

calendar

FACULTY OF GRADUATE STUDIES



**Dalhousie
University 1985-86**

Dalhousie University Graduate Studies Calendar

Founded in 1818
Halifax, Nova Scotia, Canada



Notices

All readers and prospective students are advised that the matters dealt with in this calendar are subject to continuing review and revision. This Calendar is printed some months before the year for which it is intended to provide guidance.

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

Dalhousie University reserves the right to delete, revise or add to anything described in this Calendar without notice, other than through the regular processes of Dalhousie University, and every student accepted for registration in the University shall be deemed to have agreed to any such deletion, revision or addition whether made before or after said acceptance.

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

Inquiries regarding Academic Matters should be directed to:

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

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Almanac 1985-86

May

Friday, 3: Senate meeting to consider candidates for the award of degrees in Arts and Science, Management Studies, Health Professions and Graduate Studies.

Saturday, 4: Examinations end, Law

Monday, 6: Level I fieldwork (2nd year, 4 weeks) and Level II fieldwork (3rd year, 8 weeks) begin, *School of Occupational Therapy*.

Thursday, 9: University Convocation (Management Studies, Health Professions and Graduate Studies).

Friday, 10: University Convocation (Arts and Science and Graduate Studies).

Monday, 13: Summer School (first session) registration and classes begin. Senate meeting to consider candidates in the award of degrees in Medicine, Spring 1985.

Thursday, 16: Last day for cancelling registration in "A" classes, first summer session.

Friday, 17: Last day for cancelling registration in "R" or "C" classes, first summer session.

University Convocation (Medicine).
Senate meeting to consider candidates for the award of degrees in Law and Dentistry.

Sunday, 19 — Tuesday, 21: Post-college assembly, Dentistry.

Monday, 20: Victoria Day

Wednesday, 22: University Convocation (Dentistry and Graduate Studies).

Friday, 24: University Convocation (Law and Graduate Studies).

Monday, 27: Examinations begin Dentistry (first and second years).

Tuesday, 28: Last day for withdrawing without academic penalty from "A" classes, first summer session.

June

Tuesday, 4: Last day for withdrawing from "A" classes, first summer session.

Monday, 10: Last day for withdrawing without academic penalty from "R" or "C" classes, first summer session. Last day for cancelling registration in "B" classes, first summer session.

Wednesday, 12: Intern training begins, Medicine.

Wednesday, 19: Last day for withdrawing without academic penalty from "B" classes, first summer session.

Tuesday, 25: Last day for withdrawing from "B," "R" or "C" classes, first summer session.
Summer School ends (first session).

Friday, 28: Last regular day for registration of postgraduate Medical Residents is June 28, 1985. Last day to apply for supplemental examinations in Law.

July

Monday, 1: Canada Day, Resident Training begins, Medicine. Postgraduate Medicine Residency programs commence.

Tuesday, 2: Level III fieldwork begins, School of Occupational Therapy. Summer School (second session) registration and classes begin.

Friday, 5: Last day for cancelling registration in "A" classes, second summer session.

Monday, 8: Last day for cancelling registration in "R" or "C" classes, second summer session.

Tuesday, 9: Supplemental and special examinations begin, Law.

Wednesday, 10: Last day to apply for supplemental examinations in Arts and Science, Health Professions and Management Studies. (does not apply to Graduate Studies) (to be written in August or September).

Monday, 15: Last day to apply for supplemental examinations in Dentistry and Dental Hygiene.

Tuesday, 16: Last day for withdrawing without academic penalty from "A" classes, second summer session.

Friday, 19: Supplemental and special examinations end, Law.

Tuesday, 23: Last day for withdrawing from "A" classes, second summer session.

Monday, 29: Fieldwork Level I begins, School of Occupational Therapy. Last day for withdrawing without academic penalty from "R" or "C" classes, second summer session. Last day for cancelling registration in "B" classes, second summer session.

August

Thursday, 1: Last day for receipt of application for admission to Arts and Science for fall term.

Monday, 5: Halifax Natal Day and Dartmouth Natal Day — No Classes

Wednesday, 7: Supplemental examinations begin in Health Professions and Management Studies.

Thursday, 8: Last day for withdrawing without academic penalty from "B" classes, second summer session.

Friday, 9: Last day for those expecting Ph.D. degrees in October to submit unbound theses to departments.

Wednesday, 14: Last day for withdrawing from "B," "R," or "C" classes, second summer session.
Final day for classes, Summer School.

Thursday, 15: Supplemental examinations begin in Dentistry and Dental Hygiene.

Wednesday, 28: First year MBA orientation begins.

September

Monday, 2: Labour Day.

Tuesday, 3: Supplemental examinations begin, Arts and Science. Registration ends in: Law and Library Service.

Registration ends and Classes begin in: Medicine, School of Human Communication Disorders, MBA, Dentistry, Dental Hygiene, Outpost Nursing.

Wednesday, 4: Classes begin in: Library Service and Law.

Wednesday, 4 — Saturday noon, 7: Last regular days for class approval, registration, and payment of fees for students in: Arts and Science, Health Professions, Graduate Studies, Management Studies

Friday, 6: Last day for those expecting Masters degrees in October to submit unbound theses to departments.

Monday, 9: Classes begin in: Arts and Science, Health Professions Graduate Studies (unless otherwise specified), Management Studies.

Friday, 13: Last day for adding or changing a Fall or full-year class, Law.

Friday, 20: Last day for changing classes, School of Library Service. Last day for those expecting to receive a graduate degree in October to submit approved unbound copies of theses to Faculty of Graduate Studies Office.

Last day for adding classes (except "B" classes), Arts and Science, Health Professions and Management Studies.

Monday, 30: Last day for cancelling registration: Faculties of Arts and Science, Health Professions and Management Studies.

October

Friday, 4: Last day for withdrawing from "A," "R" or "C" classes without academic penalty, Management Studies.

Monday, 14: Thanksgiving Day.

Saturday, 19: Fall convocation.

November

Friday, 1: Last day for withdrawing from "A," "R" or "C" classes with a grade of "W," Management Studies.

Monday, 11: Remembrance Day.

Tuesday, 12: Last day for withdrawing from "A" classes without academic penalty, Arts and Science and Health Professions.

Friday, 15: Last day for receipt of application for admission to Arts and Science for winter term. Last day for those expecting PhD degree by approval of Senate in February to submit unbound theses to departments.

Monday, 18: Last day for withdrawing from "A" classes without academic penalty, Graduate Studies.

Friday, 29: Last day to change status (PT to FT or FT to PT), Graduate Studies.

December

Monday, 2: Last day to apply for intern training, Medicine.

Thursday, 5: Last day of classes in Arts and Science, Health Professions and Management Studies.

Friday, 6: Last day of classes, Law (all years).

Saturday, 7: Examinations begin in Law (second and third years).

Monday, 9: Examinations begin in Arts and Science, Health Professions and Management Studies.

Tuesday, 10: Examinations begin in Law (first year). Last day of classes, School of Library Service.

Wednesday, 11: Examinations begin, School of Library Service.

Friday, 13: Classes end, Dentistry (first, second and third years) and Dental Hygiene (first and second years). Last day for those expecting Masters degrees by approval of Senate in February to submit unbound theses to departments.

Monday, 16: Examinations begin, Dentistry (first, second and third years), Dental Hygiene (first and second years).

Wednesday, 18: Holidays begin.

Friday, 20: Last day of classes in Dentistry (fourth year)

Wednesday, 25: Christmas Day.

Thursday, 26: Boxing Day.

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

January 1986

Wednesday, 1: New Year's Day.

Thursday, 2: Registration of new students (not applicable to Graduate Studies). Classes resume. Fieldwork (4th year) begins, School of Occupational Therapy.

Tuesday, 7: Last day for adding or changing spring term classes, Law.

Friday, 10: Last day for adding "B" (or second term) classes, Arts and Science, Health Professions and Management Studies.

Wednesday, 15: Last day for cancelling registration, those registered only in "B" classes.

Wednesday, 22: Last day for withdrawing from full-year classes, without academic penalty, Arts and Science and Health Professions.

Friday, 24: Last day for withdrawing from "B" classes without academic penalty, Management Studies. Last day for students in Arts and Science, Health Professions and Management Studies to apply for supplemental examinations "A" classes. (does not apply to Graduate Studies)

Friday, 31: Last day for withdrawing from full-year classes without academic penalty, Graduate Studies.

February

Saturday, 1: Winter Carnival, No classes.

Friday, 7: Munro Day, No classes.

Monday, 10: Supplemental examinations begin, Arts and Science and Management Studies.

Friday, 21: Last day, for withdrawing from B classes with a grade of "W," Management Studies.

Monday, 24: Study break begins.

Wednesday, 26: Last day for those expecting Ph.D. degrees in May to submit unbound theses to departments.

March

Monday, 3: Classes resume.

Friday, 7: Last day for withdrawing from "B" classes without academic penalty, Arts and Science, Health Professions and Graduate Studies.

Friday, 28: Good Friday.

Monday, 31: Last day for those expecting Masters degrees in May to submit unbound theses to departments.

April

Saturday, 5: Last day of classes in Arts and Science, Health Professions, (except 4th year Occupational Therapy) Management Studies and Graduate Studies.

Monday, 7: Examinations begin in Arts and Science, Health Professions, Graduate Studies and Management Studies.

Friday, 11: Last day for those expecting to receive a graduate degree in May to submit approved unbound copies of theses to Faculty of Graduate Studies Office. Last day of classes Law (all years), Library Service, Occupational Therapy (4th year).

Saturday, 12: Examinations begin, Library Service.

Friday, 18: Examinations begin, Law (second and third years) Last day of classes in Dentistry (third and fourth years), Dental Hygiene (first and second years).

Monday, 21: Summer clinical practicum begins in the School of Nursing (for basic degree students only), first, second and third year, 6 weeks, and School of Physiotherapy (second year). Summer clinical practicum begins, School of Physiotherapy (third year) (18 weeks). Examinations begin, Dentistry (third and fourth years), Dental Hygiene (first and second years).

Monday, 28: Third Term for Dentistry (third year) begins.

May

Senate meets to consider the award of degrees, Spring 1985. (dates to be confirmed).

Saturday, 3: Examinations end, Law.

Monday, 5: Level I fieldwork (second year, 4 weeks) and Level II fieldwork (third year, 8 weeks) begins, School of Occupational Therapy.

Thursday, 8: University Convocation, Management Studies, Health Professions and Graduate Studies.

Friday, 9: University Convocation, Arts and Science and Graduate Studies. End of year — Dentistry (fourth year).

Monday, 12: Summer School (first session) registration and classes begin.

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

Friday, 16: University Convocation (Medicine). Last day for cancelling first summer session registration in "C" or "R" classes.

Sunday, 18 - Tuesday, 20: Post-College Assembly, Dentistry.

Monday, 19: Victoria Day.

Tuesday, 20: Examinations begin, Dentistry (first and second years) and Dental Hygiene (first year).

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

Friday, 23: University Convocation (Law and Graduate Studies). Last day of classes, Dentistry (first and second years).

Monday, 26: Examinations begin, Dentistry (first and second years).

Tuesday, 27: Last day for withdrawing without academic penalty from "A" classes first summer session.

Friday, 30: End of year, Dental Hygiene (first year).

June

Tuesday, 3: Last day for withdrawing from "A" classes first summer session.

Monday, 9: Last day for withdrawing without academic penalty from "R" and "C" classes first summer session. Last day for cancelling registration in "B" classes first summer session.

Wednesday, 11: Internship year begins.

Wednesday, 18: Last day for withdrawing without academic penalty from "B" classes first summer session.

Tuesday, 24: Summer School ends (first session). Last day for withdrawing from "B," "R" or "C" classes first summer session.

Friday, 27: End of year Dentistry (third year).

Admission Application Dates

Arts and Science

Students entering from Canadian or US high schools	August 1
Foreign Students (except USA)	May 1
Transfer Students	July 1
BEd Program	May 30

Health Professions

(Undergraduate)	
Transfer Students ¹	July 1
Recreation, Physical and Health Education	July 15
Nursing — Basic BN	April 1
BN for Post RN ²	August 1
Outpost and Community Health Nursing ³	April 15
Occupational Therapy	March 1
Physiotherapy	January 28
Pharmacy	March 1
Social Work	April 15
(supporting documents)	May 15

Management Studies

(Undergraduate)	August 1
Transfer Students	July 1
Non-American Foreign Students	May 1
Public Administration	August 15

Dentistry

Dental Hygiene	December 1
	January 31
Medicine	
MD	December 15
Post-Graduate	December 1

Law⁴

	February 28
Graduate Studies	August 1
Non-North American Students	May 31
Human Communication Disorders	February 28
Law	April 15
Library Service	April 15
Nursing (full-time students)	May 31
Social Work	January 31

Winter Term

BA, BSc and BComm programs only	November 15
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Early Registration and Registration by Mail is Possible for Most Students, and is Advised

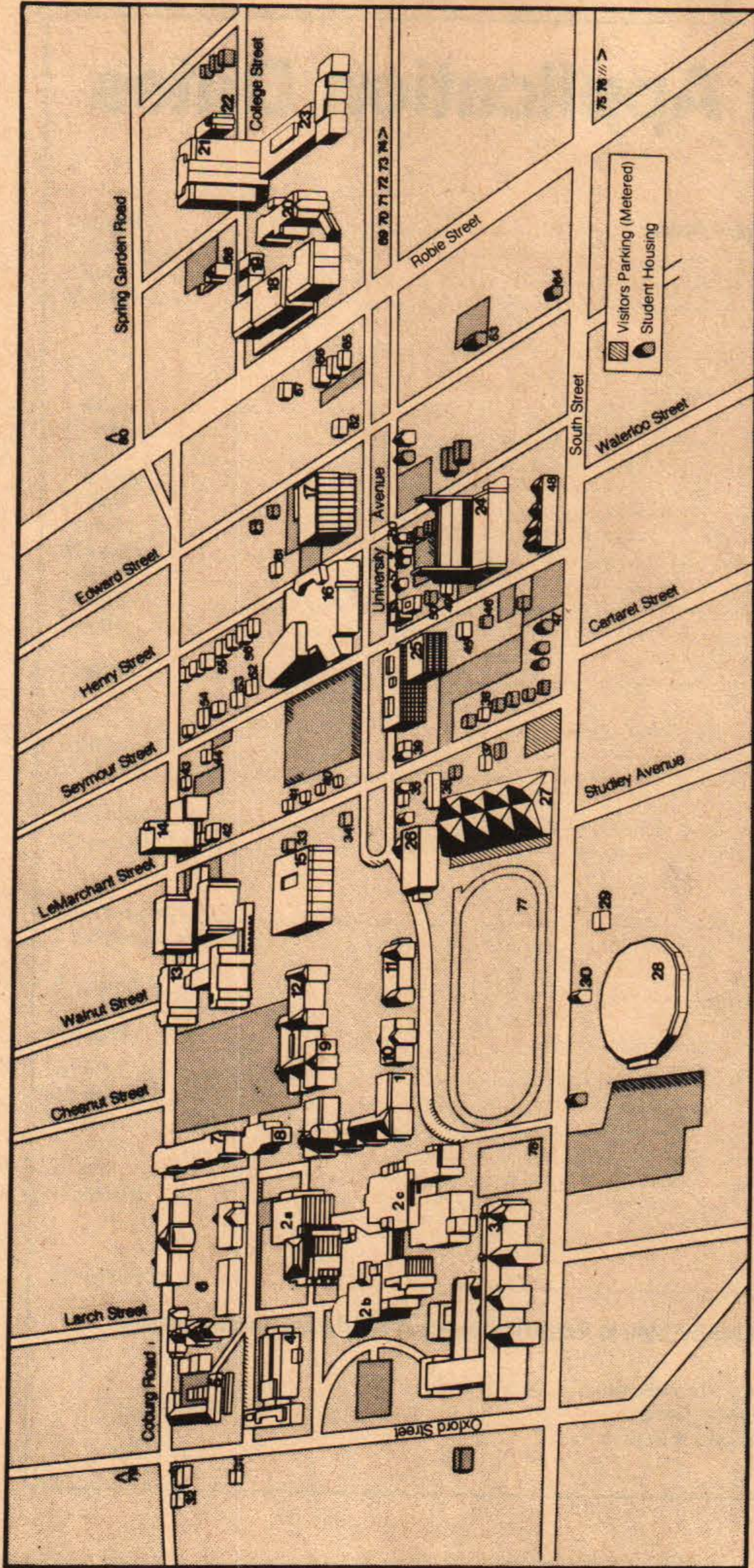
¹ Except Occupational Therapy, Pharmacy, Physiotherapy

² Subject to change depending on numbers applying

³ Application date for class entering in January is October 1.

⁴ Late applications may be considered.

The Campus Map



- Admissions - 1
- Alumni Office - 30
- Arts and Administration Building - 1
- Arts Centre - 16
- Biology - 2a
- Bookstore - 25
- Business Administration, School of - 14
- Chemistry - 9, 12
- Clinical Research Centre (CRC) - 23
- Computer Centre - 15
- Counselling and Psychological Services - 25
- Dalplex - 28
- Day Care - 5, 75
- Dentistry - 18
- Development Office - 8
- Dunn Building - 17
- Economics - 35
- Education - 11
- Engineering - 7
- English - 53 and 55
- Faculty Club - 10
- Forrest Building - 20
- French - 40
- Geology - 2b
- German - 4
- Graduate House - 39
- Health Education, School of - 29
- Henson Centre - 51
- History - 54
- Howe Hall - 13
- Institute of Public Affairs (IPA) - 51
- Killam Library - 15
- King's College - 6
- Law - 17
- Life Sciences Centre - 2
- Macdonald Science Library - 9
- MacMechan Auditorium - 15
- Mathematics - 15
- McInnes Room - 25
- Medicine - 21
- Nursing, School of - 22
- Occupational Therapy, School of - 21
- Oceanography - 2b
- Old Public Archives Building - 8
- Ombud's Office - 25
- Part-Time Studies and Extension - 57
- Pharmacy, College of - 19
- Philosophy - 56
- Physical Education, School of - 29
- Physics - 7
- Political Science - 1
- Psychology - 2c
- Public Relations - 8
- Rebecca Cohn Auditorium - 16
- Rink - 27
- Religion - 7
- Russian - 33
- Security and Traffic Office - 24
- Shirreff Hall - 3
- Social Work, School of - 32
- Sociology and Social Anthropology - 48
- Spanish - 33
- Student Union Building (SUB) - 25
- Studley Gymnasium - 26
- Theatre - 16
- Tupper Building - 21
- Visitors Parking (Metered)
- Student Housing

Dalhousie University

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

Dalhousie's student population has grown to 10,000 students. To accommodate these, in a wide variety of undergraduate, professional, and graduate programs offered, Dalhousie occupies more than 60 acres in a residential area of the city of Halifax. University facilities include buildings for teaching and research, libraries, residential housing for students, a Student Union Building, an Arts Centre for music, theatre, and an art gallery, and facilities for physical recreation. The Nova Scotia Archives building, the Atlantic Regional Laboratory of the National Research Council, major provincial hospitals, and the Dr. D.J. MacKenzie Laboratories are located in close proximity to the University. Dalhousie benefits from a variety of arrangements for teaching and research collaboration with hospitals and federal and provincial research laboratories.

The University of King's College, situated on the Dalhousie campus, is an affiliated institution, and its students in Arts and Sciences receive Dalhousie degrees authorized in the name of both institutions. By agreement with Mount Saint Vincent University there is co-operation in access for students to various courses and services, and by agreement with the Technical University of Nova Scotia there are co-operative arrangements for engineering, engineering-physics, and computer science studies. By arrangement with the Nova Scotia Teachers College, graduates of that institution may complete education degree requirements at Dalhousie. Co-operation in a number of academic programs, in administrative services, and in use of library resources is also provided for in working arrangements with Saint Mary's University and other institutions in Halifax.

Arrangements proposed with the Nova Scotia Agricultural College will provide for the awarding of degrees in Agriculture by Dalhousie in cooperation with the College.

Under the University's statutes the Board of Governors is responsible for the operation of the University. The Board consists of representatives named by the Government of Nova Scotia, by the alumni, by the Student Union and by certain other bodies. Internal regulation of the University is the primary concern of the Senate, subject to approval of the Board of Governors. The Senate consists of the President, Vice-Presidents, Deans of faculties and academic department heads, Registrar, full professors, other members of the academic staff elected from and by each faculty, six students elected by students, and certain other persons.

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

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

Faculties

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

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

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

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

Faculty of Law (Law);

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

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

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

Schools and Colleges

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

Institutes and Centres

Applied Microelectronics Institute
Atlantic Institute of Criminology
Atlantic Region Magnetic Resonance Centre
Atlantic Research Centre for Mental Retardation
Canadian Centre for Marine Transportation
Centre for African Studies
Centre for Foreign Policy Studies
Centre for International Business Studies
Centre for Marine Geology
Centre for Regional and International Development Projects
Centre for Research in Sensory, Psychology and Medical Physics
Dalhousie Ocean Studies Program
Institute for Resource and Environmental Studies
Institute of Oceanography
Institute of Public Affairs
Trace Analysis Research Centre

Academic Programs and Information Sources

In 1983-84 Dalhousie offered the following academic programs. The normal years of full-time study are shown. Information about each may be found in the current University calendar indicated.

