: D. Cameron.
- 6410B Municipal Management: P. Brown.
- 6420B Municipal Financial Administration: K. Antoft.
- 6500A Business & Government: J. McNiven.
- 6505B Interest Groups: H. Bakvis.
- 6510A Policy Analysis: D. Stuewe.
- 6520A Program Evaluation Seminar: C. Tozer.
- 6521B Program Evaluation Practicum: D. Poel.
- 6530A Natural Resource Administration: P. Pross.
- 6535B Politics & Administration of Fisheries Management: P. Pross.
- 6537A Environmental Policy: P. Brown.
- 6540B Canadian Regional Development Policy: F. Siddiq.
- 6600A Personnel Administration: M. Cassin
- 6610B Compensation & Collective Bargaining: L. Currie

- 6620A Women and Men and Management: M. Cassin.
- 6750A Intergovernmental Relations: D. Cameron.
- 6780B International Development Administration: D. Luke
- 6785B Advanced Quantitative Methods: F. Siddiq.
- 6800R Project: staff.
- 6850R Internship: P. Brown.
- 6900R Directed Reading: staff.
- 6910A Directed Reading: staff.
- 6920B Directed Reading: staff.
- 6925A/B Management Information Systems: 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.

Recreation, Physical and Health Education

Location: 6230 South Street
Halifax, N.S. B3H 3H5
Telephone: (902) 494-2152

Director of School
A.J. Young

- Professors**
- E.G. Belzer, Jr., BS (West Chester), MS (Maryland), PhD (U.Ill.) Head/Graduate Co-ordinator of the Health Education Division.
 - A. Bonea, BA (W. Ont), MS, PhD (U. Ill.) Graduate Co-ordinator of Kinesiology
 - L.E. Holt, BS, MS (Springfield), PhD (S Ill.)
 - J.C. Pooley, Teach. Cert. (Bede), Dip PE (Carnegie Sch PE, England), MS, PhD (Wisconsin)
 - A. Richards, Dip PE (Carnegie Schl. PE, England), Teach. Cert. (Trent Park Coll.), MSc (Dal), EdD (Colorado) Head of the Leisure Studies Division.

- Associate Professors**
- R.P. Beazley, BA, BEd (Acadia), BPE (McM), MPE (Dal), EdD (Tennessee)
 - P.D. Campagna, BPHE (Windsor), BEd (Queen's), MEd (SUNY-Buffalo), PhD (Alta.)
 - G.C.B. Elder, Dip.PE Adv. (St. Mary's, London), MEd (Georgia Southern), PhD (McM)

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- R.F. Lyons, BA (Dal), MEd (Xavier), PhD (Oregon)
T.L. Maloney, BPE, BEEd (Alta.), MA (W.Ont), PhD (Alta.)
J.F. McCabe, BPE, BA (UNB), MS, EdD (Tenn.)
W.R. Mittle, BA (W Ont.), MHK (Windsor), EdD (SUNY-Buffalo)
C.A. Putnam, BPE (Man.), MS (Wash.), PhD (Iowa)
S.M. Shaw, Cert.Ed. (Inst. Ed, London), BPE, MSc (Dal), PhD (Carl.)
J.F. Singleton, BA (Waterloo), MS (Penn.State), PhD (Maryland) Graduate Co-ordinator of the Leisure Studies Division
L.J. Verabloff, BA, BPHE (Queen's), MS (Mich.), PhD (Ohio State) Supervisor of Teaching Internship Program.

Assistant Professors

- H.C. Ballem, BPE (UNB), MSc (Dal)
N.M. Ipson, BA, MS (Brigham Young U.)
D.P. McGuire, BA (Wright State), MA (Cincinnati)
P.D. Richards, Teach. Cert. (Trent Park Coll.), Laban Arts of Movement Centre Cert. (England), MA (Colorado).

The School of Recreation, Physical, and Health Education offers master's degree programs in three areas: Master of Arts in Health Education, Master of Science in Kinesiology and Master of Arts in Leisure Studies. There are ongoing research programs conducted in each of the areas of health education (basic health-related research and evaluation of school and community health education/health promotion policies, programs, practices and content), kinesiology (exercise physiology, motor behaviour, biomechanics) and leisure studies (leisure and youth, women and the family, disabled persons, gerontology; sports history and sport sociology).

Admission Requirements

Candidates must satisfy the general requirements for admission to the Faculty of Graduate Studies.

Students seeking admissions to the MA program in Health Education should have earned an excellent record during four years of undergraduate studies in health education, in an allied health profession or in a life or social science. Qualifying work may be required of applicants whose background for advanced studies in health education or health promotion is judged deficient.

Program Requirements

One full academic year (12 months) of resident study at Dalhousie University is a minimum requirement for the master's degrees. Completion of the degrees is also possible through part-time study.

Financial assistance is not available for students undertaking the degree on a part-time basis.

A thesis proposal must be approved by the candidate's thesis examination committee, which consists of at least three examiners, at least two of whom are members of the School's graduate faculty, before the thesis research may be undertaken. The candidate's advisor (i.e. research supervisor) is not a member of this committee, which also must approve the completed thesis before conferral of the Master's degree is recommended.

Five credits (30 units) of graduate credit are required in all programs. Required and elective classes for each program are described below. Beyond the required classes, the classes are selected from the electives list for his/her program. 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 master's requirements.

Ancillary Classes

Students may take a maximum of 6 units of credit of ancillary courses, above and beyond the required program of courses.

Master of Arts Degree

Health Education

The MA (Health Education) degree program requires a minimum of 30 credit hours - 18 credit hours of classes and 12 credit hours of thesis work. Students must complete courses in research methods, statistics, measurement & evaluation and health education. The thesis topic will be determined by the student and academic advisor. When applicable, students may transfer as many as nine credit hours of graduate classes from another university. On completion of all work, a final oral examination covering the nature and findings of the thesis is required. Ordinarily, the degree must be completed within five years of first registration.

Although the MA (Health Education) degree program officially has a one-year residency requirement, students should expect to take from 18 to 24 months of full-time work to complete it.

A. Required Classes: 24 credit hours.

HE 9000R Thesis: 12 credit hours
Ednc 5811A Quantitative Research Methods
or

LST 5501B Advanced Social Research Methods
HE 5503A Intermediate Statistics for the Health Sciences
or

EDUC 625B Intermediate Statistics & Research Design (Mount St. Vincent University)

Prerequisite: Before entering either LST 5501

or EDUC 625 students must have completed an introductory course in statistics with at least a "B" grade.

HE 5595B Measurement & Evaluation in Health Education and Health Promotion

HE 5514A Trends in Health Education

or

HE 5516B Theoretical & Scientific Bases of Health Education

B. Elective classes: 6 credit hours.

Students are encouraged to elect courses outside the Health Education Division that may help in the development of their research and/or professional interests, as well as courses within the Division. Electives must be approved by the student's advisor.

The Health Education Division holds research-oriented seminars during the Fall and Spring semesters, usually on Friday afternoons. The Division's Master's students are required to have attended at least 10 of these seminars, and to have presented at least one, before they schedule their thesis examination.

Master of Science Degree

Kinesiology

Required Classes

KIN 5501 Research Methods for Natural Sciences: L.E. Holt, ½ credit (3 units).

KIN 9000R Thesis: 2 credits (12 units).

Total: 2½ credits (15 units).

Elective Classes

KIN 5503 Interdisciplinary Statistics for Health Sciences: staff.

KIN 5510 Cardiorespiratory Dynamics in Exercise: P.D. Campagna.

KIN 5511 Regulation of Substrate Metabolism in Muscle: A. Bonen.

KIN 5516 Neuromuscular Physiology: G.C.G. Elder.

KIN 5520 Advanced Anatomy and Kinesiology: L.E. Holt.

KIN 5523 Biomechanics of Human Motion: C.A. Putnam.

KIN 5524 Research Techniques in Biomechanics: C.A. Putnam.

KIN 5525 Sport Science Seminar: L.E. Holt.

KIN 5530 Motor Learning and Performance: J.F. McCabe.

KIN 5572 Topics in Human Performance: J.F. McCabe.

KIN 5580 Principles of Skill Acquisition: L.J. Verabioff.