Faculty of Arts and Science

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

Faculty of Management Studies

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

Faculty of Health Professions

Bachelor of Physical Education (4 years)
 Bachelor of Recreation (4 years)
 Bachelor of Science in Health Education (4 years)
 Bachelor of Nursing (4 years, with previous RN 3 years)
 Diploma in Outpost and Community Health Nursing (15 months post RN)
 Bachelor of Science in Pharmacy (4 years)
 Residency Program in Clinical Pharmacy (1 year) (post BSc Pharm)
 Bachelor of Science in Physiotherapy (3 years Physiotherapy following one year of Arts and Science or minimum 2 years post Diploma program)
 Bachelor of Science in Occupational Therapy (3 years Occupational Therapy following one year of Arts and Science)
 Bachelor of Social Work (3 years Social Work study following one year general study, a wide choice permitted)

Faculty of Dentistry

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

Faculty of Law

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

Faculty of Medicine

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

Faculty of Graduate Studies

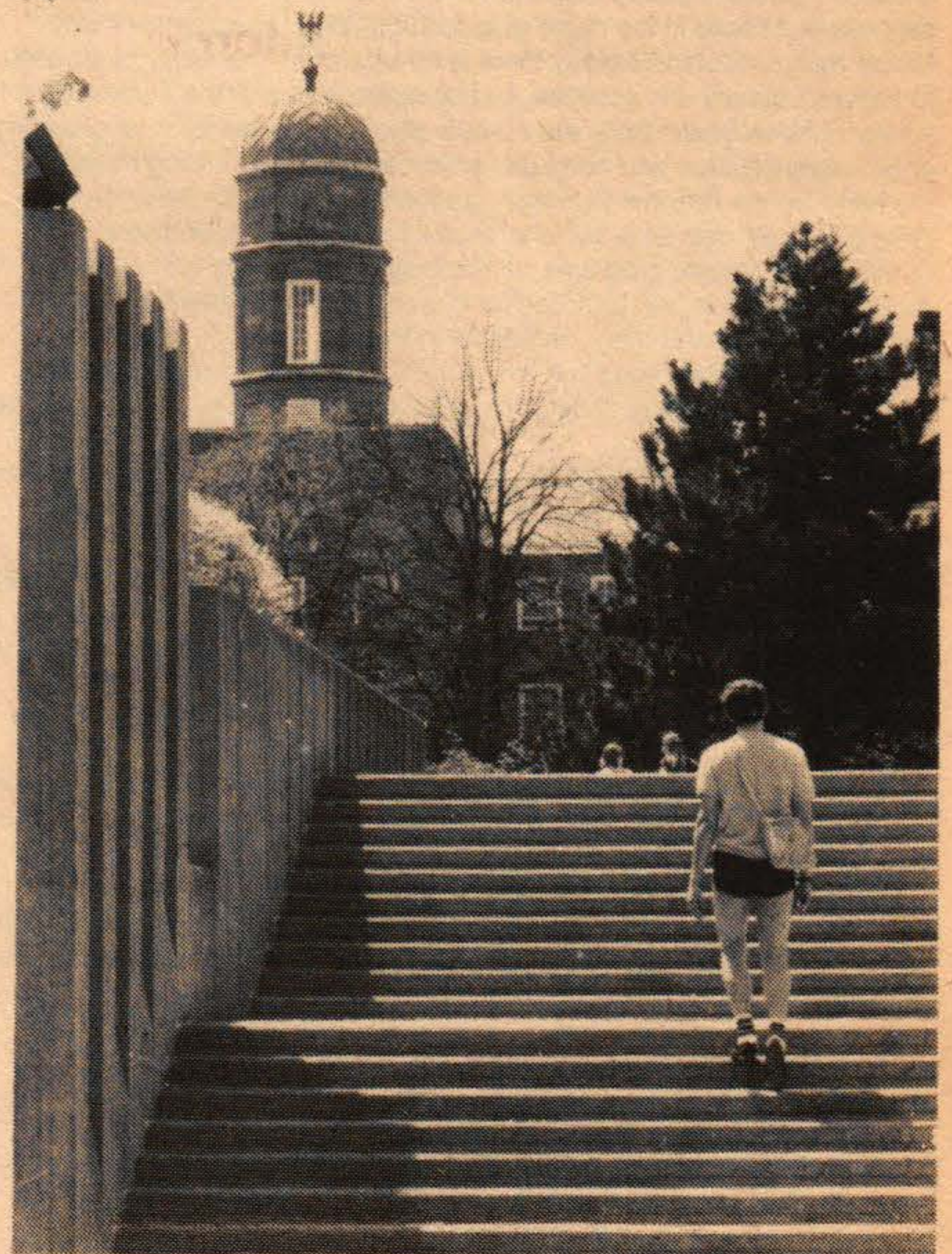
Master of Arts (1 or 2 years, with thesis) in Classics, Economics, Education, English, French, German, History, Mathematics, Philosophy, Political Science, Psychology, and Sociology
 Master of Science (1 or 2 years with thesis) in Anatomy, Biochemistry, Biology, Chemistry, Geology, Health Education, Human Communication Disorders, Audiology or Speech Pathology, Mathematics, Microbiology, Oceanography, Oral Surgery (4 years), Pathology, Pharmacology, Pharmacy, Physical Education, Physics, Physiology and Biophysics
 Doctor of Philosophy (2 or 3 years, with thesis) in Anatomy, Biochemistry, Biology, Chemistry, Classics, Economics, Education, English, Geology, His-

tory, Interdisciplinary Studies, Mathematics, Microbiology, Oceanography, Pharmacology, Pharmacy, Philosophy, Physics, Physiology, and Biophysics, Political Science, Psychology

Doctor in the Science of Law (2 or 3 years, with thesis)
 Master of Arts in Teaching (French) (2 years)
 Master of Business Administration (2 years)
 Master of Education (1 year)
 Master of Environmental Studies (1 or 2 years)
 Master of Laws (1 year)
 Master of Library Service (2 years)
 Master of Public Administration (2 years)
 Master of Development Economics (2 years)
 Master of Nursing (2 years)
 Master of Social Work (1 or 2 years)
 Diploma in Public Administration (1 year)
 Master of Business Administration with Bachelor of Laws (4 years)
 Master of Science in Oral Surgery (4 years)
 Doctor of Medicine (4 years)
 Intern Year (1 year)

Honourary Degrees

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



General Information

Libraries

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

As of April 1, 1984, the total Dalhousie University Library System holdings include over 1,173,000 volumes of books, bound periodicals, documents, and bound reports, as well as 23,000 reels of microfilm, 275,000 microfiche and microcards, and 120,000 data cards, maps, musical scores, and other media. 12,000 serials titles are currently received, and dead title holdings number over 6,000.

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

University Computing and Information Services

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

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

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

Student Services

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

The Dean can assist students with any University related problem, and can offer direction in class or program selection to ensure compliance with the degree requirements of Dalhousie University. A special program has been developed for students requiring academic assistance. All divisions of

Student Services co-operate in the program together with a number of departmental faculty advisers. Students who may experience difficulties are encouraged to consult with the Dean who reviews their situation and advises them of the various services available.

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

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

Dalhousie has a CUSO coordinator who may be reached through the Dean's office. General CUSO information is available to students at all times.

Student Counselling Service

The Student Counselling and Psychological Services Centre offers programs for personal development as well as assistance with personal, interpersonal and educational concerns. Counselling is offered by professionally trained counsellors and psychologists. Strict confidentiality is assured. Individual counselling is available for any personal or social problem which a student may encounter. Some of the programs offered regularly are: *Career Planning for Mature Students*; *Study Skills*; *Thesis Writing*; *Examination Anxiety Reduction*; "Speak Easy"; and the *Career Information Centre*.

Counselling Centre offices are on the 4th floor of the Student Union Building. Enquire or make appointments by coming in or calling 424-2081.

Chaplaincy at Dalhousie

The University provides facilities for chaplains appointed by various churches. There are four full-time chaplains at Dalhousie, representing the Anglican, Roman Catholic, Lutheran, and United Church traditions. In addition, contact ministers are designated by the Baptist, Jewish, and Presbyterian traditions and can be reached through the Chaplains' Office on campus. The Chaplains' Office is located on the third floor of the Student Union Building. Office hours are Monday to Friday 9-5. Appointments can be made for other convenient times. The chaplains are available at any time for emergencies. Outside office hours, chaplains may be reached by calling 422-5665, or via the SUB Enquiry Desk 424-2140.

University Health Service

The university operates an out-patient service, in Howe Hall, at Coburg Road and LeMarchant Street staffed by general practitioners and a psychiatrist. Further specialists' services are available in university hospitals and will be arranged through the Health Service when indicated. All information gained about a student by the Health Service is confidential and may not be released to anyone without signed permission by the student. In the event of emergency, students should telephone the University Health Service at 424-2171 or appear at the clinic in person. The university maintains health services on a 24-hour basis with a physician on call. The offices are closed from 10 p.m. to 9 a.m. All students must have medical and hospital coverage approved by the Health Service. All Nova Scotia students are covered by the Nova Scotia Medical Services Insurance. All other Canadian students must *maintain* coverage from their home provinces. This is especially important for residents of any province requiring payment of premiums. All non-Canadian students must be covered by medical and hospital insurance prior to registration. Details of suitable insurance may be obtained from the University Health Service prior to registration. Any student who has had a serious illness within the last 12 months, or who has any chronic medical condition, should contact and advise the Health Service, preferably with a statement from his doctor. Medications prescribed by any physicians or consultants are paid by a prepaid drug plan.

Student Housing

The University provides accommodation for more than 2,000 students in a variety of facilities — regular residence halls, apartments, graduate houses and casual houses.

Enquiries relating to residences, apartments and houses (with the exception of Peter Green Hall, as noted below) should be directed to the Dalhousie University Housing Office, Room 122, Student Union Building, Dalhousie University, Halifax, Nova Scotia, B3H 4J2.

In addition to coordinating applications for accommodation in University premises, the University Housing Office coordinates information on housing, apartments and other accommodations offered for rent by others in the Halifax-Dartmouth region. Information is posted on notice boards outside the Housing Office and phones are provided for use in calling prospective landlords. During summer months, a list of accommodations available is maintained and is sent periodically to out-of-town applicants upon request. Applicants from the Halifax area are expected to rely upon the notice boards at the office. The Housing Office will endeavour to help with special housing needs.

Residence Accommodation

The University provides accommodation for more than 2,000 students in a variety of facilities — regular residence halls, apartments and houses. Enquiries relating to residences, apartments, and houses (with the exception of Peter Green Hall, as noted below) should be directed as follows:

Residence Halls and Houses

Shirreff Hall (Women) — on campus, primarily undergraduate, accommodation and meals. Contact: Dean of Women, Shirreff Hall, Dalhousie University, Halifax, Nova Scotia, B3H 4J4.

Howe Hall (Men) — on campus, primarily undergraduate, accommodation and meals. Contact: Dean of Men, Howe Hall, Dalhousie University, Halifax, Nova Scotia, B3H 4J5.

Women's Residence Houses — within walking distance of campus, without meals. Contact: Dean of Women, Shirreff Hall, Dalhousie University, Halifax, Nova Scotia, B3H 4J4.

Apartments

Fenwick Place — a University-owned, co-ed high-rise apartment building with 2, 3 and 4-bed apartments with kitchen and living room, and laundry facilities on each floor. Contact: Manager, Fenwick Place, 5599 Fenwick Street, Halifax, Nova Scotia, B3H 1R2.

Peter Green Hall (Married students) — an apartment building available to married students only. Enquiries should be directed to the Business Office at 1094 Wellington Street, Halifax, Nova Scotia, B3H 2Z9.

Glengary Apartment (Women) — an apartment building close to the center of the University. Contact: Dean of Women, Shirreff Hall, Dalhousie University, Halifax, Nova Scotia, B3H 4J4.

Off-Campus Housing

The University Off-Campus Housing Office on the main floor of the Student Union Building on University Avenue co-ordinates information on housing, apartments and other non-university owned accommodation offered for rent in the Halifax-Dartmouth region. Information is posted on notice boards outside the Off-Campus Housing Office and a telephone is provided for use in calling prospective landlords. For further information on the Off-Campus Housing Office contact: The Manager, Off Campus Housing Office, Student Union Building, Dalhousie University, Halifax, Nova Scotia B3H 4J2.

Meals

Meal tickets may be obtained by any student for use in the residence dining rooms and meals are available at the Student Union Building Cafeteria.

Dalhousie Student Union

President, Student Union: Alex Gigeroff

Vice-President: Rusty James

Treasurer: Neil Ferguson

General Manager, Student Union: J.W. Graham, BComm

The Dalhousie Student Union is an incorporated body comprising all full-time students of Dalhousie University, and other students who have paid their union fees of \$83. The objects of the Union include acting as the official organization of the students of Dalhousie, and promoting activities for the advancement of its members. Government of all extra-curricular student activities is another Union responsibility.

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

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

The Union employs a staff to administer its affairs and to enable the Union to carry out its obligations. Supervision of the staff is generally entrusted to the General Manager, a full-time employee of the Student Union who is responsible to the President and to Council. His job is largely administrative, but he is often called on for information and advice by the Council or other Union organizations. About eight full-time employees provide continuity and expertise. The Union uses its need for employees as a source of part-time work for students.

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

Student Clubs and Organizations

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

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

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

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

Cultural Activities

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

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

Athletics

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

The Divisions of Athletics and Recreation offers a well-diversified program for every student at Dalhousie University. For those interested in highly

competitive sports, there is a broad selection of inter-collegiate activities. For those who enjoy competition and friendly rivalry there is an interfaculty athletic program. For those interested in recreational activities on a casual or club basis opportunities exist.

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

Alumni Association

The Alumni Association is composed of over 30,000 former students of the University. It operates a number of programs, including a young alumni club and branch clubs outside Halifax, and a counselling and tutoring service. The association also publishes the *Dalhousie Alumni Magazine* which is sent to all Alumni and friends of the University. The association sponsors class reunions, scholarships and bursaries, the Alumni Award for Teaching Excellence, assists with fund-raising drives and arranges for alumni representation on the Board of Governors.

Canadian Armed Forces

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

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

Awards Office

Director: G.G. Steedman, BA

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



University Regulations

1. All students must report their local address while attending the University to the Office of the Registrar, on registration or as soon as possible thereafter. Subsequent changes must be reported promptly.
2. Place of Residence of Students. For the purpose of admission to the University, the place of residence of a student is the place of domicile. This is normally presumed to be the place (country, province, etc.) where the parents' or guardian's home is located. That place remains unchanged unless the Registrar is satisfied that a place of residence is established elsewhere.
3. No person under sixteen years of age is admitted to any class except by special permission of the Senate.
4. All students must agree to obey all the regulations of the University already made or to be made, and pay the required fees and deposits before entering any class or taking any examinations.
5. A student is not eligible to register unless all previous accounts, including fees, library fines, and other fines to the University have been paid.
6. Late Registration requires the approval of the Dean of the Faculty.
7. Withdrawal: See the individual faculty regulations and the Fee section.
8. Tuberculin Test: In the interests of public health in the University, students are encouraged to have a tuberculin test. This is compulsory for Dental, Dental Hygiene and Physiotherapy students. Facilities for testing are arranged by the University Health Services.
9. Transcript of Record: A student may receive only an unofficial transcript. Official transcripts will be sent at a student's request to other universities, or to business organizations, etc. on payment of the required fee. If a student so requests, a copy of a medical certificate will be enclosed with the transcripts.
10. The Senate is charged with the internal regulations of the University, including all matters relating to academic affairs and discipline, subject to the approval of the Governors. Within the general policies approved by Senate, academic requirements are administered by the Faculty concerned.
11. When the work of a student becomes unsatisfactory, or a student's attendance is irregular without sufficient reason, the Faculty concerned may require withdrawal from one or more classes, or withdrawal from the Faculty.
12. If a student is required to withdraw from a Faculty because of failure to maintain adequate academic standing, such a student may apply to another Faculty. However, in assessing the application, previous performance may be taken into consideration.
13. 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.

14. 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 well as certain other offences, and delegates this authority to the Senate Discipline Committee.

15. On report of a serious breach of the law, or a serious academic offence deemed by the President, or in his absence by the 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.

16. 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.

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

18. 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.

The terms of reference under which the Committee operates are as follows:

Procedures for Dealing With Academic Offences

(a) The Senate Discipline Committee is vested with original jurisdiction to consider all complaints or allegations respecting offences or irregularities of an academic nature, including those relating to admissions procedures and evaluation procedures, and to impose penalties in cases where the Committee finds an offence or irregularity has occurred.

(b) The Senate Discipline Committee shall assume jurisdiction when a complaint or allegation respecting offences or irregularities of an academic nature are brought to its attention by the Secretary of Senate.

(c) The Senate Discipline Committee shall report its findings and any penalty imposed to the Secretary of Senate. The Secretary of Senate shall forward a copy of the report to any member of the University community whom the Senate Discipline Committee has found to have committed an offence or irregularity and if the member concerned be other than a student a copy shall also be sent to the Vice-President (Academic).

(d) If the member of the University found to have committed an offence or irregularity is a student, he may appeal to Senate on any finding or any penalty imposed by the Senate Discipline Committee by advising the Secretary of Senate in writing within 30 days of receipt of the report by the student.

Irregularities in Admissions Procedures

A member of the University who gains admission or assists any other person in gaining admission by any irregular procedure, for example, by falsifying an academic record or by forging a letter of recommendation or by impersonating any other person, commits an academic offence and is liable to a penalty.

Irregularities in Evaluation Procedures

(a) 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.

(b) Without limiting possible irregularities in evaluation procedures that may be considered by the Senate Discipline Committee, the following examples shall be considered irregular procedures.

- (i) arranging for or availing oneself of the results of any personation at any examination or test, or,
- (ii) attempting to secure or accepting assistance from any other person at any examination or test, or,
- (iii) having in one's possession or using any unauthorized material during the time that one is writing any examination or test, or,
- (iv) without authorization procuring a copy of an examination, test or topic for an essay or paper, or,
- (v) in the absence of any enabling statement by the Faculty member in charge of that course, submitting any thesis, essay, or paper for academic credit when one is not the sole author, or,
- (vi) without authorization submitting any thesis, essay or term paper that has been accepted in one course for academic credit in any other course in any degree, diploma or certificate program.

Penalties

The Senate Discipline Committee, when it finds that a member of the University who is a student has committed an academic offence or irregularity may impose one or more of the following penalties:

- (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.

Definitions

Full-time Students: those registered for three full classes or more, or the equivalent of three half credit classes or more in either first or second term.

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

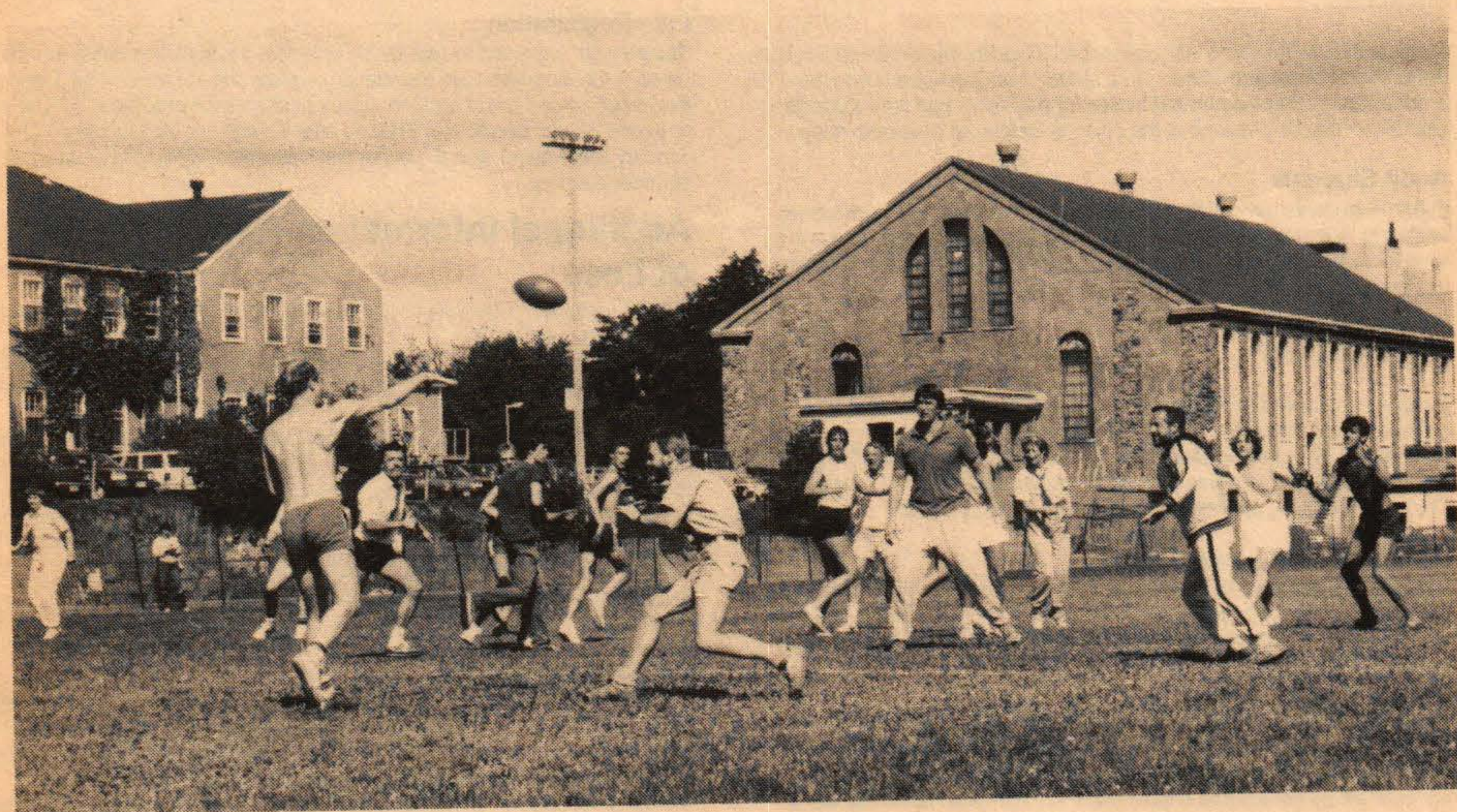
Matriculation Standing: Senior Matriculation designates the level of studies attained by students who have successfully completed Grade XII in a public high school in Nova Scotia or its equivalent elsewhere.

No-degree Students: students who are not candidates for a degree or diploma but who wish to take one or more university classes which may be allowed for credit. This is not the same as auditing a class (see General Undergraduate Regulation 16). No-degree students must satisfy normal admission requirements.

Part-time Students: students registered for fewer than three full-credit classes or the equivalent of three half-credit classes in either first term or second term.

A full credit class is equivalent to 6 credit hours.

Undergraduates: students who are candidates for an undergraduate qualification.



Fees

Full-Time Students

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

Fees 1984-85

The 1985-86 fee schedule was not available at the time of printing this calendar. It will be available from the Student Accounts Office by June/85.

Fees are due and payable at registration but if preferred, those registered full-time for fall and winter terms may pay in two installments, the first due by September 30, 1985, the second by January 25, 1986.

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

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

Please note the fee reduction if paid in full before August 31, 1985.

Foreign Students

Students registering at Dalhousie who are not Canadian citizens or permanent residents are required to pay an additional fee of \$1375.00 if registered on a full-time basis, or if registered part-time, a proportionate fee related to their part-time studies. (Any assessed differential must be paid in full with the first installment, and is payable each session the student attends as a visa student).

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

Audit Students

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

One-half credit class	\$75.00
One full credit class	\$150.00

A student registered to audit a class who during the session wishes to change to registration for credit must receive approval from the Registrar and pay the difference in class fees plus a transfer fee of \$25.00. This must be done before the last date for class changes as given in the Almanac. The same deadline applies for a change from credit to audit.