KIN 5600-5699 Independent Studies: staff. Class numbers and titles assigned by School - open to independent completion of study.

Students from undergraduate programs other than Kinesiology, such as Biology, Psychology, Mathematics, and Physics, may also be considered for the MSc program in Kinesiology.

The Kinesiology Division conducts weekly research-oriented seminars during the academic year. Graduate students are expected to attend as part of their program of studies.

Master of Arts Degree

Leisure Studies

LST 5501 Advanced Social Research Methods: S.M. Shaw, ½ credit (3 units).

LST 5503 Interdisciplinary Statistics for Health Sciences: staff, ½ credit (3 units).

or

another intermediate statistics class approved by the Leisure Studies Graduate Co-ordinator.

LST 5592 Interdisciplinary Basis of Leisure Science: J.C. Pooley, ½ credit (3 units).

LST 9000R Thesis: 2 credits (12 units).

Total: 3½ credits (21 units).

Elective Classes

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.

The Leisure Studies Division conducts weekly research-oriented seminars during the academic year. Graduate students are expected to attend as part of their program of studies.

Social Work

Location: 6414 Coburg Road
Halifax, N.S. B3H 3J5
Telephone: (902) 494-3760

Director of School

D. O'Brien

Professors

R.W. Carlson, BA, MSW (Penn.), PhD (Chic.)
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.)
F.C. Wien, BA (Qu.), MA, PhD (Cornell)

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. O'Day, BA (UBC), MA, PhD (Mich.)
D. Williams, AB (Chic.), MSW (Calif.), PhD (Brandeis)
R. Williams, BA (Acadia), MA (Tor.), Ed.D. (OISE)

Assistant Professors

M. Deveau, BA (Ste. Anne), MSW (Dal), Resident Faculty Member, Church Point
J.B. Duplisa, BA, MSW (Mt. A)
J. Harbison, BA, BSS (Dublin), Grad. Dip. SW (Edinburgh), Doc. Cand. (Tor.)
E. MacDonald, BA (St. Dunstan's), BSW, MSW (Ottawa) (Resident Faculty Member, Charlottetown)
B.K. Richard, BA (Mt. A), MSW (Dal)
A. Sexton, BA (St. Thomas), MSW (Dal)
E. Whitmore, BA, MA (Boston), PhD (Cornell)

Lecturer

J. Pace, BSW (Dal), MSW (WLU)

Field Instructors

Susan Bennett
Wanda Bernard
Mona Bordage
Barbara Burton
Paul Cashman
Susan Chadwick
Barbara Comeau

Sharon Gibson
Pat Hardy
Carolyn Humphreys
Lydia Lucas-White
Marilyn MacDonald
Verie Marchand
Joan Mendes
Aurelda Michaud-Achorn
Mary Petty
Joe Rinehart
Carol Short
Sharon Snow
Linda Stanley
Gall Warriner
Peggy White

Master of Social Work (MSW)

The one year MSW program is intended to advance knowledge about the resolution of social problems in Canada and 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, interests in related areas, and a preference for a specific Master's project or thesis. The deadline for receiving applications (including study proposal and supporting documents) to the program is March 1st.

The Maritime School offers affirmative treatment for indigenous minorities - Aboriginal, Acadian and Black - of the Atlantic Region.

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 academic year of full time study or three academic 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: 1½ credits, for students of this concentration.

or

MSW 6345R Social Work in Physical and Mental Health: 1½ credits, for students in this concentration.

MSW 6020R Master's Project in Individual and Family Practice: 1 credit, open to independent completion of study.

or

MSW 6030R Thesis in Individual and Family Practice: 1½ 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: 1½ credits, open to independent completion of study.

or

MSW 6230R Thesis in Community Practice: 1½ credits, open to independent completion of study.

Electives

In addition to the 3½ credits specified above for each specialization, each student is required to complete 1½ 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 6365A/B Community Socio-Economic Development

MSW 6370A/B Advanced Practice Skills

MSW 6375A/B Group Dynamics

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

Location: Dalhousie University
Halifax, N.S. B3H 1T2
Telephone: (902) 494-6593

Chairperson of Department
Victor Thiessen

Professors

R. Apostle, BA (Simon Fraser), MA, PhD (U of Calif. Berkeley) Graduate Co-ordinator
J.H. Barkow, AB (Brooklyn), AM, PhD (Chic.)
D.H. Clairmont, BA, MA (McM), PhD (Wash. U)
H.V. Gamberg, BA (Brandeis), AM, PhD (Princ.)
R.C. Kaill, BA (Dal), BD, MA (Tor.), PhD (McG)
L. Kasdan, MA, PhD (Chic.)
J.J. Mangalam, PhD (Cornell)

Associate Professors

P.M. Butler, BA, MA, PhD (U of Tor.)
D.H. Elliott, BA (Yale), PhD (Plitt.)
J.L. Elliott, BA (Wells), MA (Kan.), PhD (Plitt.)
N.W. Jabbra, BA (U of Calif.-Santa Barbara), MA (Indiana), PhD (Catholic)
V.P. Miller, BA (U. of Calif.-Berkeley), MA, PhD (U of Calif.-Davis)
J.G. Morgan, BA (Nott.), MA (McM), DPhil (Oxon.)
C. Murphy, BA (St.FX), MA (Dal), PhD (Tor.)
J.D. Stolzman, BA (Ore.), MS (Fla.), PhD (Ore.)
V. Thiessen, BA (Man.), MA, PhD (Wis.)

Assistant Professors

M. Binkley, BA, MA, PhD (Tor.), Associate Dean, Faculty of Arts and Social Sciences
P.G. Clark, BA, MA (McM), PhD (UBC)
S. Pollock, BN (Manitoba), BA, PhD (Warwick)

Research Associates

J. Benoit, BA, MA (Univ. of Guelph), PhD (Johns Hopkins)
B. Keddy, BScN (MSVU), MA (Dal)
B. Raymond, MA (U of Calif.-Berkeley), PhD (Chic.)
S. Shaw, BPE, MSc (Dal), PhD (Carleton)

Canada Research Fellow

T. Li, BA, PhD (Cambridge)

SSHRC Post-Doctoral Fellow

P. Barber, BA, MA (Auckland), PhD (Tor)

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.

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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 1989-90.