Summer Session Students

Students registered for the first or second summer session must pay fees on the specified registration dates, otherwise a late registration fee must also be paid. For full information, see the Summer School Calendar, available from the Director of the Summer School.

Regulations for Payment of Fees

Fees must be paid in Canadian funds by cash or negotiable cheque. If payment is by cheque and returned by the bank as non-negotiable, the account will be considered unpaid and there will be an additional fee of

\$15.00. If the cheque was to cover the first payment on tuition, the student will not be considered registered and, if applicable, the late fee for registration will apply.

Application Fee

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

Admission Deposit

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

Registration Fees

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

Late Registration

Students are expected to register on or before the specified dates as indicated in the almanac. Late registration requires the approval of the Dean of the Faculty and, if this is granted, payment of an additional fee of \$25.00 on or before September 30 and \$100.00 after September 30, (January 30 for January registration), and the entire first installment. Similar dates apply in summer sessions.

Additional Information About Payment of Fees

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

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

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

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

Delinquent Accounts

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

Fees 1984-85

	University Fee	Student Union Fee ¹	Society Fee	TOTAL	If paid before Aug. 31, 1984 pay only	If paid by TWO installments	
						At Registration	Balance Jan. 25/85
Arts & Science	1,410.00	83.00	5.00	1,498.00	1,470.00	975.00	523.00
King's (payable to Dalhousie)	1,410.00	—	5.00	1,415.00	1,387.00	975.00	440.00
Engineering	1,490.00	83.00	10.00	1,583.00	1,553.00	975.00	608.00
Health Professions							
Nursing	1,490.00	83.00	15.00	1,588.00	1,558.00	975.00	613.00
Outpost nursing, 2nd year	1,490.00	—	15.00	1,505.00	1,475.00	975.00	530.00
Pharmacy	1,490.00	83.00	28.50	1,601.50	1,571.50	975.00	626.50
Clinical Residence — Pharmacy	360.00	—	—	360.00	360.00	360.00	—
Phys. Ed., Health Ed., Rec.	1,490.00	83.00	10.00	1,583.00	1,553.00	975.00	608.00
Physio./Occ. Therapy	1,490.00	83.00	12.00	1,585.00	1,555.00	975.00	610.00
Administrative Studies							
BComm	1,490.00	83.00	30.00	1,603.00	1,573.00	975.00	628.00
CPA, BSW	1,410.00	83.00	10.00	1,503.00	1,475.00	975.00	528.00
Graduate Studies							
Full time	1,510.00	83.00	20.00	1,613.00	1,583.00	1,100.00	513.00
Part-time for Degree	520.00	34.00	10.00	564.00	554.00	375.00	189.00
Thesis-only full-time	235.00	83.00	20.00	338.00	338.00	338.00	—
Thesis-only part-time	235.00	41.50	10.00	286.50	286.50	286.50	—
MSc Dentistry — Oral Surgery	1,755.00	83.00	20.00	1,858.00	1,823.00	1,100.00	758.00
LLM (full-time) JSD	1,615.00	83.00	20.00	1,718.00	1,686.00	1,100.00	618.00
LLM (part-time for Degree)	807.50	41.50	10.00	859.00	843.00	576.00	283.00
Law	1,615.00	83.00	15.00	1,713.00	1,681.00	1,100.00	713.00
Medicine							
MD	1,755.00	83.00	18.00	1,856.00	1,821.00	1,100.00	756.00
Postgraduate, Interns, Residents	360.00	—	—	360.00	360.00	360.00	—
Dentistry							
DDS ²	1,755.00	83.00	150.00	1,988.00	1,953.00	1,100.00	888.00
DDS Advanced Standing ²	3,510.00	83.00	150.00	3,743.00	3,673.00	2,200.00	1,543.00
Dental Hygiene ²	1,490.00	83.00	5.50	1,578.50	1,548.50	975.00	603.50
Dental Hygiene Advanced Standing ²	2,980.00	83.00	5.50	3,068.50	3,008.50	1,950.00	1,118.50
Postgraduate Periodontics	1,755.00	83.00	150.00	1,988.00	1,953.00	1,100.00	888.00
Full-time: one term only more than 3 one-half credits	700.00	41.50	—	741.50	741.50	741.50	—
Part-time: session and term³							
1 Full-credit Course	300.00	17.00	—	317.00	311.00	200.00	117.00
2 Full-credit Courses	580.00	34.00	—	614.00	602.00	400.00	214.00
3 Full-credit Courses ⁴	860.00	83.00	4	943.00	926.00	600.00	343.00
½-credit Course	150.00	8.50	—	158.50	158.50	158.50	—
⅓-credit Course	100.00	8.50	—	108.50	108.50	108.50	—
Audit: session and term⁵							
1 Full Audit Course	150.00	—	—	150.00	150.00	150.00	—
½ Course for Audit	75.00	—	—	75.00	75.00	75.00	—
⅓ Course for Audit	50.00	—	—	50.00	50.00	50.00	—

¹ Charges include Year Book in graduating year.

² An instrument user fee will be charged in addition to total fee. Candidates with advanced standing admitted to special programs in DDS and Dental Hygiene to meet Provincial Professional Qualifications are required to pay double the University fee paid by students in regular programs.

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

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

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

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

University. The student will be reinstated upon payment of the arrears, the arrears interest and a \$50.00 Reinstatement fee.

Fees Deductible For Income Tax

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

Refund of Fees

No refund is made for 30 days when payment is made by personal cheque. In any program in which the registration is limited, the first installment of fees is not refundable except on compassionate grounds (e.g. illness). In other programs refunds may be made under certain conditions set out below. No refunds or rebates of charges for the session will be made to students withdrawing after the end of January.

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

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

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

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

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

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

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

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

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

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

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

Other Charges

Identification Cards

All new, full and part-time students may obtain identification cards upon registration and payment of proper fees. ID cards for those who register early for the regular academic year are issued by the ID Office (located in

the central foyer of the Arts and Administration Building basement) starting on the first weekday in June. For either summer school session, ID cards are issued starting 2 weeks prior to the commencement of classes. An ID card will only be issued upon presentation of the appropriate requisition form, authorized by both the Registrar's Office and the Student Accounts Office. If a card is lost, authorization for a replacement may be obtained from the Office of the Registrar. A fee of \$12.00 is charged for all replacement ID cards except those expressly directed by the University. Regular academic year ID cards remain valid until the beginning of the following academic year (including summer session. ID cards issued specifically for a summer session expire at the conclusion of that session). At the commencement of subsequent consecutive years, validation stickers are affixed to the "expired" ID card. Should ID cards not be available for validation, a new one will be issued and the student charged for the replacement (currently \$12.00). A student who also becomes an employee of Dalhousie University will have a sticker showing the employee number, placed on the student ID card. Similarly, a Dalhousie University employee may have a sticker showing the student number placed on the employee ID card when becoming a student.

Laboratory Charge

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

Fees for Supplemental and Special Examinations

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

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

Degree in Absentia

Any graduating student who is unable to appear at the convocation is expected to notify the Registrar in writing prior to May 4, or October 15 for Fall convocation, giving the address to which the diploma is to be mailed. In any case where notification is not received by the required date, and a student does not appear at the convocation, there will be a fee of \$20.00.

Transcripts

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

Residence Charges

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

When students, who have chosen to live in residence and succeeded in securing a room, withdraw from residence before the end of the school year, there are serious financial penalties. One month's written notice must be given to the Dean or Manager. Complete information on withdrawal from residence are available from the residence Dean. No refund will be made to any resident who is dismissed for misconduct. Discretionary power in exceptional circumstances remains with the Manager of University Services. Confirmation of accommodation will not be granted until the student has been accepted by the University for the coming session and the \$100.00 residence deposit has been received from the student by the Dean before August 1.

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

Residence Fees and Meal Charges

Period September 6, 1985, to the day in April after the last examination in the Faculty of Arts and Science (exclusive of Christmas vacation)

SUBJECT TO CHANGE

	Total	Prepaid Deposit	In Full At Reg.	Payable At. Reg.	Balance Jan. 25 ⁸
Howe Hall¹					
Single Room & Board	\$3,192.00	\$100.00	\$3,092.00	\$1,600.00	\$1,502.00
Double Room & Board	2,927.00	100.00	2,827.00	1,600.00	1,237.00
Shirreff Hall²					
Single Room & Board	3,160.00	100.00	3,060.00	1,600.00	1,470.00
Double Room & Board	2,982.00	100.00	2,882.00	1,600.00	1,292.00
Ardmore Hall³					
Single Room	1,660.00	100.00	1,560.00	850.00	720.00
Double Room	1,463.00	100.00	1,363.00	850.00	523.00
Residence Houses⁴					
Single Room	1,826.00	100.00	1,726.00	900.00	836.00
Double Room	1,588.00	100.00	1,488.00	900.00	598.00
Glengary Apartments⁵					
Single Room	1,890.00	100.00	1,790.00	900.00	900.00
Double Room	1,650.00	100.00	1,550.00	900.00	650.00
Bachelor Apartment	2,569.00	100.00	2,469.00	1,250.00	1,229.00
Fenwick Place^{6,7}					
Student shared rates:					
2 person	2,240.00	100.00	2,240.00	1,120.00	1,120.00
3 person	1,760.00	100.00	1,760.00	880.00	880.00
4 person	1,824.00	100.00	1,824.00	912.00	912.00
Meals Only					
Special rate for session:					
3 meals per day	1,365.00				
2 meals per day	1,315.00				

¹ Charges include residence membership fee of \$25.00 and key deposit of \$6.00

² Charges include residence membership fee of \$15.00 and key deposit of \$2.00

³ Charges include residence membership fee of \$10.00 and key deposit of \$2.00

⁴ Charges include key deposit of \$2.00

⁵ Charges include caution deposit of \$50.00

⁶ The \$100 prepaid deposit is a damage deposit — see application for details

⁷ The \$10.00 Service Charge is not applicable

⁸ Charges include service charge of \$10.00

Payment of Residence Charges

Payment may be made in full at registration or, for an extra charge of \$10.00, in two installments as per rate schedule. Scholarships may be applied to residence charges only after tuition fees for the full session are paid. The first installment must be paid in full by the date of registration. A penalty is imposed for late payment, of \$5.00 per day, to a maximum of \$100.00, commencing on the first business day following registration. To all accounts outstanding after September 30 an interest of 1.33% per month (16% per annum) will be charged. On second installments outstanding after February 1 interest of 1.33% per month (16% per annum) will be charged. The interest rate may change from time to time without notice if the cost of money to the University varies. The student will not be permitted to register for another session until all accounts are paid in full. Students whose accounts are in arrears more than 30 days are considered financially dismissed from the University.

Key and Caution Deposits

Key and caution deposits may be charged before admission to residence. The key deposit is refundable when the keys are returned to the Dean or Manager. The credit balance of the caution deposit will be refunded as soon as possible after the end of the academic session.

Regulations and Additional Charges

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

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

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

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

Residence students before or after current session, all residences
 Room per night: \$13.00
 Room per week: \$55.00

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



Faculty of Graduate Studies

Administrative Officers

(Tel. (902) 424-2485)

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

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

Secretary, T.S. Cameron, MA, DPhil (Oxon)

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

D. Nance	'85 Anatomy
L. Ramaley	'85 Chemistry
C. Stuttard	'85 Microbiology
D. Varma	'85 English
P. Waite	'85 History
R. Apostle	'86 Sociology and Social Anthropology
R. Brookbank	'86 Business
R. Kocourek	'86 French
R. Lyons	'86 Recreation, Physical and Health Ed.
W. Hare	'86 Education
J. Cornwall	'87 Economics
W.J. Eifler	'87 Physiology/Biophysics
L. O'Brien	'87 Law
S.T. Nugent	'87 Physics
A.C. Thompson	'87 Mathematics
Dan Theriault	Business School (Student Rep)
Jim Collings	Biochemistry (Student Rep)
W. Birdsall	University Librarian
T. Cameron	Faculty Secretary
M. Parks	Assistant Dean
K. Leffek	Dean

Scholarship Committee

P.S. Farmer	'85 Pharmacy
R. Glube	'85 Business
S.A.M. Burns	'86 Philosophy
G.R. Ferrier	'86 Pharmacology
E. Friedenberg	'87 Education
J. Gray	'87 English
D. Rasmusson	'87 Physiology/Biophysics

Postdoctoral Fellowship Committee

A. Bonen	'85 Recreation, Physical and Health Ed.
J. Crowley	'85 History
P. Borwein	'86 Mathematics
D. Kiang	'86 Physics
I. Meinertzhagen	'86 Psychology
R. Berard	'87 Education
O. Knop	'87 Chemistry
I.A. McLaren	'87 Biology

Research Development Fund in the Social Sciences and Humanities

M.S. Cross	'85 History
D. Varma	'85 English
D.H. Elliott	'86 Sociology and Social Anthropology
W. Mitic	'86 Recreation, Physical and Health Ed.
C. Marfels	'87 Economics
R. Martin	'87 Philosophy
N. Tréves-Gold	'87 French

Research Development Fund in the Sciences

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

Killam Lecture Committee

W.T. Josenhans	'85 Physiology/Biophysics
E.S. MacFarlane	'85 Microbiology
N. Tréves-Gold	'85 French
C. Boyle (Chairman)	'86 Law
R.B. Goldbloom	'86 Pediatrics
B. Raymond	'86 Library Service
T. Laidlaw	'87 Education
H.J. Thieboux	'87 Mathematics
P. Waite	'87 History

Library Committee

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

Human Ethics Review

A.C. Irwin	Assistant Dean
A. Barton	'85 Preventive Medicine
E. Belzer	'88 Education
B. Earhard	'88 Recreation, Physical and Health Ed.
B. Stovel	'88 Psychology
N. Jabbra	'88 English
Chairman	'89 Sociology and Social Anthropology

Academic Appeals Committee

J.A. Ritchie	'85 Nursing
H.L. O'Brien	'86 Law
P.B. Huber	'87 Economics

Reserve Panel for Academic Appeals Committee

S.E. Sprott	English
R.H. March	Physics
M.J.C. Martin	Business

Library Representatives on Faculty

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

Honorary Faculty Appointments

Highly qualified scientists and scholars on the staff of neighbouring institutions and government laboratories cooperate with the research and graduate degree program at Dalhousie on a part-time basis. These persons, and other individuals in or close to the University community, are appointed to honorary faculty positions. Honorary Research Associates cooperate with members of the University departments in the direction, or evaluation, of graduate research. Such cooperation may take the following forms:

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

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

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

2. Faculty Regulations

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

2.1 Degree Programs

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

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

2.1.1 Conferring of Degrees

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

2.1.2. Academic Costume

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

- MA: Crimson silk
- MAT: Crimson silk/white border
- MBA: Turquoise silk
- MDE: Medium blue/scarlet border
- MEd: Royal Blue silk
- MES: Brown silk
- LLM: Purple silk
- MLS: Mid-forest Green silk
- MN: Apricot silk
- MPA: Sky Blue silk
- MSc: Scarlet silk
- MSW: Citron silk

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

JSD: TBA.

2.2 Admission Requirements

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

2.2.1 English Language Competency

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

2.2.2 Master's Degree Program

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

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

or

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

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

Candidates who do not meet the minimum admission requirements stated above may, upon the recommendation of the Department, be

admitted to a preliminary year of study. This year is known as the Qualifying Year. At the end of the Qualifying Year, students must reapply for admission. Completion of the Qualifying Year may not be offered as a substitute for the first year of graduate work.

2.2.3 Doctoral Degree Program

Candidates must hold

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

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

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

2.3 Application

Application for Admission forms may be obtained from the Registrar's Office, Dalhousie University, and should be returned to that office along with all supporting materials. Application deadlines for the Faculty are May 31 for Overseas applicants and August 01 for applicants from within North America, except where special dates apply, (see page 7). Any application received after August 01 will, in the event that it is accepted, incur an automatic late penalty.

2.4 Financial Aid

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

2.5 Registration

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

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

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

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

Thesis Only: a student who has completed the minimum number of years of full-time study required for a particular degree program and is completing degree requirements (usually the thesis). If degree requirements are being completed on campus, the student is designated *Full-Time Thesis Only*. If the degree requirements are being completed off campus the designation is *Part-Time Thesis Only*.

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

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

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

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

Students unable to register on or before the specified date should apply to the Faculty Office for permission to register. A later registration fee will be assessed (see page 16). *Any student who fails to register in September will not be allowed to submit a thesis or obtain any service whatsoever from the University during that academic year.*

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

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

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

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

2.6 Residency Requirement

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

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

JSD — 1 year residency if entering with thesis LLM.

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

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

2.7 Fees

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

Full Time

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

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

- From Bachelor's degree to DPA — 3 years
- From Honours Bachelor's degree to MA or MSc — 3 years
- From Pass Bachelor's degree to MA or MSc — 6 years

- From Honours Bachelor's degree in French plus BEd to MAT — 3 years
- From Pass Bachelor's degree to MDE. — 6 years
- From Bachelor's degree to MBA — 6 years
- From Honours Bachelor's degree to MES — 6 years
(except students admitted to a one-year program)
- From Bachelor's degree to MPA — 6 years
- From Bachelor's degree to MLS — 6 years

Part-time students in an LLM program will pay part-time fees (equivalent to one-half of the fee paid by a full-time student) for a period of two years.

From LLB to LLM — 2 years

2.8 Identification Cards

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

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

2.9 Notification of Address

Students are required to keep the Faculty Office, the Registrar's Office, and their Department office up to date on changes of address. Notifications from the University will be sent to the most recent address possessed by these offices; students will be held responsible to comply with these notifications, and non-receipt of material because of failure to report a change of address will not excuse students from such responsibility.

2.10 Degree Requirements

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

2.10.1 Summer School Classes

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

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

2.10.2 Requirement for the MA and MSc Degrees

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

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

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

FACULTY OF GRADUATE STUDIES

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

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

2.10.3 Course Requirements for the PhD Degree

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

Candidates for graduate degrees may be required to engage in teaching duties. These duties will conform to the requirements of the Departments and usually will not involve more than six (6) hours per week. Residency requirements must be fulfilled before degrees can be conferred.

2.11 Classes, Theses, Examinations, Etc.

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

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

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

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

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

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

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

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

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

Withdrawal From Classes: The final date for withdrawal from classes shall be: for 'A' classes — 16 November, for 'B' classes — one week after study break; for full year classes (both 'R' and 'C') — 31 January; for summer session classes — the mid-point of the class. For withdrawals before these dates, the class and the withdrawal is not recorded on the academic record. After these dates, the student is responsible for the content of the class and receives a grade for it. Students must complete the appropriate registration change form, which must be approved by the instructor concerned.

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

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

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

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

Theses will normally be graded as "Approved" or "Not Approved." In exceptional cases, with the unanimous agreement of the examiners, the designation recommended may be "Approved with Distinction."

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 chairman, and at least four (4) other persons named by the Dean in consultation with the Department chairman, 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 31, for Spring Convocation, or September 6, 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 Chairman 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 Chairman 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 Chairman 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 Mac-Mechan 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 chairman 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 Chairman 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 Chairman 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, or in special cases and upon unanimous decision of the Examining Committee, as a pass with distinction. 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 Chairman of the Department. If the evidence presented appears sufficiently strong, the Dean shall initiate the procedure for a re-examination as outlined above. No more than one such appeal shall be entertained, and the Dean's judgement shall be final.

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

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

2.12.3 Preparation of Manuscript

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

2.12.4 Binding

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

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

- a. One (1) copy is sent to the author.

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

*Subject to change without notice.

3. Scholarships, Fellowships and Financial Assistance

3.1 Postgraduate Awards

3.1.1 Dalhousie Graduate Fellowships

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

Applications for fellowships must be made on the form "Application for Admission" obtainable from the Registrar. Graduate fellowships are awarded only to students pursuing a degree program on a full-time basis. A student may register full-time and hold a job simultaneously only if the job involves not more than 10 hours work per week. Fellowships are not offered to anyone on leave from a job with salary continuation. In order to be eligible for a Dalhousie Graduate Fellowship, a student is expected to hold at least the equivalent of a Dalhousie honours degree in an appropriate field of study. Those wishing to be considered for fellowship assistance are advised to submit their applications *no later than March 31*.

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

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

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

3.1.2 The Izaak Walton Killam Memorial Scholarships

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

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

The scholarships, which may be renewed annually upon evidence of satisfactory completion of work leading toward the Master's or Doctoral degree, are valued at \$12,000 (1984). No remission of fees accompanies the scholarships, but additional funds to assist with transportation to

Halifax will be supplied. Killam scholars may perform instructing or demonstrating duties, but, if they do, will be given additional remuneration for these services.

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

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

3.1.3 Other Scholarships and Fellowships

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

SSHRC Grants

NSERC Grants

Canadian Social Sciences Research Council Fellowships

Commonwealth Scholarships and Fellowships

The Parke, Davis Pharmacy Research Award Fellowship

Canada Mortgage and Housing Corporation Fellowships

Sir James Dunn Postgraduate Scholarship

Goldberg/Schulich Award for Entrepreneurship in Business Administration

Imperial Oil Graduate Research Fellowships

Sarah M. Lawson Scholarship in Botany

Law Graduate Teaching Fellowships

The James Gordon MacGregor Memorial Teaching Fellowships in Physics

The Dr. A. Stanley MacKenzie Teaching Fellowship in Physics

The Archibald MacMechan Scholarship

The Howard Murray Fellowship in Classics

Canadian Red Cross Fellowship

Canadian Nurses' Foundation Fellowship

W.B. Saunder's Nursing Fellowship

Texaco Exploration Limited Fellowship in Oceanography

The James W. Tupper Graduate Fellowship in English

The H.W. Wilson Scholarship

Xerox Canada Inc. Fellowship

Canadian Foundation for the Advancement of Pharmacy Fellowship

3.2 Postdoctoral Awards

3.2.1 Izaak Walton Killam Memorial Postdoctoral Fellowships

Killam funds also provide for postdoctoral fellowships in most fields of study. The annual stipend is \$21,200 (1984) for initial terms of one year, plus travel grants. Applications for extensions of the fellowship may be

considered. There are no restrictions regarding nationality of applicants, but non-Canadian candidates must meet all Canadian immigration requirements. These awards are tenable only at Dalhousie University and may be taken between July 1st and December 31st of the calendar year in which the award is made, but preferably in September or October. Those seeking Killam Memorial Postdoctoral Fellowships should apply for the appropriate forms from the Office of the Dean, Faculty of Graduate Studies, Dalhousie University, Halifax, Nova Scotia, Canada. Applications and supporting documents should be received at Dalhousie University not later than December 15. Successful candidates will be notified as soon as possible thereafter.