5010 Sociology of Work Roles

5030 Social Problems and Social Policy

5050A/B Advanced Theory

5060A/B Advanced Methods

5070 Human Nature and Anthropology

5080 Linguistics and Anthropology

5095A/B Demographic Techniques

5110 Sociology of Leisure

5117 Formal Organization

5120 Social Conflict

5135 Social Organization of Health Care

5140 Sociology of Mental Disorders

5145 Gender and Health

5160 Dawn of Civilization

5180 Issues in the Study of Society

5190 Social Movements

5200 Graduate Seminar

5205 Ethnicity, Race and Nationalism

5210 Continuity and Change in Rural Societies

5220A/B Coastal Communities

5250 Sociology of Science and Ideas

5280 Youth Crime

5285 Sociology of Criminal Law

5290 Corrections

5306A/B Modernization and Development

5320A/B Comparative Social Organization

5510A/B Graduate Readings in Sociology

5520A/B Graduate Readings in Sociology

5561A/B Gender, Leisure and the Family

9000 MA Thesis

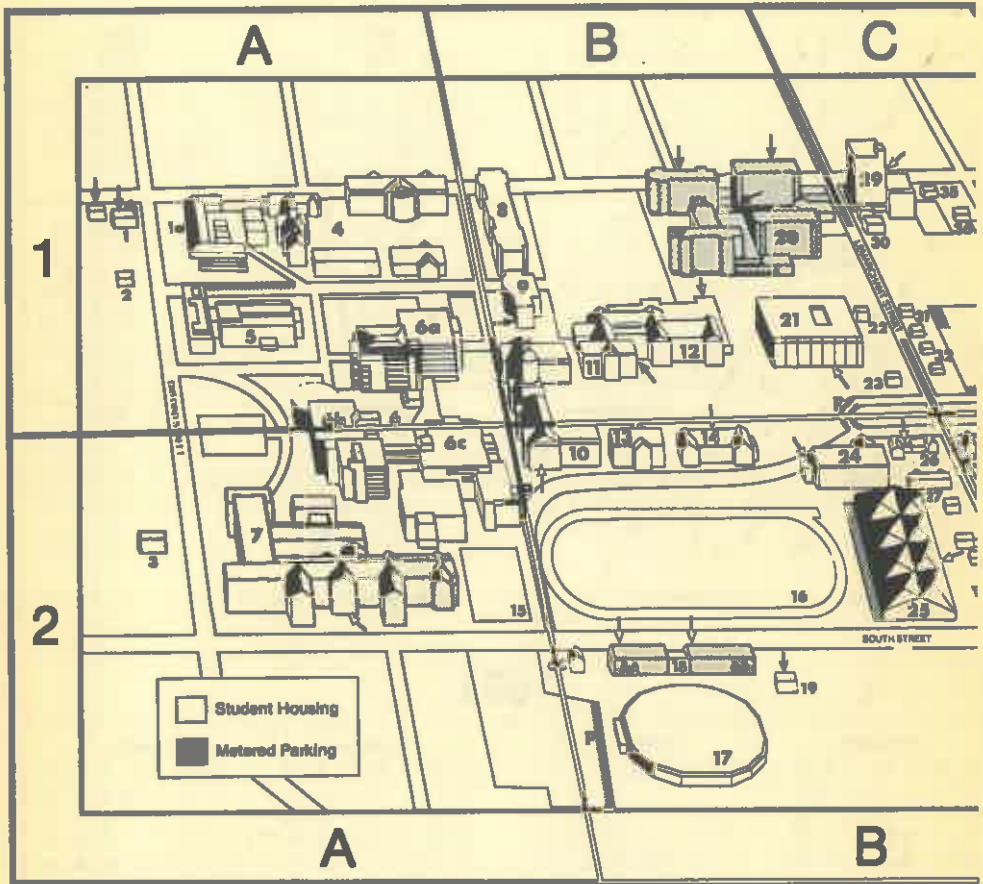
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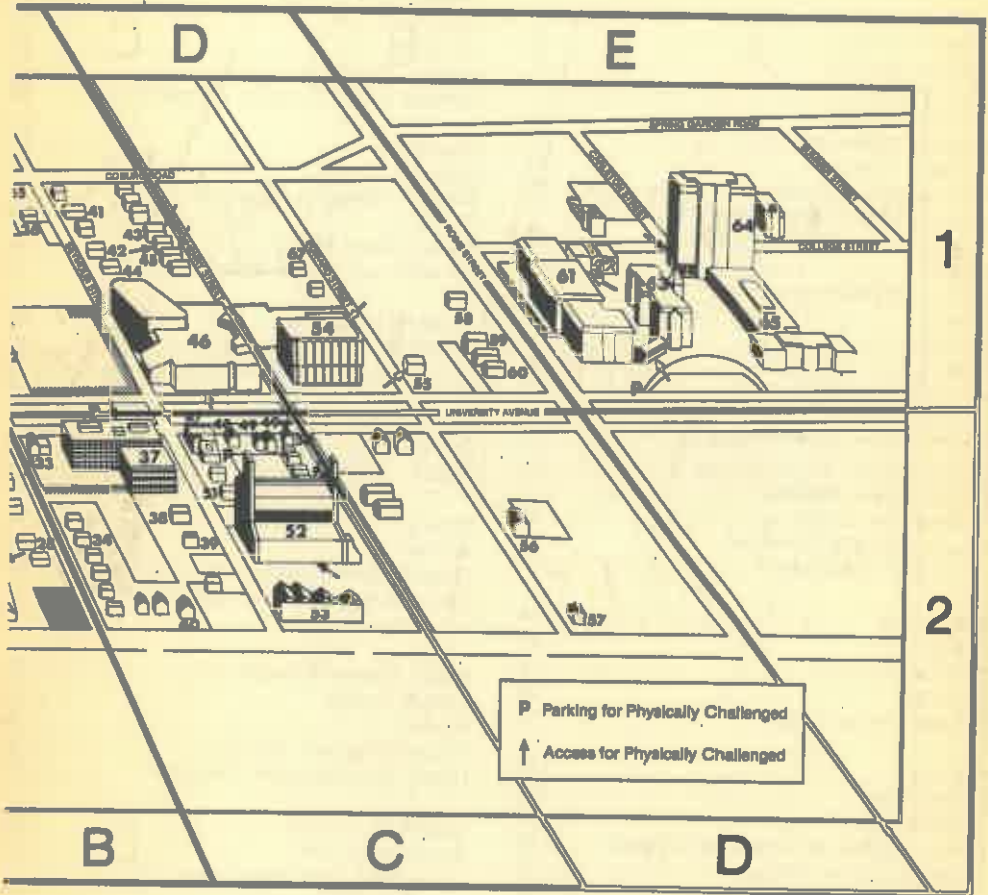
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29	30						27	28	29	30	31			24	25	26	27	28	29	30	29	30	31				