3.2.2 Other Postdoctoral Fellowships

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

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

4. University Services

4.1 Computer Centre

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

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

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

4.2 Laboratories

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

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

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

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

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

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

The Oceanography Department, in cooperation with the Departments of Biology, Chemistry, Geology, and Physics, works closely with the Atlantic Oceanographic Group and the Bedford Institute to provide a powerful institutional group for study of the oceans. Ocean-going research vessels are in active use, particularly in the summer months, providing sea time as an integral part of the student's academic program.

The University also maintains close contacts with the Atlantic Regional Laboratory of the National Research Council, the Defense Research Establishment (Atlantic), the Fisheries Experimental Station (Atlantic), and the Nova Scotia Research Foundation. Dalhousie faculty members, postdoctoral fellows and graduate students make active use of the research facilities of these cooperating institutions.

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

4.3 Libraries

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

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

4.3.1 University Library

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

4.3.2 Special Collections

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

4.3.4 Killam Memorial Library

Opened in 1970, the Killam Memorial Library has a number of specialized features. These include faculty offices, seminar rooms and 400 stu-

dent carrels. These carrels are wired for eventual installation of on-line computer connections and closed circuit television. This library offers a variety of audio-visual units and ancillary services (typing rooms, computer services, language laboratories, microfilm equipment) as well as an auditorium and display and exhibition areas.

4.3.5 Law Library

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

4.3.6 Halifax Libraries

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

5. Interdisciplinary Studies

5.1 Interdisciplinary PhD Program

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

- (a) The responsibility largely lies with the student to 'organize' a unique program of studies with appropriate faculty members and the Office of the Dean of Graduate Studies.
- (b) The student must hold a first-class Honours undergraduate degree and a Master's degree, or acceptable equivalents, and therefore must have attained an academic level higher than that normally required for entry into a Dalhousie PhD program.
- (c) The broader demands of interdisciplinary scholarship dictate that a student can expect, typically, to take a year longer to complete an interdisciplinary program than is normal for a program in a single discipline.
- (d) The student should plan such studies in the context of an overall career goal to ensure that, as far as possible, the program will constitute a proper qualification for desired employment upon graduation.

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

- (1) Normally, the student will have completed at least one year of study in a Faculty of Graduate Studies and be in 'good standing.'
- (2) The student should develop a tentative program of proposed study, reviewing its various features and ramifications, and making sure that it (a) clearly focuses on career goals, (b) is truly interdisciplinary, and (c) cannot be completed within the framework of an extant program.
- (3) The student should discuss the proposed program with a faculty member in a participating department obtaining that person's agreement to act as the supervisor or as one of the thesis committee members.
- (4) A formal application should then be initiated for entry into the program. Details of the procedure (including an application form) for pursu-

ing an interdisciplinary PhD program are available from the Office of the Dean of Graduate Studies. If the application is approved, a supervisory committee will be established by the Dean.

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

5.2 African Studies

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

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

5.3 Biomathematics

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

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

5.4 Neuroscience

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

5.5 Institute for Resource and Environmental Studies

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

Departmental Listings

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

Each Departmental entry includes the following information:

1. A list of faculty members engaged in the teaching of graduate classes and/or the direction of graduate research. Faculty members whose major appointments are in other Departments are so indicated. In

addition, the names of other teachers and/or researchers in the Department may be listed.

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

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

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

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

5. A representative list of class offerings. Not all of the classes will necessarily be offered in a given year. In all cases where a letter appears after a class number in this calendar it should be understood as follows:

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

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

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

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

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

6. An extensive list of areas of specialization.

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

D.A. Hopkins, BSc (Alta.), MA, PhD (McMaster)
 R.A. Leslie, BSc (Brock), PhD (Cantab)
 I.G. Mobbs, BSc (Aberdeen), MSc (McMaster), PhD (W.Ont.)
 D.M. Nance, BS, MS, PhD (Oklahoma)
 J.G. Rutherford, MSc (Syracuse), PhD (SUNY)
 S.B. Singh, BSc, MSc (Alld.), PhD (W.Ont.)
 V.G. Vethamany, BA, MA (Madras), PhD (Tor.)
 R.J. Wassersug, BSc (Tufts), PhD (Chicago)

Assistant Professors

R.W. Currie, BSA, MSc, PhD (Man.)
 J.C. Penny, MSR, FSR, TE (Lond.)
 P.C. Jackson, PhD (McMaster)
 J.A. Matsubara, BSc (Columbia), PhD (Calif.)
 E.J. Scott, BSc, MSc, PhD (Man.)

Lecturers

J.D. Shaw, MSCP (SMU)
 A.E. Tweed, MB, BS, LRCP (Lond.), FRCS(C) (Primary appointment in the Department of Surgery)

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

Admission Requirements

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

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

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

MSc Degree Program

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

A minimum of five graduate-level credits is required. A written thesis reporting original research must be submitted and defended orally. The MSc thesis (Anatomy 9000) may count for three of the five graduate-level credits required for the degree. All MSc candidates must obtain the ½ credit for Anatomy 505C (Seminar). Additional 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 participate in the departmental seminar program and 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.

Anatomy

(Tel. 424-2051)

Campbell Professor and Head of Department

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

Professors

D.M. Chapman, MSc (Man.), PhD (Cantab.)
 D.H. Dickson, BA, MSc, PhD (W.Ont.)

Associate Professors

J.R. Asuncion, Jr., MD, CM (Santo Tomas), AA (Philippines)
 R.E. Clattenburg, BSc, MSc (Acadia), PhD (W.Ont.)
 M.M. Hansell, BSc (Tor.), PhD (Calif.)

PhD Degree Program

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

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

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

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

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

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

Classes

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

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

505C Seminar: half credit, co-ordinator D.M. Nance.

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

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

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

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

516R Gross Anatomy: one and one-half credits, co-ordinator R.E. Clattenburg.

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

9000 MSc Thesis

9530 PhD Thesis

Biochemistry

(Tel. 424-2480)

Head of Department

R.W. Chambers, Carnegie and Rockefeller Professor

Professors

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

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

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

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

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

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

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

S.J. Patrick, BA, PhD (Tor.)

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

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

Associate Professors

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

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

R.G. Fenwick, Jr., BA (Miami), PhD (Tenn.)

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

C. Mezei, BSc, PhD (UBC)

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

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

Assistant Professors

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

L.C. Stewart, MSc (McG)

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

Lecturers

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

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

R.A. Mulrone, BSc (Ott.), PDt (Montreal), MSc (Wisc.)

Admission Requirements

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

General Regulations

General Faculty requirements are given in sections 2.10 —2.12. In the course of their studies, students must demonstrate a basic knowledge at an introductory level of all aspects of Biochemistry, and a firm grasp at an advanced level of one of three specialties: molecular biology, general biochemistry with emphasis on lipids, or protein biochemistry. The basic knowledge requirement may be satisfied by passing open-book qualifying examinations in four areas: general biochemistry with emphasis on proteins; general biochemistry with emphasis on metabolism; molecular biology; bioorganic chemistry. These can be taken singly or in combination during the first two weeks of May, September and January. Assistance will be available for those who need it in preparing to meet this requirement. The advanced knowledge requirement may be met by

formal classes and/or guided study arranged for each student through consultation with his or her advisory committee. Participation in the weekly Biochemistry Seminar series (Biochemistry 5900) is also required. A preliminary examination on the subject area of the thesis is taken at the end of the first year of study. Application may be made at that time to transfer from an MSc to a PhD program.

MSc Program

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

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

PhD Program

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

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

Areas of Specialization

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

1. Structure, biosynthesis and metabolism of serum lipids and lipoproteins (W.C. Breckenridge, P.J. Dolphin, and M.H. Tan).
2. Metabolic bone disease and the role of inorganic anions in connective tissue metabolism (D.E.C. Cole).
3. Antibody-linked drugs in cancer therapy (A.H. Blair).
4. Control of eukaryotic cell reproduction; the cell cycle (R.A. Singer).
5. Structure, function and evolution of mitochondrial nucleic acids; organization and evolution of eukaryotic ribosomal RNA genes (M.W. Gray).
6. Insulin action in skeletal muscle (M.H. Tan).
7. Enzyme mechanisms; alcohol and aldehyde metabolism (A.H. Blair).
8. Biogenesis of myelin in the peripheral nerve during development (C. Mezei).
9. Metabolism of physiologically active membrane phospholipids (F.B. Palmer).
10. Biochemistry of biological clocks with special reference to neurohormones in chick pineal gland and retina (S.D. Wainwright).
11. Mechanism of estrogen action: estrogen receptors in normal and neoplastic tissue (C.B. Lazier).
12. Chemical and physicochemical studies on enzymes and cell membrane proteins (J.A. Verpoorte).
13. Structure, function and evolution of ribosomal RNA; control of gene expression in prokaryotes; genome structure and evolution of archaeobacteria; eukaryotic repetitive DNAs (W.F. Doolittle).
14. Metabolism of unsaturated fatty acids and membrane lipids in cultured cells (H.W. Cook).
15. Membrane-bound enzymes of lipid metabolism, local membrane remodelling and bulk turnover in eukaryotic cells in culture. Human inherited metabolic diseases (M.W. Spence).
16. Mathematical programming and game theory in biochemistry (F.I. Maclean).

17. Mutagenesis and carcinogenesis. Nucleic Acid Chemistry. Site-specific mutagenesis. The molecular mechanisms of mutations by carcinogens (R.W. Chambers).

18. Gene transfer, expression and mutation in mammalian cells; activation of tumor genes by carcinogens (R.G. Fenwick, Jr.).

Classes

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

4300B Metabolism II: lecture 2 hours, F.B. Palmer, W.C. Breckenridge.

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

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

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

4403A Structure, Organization and Replication of Genes: lecture 2 hours, M.W. Gray.

4404B Gene Expression: lecture 2 hours, W.F. Doolittle, R.A. Singer.

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

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

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

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

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

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

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

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

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

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

9000 MSc Thesis

9530 PhD Thesis

Biology

(Tel. 424-3514)

Chairperson of Department

B.K. Hall

Professors

R.G.S. Bidwell, MA, PhD (Queens) FRSC, Killam Research Professor
 R.G. Brown, MSc (McG.), PhD (Rutgers)
 M.L. Cameron, MSc (Dal), PhD (Cantab.)
 A.R.O. Chapman, PhD (Liv.)
 R.W. Doyle, MSc (Dal), PhD (Yale)
 J. Farley, MSc (W.Ont.), PhD (Man.)
 J.C. Fentress, BA (Amherst), PhD (Cantab.), Major appointment in Psychology
 L.E. Haley, MSA (Tor.), PhD (Calif.)
 B.K. Hall, PhD, DSc (UNE)
 O.P. Kamra, MS (N. Car. State), PhD (Wash. State)
 W.C. Kimmins, PhD (Lond.)
 P.A. Lane, MSc (SUNY Binghamton), PhD (SUNY Albany)
 K.E. von Maltzahn, MS, PhD (Yale), *Carnegie Professor, King's College*
 I.A. McLaren, MSc (McG), PhD (Yale), *George S. Campbell Professor*
 E.L. Mills, MS, PhD (Yale), Major appointment in Oceanography
 R.K. O'Dor, AB (Berkeley), PhD (UBC)
 J.G. Ogden, III, MA (Tenn.), PhD (Yale)
 L.C. Vining, MSc (Auck.), PhD (Cantab.), FRSC
 E. Zouros, MSc, PhD (Agr. College Athens), PhD (Chic.)

Associate Professors

E.W. Angelopoulos, MS, PhD (Minn.)
 B. Freedman, MSc, PhD (Tor.)
 M.J. Harvey, PhD (Dunelm)
 G.S. Hicks, MSc (Carl.), PhD (Sask.)
 R.W. Lee, MA (Mass.), PhD (SUNY Stony Brook)
 R.P. McBride, MSc (UBC), PhD (Edin.)
 R.G.L. McCready, MSc (Alta.), PhD (Calg.)
 D.G. Patriquin, MSc, PhD (McG)
 J.H.M. Willison, PhD (Nottingham)

Associate Professor (Research)

G.F. Newkirk, PhD (Duke)

Assistant Professors

T.H. McRae, MSc, PhD (Windsor)
 J.A. Novitsky, BSc (Penn St.), PhD (Oreg. SU)

Assistant Professors (NSERC Research Fellows)

R.G. Boutilier, MSc (Acadia), PhD (East Anglia)
 M.R. Rose, MSc (Queens), PhD (Sussex)
 R. Scheibling, BSc, PhD (McG.)

Postdoctoral Fellows

R.K. Bhatnagar, PhD (Delhi)
 P.G. Daye, BSc (UNB), MSc, PhD (Dal)
 P. Dyson, PhD (Glasgow)
 G. Jones, PhD (Wales)
 P. Service, PhD (N. Car.)
 D. Williams, PhD (Surrey)

Honorary Research Associates

D.M. Anderson, BSc, MSc (Man.), PhD (Sask.), Nova Scotia Agricultural College
 J. Bubar, BSc (Macdonald College, McG), MS (Penn St.), PhD (McG.) Nova Scotia Agricultural College
 L. Cook, BSc (McG), MS (Wis.), PhD (Maine), Nova Scotia Agricultural College
 D.K. Cone, BSc, MSc (Guelph), PhD (UNB), St. Mary's University
 R. Conover, PhD (Yale), Mar. Ecol. Lab., BIO
 D.C. Crober, BSc, MSc (Macdonald College, McG), PhD (UBC), Nova Scotia Agricultural College
 J. Fraser, BSc (Bedford College, London University), MSc (Aberdeen), PhD (Lincoln College, Un. of Canterbury), Nova Scotia Agricultural College
 T. Ghose, MB, BS, PhD (Calc.), MRC Path., Dept. of Pathology, Dalhousie
 B.T. Hargrave, BSc, MSc (Dal), PhD (UBC), Marine Ecology Laboratory, Fisheries and Environment
 F.H. Harrington, BA Hons (Delaware), PhD (New York at Stony Brook), Mount Saint Vincent University
 W.G. Harrison, BSc, PhD (North Carolina, Raleigh), Marine Ecology Laboratory BIO
 J.J. Kerekes, BSc (UBC), MSc (Alberta), PhD (Dal) Canadian Wildlife, Environment Canada
 S.R. Kerr, BSc (Carleton), MSc (Queen's), PhD (Cal.), Mar. Ecol. Lab. BIO
 J.R. Long, Dip. Agric. (N.S. Agricultural College), DVM (Tor.) M.S. (Cornell), PhD (Guelph), Nova Scotia Agricultural College
 W.S.G. Maass, Dr rer nat (Tubingen), Atlantic Research Laboratory, NRC
 I.A. Meinertzhagen, BSc (Aberdeen), PhD (St. Andrews), Psychology Dept., Dalhousie
 T.C. Platt, BSc (Nottingham), MA (Tor.), PhD (Dal), Marine Ecology Laboratory, BIO
 R.K. Prange, BSc (Acadia), MSc (UBC), PhD (Guelph), Nova Scotia Agricultural College
 J.D. Pringle, BSc, MSc (Victoria), PhD (Dal), Marine Ecology Laboratory, Fisheries and Oceans
 A.R. Robinson, BSc, MSc, PhD (Macdonald College, McG), Nova Scotia Agricultural College
 G.W. Stratton, BSc, MSc, PhD (Guelph), Nova Scotia Agricultural College
 J.P. van de Meer, BSc Hons (W.Ont.), PhD (Cornell), Atlantic Research Laboratory, IJRC
 R.J. Wassersug, BSc (Tufts), PhD (Chic.), Dept. of Anatomy, Dal

Honorary Adjunct Professors

D. Brewer, BSc (Durham), MSc, PhD (Tor.), Atlantic Regional Laboratory, NRC
 J.D. Castell, MSc (Dal), PhD (Oregon), Fisheries and Oceans
 J.S. Craigie, BA, MSc, PhD (Queen's), Atlantic Regional Laboratory, NRC
 K.H. Mann, BSc, DSc (Lond.), PhD (Reading), FRSC Mar. Ecol. Lab. Bedford Institute of Oceanography
 J.L. McLachlan, BSc, MA, PhD (Oregon State College), Atlantic Regional Laboratory, NRC

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

Admission Requirements

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

MSc Degree Program

For minimum times required to complete this program, see section 2.6.

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

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

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

Students are expected to participate in weekly departmental seminars.

PhD Degree Program

For minimum times required to complete this program, see section 2.6.

Biology 5700C and Biology 5705C are required classes and additional classes may be specified by supervisory committees.

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

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

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

Students are expected to participate in weekly departmental seminars.

Streams

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

A: Ecology/Evolution/Marine Biology/Animal Psychology

B: Plant - Terrestrial Biology/Plant Physiology

C: Cell/Molecular/Genetics/Development/Microbiology

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.

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

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

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

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

5068A Limnology: lecture 3 hours, J.G. Ogden.

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

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

5100A Marine Microbiology: lecture 2 hours, seminar, discussions, 2 hours, R.G.L. McCready.

5101B Industrial Microbiology and Biochemistry: lecture, seminar 2 hours, R.G.L. McCready.

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

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

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

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

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

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

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

5652C Advanced Ecology Seminar: consult Department.

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

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

5705C Graduate Stream Class: 2 hours, staff.

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

9000 MSc Thesis

9530 PhD Thesis

Areas of Specialization

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

Monogastric nutrition. (D.M. Anderson).

Ultrastructure and microtubules of trypanosomatidae; ultrastructure of *Trichomonas tenax*. (E.W. Angelopoulos).

Respiratory and acid-base physiology in lower vertebrates (R.G. Boutilier).

Nutrient requirements of aquatic species. (J. Castell).

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

Animal science. (L.M. Cock).

Fish parasites and diseases. (D.K. Crone).

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

Poultry science. (D.C. Crober).

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

Parasitology; history of biology. (J. Farley).

Ethology; development and adaptation in behaviour. (J.C. Fentress).

Thermal and osmoregulative physiology, pollutant pathology and structural analysis of fishes. (E.T. Garside).

Genetics of oysters. (L.E. Haley).

Resource and environmental studies. (A. Hanson).

Marine benthic ecology. (B.T. Hargrave).

Behavioural ecology; ethology. (F.H. Harrington).

Marine phytoplankton. (G. Harrison).

Chemical and biological effects of lake acidification; primary production and nutrient-trophic relationships in lakes. (J. Kerekes).
 Marine population studies; ecology. (S.R. Kerr).
 Community ecology, structure and stability of plankton communities, competition-predation phenomena, eutrophication. (P.A. Lane).
 Analysis of ecosystems. Comparison of system function in coastal inlets and in lakes. Ecological energetics. (K.H. Mann).
 Microbial ecology of disturbed habitats. (R.P. McBride).
 Marine botany. (J. McLaghlan).
 Population, evolutionary ecology of zooplankton, birds and sea mammals. (I.A. McLaren).
 Invertebrate nervous systems; their structural organization and development. (I.A. Meinertzhagen).
 Biological oceanography, benthic invertebrates. (E.L. Mills).
 Aquaculture genetics and bivalve culture. (G.F. Newkirk).
 Reproductive physiology and bioenergetics of molluscs, especially cephalopod. The life cycle of the squid, *Illex illecebrosus*. (R.K. O'Dor).
 Environmental distribution of Sr90; radiocarbon dating; pollen stratigraphy. (J.G. Ogden III).
 Dynamics and spatial properties of phytoplankton. (T. Platt).
 Ecology of crustacea and marine plants. (J.D. Pringle).
 Life-history evolution; genome evolution; theoretical population biology. (M.R. Rose).
 Feeding mechanism, foraging strategy and reproductive life history strategy of marine invertebrates; population and community ecology of marine benthos. (R. Scheibling).
 Genetics of marine algae (J. van de Meer).
 Evolutionary biology; anatomical adaptation. (R.J. Wassersug).
 Population and ecological genetics; the genetic basis of adaptation and evolution. (E. Zouros).
 Development and readjustment of functional organizations in the nervous systems. (M. Yoon).

Stream B — Plant — Terrestrial Biology/Plant Physiology

Applied physiology; agricultural engineering; photosynthesis; photorespiration. (R.G.S. Bidwell).
 Field crops cultivar evaluation; forage crops breeding, new crop development. (J.S. Bubar).
 Taxonomy and ecology of soil fungi. (D. Brewer).
 Physiology and biochemistry of marine algae. (J.S. Craigie).
 Crop production. (J. Fraser).
 Forest ecology, pollution and resource management, ecology. (B. Freedman).
 Plant biosystematics and biogeography; grass systematics. (M.J. Harvey).
 Plant development: morphogenesis, histology, organ culture, regulatory mechanisms. (G.S. Hicks).
 Plantbiochemistry: role of cell wall glycoproteins. Plant physiology: applications of hydroponics. (W.C. Kimmins).
 Lichen biology and chemistry. (W.S.G. Maass).
 Regeneration and reproduction in lower plants. (K.E. von Maltzahn).
 Physiology, microbiology and ecology of nitrogen-fixing plant-bacterial associations; Biological Agriculture. (D.G. Patriquin).
 Environmental physiology of agronomic plants; water stress physiology. (R.K. Prange).
 Electron microscopy; plant cell wall structure and development. (J.H.M. Willison).

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

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

Tumor immunology; metastasis; immunopathology. (T. Ghose).
 Developmental biology, cell differentiation, organ regulation. (B.K. Hall).
 Radiation genetics and chemical mutagenesis; cytogenetic effects of food additives and insecticides. (O.P. Kamra).
 Genetics, characterization and regulation of chloroplast DNA in *Chlamydomonas*. (R.W. Lee).
 Veterinary microbiology. (J.R. Long).
 Microtubule assembly and organization; protein synthesis regulation during embryogenesis. (T.H. MacRae).
 Applied, environmental, industrial microbiology. (R.G.L. McCready).
 Marine Microbiology, microbial response to low nutrient conditions. (J.A. Novitsky).
 Soil and aquatic microbiology; pesticide microbiology; microbial toxicology. (G.W. Stratton).
 Microbial biochemistry; biosynthesis of antibiotics; metabolic controls. (L.C. Vining).
 Reproductive endocrinology in domestic animals. (A.R. Robinson).

School of Business Administration

(Tel. 424-7080)

The School of Business Administration offers a curriculum of undergraduate and graduate studies designed to equip students to serve the community in business, government, and the professions. Graduates in good standing from all faculties can apply to enter the graduate program leading to the degree of Master of Business Administration. The undergraduate program includes studies in the humanities and social sciences and in the functional areas of business. Recognition is given to the growing emphasis on quantitative and behavioural analysis.

Director of the School

John H. Scheibelhut

Director, International Business Centre

Alan M. Rugman

Coordinator, MBA Program

M. Eileen MacDougall

Professors

C.R. Brookbank, BA, MA, PhD (Toronto)
 G.R. Chesley, B Comm (MtA), MA, PhD, (Ohio), CA
 M.A.H. Dempster, BA (Toronto), MS, PhD (Carnegie), MA (Oxon.) (Roy A. Jodrey Chair)
 C.R. Dipchand, B Comm (Queen's), MBA (Sask.), PhD (Western)
 R.E. George, BSc (London), MS (Bristol), PhD (London) (Wm. A. Black Chair)

M.J.C. Martin, BSc (Nottingham), PhD (Sheffield)
 J.D. Misick, BA (Dal), MBA (Col.)
 J.R.E. Parker, B Comm (Dal), MBA (Wash.), C Phil (Mich.), CA
 G.S. Roberts, AB (Oberlin), MA, PhD (Boston College)
 A.M. Rugman, BA (Leeds), MSc (Lond.), PhD (Simon Fraser)
 J.H. Scheibelhut, BSc (Notre Dame), MBA (Ind.), PhD (Oregon)
 R.G. Storey, BBA (UNB), MBA (Queen's), PhD (Mich. State)

Associate Professors

B.C. Archibald, BA (Queen's), MSc (Stanf.), PhD (Wat.)
 A.A. Atkinson, B Comm, MBA (Queen's), MSc, PhD (Carnegie)
 M.R. Brooks, BOT (McG.), MBA (Dal), PhD (Wales)
 D.C. Cherry, B Comm (Dal), MBA (McM), RIA
 C.J. Dirksen, BS (Santa Clara), MBA, PhD (Oregon)
 J.F. Duffy, BS, MS, PhD (Iowa)
 R.A. Ellison, BSc (UNB), MBA (McM.), PhD (Tenn.)
 R.H.R. Glube, BSc (Dal), MBA (Chic.), PhD (Cranfield)
 R.E. Klapstein, BSc (Calg.), BA (Alta.), MBA, LLB (Dal), LLM (Osgoode Hall)
 S.O. Larsson, BSc (SGW), MSc (Alta.), PhD (UBC)
 L.C. MacLean, BA, BEd, (StFX), MA, PhD (Dal)
 R.N. Maddox, BA, MBA, PhD (Ohio)
 L.W. Mealiea, AB, MBA (Rutgers), PhD (Mass.)
 A. Oppong, BSc (Ghana), MBA (Chic.), PhD (Iowa), CGA
 D.J. Patton, BA (UNB), MA (Tor.), DBA (Indiana)
 R.J. Rosson, Dip. MS (Salford), MA (Lancaster), PhD (Bath.)
 R.S. Sandhu, BSc, BCL, LLM (Delhi), LLM (Yale), MBA (Dal)
 Y. Sankar, BA (McG), MA (Tor.), PhD (Johns Hopkins)
 D.A. Schellinck, BSc, MBA (Dal), PhD (Ill.)
 E.W. Scott, BComm (Dal), MBA (Col.), RIA, CA
 Y. Shafai-Sahrai, BSc, MPA (Tehran), MBA, PhD (Mich.)
 R.A. Street, BComm, LLB, LLM (Dal), MBA (Western)
 Y.B. Yalawar, BComm, MComm (Karnatak), MBA, PhD (Ohio State)
 G.E.R. Zinck, BComm (Dal), BEd (MSV), CA

Assistant Professors

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

Lecturers

R.G. Blunden, BComm (Dal), M.Mgmt. (Northwestern)
 J.P. King, BA, BEd, MBA (Dal)
 H.A. Wier, BComm (SMU), CA

Part-Time Faculty

J. Barger, BS (Pace), BEd, MA (Dal)
 R. Carroll, BBA, BEd (StFX), MBA (Dal), CGA
 F. Crane, BA (Acadia), DPA, MPA (Dal)
 J. Gratwick, BSc (London), FCIT
 T.A. Lister, BA, (Alta.), MBA (Dal)
 M.E. MacDougall, BSc, MBA (Dal)
 P. Markus, BSc, LLB, MBA, (Dal)
 C. McManus, B Eng (NSTC), MBA (Dal)
 D. Moulton-Barrett, BA (Dal)

D. Othen, BA, MA, (Jesus Coll., Oxford), MBA (Dal), PhD, (Alta.)
 E. Rubin, BComm (Dal), MSc (New York)
 R.M. Sparkman, BSIE (Northwestern), MBA (College of William and Mary), PhD (Houston)
 T.E. Withers, BComm, MBA (Dal)

MBA Program

The program structure outlined below will be revised slightly, subject to University approval of changes proposed by the School of Business Administration. Students seeking further information should address themselves to:

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

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

The first year of the program develops the student's understanding of all the major functional areas of business through an integrated set of courses embracing economics, statistics, finance, operations research, operations management, accounting, marketing and management. The second year has only one required course, Business Policy, and beyond this the student may select those courses offering an opportunity to examine in greater depth areas of special interest. The Business Policy course includes a major assignment involving organizations in the business community.

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 along with a sound academic background is a definite asset.

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

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

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

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

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

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

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

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

Any applications received after this date will be considered on a first-come-first-served basis because of limited class size. Applications received after August 1 cannot be guaranteed normal processing.

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

Grading System and Good Standing

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

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

Failed core classes must be repeated and passed at the earliest opportunity; failed elective classes may be repeated and passed or replaced. A second failure in the same course, regardless of when such failure occurs, will normally result in immediate dismissal from the MBA program.

Part-time MBA Program

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

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

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

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

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

Special Areas of Study

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

International Business

In addition to the general requirements for the MBA degree, International Business majors will be expected to complete the following courses: 6801 A or B The Firm in the International Environment, and 6802 A or B

International Business Policy. At least two of the other International Business courses to be offered by the School must be taken by International Business majors. These include:

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

In addition, MBA 6553 A or B Managing Technological Innovation and MBA 6111 A or B Accounting in the International Environment are designed with a significant international aspect included.

Transportation

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

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

Combined LLB and MBA Program

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

Year I: First-year classes of MBA program as listed under "Courses Offered."

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

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

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

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

Applicants who are accepted into either the MBA or the MBA/LLB programs 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. The Faculty of Law may also require a deposit.

Classes Offered

First-Year of Two-Year Program

MBA 5101A/B Financial Accounting: 2 hours 40 minutes.

MBA 5102A/B Managerial Accounting: 2 hours 40 minutes. Prerequisite: MBA 5101

MBA 5201A/B Finance: 2 hours 40 minutes. Prerequisite: MBA 5101

MBA 5311A Organizational Behaviour: 2 hours 40 minutes.

One of:

MBA 5312 Organizational Design; 5331A/B Introduction to Labour Management Relations; or 5321 Introduction to Personnel Administration.

MBA 5401A/B Marketing Management: 2 hours 40 minutes.

MBA 5501A/B Business Statistics: 2 hours 40 minutes.

MBA 5502A/B Operations Research: 2 hours 40 minutes.

MBA 5551A/B Operations Management I: 2 hours 40 minutes. Prerequisite: MBA 5502 ; MBA 5501 may be taken concurrently.

MBA 5701C & 5702C Managerial Economics: 2 hours 40 minutes.

Plus ½ course elective.

Second-Year of Two-Year Program

All second-year students must register for MBA 6001 and four other classes (or equivalent in half classes). The variety of electives allows a student to develop a program in keeping with his career plan. Not all classes will necessarily be offered every year. In addition, new classes may be added from time to time. Therefore, students should check with the Department for up-to-date information.

Students cannot take in excess of five classes per term in the second year of the MBA program without permission of the Coordinator of the Program.

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

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

Core Class: Required for all students

MBA 6001 Policy: seminar 4 hours. Prerequisite: all first-year MBA classes.

Elective Classes

A minimum of four full or eight half courses required of all students.

Accounting

MBA 6101A or B Business Information Systems & Auditing: seminar 2 hours Prerequisite: MBA 5101.

MBA 6102A or B Taxation: seminar 2 hours. Prerequisite: MBA 5101. MBA 5701/5702 may be taken concurrently.

MBA 6103A or B Advanced Taxation: seminar 2 hours. Prerequisite: 6102.

MBA 6104A or B Financial Accounting for Managers: lecture 2 hours. Prerequisite: 5101. This class is not open to students who plan to take or have taken MBA 6108 and 6109.

MBA 6105B Accounting for Non-Profit Organizations: lecture 2 hours. Prerequisite: MBA 5101.

MBA 6106A Advanced Managerial Accounting 1: lecture 2 hours. Prerequisite: MBA 5102 or permission of the instructor.

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

MBA 6108A Advanced Financial Accounting 1: lecture 3 hours. Prerequisite: MBA 5101 or permission of the instructor.

MBA 6109B Advanced Financial Accounting 2: lecture 2 hours, 40 mins. Prerequisite: MBA 6108 or permission of the instructor.

MBA 6110A or B Information for Decision Analysis: lecture 2 hours, 40 mins. Prerequisites: MBA 5501, MBA 5502 and MBA 6106.

MBA 6111A or B Accounting in the International Environment: lecture 2 hours. Prerequisite: MBA 5101; 5102 may be taken concurrently.

MBA 6150R Accounting Seminar: seminar 2 hours.

Finance

MBA 6201A or B Investments: lecture 2 hours. Prerequisites: 5000 level Finance and Accounting classes.

MBA 6202A or B Investment Seminar: lecture 2 hours. Prerequisite: MBA 6201 or MBA 6206. Suggested background course MBA 6504.

MBA 6203A or B Capital Markets: lecture 2 hours. Prerequisites: 5000 level Finance and Accounting classes.

MBA 6204A or B Working Capital Management: lecture 2 hours. Prerequisite: 5000 level Finance and Accounting classes.

MBA 6205A or B Capital Budgeting: lecture 2 hours. Prerequisite: 5000 level Finance and Accounting classes.

MBA 6206A or B Portfolio Theory: lecture 2 hours. Prerequisite: 5000 level Finance and Accounting classes.

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

Management

MBA 5312A or B Organizational Design: lecture 2 hours, 40 minutes. Prerequisite: MBA 5311.

MBA 5321A or B Introduction to Personnel Administration: lecture 2 hours. Prerequisite: MBA 5311.

MBA 5331A or B Introduction to Labour Management Relations: seminar 2 hours. Prerequisite: MBA 5311.

MBA 6313A or B Organizational Change: seminar & lecture 2 hours. Prerequisite: MBA 5311 & MBA 5312 or permission of the instructor.

MBA 6314A or B Organization Theory and Research: seminar 2 hours. Prerequisite: MBA 5311 & MBA 5312 or permission of the instructor.

MBA 6322A or B Selection: Testing & Interviewing: seminar 2 hours. Prerequisite: MBA 5321 or permission of the instructor.

MBA 6323A or B Training & Development: seminar & lab 3 hours. Prerequisite: MBA 5321.

MBA 6324A or B Performance Appraisal & Compensation: seminar 2 hours. Prerequisite: MBA 5321.

MBA 6325A or B Occupational Safety Management: seminar 2 hours. Prerequisite: MBA 5321.

MBA 6332A or B Collective Bargaining: seminar 2 hours. Prerequisite: MBA 5331.

MBA 6333A or B Comparative Labour Relations: seminar 2 hours. Prerequisite: MBA 5331 or permission of the instructor.

Marketing and Transportation

MBA 5402A or B Buyer Behaviour: lecture 2 hours. Prerequisite: MBA 5401.

MBA 6401A or B Marketing Research and Information Systems: seminar 2 hours. Prerequisite: MBA 5402, MBA 5401; strongly recommended MBA 6504.

MBA 6402A or B Marketing Channel and Logistical Management: lecture 2 hours. Prerequisite: MBA 5401; recommended MBA 5402.

MBA 6403A or B Advertising Management: lecture & seminars 2 hours. Prerequisite: MBA 5401; recommended MBA 5402.

MBA 6404A or B Consumer Behaviour: lecture & seminar 2 hours. Prerequisite: MBA 5401 and MBA 5402.

MBA 6405A or B Sales Management: lecture & case studies 3 hours. Prerequisite: MBA 5401.

MBA 6406A or B Domestic Transportation: lecture & seminar 2 hours.

MBA 6407A or B Physical Distribution Management: lecture & seminar 2 hours. Prerequisites: MBA 5551, or permission of the instructor.

MBA 6408A or B Management of Transportation: lecture 2 hours. Prerequisites: MBA 5201 and MBA 5311.

MBA 6450B Marketing Strategy Seminar: seminar 2 hours. Prerequisite: MBA 5401, and at least two marketing classes, or instructor's consent. These classes may be taken concurrently.

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

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

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

Quantitative Methods

MBA 6501A or B Operations Research II: lecture 2 hours. Prerequisite: MBA 5501 and 5502.

MBA 6502A or B Forecasting Models: seminar 2 hours Prerequisite: MBA 5501 or equivalent.

MBA 6503A or B Simulation Models: lecture & seminar 2 hours. Prerequisites: MBA 5501 and 5502.

MBA 6504A Applied Statistics: seminar 2 hours. Prerequisite: MBA 5501.

MBA 6505A or B Managerial Decision Making: lecture & seminar 2 hours.

MBA 6506A or B Case Problems in Operations Research: seminar & case studies 2 hours.

MBA 6507R Advanced Operations Research Project: tutorial 6 hours. Choice of instructor. See the MBA program co-ordinator for requirements.

Operations and Innovation Management

MBA 6551A or B Operations Management II: lecture 2 hours. Prerequisites: MBA 5501, 5502 and 5551.

MBA 6552A or B Operations Management in Service Industries: lecture/seminar 2 hours. Prerequisite: MBA 5551

MBA 6553A or B Managing Technological Innovation: seminar 2 hours.

International Business

MBA 6801A or B The Firm in the International Environment: seminar 2 hours. Prerequisite: MBA 5701/5702.

MBA 6802A or B International Business Policy: seminar 2 hours. Prerequisite: MBA 6801.

MBA 6803A or B International Transportation: seminar 2 hours.

MBA 6804A or B Seminar in Ocean Transportation: seminar 2 hours. Prerequisite: MBA 6803.

MBA 6805A or B International Business and Ocean Resources: seminar 3 hours.

MBA 6806A or B Export Marketing: seminar 2 hours. Prerequisite: MBA 5401. A useful class is MBA 6801.

MBA 6807A or B International Financial Management: seminar 2 hours. Prerequisites: MBA 5701, 5702, 5201 and 5101. A useful class is MBA 6801.

MBA 6808A or B International Banking and Finance: seminar 2 hours. Prerequisites: MBA 5701, 5702. A useful class is MBA 6801.

General

MBA 6901A or B Business Law: seminar 2 hours.

MBA 6902A or B Business and Government: lecture 2 hours.

MBA 6903A or B Management Information Systems: lecture/seminar 2 hours. Prerequisite: MBA 5101.

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

Chemistry

(Tel. 424-3305)

Chair

W.A. Aue, PhD (Vienna)

Professors

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

Associate Professors

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

Assistant Professors

K.R. Grundy, BSc, MSc, PhD (Auckland)
 R.D. Guy, BSc (SFU), PhD (Carleton)

Assistant Professors (NSERC Research Fellows)

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

Visiting Scientists

J.E. Fergusson, University of Canterbury, New Zealand
 K. Sakai, Tokai University, Japan
 X. Feng, Chinese Academy of Sciences
 T.Z. Guo, Quinghai Geology Bureau, China
 M.H. Kaistila, Technical Research Centre of Finland

Instructors

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

D.J. Silvert, M.S. (CWRU)
 W.D. Tacreiter, MSc (Kraków)
 K.E. Thompson, BSc (Acad.)

Research Assistant

S.W. Kim, PhD (Wayne State)

Postdoctoral Fellows and Research Associates (1984)

D. Adhikesavalu, PhD (IISc, Bangalore)
 A.D. Becke, PhD (McM)
 H. Bem, PhD (Lodz)
 M. Daniewski, PhD (Warsaw)
 S.A. Deraniyagala, PhD (Dal.)
 S.P. Deraniyagala, PhD (Dal.)
 K.N. De Silva, PhD (Dal.)
 S.M. De Silva, PhD (Dal.)
 H. Flakus, PhD (Kraków)
 H. Furue, PhD (Queen's)
 M. Hojatti, PhD (Essex)
 U. Maciejwska, PhD (Gdansk)
 N. Mathur, PhD (Dal.)
 S. Muddukrishna, PhD (IIT, Kanpur)
 A. Okamoto, PhD (Tokyo)
 V. Paramasigamani, PhD (Dal.)
 S. Peiris, PhD (Concordia)
 U.K. Roychowdhury, PhD (IIT, Kanpur)
 P. Sunkada, PhD (IISc, Bangalore)
 J. Wierzchowcki, PhD (Warsaw)
 A.B. Yamashita, PhD (UWO)

Honorary Adjunct Professors

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

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

Admission Requirements

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

General Regulations

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

Further details of degree regulations are presented in a Handbook for Graduate Students in Chemistry, which may be obtained from the Departmental Office.

MSc Degree

Full-time Program

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

Part-time Program

The full-time MSc class requirements and thesis regulation apply. However, students enrolled in the part-time MSc program are expected to complete their class work in four years and their thesis work in six years. The thesis must be supervised by a member of the Department. No stipends are available from the Faculty of Graduate Studies.

PhD Degree Program

Three full-credit classes, or the equivalent, are required. A preliminary oral examination must be completed successfully. Original research, together with preparation and oral defence of a thesis, is required.

For the minimum time required to complete the program, see Section 2.6. Financial support is not available for more than four years.

Classes

Two types of graduate classes are offered by the Department - core classes and specialized classes. The core classes constitute the main framework of a student's formal course work, and are designed to be broad-based but at an advanced level. They are intended to help the student gain a wide understanding in several major branches of chemistry and thus students are required to take such classes outside their area of specialization. The following half-credit core classes are offered at least every other year. Please consult the timetable to ascertain which classes are being given.

Analytical

- 5200 — Advanced Chemical Equilibria and Electroanalytical Chemistry
- 5210 — Separations
- 5220 — Analytical Spectroscopy

Inorganic and Structural

- 5100 — Solid State Chemistry
- 5110 — Advanced Inorganic Chemistry
- 5120 — Advanced Organometallic Chemistry

Organic

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

Physical and Theoretical

- 5000 — Applied Quantum Chemistry
- 5300 — Molecular Spectroscopy
- 5310 — Physical Chemistry of Condensed Phases
- 5320 — Physical Chemistry of the Gas Phase
- 5330 — Principles of Magnetic Resonance

Specialized classes provide the opportunity for in-depth study of selected topics which are more closely related to the student's research area. These classes vary from year to year depending on students' needs and interests. Some of the topics covered recently in specialized courses include: X-ray crystallography, pollution evaluation, organic

photochemistry, organic electrochemistry, nuclear chemistry, electronics for scientists, carbohydrate chemistry, analytical flame spectroscopy, electrolyte solutions, heteroatom chemistry.

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

Chemistry Research Interests

Analytical Chemistry

- W.A. Aue: Basic and applied chromatography.
- A. Chatt: Behaviour of trace elements in the environment by nuclear analytical methods.
- R.D. Guy: Method development for the speciation of toxic metals and organic chemicals in the aquatic environment.
- L. Ramaley: Electroanalytical chemistry and chemical instrumentation.
- D.E. Ryan: Molecular and gamma-ray spectroscopy in trace elements.
- R. Stephens: Analytical atomic spectroscopy.

Inorganic and Structural Chemistry

- T.S. Cameron: X-ray structural studies on inorganic, organic and organometallic compounds; hydrogen bonding in oxyanion salts.
- K.R. Grundy: Synthesis and reactivity of low-valent organometallic complexes and their utilization in organic synthesis.
- O. Knop: Structural and solid-state inorganic chemistry.

Organic Chemistry

- D.R. Arnold: Photochemistry, especially the development of synthetically useful methods.
- T.P. Forrest: Stereochemistry; nmr spectroscopy.
- T.B. Grindley: The chemistry of carbohydrates and of carbanions; conformational analysis.
- J.S. Grossert: Synthetic, structural and spectroscopic aspects of organosulphur chemistry; effects of pressure on reactions in solution.
- D.L. Hooper: Spectroscopic methods, especially high field multinuclear, nmr applied to chemical problems.
- K.T. Leffek: Physical organic chemistry, including the study of reaction mechanisms and isotope effects.
- J.A. Pincock: Studies on reaction mechanisms involving both ground and excited states.

Physical and Theoretical Chemistry

- R.J. Boyd: Quantum chemistry; theoretical biophysical chemistry.
- J.A. Coxon: Electronic spectra of small molecules using laser excitation and double resonance techniques; intensities; chemiluminescence.
- B.J. Forrest: Magnetic resonance of biomembranes and liquid crystals.
- K.E. Hayes: Investigations in adsorption and catalysis.
- W.E. Jones: Atomic and molecular spectroscopy; gas phase kinetics; infrared chemiluminescence and reaction dynamics.
- J.C.T. Kwak: Physical chemistry of colloidal electrolytes; biophysical chemistry.
- P.D. Pacey: Temperature dependence of reaction rates.
- C.H. Warren: Laser Raman, laser induced fluorescence, and molecular spectroscopy.
- R.E. Wasylishen: Applications of multinuclear nmr spectroscopy: molecular motion in liquids and orientationally disordered solids; isotope effects; conformational studies.
- M.A. White: Thermal properties of solids.

Classics

(Tel. 424-3468)

Chairperson of Department

R. Friedrich

Visiting Professor

L. Obertello (Professor, University of Genoa)

Professor Emeritus

J.A. Doull, BA (Dal), MA (Tor.)

Adjunct Professor

A.H. Armstrong, MA (Cantab.), FBA

Professors

J.P. Atherton, MA (Oxon.), PhD (Liverpool)

R.D. Crouse, BA (Vind.), STB (Harv.), MTh (Trin.), PhD (Harv.)

E. Segelberg, DTh, FK (Upsala)

R. Friedrich, PhD (Gott.)

Associate Professors

W.J. Hankey, BA (Vind.), MA (Tor.)

P.F. Kussmaul, PhD (Basle)

C.J. Starnes, BA (Bishop's), STB (Harvard), MA (McG), PhD (Dal)

Assistant Professor

D.K. House, MA (Dal), PhD (Liverpool), *Graduate Studies Coordinator*

The Department invites applications especially from students of wide humanistic interests who wish to study contemporary culture through its ancient origins.

The graduate teaching and research of the Department is chiefly in the following areas:

- (a) Greek and Latin Poetry.
- (b) Hellenistic and early Christian history.
- (c) Greek Philosophy; Aristotle and the history of Aristotelian philosophy (from the Greek commentators to Hegel).

MA students may concentrate their work in any of these areas. PhD candidates must work in the area of Hellenic and Hellenistic Studies.

Admission Requirements

Candidates must satisfy the admission requirements of the Faculty of Graduate Studies. The requirement of both Classical languages at Honours level may sometimes be relaxed, e.g., where a student has taken a Combined Honours course involving only one Classical language. In such cases at least two classes in the second language will be taken in addition to the MA course proper. In certain programs, a knowledge of other ancient languages may be required.

MA Degree Program

It will rarely be possible for candidates to complete their classes and thesis in less than a calendar year.

Three graduate seminars, two in the general area of interest and a reading and research class related to the thesis subject are required.

Candidates are expected to attend graduate seminars related to their theses throughout their period of full-time study. A thesis is required.

MA students should obtain a copy of the Departmental regulations for the degree.

PhD Degree Program

The normal admission requirement is the Dalhousie MA in Classics, or equivalent preparation. The minimum residence requirement for such candidates is two years, during which time they must satisfy the general requirements of the Faculty, and, in addition, must demonstrate competence in the languages (ancient and modern) necessary for research in their particular fields of study.

All candidates are expected to have a broad understanding of all aspects of Classical culture, and within the general area of Hellenic-Hellenistic Studies, each candidate is expected to concentrate, with the guidance of a Supervising Committee, in one of three fields: History, Literature and Philosophy. At least one year before submitting a thesis, the candidate must pass a comprehensive examination (written and oral) in his special field.

Classes

Greek, Latin and Near Eastern Literature

Greek 5010 Seminar on Greek Epic: R. Friedrich.

Greek 5020 Seminar on Greek Lyric: R. Friedrich.

Greek 5030 Seminar on Greek Drama: Tragedy. R. Friedrich.

Greek 5040 Seminar on Greek Drama: Comedy. R. Friedrich.

Greek 5050 Seminar on Greek Philosophical Texts I: staff.

Greek 5060 Seminar on Greek Philosophical Texts II: staff.

Greek 5070 Seminar on Greek Philosophical Texts III: staff.

Greek 5080 Seminar on Greek Historians: staff.

Greek 5090 Seminar on Greek Literary Criticism: R. Friedrich.

Greek 5100A & B — 5109A & B Reading and Research: staff.

Greek 5120 — 5129 Reading and Research: staff.

Latin 5500 Seminar on Roman Satire: staff.

Latin 5510 Seminar on Vergil: J.P. Atherton.

Latin 5520 Advanced Reading in Latin Literature: staff

Latin 5530 Seminar on Roman Historians: P.F. Kussmaul.

Latin 5550A & B — 5559A & B Reading and Research: staff.

Latin 5560 — 5569 Reading and Research: staff.

Coptic 5020 Seminar on Aspects of Coptic Language, Literature & Culture: E. Segelberg.

Ancient History

Classics 5260 Seminar on Roman Religion: E. Segelberg.

Classics 5270 Seminar on Near Eastern Religion: E. Segelberg.

Classics 5280 Seminar on Christian Beginnings: E. Segelberg.

Classics 5290 Seminar on Greek Religion: E. Segelberg.

Classics 5520 Seminar on Problems of the Hellenistic Period: E. Segelberg.

Classics 5530 Seminar on the Roman Empire and the Rise of Christianity: staff.

Classics 5550A & B — 5559A & B Reading and Research in Ancient History: staff.

Classical Philosophy

Classics 5600 Seminar on the Philosophy of Aristotle: J.A. Doull, J.P. Atherton.

Classics 5610 Seminar on the Philosophy of Plato: D.K. House.

Classics 5620 Ancient and Modern Dialectic: J.A. Doull

Classics 5630 History of the Interpretation of Aristotle: J.A. Doull, W.J. Hankey.

Classics 5640 Mediaeval Interpreters of Aristotle: R.D. Crouse, J.P. Atherton.

Classics 5650 Seminar on Ancient Natural Philosophy: J.A. Doull, W.J. Hankey.

Classics 5670 Seminar on Ancient Practical Philosophy: J.A. Doull.

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

Classics 5800 Seminar on Neoplatonism: D.K. House.

Classics 5810 Greek Philosophical Texts: Classical and Patristic: staff

Classics 5830 Latin Philosophical Texts: Classical and Patristic: staff.

Classics 5850A & B — 5859A & B Reading and Research in Classical Philosophy: staff.

Classics 5900 Departmental Seminar: staff.

Classics 5901 — 5910 Reading and Research: staff.

9000 MA Thesis

9530 PhD Thesis

Economics

(Tel. 424-2026)

Chairperson of Department
E. Klein

Professor Emeritus

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

Professors

R.L. Comeau, BA, MA (StFX), PhD (Brown)

J.L. Cornwall, BA (Iowa), MSc (Lond.), PhD (Harv.), *Coordinator of Graduate Studies*

R.E. George, BSc (Lond.), MA (Brist.), PhD (Lond.), *William A. Black Professor of Commerce*

J.F. Graham, BA (UBC), MA, PhD (Col.), FRSC, *Fred C. Manning Professor of Economics*

E. Klein, LL.M. (Buenos Aires), MSc (Dal), Dr. Rer. Pol. (Hamburg)

C. Marfels, Dr. Rer. Pol. (Berlin)

R.I. McAllister, MA (Oxon.), MA (Cantab.)

N.H. Morse, BA, MA (Acad.), PhD (Tor.)

A.M. Sinclair, BA (Dal), MA, B Phil (Oxon.), PhD (Harv.)

Associate Professors

F.M. Bradfield, BComm (McM), PhD (Brown)

M.G. Brown, BA (W.Ont.), MA (Queen's), AM, PhD (Chi.)

P.B. Huber, BA, MA, PhD (Yale)

G. Kartsaklis, CE (Athens), Dr. Rer. Pol. (Bonn), *Coordinator of Admissions for Graduate Programs*

B. Lesser, BComm (Dal), MA, PhD (Cam.)

L. Osberg, BA (Hons) (Queen's), MPhil, PhD (Yale)

U.L.G. Rao, MA, MSc (Andhra), PhD (W.Ont.)

Assistant Professors

M.L. Cross, BA (Montana), MA (SFU), PhD (Texas A. & M.)

S. DasGupta, BA (Calcutta), MA (Delhi), PhD (Rochester)

B. Jamieson, BA (UBC), MA, PhD (Tor.)

L. Mazany, BSFS (Georgetown), PhD (UBC)

Lecturers

M.S. Amirkhalkhali, BA Hons. (Shiraz), MA (Dal)

A. Cornwall, BA (Colby), MA (Maine)

Special Lecturers

T. Pinfeld, BA, MA (W.Ont.), PhD (Minn.)

E.W. Kierans, BA (Loyola), LLD Hon (St. Thomas)

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.

B. Program Choices

The Program Choices outlined below, are shown as two-year programs. Honours graduates who plan to enter a one-year program should choose classes in their Honours program which serve to satisfy the recommendations for the first year of the program of their choice or, if that is not possible, should consult with a Department representative to choose a program which is consistent with the work they have completed in their undergraduate studies. Students who have completed one or more of the classes listed for the field preparation year during their previous undergraduate work are exempted from these classes but must replace them with other economics classes to reach the required number. Shifts in programs at the student's option are possible provided the earlier preparation is consistent with the change of goals. Departmental approval is required for the program of each student.

Three basic programs are available:

- 1. Economic Analysis and Policy:** The goal of this program is the preparation of students for further advanced work, e.g. doctoral programs, or to give a sound training in basic theoretical and analytical economics for students seeking a terminal degree for careers in teaching, government or business.
- 2. Mathematical Economics and Econometrics:** This program is designed primarily for those wishing to continue on to doctoral programs but it may also provide a rigorous training in economic analysis for those wanting a terminal degree. Those considering this program should have an interest in mathematics and have completed at least two classes in Mathematics beyond the 1000 level (preferably including Mathematics 2000 and 2030A, 2040B) before entering the program.
- 3. Applied Economics:** The purpose of this program is to produce technically competent, practically oriented working economists at the MA level. This program concentrates on the working tools of economics.

Interdisciplinary Programs: The Department of Economics participates with other Departments and Institutions in several such programs. These include:

- African Studies
- Environmental Studies
- Health Evaluation Studies
- Urban, Rural and Regional Studies

Graduate students wishing to orient their studies in the direction of these interdisciplinary fields take some classes in the relevant area from offerings outside the Department and do their graduate thesis on related top-

ics. The Department's approval of such a program is required. Other special interdisciplinary programmes may be devised, with the Department's consent, to meet particular interests.

Completion of MA Program

Students must successfully complete the required and optional classes of their program. Normally a course of study worth at least five (5) credits is required, including a thesis which must be submitted and approved by the Department.

MDE Degree Program (Master of Development Economics)

A. Admission Requirements

The normal duration of the program is two years; applicants with either a well-rounded Honours BA in the social sciences or a professional degree (such as MPA, MBA, LLB or MES) may be eligible for a one-year program.

Entrance to the two-year program normally requires a Pass or General BA, BSc or B Comm degree, with a minimum of 2 classes in economics beyond the introductory level, including one full class in intermediate theory and a basic class in statistics. A first-level mathematics class should also be included.

Promising students who do not meet the entrance requirements for the two-year program either might be admitted to a qualifying year or permitted to take not more than 2 missing classes within the time frame of the two-year program.

B. Program Choices

The program normally is for two years. The first year is a foundation year to allow persons from disciplines such as political science, engineering, law, accountancy, sociology or commerce, who have only minimum undergraduate training in economics, to acquire a practical background in applied development economics. Those with a background in economics, will in their turn, have the opportunity to ensure they have an adequate breadth of academic background.

A one-year program option is available to applicants with the necessary undergraduate training in economics and a blend of other disciplines. The one-year option also relates conveniently with a number of other graduate programs such as the MPA, MBA and MES. Two graduate programs may not be embarked upon concurrently.

Two basic programs are available. These programs are designed for young professionals who are already embarked on, or intend to pursue, professional careers in public agencies or private corporations that are active in the field of economic development. As an essential component of this program, strategic links are made with other programs in the University, including public administration, international business policy, sociology, environmental and ocean studies, history, law and political science.

- 1. The Canadian Studies Program* concentrates particularly on Canadian development, with comparative insights from other industrialized countries. The program includes a focus on Eastern Canada and such issues as: the provision of transport and communications to rural Labrador; the development of major projects such as Fundy tidal power; offshore energy and the James Bay hydro project; urban planning for growing cities such as Halifax and Quebec City; manpower mobility programs; and alternative strategies for tenacious problems such as Sydney Steel and the East Coast fisheries.

- 2. The International Development Studies Program* concentrates more on sectoral themes than on geographic regions. These include rural development, manpower planning, the role of state corporations, international trade and payments, import substitution policies, international development and aid agencies, world health issues and the problems of

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helping those in greatest need in Third World countries. Specific country case experiences are extensively drawn upon through links the University faculty have with West Africa, East Africa, Indonesia, Latin America, the Caribbean and China.

Completion of MDE Program

Students must successfully complete a minimum of nine full-credit classes, plus thesis.

PhD Degree Program

A. Admission Requirements

Applicants for admission to the PhD program must have academic qualifications superior to those required for entrance into the MA program. The minimum required for entry is an Honours Degree in Economics with an average of at least 75% (B+) by Dalhousie standards in the classes in economics and related fields. Students entering after completing the required course work for an MA degree in Economics would normally prepare for their PhD Comprehensive Exams in two years; those with only an Honours BA would normally require three years. Other specific requirements for entry depend upon the PhD program chosen and are listed below.

Applicants may be required to submit the results of the Graduate Record Examination in Economics with their application.

Students admitted to the last two years of the PhD program may choose to do either the General Program or the Mathematical Program. Students admitted to a three year PhD program may follow either of these programs after having satisfactorily completed one year's prescribed study.

All student programs must be approved by the Department.

B. General Program

The General Program is designed to provide students with a strong foundation in economic theory and quantitative methods and intensive work in two applied fields of economics. In addition to the entrance requirements above, students are expected to have completed classes, at a satisfactory level, in Intermediate Calculus, Matrix Algebra, Linear Algebra and Statistics (equivalent to Dalhousie Mathematics 2000, 2030 and 2040 and Economics 2228).

At the completion of their class work, candidates for the PhD in the General Program will be examined in:

1. Macroeconomic and Microeconomic theory (at the level of Dalhousie Economics classes 5500A, 5509B, 6600B and 6609A, including applications of the economic theory described).
2. A major field.
3. A minor field.
4. History of Economic Thought.

They are also required to show proficiency in Quantitative Analysis and Economic History in the course of their work. A course of study recommended for the two-year General Program would include:

First Year:

1. Economics 5500A (Macroeconomics theory)
2. Economics 5509B (Microeconomics theory)
3. Economics 5506 (Economic History)
4. One class in an applied field selected as the student's "major applied field"
5. One other class

Second Year:

1. Economics 6600B (Macroeconomic theory)
2. Economics 6609A (Microeconomic theory)
3. Economics 5533 (Econometrics)
4. A second class selected from the "major applied field"
5. One class in an applied field selected as the "minor applied field."

C. The Mathematical Economics Program

The Mathematical Economics Program provides students with the option of pursuing work leading to specialization in Mathematical Economics. In addition to the entrance requirements in (A) above, applicants for the two-year program should have classes in Advanced Calculus, Matrix Algebra, Linear Algebra and Statistics (equivalent to Dalhousie classes Mathematics 2000, 2030, 2040 and Economics 2228).

Students with combined Honours in Mathematics and Economics, or Honours in Mathematics and who have done (reasonable) undergraduate work in Economics may be accepted into the same course of study and be permitted to make up deficiencies during the first year of study.

At the completion of their class work students in the Mathematical Program will be examined in General Economic Theory (including History of Thought); Mathematical Economics and one applied field. A course of study recommended for the two-year program would include:

First Year:

1. Mathematics 3040 (half class); Metric Spaces and Elementary Topology, and Mathematics 4140 (half class); Introduction to Functional Analysis

or

1. Mathematics 3300 (half class); Linear Integer Programming, and Mathematics 3310 (half class); Discrete and Dynamic Programming
2. Economics 6600B (half class); Economic Theory
3. Economics 6610; Mathematical Economics
4. One class in an applied field
5. One other class

Second Year:

1. Mathematics 4010; Measure and Integration Theory, Mathematics 3120 (half class); Differential Equations, or Mathematics 4300 (half class); Control Theory
2. Economics 6619 (half class) and Economics 6620 (half class); Seminars in Mathematical Economics and Economic Theory
3. Economics 5533; Econometrics
4. One class in the applied field selected in the first year.

D. Examination and Thesis

Comprehensive examinations consisting of written papers in economic theory and two fields, and oral examinations in the same three subjects, are required at the end of the required period of course work.

A suitable thesis must be submitted and defended. Students are required to make a public presentation of a thesis proposal no later than six months after completion of the comprehensives and preferably at some point prior to the comprehensives.

Classes

Classes other than those listed may be offered. Not all classes listed are necessarily offered in any given year.

5231A Health Economics: M.G. Brown.

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

- 5239B The European Economy in Historical Perspective: After the Industrial Revolution: P.B. Huber and Z.A. Konczacki.
- 5250 Applied Development: Policy, Practice and Economics: R.I. McAllister.
- 5251 Seminar in Development Studies: R.I. McAllister.
- 5328 Industrial Organization: C. Marfels.
- 5330A International Trade: A.M. Sinclair.
- 5333A Theories of Economic Development: Z.A. Konczacki.
- 5334B Economic Development: Recent Debates, Controversies and Conflicts: Z.A. Konczacki.
- 5336B Regional Development: Post-1945 Canadian and Industrial Countries' Economic Policy Experience: R.I. McAllister.
- 5341A Urban Economics: Growth and Development of Urban Areas: T.A. Pinfeld.
- 5342B Urban Economics: Economic Analysis of Urban Problems: T.A. Pinfeld.
- 5431B International Payments: A.M. Sinclair.
- 5433B Intergovernmental Fiscal Relations: J.F. Graham.
- 5446B Classical Liberalism and Democracy (same as Philosophy 5470B and Pol. Sci. 5479B): D. Braybrooke.
- 5448A Social Choice Theory (same as Philosophy 5480A and Pol. Sci. 5480A): D. Braybrooke.
- 5449B The Logic of Questions, Policy Analysis, and Issue Processing (same as Philosophy 5490B and Pol. Sci. 5490B): D. Braybrooke.
- 5500A Macroeconomics: J.L. Cornwall.
- 5502A Monetary Theory: Microeconomic Aspects: G.A.B. Kartsaklis.
- 5505 Public Finance
- 5506 North American Economic History: B. Lesser.
- 5508 Competition Policy and Anti-Trust Economics: C. Marfels.
- 5509B Microeconomics: S. DasGupta.
- 5511A Regional Economics: Theories: F.M. Bradfield.
- 5512B Regional Economics: Empirical Studies and Policies: F.M. Bradfield.
- 5514B Monetary Theory: Macroeconomic Aspects: R.L. Comeau.
- 5515 Labour Economics: L. Osberg
- 5516A Natural Resource Economics: M.L. Cross.
- 5533 Econometrics: U.L.G. Rao.
- 5551A Special Topics in Advanced Monetary Policy: R.L. Comeau.
- 5552B Special Topics in Advanced Monetary Theory: G.A.B. Kartsaklis.
- 5558 Special Topics in Industrial Organization: C. Marfels.
- 5559 Special Topics in Labour Economics: L. Osberg.
- 5563 Special Topics in Regional Economics: F.M. Bradfield.
- 5570 Special Topics in Econometrics: U.L.G. Rao.
- 5571 Special Topics in Urban Economics: T.A. Pinfeld.
- 5572 Special Topics in International Trade: P.B. Huber.
- 5575A Applied Statistics and Econometrics I
- 5576A Applied Statistics and Econometrics II
- 6600B Economic Theory: J.L. Cornwall.
- 6609A Economic Theory: E. Klein.
- 6610 Mathematical Economics: S. DasGupta and E. Klein.
- 6619A Seminar in Mathematical Economics and Advanced Economic Theory
- 6620B Seminar in Mathematical Economics and Advanced Economic Theory
- 6680 Directed Reading
- 9000 MA Thesis
- 9530 PhD Thesis

Special Topics classes, not separately listed, will be arranged to provide for advanced work in the areas of specialization chosen by PhD students. MA students with the appropriate backgrounds will also be admissible to such classes. Other classes than those listed may also be offered and certain of the classes listed are not necessarily offered on an annual basis.

Education

(Tel. 424-3724)

Acting Chairperson of Department
S.W. Semple

Professors
E.Z. Friedenberg, BA (Centenary), MA (Stanford), PhD (Chicago)

EDUCATION

L.E. Haley, BSA., MSA. (Tor.), PhD (Calif.)
 W.F. Hare, BA (London), MA (Leics.), PhD (Tor.)
 J.D. Myers, BA, MA (Tor.), PhD (Edinburgh), *Director of Policy Development, Continuing Education*

Associate Professors

A. Barton, BA, MA (Trinity)
 R. Gamberg, BA (Brandeis), MA (Illinois)
 P. Keane, BA (Manch.), MEd (Bristol), PhD (Bath)
 T. Laidlaw, BA, MEd (Calgary), PhD (Alberta)
 J. Manos, BA, BEd (StFX), MEd (Calgary), PhD (Alberta)
 E.T. Marriott, BA (MtA), MEd (Tor.), *Dean, Student Services*
 H.J. Murphy, BSc (St. Dunstan's), BEd (PEI), MEd, EdD (Virginia)
 H.E. Poole, BA, MA, PGCE (Birm.), PhD (Tor.)
 E. Ricker, BA, MEd (UBC), PhD (Tor.), *Coordinator of MA/PhD Programs*
 J.B. Roald, BEd (UBC), MEd (Wash.), EdD (UBC)
 S.W. Semple, BA, Dip Ed (Syd.), MEd, EdD (Tor.)
 S.S. Sodhi, BA, BT, MA (Punjab), Dip. Guid. (Delhi), BEd, PhD (Alta.)
 K. Sullivan, BSc, BEd (Dal), MEd, PhD (Alta.)

Assistant Professors

R.N. Bérard, BA (Antioch.), MA (McM.), BEd (Dal), PhD (McM.), *Coordinator, BEd Program*
 B.A. Wood, BA (Tor.), MEd (Ottawa), PhD (Ottawa)
 M. Schoeneberger, BA (St. Catherine), MA (Minn.), PhD (Alta.)
 M. Welton, BA, MA, PhD (UBC)

Adjunct Professors

L.P. Christiansen-Ruffman, BA (Smith), PhD (Columbia)
 V.G. Hammock, BFA (San Francisco Al), MFA (Indiana)
 M. St. J. Macdonald, BSc (Agr.) (McG), MA (StFX), EdD (Tor.)
 C.P. McFadden, BSc (UBC), BEd (SMU), MSc (UBC), PhD (UWO)
 J.M. Newman, BSc (Dal), MA, PhD (Tor.)

Lecturers

M. Crowley, BA (Miami), MAT (Johns Hopkins)
 D.A. Manicom, BEd (McG), MEd (Atl. Inst. Educ.), *Acting Coordinator MEd Programs*

Research Associates

J. Eaton, BSc (Acadia), PhD (Dal) (*Honorary Research Associate*)

Admission Requirements

Students are advised to consult the Faculty Regulations.

Normal admission requirements are a first degree plus the BEd or its equivalent with at least second-class standing overall.

Applicants who are uncertain whether or not they possess the equivalent of the BEd should make inquiries of the Department. A Faculty advisor is assigned to each student admitted to a degree program. The advisor must approve all class selections.

PhD Degree Program

Full-time study only is permitted.

The Department offers a program based on the study of educational theory, policies and practices. The Foundations disciplines (i.e., the educational subdisciplines of the social sciences and humanities) provide the framework for the program. Students may elect to examine educational theories, policies and practices through one or more of these disciplines.

Students must meet normal admission requirements for the Faculty of Graduate Studies. A Master's degree in Education or a cognate field is normally expected. In exceptional cases a student may be admitted with a Bachelor's degree in Education or an honours degree in a cognate field.

Degree requirements include a two or three-year residency (students entering with an acceptable Master's degree will be required to complete a two-year residency; those with an Honour's degree or equivalent will be required to complete a three-year residency); full time study; four to eight course credits or equivalent including Ed. 5800R; a reading knowledge of any language required for successful completion of doctoral research; Preliminary Examination, thesis, oral defence of thesis.

To qualify for the award of the PhD degree, the thesis must make a substantial original contribution to educational theory, either by discovery of new information, or by the original interpretation of known information, or both.

Students in residence must participate in weekly departmental seminars. For further information see the current edition of the *Graduate Source Book* (available from the Department).

MA Degree Program

Part-time study is permitted.

The MA degree in Education offers a program which emphasizes research and writing, embodied in a thesis, together with a number of graduate classes. This program would normally be followed by a student who intends to pursue studies at the PhD level, but it is open also to students seeking only a Master's degree based upon research, writing and course work.

The Department offers programs of study leading to the MA degree in the following areas:

Curriculum, Continuing Education, Educational Administration, Educational Psychology, Foundations of Education.

A minimum of five university graduate credits is required, including Ed. 5800R. Particular areas of concentration may require specific classes, and class credits beyond the minimum equivalent of five university credits. Additional credits may also be prescribed when, in the view of the Department, the applicant's academic experience or proposed area of concentration warrants such. A thesis equivalent to two credits is required.

Students in residence must participate in weekly departmental seminars. For further information see the current edition of the *Graduate Source Book* (available from the Department).

MEd Degree Program

Part-time study is permitted.

The MEd is a course work degree which may include a project involving the practical application of educational ideas.

The Department offers programs leading to the MEd degree in the following areas:

Curriculum, Continuing Education, Educational Administration, Educational Psychology, Foundations of Education.

A minimum of five university graduate credits is required. Particular areas of concentration may require specific classes, and class credits beyond the minimum equivalent of five university credits. Additional credits may also be prescribed when, in the view of the Department, the applicant's academic experience or proposed area of concentration warrants such. A project may be required in some areas of concentration.

Students in residence must participate in weekly departmental seminars. For further information see the current edition of the *Graduate Source Book* (available from the Department).

Areas of Specialization Leading to the Master's Degree

1. Educational Foundations

A course of studies in the humanistic and social scientific aspects of education, with either a single-discipline or multi-disciplinary emphasis.

Some classes may be taken in other departments of the University, e.g., Sociology and Social Anthropology, History, and Philosophy.

2. Educational Psychology

A program designed for students with a special interest in psychological issues as they pertain to education. The program includes courses in human development, personality and learning theory. Emphasis is placed on themes such as adolescence, gender issues and special education.

3. Educational Administration

The Department offers courses of study of particular interest and relevance to students wishing to prepare for administrative and supervisory positions and for those interested in advanced studies in educational administration. The program combines a solid theoretical base, a high degree of technical competence and a critical, analytical approach. Students are advised to contact the Graduate Secretary of the Department for information on course requirements, the supervisory allowance and other relevant details.

4. Continuing Education

This program is intended to serve the needs of participants in the broad field of adult learning, from Basic Education to Continuing Professional Education. It offers a core course of studies, plus a variety of options, encompassing career interests in such fields as teaching, counselling, administration, adult literacy and community development.

5. Curriculum

This program is designed to accommodate different student needs and interests related to the school curriculum and other educational institutions. A student may choose to focus upon curricular theory and practice, in which case classes should be selected from among those which deal with the philosophy and theory of curriculum, critical analysis, design, implementation, and so forth. Alternatively, a student may elect to study the pedagogy of a particular discipline or subject field, in which case the classes chosen should deal with such matters as the structure of knowledge within the particular discipline or field, research on teaching, and so forth.

Classes

Students should note that within the confines of their program of study and with the approval of their advisor or the appropriate Coordinator they may elect to take classes from other areas or from other departments of the university. Students should consult the department about the availability of classes in any given term. Please Note: not all classes listed below are offered every year. Please check the *Graduate Source Book* for current listings.

5021A The Development of a Progressive Curriculum in Canadian Public Schools, 1890-1914: A. Wood.

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

5030R Teachers, Their Organizations and Decision Making in Education: R. Bérard.

5060R The History of Curricular Thinking: J.B. Roald.

5070R Anthropology of Education: staff.

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

5101A/B Philosophy of Education — Advanced Seminar: W. Hare.

5151B Ethics and Education (Crosslisted with Philosophy 8060B): W. Hare.

5152B Philosophy of Education: Aesthetics and Education: (Cross-listed with Philosophy 5070B): W. Hare.

5155A Moral Education: staff.

5162B Open-Mindedness and Education: W. Hare.

5172B Philosophical Issues in Sex Education: H. Poole.

5201A Youth as a Social Category: E.Z. Friedenberg.

5202B The School as a Communications System: E.Z. Friedenberg.

5211A Deschooling Society: Educational Alternatives: E.Z. Friedenberg.

5221B Higher Education and Social Policy: E.Z. Friedenberg.

5222B Schools and Social Identity: E.Z. Friedenberg.

5223A Criticism of Public Education: E.Z. Friedenberg.

5230R Social Issues in the Curriculum: A. Manicom.

5241A Gender Roles: T. Laidlaw.

5250R Advanced Seminar on the Family: T. Laidlaw.

5251A Educational Tradition and Change in Regional Context: The Soviet Realm: S. Semple.

5252B Comparative Perspectives on Issues in Education: S. Semple.

5260 Education and Development: staff.

5290R Multiculturalism and Education: staff.

5300R Human Learning: S. Sodhi.

5302B Extrinsic Motivation in Curriculum: E.Z. Friedenberg.

5310R Foundations of Childhood Education: staff.

5320R Current Issues in Educational Psychology: staff.

5330R Interdisciplinary Seminar on Early Childhood Education and Practicum: staff.

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

5341A Special Education Policy Decisions: S. Sodhi.

5342B Learning Disabilities: S. Sodhi.

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

5360 Theories of Personality: J. Manos.

5362B Leadership Programming in Childhood Education: staff.

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

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

EDUCATION

- 5401A Administration of Public Education in Canada: E. Ricker.
- 5402B Concepts in Educational Administration: K. Sullivan
- 5411A Administration of Educational Personnel: E.T. Marriott.
- 5412B Administration of Educational Programs: E.T. Marriott.
- 5420R Political Economy of Education: staff.
- 5431B Education and Public Policy: E. Ricker.
- 5432B The Local Government and Administration of Education: E. Ricker.
- 5440A Contemporary Issues in Educational Administration: National and International Issues: K. Sullivan.
- 5442B Conceptual Analytical Skills for Educational Administration: staff.
- 5451A Philosophy and Educational Administration: W. Hare.
- 5460R Law and the Schools: staff.
- 5462B Interest Groups in Education: E. Ricker
- 5470R Local Government and Administration of Education: E. Ricker.
- 5471A Educational Finance: staff.
- 5480R The Analysis of Teaching: staff.
- 5500R Curriculum: A. Barton.
- 5510R Approaches and Issues in Curriculum Design: B. Roald.
- 5520R Implementation of Curriculum: M. Schoeneberger
- 5524A Issues in Curriculum Evaluation: J. Murphy/B. Roald.
- 5525B Curriculum Evaluation (Practicum): J. Murphy/B. Roald.
- 5530R Studies in Elementary Education: staff.
- 5540A The Nature of Scientific Knowledge: E.Z. Friedenber.
- 5541B The Science Curriculum in Social Context: E.Z. Friedenber.
- 5542A Perspectives in Science Curriculum: staff.
- 5542 Shaping Tomorrow's Science Curriculum: staff.
- 5550R Geography in Education: S. Semple.
- 5552B Organizing and Administering School Library Media Center Programs: staff.
- 5560R Canadian Studies in the Curriculum: R. Bérard.
- 5581B Science — A Cross-Disciplinary Approach
- 5600R Music Education: Kodaly Philosophy and Pedagogy: staff.
- 5601A Young Adult Literature and Media Interests: staff.
- 5612B Children's Literature and Media Interests: staff.
- 5613B Children's Literature and Creative Imagination: staff.
- 5624A/5625B New Directions in High School Math Curricula: M. Crowley.
- 5630R Advanced Computer Learning and Instructional Cybernetics: A. Barton.
- 5632B Collections Development: staff.
- 5633R Computers in Education: M. Crowley.
- 5636R Survey of Computer Applications in Education: staff.
- 5638R Advanced Computer Assisted Learning: staff.
- 5650R Computer Lesson Writing: A. Barton.
- 5660R Geography in Education: S. Semple.
- 5670R New Dimensions in Geographical Education: S. Semple.
- 5680R Science Curriculum: A. Barton.
- 5701A Understanding Reading: staff.
- 5702B Reading Instruction: staff.
- 5800R Graduate Seminar: staff.
- 5801A Qualitative Research Methods in Educational Settings: A. Manicom.
- 5802B Practicum in Qualitative Research: A. Manicom.
- 5811A Quantitative Research Methods: J. Murphy.
- 5821B Educational Statistics: J. Murphy.
- 5900R Foundations of Continuing Education: P. Keane.
- 5910R Education and Aging: P. Keane.
- 5921A Program Design in Continuing Education: P. Keane.
- 5931A Adult Learning Theory: M. Welton.
- 5932B Adult Education Methods: M. Welton.
- 5933B History of Adult Education: M. Welton.
- 5940R Adult Counselling: M. MacDonald.
- 5950R Comparative Studies in Continuing Education: S. Semple.
- 5961A Adult Psychology: S. Sodhi.

- 5962B Adult Psychology: S. Sodhi.
- 5970R Administration of Continuing Education: staff.
- 5972B Managing Negotiations: A Case Study Approach: staff.
- 5973A Community Education and Development: M. Welton.
- 5974B Practicum in Community Education and Development: M. Welton.
- 5975B Selected Policy Issues in Continuing Education: D. Myers.
- 5981A Issues in Adult Literacy: R. Gamberg.
- 5982B Adult Literacy Needs and Programs: R. Gamberg.
- 5985R Theory and Practice of Literary Acquisition for Adults: R. Gamberg.
- 5990R Qualitative Methods for Evaluating Adult Educational Policy and Programs: staff.
- 5099-5999 Thesis Research Seminars
- 6000-6911 Reading Classes
- 7300R Senior Seminar in Educational Psychology: S. Sodhi.
- 7580 Reading Practicum: staff.
- 7990 Project — Educational Psychology: Consult Dept. Open to independent completion of study.
- 7991R Project — Curriculum: Consult Dept. Open to independent completion of study.
- 7992B Practicum in Continuing Education: P. Keane. Open to independent completion of study.
- 9000R MA Thesis
- 9530R PhD Thesis

English

(Tel. 424-3384)

Chairperson of Department
J.B. Stovel

Professors

J. Fraser, MA (Oxon.), PhD (Minn.)
J. Gray, MA (Aberd.), MA (Oxon.), PhD (Mont.), FRSA, FRSC, *McCulloch Professor of English*

A.E. Kennedy, BA, MA (UBC), PhD (Edinburgh)
M.G. Parks, MA (Dal), PhD (Tor.)
M.M. Ross, O.C., BA (UNB), MA (Tor.), PhD (Corn.), D.Litt. (UNB), FRSC, *Professor Emeritus*
R.J. Smith, BA (Natal), MA (Oxon.), PhD (Natal)
S.E. Sprott, MA, BD (Melb.), PhD (Col.), *George Munro Professor of English Language and Literature*
D.P. Varma, MA (Patna), PhD (Leeds)

Associate Professors

J. Baxter, BA, BEd, MA, PhD (Alberta)
S.A. Cowan, BA (Montana), MA (Yale)
R. MacG. Dawson, MA (Tor.), B.Litt. (Oxon.)
R.M. Huebert, BA (Sask.), MA, PhD (Pitt.)
M.A. Klug, BA (Minn.), MA (Kan. State), PhD (Ill.)
P. Monk, BA (Reading), MA (Carleton), PhD (Queen's)
C.J. Myers, BA (Sask.), MA, PhD (Tor.)
J.B. Stovel, BA (Sir G. Wms.), MA (Cantab.), PhD (Harvard)
R.R. Tetreault, BA (UBC), MA, PhD (Cornell)
J.A. Wainwright, BA (Tor.), MA, PhD (Dal.)
H.S. Whittier, BA (U.S. Naval Acad.), MA (New Hamp.), PhD (Yale)

Assistant Professors

M. Furrow, BA (Dal), MA, MPhil, PhD (Yale)
B.R. Greenfield, BA (York), MA (McG), MPhil, PhD (Columbia)
H.E. Morgan, BA (UBC), MA (Wash.), B.Litt. (Oxon.), PhD (Wash.)
D. McNeil, BA (Concordia), MA (UNB), PhD (McM)
R.L. Raymond, BS (Yale), MA (Tor.)
M. Stone, BA (Guelph), MA, MPhil (Waterloo), PhD (Tor.)

Applicants should designate the proposed thesis area at the time of application for admission. The Department will entertain research proposals at the MA level in most areas of British, Canadian, or American literature, and at the PhD level in many of these areas. Nonetheless, applicants for the PhD should take care to consult the Graduate Coordinator of the department concerning its strength, in both resources and personnel, in the field of study in which they propose to specialize.

Admission Requirements

Candidates must satisfy the general requirements for admission to the Faculty of Graduate Studies. Candidates for the PhD degree in English must hold an MA degree from Dalhousie or its equivalent. Only in exceptional circumstances will persons holding a BA and an MA from Dalhousie be allowed to proceed to a PhD program without study at another institution.

MA Degree Program

For minimum time required to complete this program, see Section 2.6. Two graduate seminars in English, one in the thesis area and one in an area unrelated to the thesis, and a third seminar in English, or, with the approval of the Department, a class in another department relevant to the candidate's course, are required.

All students are required to have studied at least one European language other than English and to demonstrate some proficiency in it.

A thesis, equivalent to two classes, is required.

Two unbound copies of the thesis are to be submitted to the Department at least two weeks before the deadline dates set by the Faculty of Graduate Studies.

PhD Degree Program

For a minimum time required to complete this program, see Section 2.6. Three graduate seminars beyond the classes for the Dalhousie MA are

ENGLISH

required. A qualifying examination with written and oral portions is required. All graduate students in the Department are required to have studied at least one European language other than English, and to demonstrate some proficiency in it. In addition to this general requirement, each doctoral thesis area has its own specific language requirements. Preparation and defence of a thesis are required.

Classes

Graduate Seminars

Approximately one-third of the seminars listed below are offered each year. Students should consult the Department about which of the following seminars will be offered in 1985-86.

- 501 Middle English Literature, 1350-1400: M. Furrow.
- 502 Shakespeare: S.E. Sprott.
- 503 Renaissance Poetry and Rhetoric: J. Baxter.
- 504 Milton and His Age: M.G. Parks.
- 505 Dryden and Restoration Literature
- 506 Samuel Johnson and His Circle: J. Gray.
- 507 The Eighteenth-Century English Novel
- 508 Blake: H.S. Whittier.
- 509 Literature and Society, 1900-1920: J. Fraser.
- 510 Victorian Fiction: J.B. Stovel.
- 511 The Gothic Romance: D.P. Varma.
- 512 Studies in Nineteenth-Century Canadian Literature: M.G. Parks.
- 513 Experiments in Realism: Jane Austen and George Eliot: J.B. Stovel.
- 514 Graveyard Poetry: D.P. Varma.
- 515 Melville and Hawthorne: H.S. Whittier.
- 517 British Literature, 1920-1945: R.J. Smith.
- 518 The Literature of Victorian Social Criticism: C.J. Myers.
- 519 Poetry and Poetic Theory of the Aesthetic Movement and the Catholic Revival
- 520 Modern Critical Methods and Theories: A. Kennedy.
- 523 Joyce and Yeats: M.A. Klug.
- 525 Studies in Modern Canadian Poetry: P. Monk.
- 526 Recent American Fiction: M.A. Klug.
- 527 Traditionalism and Experimentation in English Poetry, 1880-1920: J. Fraser.
- 528 Restoration and Augustan Satire: J. Gray.

- 534 Literature and Society, 1750-1800: J. Gray.
- 537 Studies in Modern Canadian Fiction: J.A. Wainwright.
- 544 Innovation and Tradition in Romantic Poetry: R. Tetreault.
- 545 The Drama from Marlowe to Ford: R.M. Huebert.
- 546 Hemingway, Faulkner and Bellow: M.A. Klug.
- 547 Mediaeval Romance: H.E. Morgan.
- 553 British Literature Since World War Two: R.J. Smith.
- 556 Canada and the Commonwealth: Selected Writers: P. Monk.
- 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)

- 50 An Introduction to Literary Research
- 201 The English Language
- 202 History of the English Language
- 244 (formerly 454) Literary Criticism
- 251 Sixteenth-Century Non-Dramatic Literature
- 252 Shakespeare and the Drama of His Time
- 253 Old English
- 254 Eighteenth-Century Literature
- 351 Middle English
- 352 Seventeenth-Century Non-Dramatic Literature
- 354 Victorian Novel
- 355 American Literature to 1900
- 356 Literature of the Romantic Period
- 357 Modern Canadian Literature
- 452 Nineteenth-Century Prose and Thought
- 453 Twentieth-Century British Literature
- 455 Modern American Literature
- 457 Victorian Poetry

Environmental Studies

(Tel. 424-3632)

Institute for Resource and Environmental Studies

Director

A.J. Hanson

Academic Program Coordinator

F. Cohen

International Program Coordinator

G. Hainsworth, BA (Lond.), PhD (Calif. — Berkeley)

Professor

A.J. Hanson, BSc, MSc (UBC), PhD (Michigan)

Associate Professors

F. Cohen, BA, MEd (Harv.), PhD (Minnesota)

B. Freedman, BSc, MSc, PhD (Tor.) (jointly appointed in Environmental Studies and Biology)

Assistant Professors (Research)

P. Stokoe, BSc (Dal), PhD (Stanford)

A. Whitten, BSc (Southampton), PhD (Cantab.)

Research Associates

N. Blair, BSc (Carleton), MES (Dal)

R. Côté, BSc (Loyola), MSc (Memorial)

C. Lamson, BA (Skidmore), MSLS (Simmons), MA (Memorial), MES (Dal) (jointly appointed in Environmental Studies and Ocean Studies)

J. Reade, BA (SMU), MLS (Dal)

P. Taschereau, BA (Sir Geo. Wms.), MA (Acadia), PhD (Man.)

Honorary Adjunct Professor

G.E.E. Beanlands, BSc, MSc (UNB), PhD (Dal)

The Institute offers a graduate program leading to the Master of Environmental Studies (MES) degree. There are two general options: (1) resource management and ecology with specialization in fields such as fisheries, forest and land management, environmental toxicology and (2) environmental policy and administration (for example, ocean and coastal zone management, environmental assessment). Classes in Environmental Studies are offered through the Institute. In addition, a wide selection of classes relevant to the program are given by other units within Dalhousie, and by Saint Mary's University and the Technical University of Nova Scotia. Students take core courses from which they will acquire a broad, interdisciplinary background in environmental studies. Each student will also take classes and write a thesis in a particular field of interest. An important element in the MES program is group research projects which give the students experience in multidisciplinary team work. There are opportunities for study and research from the points of view of

policy, technique and science. More than 20 faculty members from various academic units in the university contribute in classwork and as thesis supervisors.

Admission Requirements

In order to be enrolled in an MES program students must have achieved sufficient depth of knowledge in an appropriate branch of an approved academic discipline.

(a) The minimum entry requirement is (i) an Honours bachelor degree in a life science, an earth science, chemistry, physics, mathematics, economics, political science or sociology, or (ii) a professional degree in law, architecture, medicine or engineering, or (iii) equivalent academic qualification.

(b) Students with a pass degree may gain admission by completing an additional year, with suitable academic standing, in an approved qualifying program registered in the Faculty of Graduate Studies. This program would direct the student into intensive study of one of the disciplines, specified in (a) and would normally bring the student to the academic level of a Dalhousie Honours graduate. Priority consideration for admission and financial assistance will be given to applications received by 31 March.

Program Duration and Minimum Requirements

(a) *The one-year program.* (Note: one year is understood to mean one calendar year, not one winter session.) Only students with a well-rounded background may enter a one-year MES program. A "well-rounded background" is defined as an acceptable professional degree, e.g. BEng or BArch with a concentration in environmental studies. Professional experience following honours graduation may be taken into consideration when evaluating entrance requirements. The requirements for the one-year program are:

1. ES 5000R and 5001B
2. One graduate-level class related to an environmental theme in the student's area of specialization.
3. Thesis

(b) *The two-year program.* For all other students the minimum program will occupy two years. Those accepted with an Honours bachelor degree, or a professional degree without environmental content, are required to complete, not later than the end of their first year, three half-credit classes selected from the disciplines of life sciences, earth sciences, chemical and physical sciences, engineering (group A), and social sciences, law, architecture (group B). An approved class in statistics as related to the environment may be accepted in either group A or B.

Students whose specialization was in group A should take at least two subjects in group B, and vice versa. Each credit must be in a different discipline and must be in subjects other than the major subject of the student's first degree. The approved classes from which these three half-credits may be selected will include a meaningful introduction to environmental questions as related to the discipline. The requirements for the first year of a two-year program are:

1. Completion of the three half-classes specified above
2. ES 5000R and 5001B
3. An approved graduate class in an area designed to relate the undergraduate major to an environmental theme
4. Introduction to thesis

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

1. An approved graduate level class
2. Thesis, and participation in the development of interdisciplinary team solutions for the general problem of which the thesis forms one component.

Class work beyond the minimum load is generally required and is specified by the program coordinator after discussions with the student and thesis supervisor.

Classes

ES 5000R Introduction to Environmental Studies: F. Cohen and staff. Open to students in other programs by permission of the instructor.

ES 5001B Environmental Assessment: G. Beanlands. Open to students in other programs by permission of the instructor.

ES 5002A Environmental Studies Joint Project: A.J. Hanson.

ES 5004A/B Management of Toxic Substances: R. Côté. Open to students in other programs by permission of the instructor.

ES 5005A. Ecosystems and Social Systems; a Field Approach: F. Cohen, P. Taschereau.

ES 5020A Resource Management and Economic Development: A.J. Hanson. (Cross-listed with Biology 4650A/5650A)

ES 5021B Fisheries Resource Management: A.J. Hanson.

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 5180B Coastal Communities: L. Kasdan. (Cross-listed with SSA 5220B).

ES 5200A/B Introduction to Environmental Law: Staff. (Cross-listed with Law 2021A/B).

ES 5601A/B Management of the Marine Environment: staff. Open to students in other programs by permission of the instructor.

ES 5300A Natural Resources Administration: P. Pross. (Cross-listed with MPA 6530A, Political Science 5266A).

ES 9000 Thesis

French

(Tel. 424-2430)

Chairperson of Department

M. Bishop

Professors

H.F. Aikens, BA (Dal), AM (Yale)

M. Bishop, BA, BEd, (Manch.), MA, (Man.), PhD (Kent. Canterbury)

R. Kocourek, State Examination, PhD, CSc, (Charles U., Prague) —

McCulloch Professor, Graduate Coordinator

D.W. Lawrence, BA, MA, PhD (Lond.)

Associate Professors

J.W. Brown, AB (Miami), MA (Middlebury), PhD (Penn.)

B.E. Gesner, BA, BEd, MA (Dal), Dr. de 3e cycle (Toulouse II)

W.T. Gordon, BA, MA, PhD (Tor.)

H.R. Runte, MA, MPh, PhD (Kansas)

R. Runte, BA (SUNY), MA, MPh, PhD (Kansas), On leave.

M. Sandhu, License es Lettres (Montpellier), PhD (Yale)

N. Trèves-Gold, BSc (Amer. U., Cairo), PhD (Rice)

K. Waterson, BA (Long Island), MA (NYU), PhD (CUNY)

Assistant Professors

E. Boyd, BA (SMU), BEd (StFX), MA (Middlebury)

T.P. Carter, BA (Prin.), MA, PhD (Brown), On leave.

P. De Méo, BA, MA, PhD (UCLA), *Coordinator of MAT program*

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-és-Lettres, D. Litt. Et. Phil. (South Africa), Acadia University

J.A. Bour, BA Dist., MA (Rochester), MA, PhD (Princeton), Mount Allison University

E.R. Clark, BA Hons. (King's College, Un. London), PhD (McMaster), Memorial University of Newfoundland

J. Deleas, BA Hons (New Brunswick), MA (Dal), DTC (Un. Paul Valéry), Mount Saint Vincent University

F.F. Falvo, MA, PhD (Laval), University of P.E.I.

P. Gerin, BA (Lyon), MA (Aix-Marseille-Tananarive), PhD (Lyon), Mount Saint Vincent University

D.E. Graham, BA Hons. (Saskatchewan), MA, PhD (Western Ontario), Memorial University of Newfoundland

V. Harger-Grinling, BA, MA Hons. (Auckland), PhD (UBC), Memorial University of Newfoundland

D.H. Jory, BA (Oxford), MA (McMaster), DU (Dijon), Memorial University of Newfoundland

L. Lavoie, BA (Laurentienne), MA (Laval), PhD (d'Aix-Marseille), College of Cape Breton

J.R. Lawler, BA Hons., MA Hons. (Melbourne), PhD (Paris)

H-D Paratte, DUEL, MA, Maîtrise (Strasbourg), PhD (Lille III), Acadia University

S. Pons-Ridler, BA, L. es L. (Algiers), L. és L. & Maîtrise (Aix-en-Provence), DML (Middlebury), Memorial University of Newfoundland

A.R. Pugh, BA, MA, PhD (Cambridge), Memorial University of Newfoundland

M. Starets, BA, MA (University of Tel Aviv), PhD (Sorbonne, Paris), Université Sainte-Anne

M.E. Walker, BA (Hons) (Victoria), PhD (UBC), St. Francis Xavier University

Honorary Adjunct Professor

R. Runte, BA (SUNY), MA, M.Ph., PhD (Kansas), Université Sainte-Anne

MA Degree Program

(For general rules see the Faculty Regulations above.)

Classes and research leading to the MA degree in French are offered in the areas of French literature, linguistics and civilization.

Candidates must satisfy the general requirements for admission to the Faculty of Graduate Studies and must show evidence of proficiency in spoken and written French.

Students may be accepted on a full-time or a part-time basis. A full-time student must spend a minimum of one year in full-time graduate study. In the first year of residency, a full-time student is carrying more than two full-credit classes. The time normally required to complete the full-time program is one year for holders of a French Honours degree or equivalent, and two years for holders of a general degree.

In a one-year full-time program, the equivalent of at least five university credits is required. This will consist of thesis (usually equivalent to two credits) plus three 5000-level credits. In a two-year full-time program, students have to attain the equivalent of Honours status (see Undergraduate Calendar) and to obtain the additional five credits as required in a one-year full-time program.

In addition to the five credits, all MA students are normally expected to take a half-year class in Research Methods. When appropriate, up to one additional undergraduate or graduate credit may be required in order to improve the student's proficiency in French. Part-time students carry only two or less full-credit classes during one year. A one-year full-time program corresponds to three years part-time. A two-year full-time program corresponds to six years part-time.

The thesis, written in French, is to be submitted and approved within five years from the first time of registration in the full-time or part-time program (within six years for part-time study).

MAT Degree Program

This degree program, jointly administered by the French and Education Departments, is a professional degree designed for the practising teacher. It may be taken full-time or part-time.

MAT classes are normally offered in the late afternoon during the Fall and Winter terms. A summer school class may occasionally be available if a sufficient number of students enrol.

The goals of the MAT are twofold:

1. to refine the student's knowledge of the French language and of francophone culture; and
2. to deepen the student's awareness of current research in second-language learning and the relevant issues in education in general, with a view to the application of these research findings to various teaching situations.

Coursework is evenly divided among the following four areas: French language and linguistics, francophone culture, second-language acquisition and teaching, and education. An independent project, supervised by members of the French and Education Departments, will focus on the application of some aspect of current research in second-language learning to a specific pedagogical situation. Students primarily interested in research on second-language pedagogy should consider doing an MA in French rather than an MAT.

Please contact the MAT Coordinator for information about courses applicable to this degree program.

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.

Selection of Classes and Registration

It is the responsibility of students admitted to one of the graduate programs to report to the MA or MAT coordinator in the week preceding the beginning of classes, or earlier. The purpose is a pre-registration briefing and interview, the final selection of classes, completion of class approval forms and the drawing up of the program of graduate studies. All graduate students should be duly registered before classes begin.

Classes

(What follows is a list of both MA and MAT classes. Classes required in particular cases will be specified in each student's Program of Graduate Studies.) Only a limited number of classes is offered in any given year. Past descriptions of the graduate classes are available on request from the secretary of the department.

5002A/5002B/5002C Méthodes de recherche/Research Methods: H. Runte.

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

5006B Philologie français: Séminaire du français moderne/French Philology: Seminar on the History of Modern French: H. Runte.

5010R Aspects des études phonétiques/Topics in Phonetic Studies: H. Aikens.

5015R Aspects de la traduction/Topics in the Science of Translating: W.T. Gordon.

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

5120R Analyse Linguistique/Linguistic Analysis: R. Kocourek.

5121A/5121B Fonctionnalisme en linguistique moderne/Functionalism in Modern Linguistics: R. Kocourek.

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

5123A/5123B Terminologie et langue de spécialité/Terminology and Specialized Language: R. Kocourek.

5124R Séminaire de linguistique (Etudes contrastives)/Linguistics Seminar (Contrastive Studies): R. Kocourek.

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

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

5260A/5260B Enseignement des compétences orales et écrites/-Teaching of Oral and Written Skills: P. De Méo.

5270A/5270B Pédagogie du texte écrit/Pedagogy of the Written Text: P. De Méo.

- 5280A/5280B Enseignement de la culture francophone/Teaching of Francophone Culture: staff.
- 5281A/5281B Culture française/French Culture: J. Brown.
- 5285A/5285B Sémiotique appliquée/Applied Semiotics: J. Brown
- 5290A/5290B Analyse, exploitation et développement de matériaux pédagogiques/Analysis, Exploitation and Development of Curricular Materials: staff.
- 5295A/5295B Séminaire: Didactique des langues secondes/Seminar: Second-Language Teaching: staff.
- 5300A Séminaire: littérature médiévale/Seminar in Mediaeval French Literature: H. Runte.
- 5301B Lectures: littérature médiévale/Supervised Readings in Mediaeval French Literature: H. Runte.
- 5400A/5400B Rabelais et son temps/Rabelais and his Time: N. Trèves-Gold.
- 5401A/5401B Montaigne et son temps/Montaigne and his Time: N. Trèves-Gold.
- 5402A/5402B La Poésie de la Renaissance/Renaissance Poetry: N. Trèves-Gold.
- 5500A/5501B L'Aventure intellectuelle du Grand Siècle/The Intellectual Adventure of French Classicism: K. Waterson.
- 5700A La Révolution romantique/The Romantic Revolution: M. Sandhu.
- 5701B Le Roman du dix-neuvième siècle/Nineteenth-Century Novel: M. Sandhu.
- 5705A/5705B Le Poème en prose au 19e siècle/The Prose Poem in the 19th Century: J. Brown.
- 5706A/5706B Impressionnisme et symbolisme/Impressionism and Symbolism: M. Bishop.
- 5800A Le Théâtre de Camus et de Claudel/The Theatre of Camus and Claudel: D. Lawrence.
- 5801B Anti-romans du vingtième siècle/Anti-Novels of the 20th Century: D. Lawrence.
- 5802A La Poésie moderne d'Apollinaire à Michaux/Modern Poetry from Apollinaire to Michaux: M. Bishop.
- 5803B La Poésie contemporaine/Contemporary Poetry: 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.

5876A/5876B Aspects de la littérature du Canada français /Studies in French Canadian Literature: B. Bednarski.

5910A/5910B Lecture de textes acadiens contemporains/Supervised Readings in Acadian Literature since 1968: H. Runte.

5920A/5920B Femmes écrivains et images de femmes dans la littérature française à travers les siècles/French Women Writers and Images of Women through the Centuries: N. Trèves-Gold.

5990R Projet indépendant/Independent Projet (MAT): Subject to independent completion of study.

5996A/5997B L'Oeuvre romanesque de Jean Giono/The Novels of Jean Giono: D. Lawrence.

5998A/5999B Recherches indépendantes/Independent Research: Subject to approval by graduate coordinator and department chairperson.

9000R Thèse/Thesis

Geology

(Tel. 424-2358)

Chairperson of Department
M. Zentilli

Graduate Coordinator
P.J.C. Ryall

Professors Emeritus
H.B.S. Cooke, MSc, DSc (Witwatersrand)
C.G.I. Friedlaender, PhD (Zurich)

Professors
D.B. Clarke, BSc, MA (Tor.), PhD (Edin.)
J.M. Hall, BSc (Wales), PhD (Lond.), DIC (Lond.)
P.T. Robinson, BSc (Mich.), PhD (Calif.)
M.H. Salisbury, BSc (MIT), MSc, PhD (Wash.), (Research)
P.E. Schenk, BSc (W.Ont.), MSc, PhD (Wisc.)

Associate Professors
R.A. Jamieson, BSc (Dal.), PhD (MUN)
F. Medioli, PhD (Parma)
G.K. Muecke, BSc, MSc (Alta.), DPhil (Oxon.)
P.H. Reynolds, BSc (Tor.), PhD (UBC) (jointly with Physics)
P.J.C. Ryall, BSc (Dal), MSc (Alberta), PhD (Dal)
M. Zentilli, BSc (Chile), PhD (Queen's)

Assistant Professors
R. Boyd, BSc, PhD (Sydney)
M.R. Gibling, BA (Oxon.), PhD (Ottawa)

Assistant Professor (NSERC Research Fellow)
D.B. Scott, BSc (Wash.), MSc (Wash. St.), PhD (Dal)

Senior Instructor
P. Wallace, BSc, MSc (McMaster)

Research Associate
C. Beaumont (Major appointment in Oceanography Department)

Honorary Research Associates
P.S. Giles, BSc, MSc (Acad.), PhD (Western Ont.), Nova Scotia Department of Mines
C.E. Keen, BSc, MSc (Dal), PhD (Cantab.), Atlantic Geoscience Centre, Energy, Mines & Resources
C.T. Schafer, BSc, MS, PhD (NY), Atlantic Geoscience Centre, Energy, Mines & Resources

Honorary Adjunct Professors
J.S. Bell, BA (Oxon.), PhD (Princeton), AGC, BIO
F.M. Gradstein, BA, MSc, PhD (Utrecht U.), Atlantic Geoscience Centre, BIO
P.A. Hacquebard, BSc, MSc (Leiden), PhD (Groningen), LLD (Dal)
L.F. Jansa, BSc, MSc (Masaryk), PhD (Charles), Atlantic Geoscience Centre, Energy, Mines & Resources
D.J.W. Piper, BA Hons. (St. Catharine's Coll., Cantab.), MA (Cantebury), PhD (Darwin Coll., Cantab.), Atlantic Geoscience Centre, BIO

Students with good degrees in any of the sciences or mathematics who wish to study some aspect of the earth are welcome. Graduate work leading to the degrees of MSc and PhD is possible in a number of different fields. These include for example: marine geology and geophysics, Appalachian geology, isotope geology, economic geology, petrology, geochemistry and mineralogy, geophysics, sedimentology, micropaleontology and coastal sedimentation.

Interdisciplinary studies are encouraged, and there is active cooperation among the science departments (including Oceanography) at Dalhousie University. Students are urged to take full advantage of the opportunities this affords. Research is often done in cooperation with government laboratories such as the Nova Scotia Department of Mines and Energy, Nova Scotia Research Foundation and the Atlantic Geosciences Centre at the Bedford Institute of Oceanography and members of these laboratories frequently serve on supervisory committees. The complex of departments and laboratories in Halifax and Dartmouth concerned with various aspects of the earth make graduate study in earth sciences very attractive.

Admission Requirements

Candidates must satisfy general requirements for admission to the Faculty of Graduate Studies.

MSc Degree Program

The minimum time for completion of the MSc degree is 12 months of full-time study (see Faculty Regulation 2.6). Experience has shown that most students take about 30 months to complete their work. Financial support is available for no more than 24 months.

Part-time study is also possible. Students must complete course requirements within 4 years, and all degree requirements within 6 years of registration for the first time. Conditions for admission to this program are the same as those for full-time students. Financial support is not normally available for part-time study.

The equivalent of five graduate classes are required, of which the thesis normally counts as three.

Graduate students are required to participate in the presentation of papers in the Geology seminar.

Research and preparation and oral defence of a thesis are required.

PhD Degree Program

The minimum time required to complete this program is two years from an MSc; normally three years are required (see Section 2.6).

For coursework required, see Section 2.10.2. The preliminary examination (see Section 2.11) is normally an oral examination in a seminar format.

Students must demonstrate ability in one language other than English. Participation in the Geology seminar is required.

Research and preparation and oral defence of a thesis are required.

Classes

The following classes are designed primarily for undergraduates in their final year; this may be taken by graduate students for general interest, because the material is needed to help in their research, or because the student's background may be inadequate. Classes marked * or † are offered routinely only in alternate years (†1985-86, *1986-87) but may be taught as graduate-only classes in any year if numbers warrant.

At the time of printing, additional course offerings were being considered. Please consult department for courses offered.

5150R Economic Geology: M. Zentilli.

5270A Applied Geophysics: P.J.C. Ryall.

*5280B Marine Geophysics: staff.

†5290B Solid Earth Geophysics: C. Beaumont.

5350B Tectonics: R.A. Jamieson, J.M. Hall.

5380A Advanced Geochemistry: G.K. Muecke.

*5390B Advanced Igneous Petrology: D.B. Clarke, R.A. Jamieson, G.K. Muecke.

†5400B Advanced Metamorphic Petrology: R.A. Jamieson.

The following classes are designed specifically for graduate students.

6100C Seminar in Sedimentology and Stratigraphy

6110C Research Topics in Micropalaeontology

6120A/6220B Seminar in Mineralogy, Petrology and Geochemistry

6130C Seminar in Geophysics

6140A/B Advanced Topics in Geophysics

6150 Metallogeny in Mineral Exploration

6250C Directed Studies

9000 MSc Thesis

9530 PhD Thesis

The following two full credit courses are required for all graduate students intending to specialize in sedimentology and micropaleontology:

6160R Research Topics in Soft Rock Geology I

6170R Research Topics in Soft Rock Geology II

German

(Tel. 424-2161)

Chairperson of Department
F.W. Gaede

Professors

F.W. Gaede, PhD (Freib.)
P. Michelsen, PhD (Gott.)

Associate Professors

H.G. Schwarz, MA (Munich), PhD (McG)
D.H. Steffen, PhD (Gott.)

Assistant Professor

E. Spence, MA, PhD (UBC)

Graduate classes leading to the degree of MA are offered in the history of German literature and thought. Research in the Department is concerned principally with the Baroque Age, the literary and philosophical tradition of German Idealism, and the culture of the twentieth century.

Graduate students may concentrate their work in any of the periods or in any particular aspect of the history of German literature and thought.

Admission Requirements

Applicants who do not meet the standards of an Honours degree may be required to take additional classes.

MA Degree Program

Candidates should be prepared to spend two academic years towards completion of their classes and thesis.

Candidates are expected to have a reading knowledge of a third modern or ancient language.

A thesis is required.

Classes

550 Literature and Thought from Reformation to Enlightenment

552 Goethe and the Enlightenment

553 Hegel's Aesthetics and the Ancients

554 Kant and the History of German Idealism

555 Hegel: Phenomenology of Spirit

557 Goethe and Romanticism

558 Goethe's Faust

559 Studies in German Idealism

560 Heidegger and German Idealism

561 Literature of the 19th Century

562 Modern German Literature

563 Aesthetic Theory

564 Ancient and Modern Dialectics

566 History and Theory of the German Novel

567 Hegel's Philosophy of Nature

History

(Tel. 424-2011)

Chairperson of Department
N.G.O. Pereira

Professors

P. Burroughs, BA, PhD (Lond.), FR Hist S
M.S. Cross, BA, MA, PhD (Tor.)
J. Fingard, BA (Dal), MPhil, PhD (Lond.)
J.E. Flint, MA (Cantab.), PhD (Lond.), FR Hist S
P. Fraser, BA (Cantab.), PhD (Lond.), FR Hist S
H.S. Granter, BA (Dal), MA (Harv.)
R.M. Haines, MA, M.Litt. (Durh.), DPhil (Oxon.), FR Hist S, FSA
N.G.O. Pereira, BA (Williams), MA, PhD (U.C. Berkeley)
P.B. Waite, MA (UBC), PhD (Tor.), FRSC
J.B. Webster, MA (UBC), PhD (Lond.)

Associate Professors

J.E. Crowley, AB (Princ.), MA (Mich.), PhD (Johns Hopkins)
J.F. Godfrey, BA (Tor.), B.Phil., DPhil (Oxon.)
L.D. Stokes, BA (Tor.), MA, PhD (Johns Hopkins)
D. Sutherland, BA (Mt. A.), MA (Dal), PhD (Tor.)
G.D. Taylor, BA, PhD (Penn.)
M. Turner, BA, MA (Manc.), PhD (Lond.)

Assistant Professors

R. Bleasdale, BA, MA, PhD (Western Univ.)
J.T. O'Brien, Jr., BA (Wisconsin), MA, PhD (Rochester), *Graduate Studies Coordinator*
J.L. Parpart, BA (Brown), MA, PhD (Boston)
D. Wootton, MA (Cantab.)

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

For minimum time required to complete this program, see Section 2.6.

Candidates in the one year program will offer two fields of study, one of which is the thesis field. Normally, the fields of study will be prepared by reading classes. It is likely that under a proposed alteration of the program students will also participate in a weekly graduate seminar devoted to the study of historiography and to thesis preparation.

Written examinations must be passed in both fields of study, usually in January. There will also be an oral examination on the subject of the thesis. Candidates writing theses in Canadian history must show a competent reading knowledge of French, others a reading knowledge of any language required for the successful completion of their research. A thesis, which does not exceed 50,000 words in length, is required. Fields and theses can be chosen from any of the fields for graduate study listed below.

PhD Degree Program

For minimum time required to complete this program, see Section 2.6.

Existing requirements include two fields of study, normally prepared in reading classes, oral examinations in both fields, and a thesis. Proposed revisions of the requirements, which might be in place beginning in 1985-1986, include three fields, written as well as oral examinations of field work, and a thesis. In either case, students must pass the preliminary examinations before proceeding on to thesis work. Students must demonstrate an adequate reading knowledge of any language required for the successful completion of their research. All students whose thesis field is in Canadian History must offer French.

A thesis is required which shall not exceed 100,000 words in length, excluding footnote references which indicate sources and excluding 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.

To qualify for the award of the PhD degree, the thesis must make a substantial original contribution to historical study either 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. Mediaeval History

Fields are available in English and mediaeval 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).

School of Human Communication Disorders

(Tel. 424-7052)

Acting Director of the School
G.T. Mencher

Full-time Faculty

Associate Professors

J. Jacobson, BA, MA, MSc, PhD (U. Utah)

Assistant Professors

E. Allard, MA (West Mich. U.)

R. Seewald, BS, MA, PhD (U. Conn.)

C. Sloan, BS, MA, PhD (U. Minn.)

S. Stager, BSc, MS (Purdue U.)

Part-time Faculty

Professor

G.T. Mencher, BA, MA, PhD (U. Mich.), FASHA

Clinical Instructors

L. Campbell, MSc

A. Godden, MSc Appl.

R. Morehouse, MSc

G. Whitehead, MA

Honorary Faculty

Associate Professors

T.J. Murray, MD, FRCP(C)

G.M. Novotny, MD, FRCS(C), FACS

Lecturers

M.N. Wali, MD

Practicum Supervisors

S. Barrett, MSc

S. Clarke, MS

M.A. Colgan, MSc

S.A. Delva, MSc

D. Lyon, MA

C. Dobbelsteyn, MSc

H. MacLean, MSc

S. Maxwell, MA

M. Merchant, MSc

D. Merritt, MA

E. Pass, MA

V. Roda, MSc

C. Santilli, MSc

S. Stuttard, MSc

C. Tompkins, MSc

N. Wood, MSc

L. Wozniak, MA

The School of Human Communication Disorders provides a 2-year program of studies and clinical experiences leading to a MSc degree in either Speech Pathology or Audiology. The School invites applications from students possessing a baccalaureate degree in Psychology, Educational Psychology, Linguistics, Special Education, Natural Science, Nursing, Health Sciences and other behavioural or health related disciplines. Applications must indicate the student's preference for either Audiology or Speech Pathology.

Admission Requirements

All applicants must possess a minimum of a baccalaureate degree from a recognized institution of higher education. This program is designed for students with either minimal or no previous academic experience in the area of speech pathology or audiology. Students whose undergraduate degree is in either speech pathology or audiology may be considered for entrance into the program at a more advanced level under *exceptional* circumstances only.

Preference will be shown to students whose academic background includes at least one course in each of the following five categories:

1. **