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Admissions — 10 (B1, B2)
 Alumni Office — 18 (B2)
 Arts and Administration Building — 10 (B1, B2)
 Arts Centre — 46 (C1)
 Biology — 6a (A1)
 Bookstore — 37 (C2)
 Burbidge Building — 62 (E1)
 Business Administration, School of — 29 (C1)
 Central Services Building — 52 (C2)
 Chase Building — 9 (B1)
 Chemistry — 11, 12 (B1)
 Classics — 27 (B2)
 Comparative Religion — 8 (B1)
 Computer Centre — 21 (B1)
 Counselling and Psychological Services — 37 (C2)
 Dalplex — 17 (B2)
 Day Care — 1a (A1)
 Dentistry and Dental Hygiene — 61 (E1)
 Development Office — 35 (C1)
 Dunn Building — 8 (B1)
 Economics — 26 (B2)
 Education — 14 (B2)
 Engineering — 8 (B1)
 Eliza Ritchie Hall — 66 (B2)
 English — 42, 43 (C1)

Forrest Building — 63 (E1)
 French — 32 (C1)
 Geology — 6b (A1, A2)
 German — 31 (C1)
 Graduate House — 33 (C2)
 Henson College — 47, 48 (C2)
 History — 41 (C1)
 Housing Office — 37 (C2)
 Howe Hall — 20 (B1)
 International Student Centre — 67 (D1)
 Killam Library — 21 (B1)
 King's College — 4 (A1)
 Law Building — 54 (D1)
 Life Sciences Centre — 6a, b, c (A1, A2)
 Macdonald Science Building — 11 (B1)
 Mathematics, Statistics, Computing Science — 9 (B1)
 Medicine — 64 (E1)
 Nursing, School of — 63 (E1)
 Occupational Therapy, School of — 63 (E1)
 Oceanography — 6b (A1, A2)
 Part-time Studies and Extension — 48 (C2)
 Pharmacy, College of — 62 (E1)
 Philosophy — 45 (C1)
 Physics — 8 (B1)
 Physiotherapy, School of — 63 (E1)



- Political Science — 10 (B1, B2)
- President's Leadership Class — 68 (B2)
- Psychology — 6c (A2)
- Public Administration, School of — 34 (C2)
- Public Relations — 21 (B1)
- Registrar's Office — 10 (B1, B2)
- Recreation, Physical and Health Education,
School of — 19 (B2)
- Resource and Environmental Studies — 60 (D1)
- Rink — 25 (B2)
- Russian — 22 (B1)
- Security and Traffic — 40 (C2)
- Shirreff Hall — 7 (A2)
- Social Work — 1 (A1)
- Sociology and Social Anthropology — 53 (C2)
- Spanish — 22 (B1)
- Student Union Building — 37 (C2)
- Studley Gymnasium — 24 (B2)
- Theatre — 48 (C1)
- Transition Year Program — 30 (C1)
- Upper Building — 64 (E1)
- University Health Services — 20 (B1)

For specific locations of offices and departments, consult the university switchboard, 424-2211 (after April 14, 494-2211), or the Halifax-Dartmouth telephone directory, or the Dalhousie telephone directory.

January 1990

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FOR FURTHER ENQUIRIES

write:

THE REGISTRAR'S OFFICE
Dalhousie University
Halifax, N.S. B3H 4H6
Fax: 902-424-1630

or call:

902-424-2450

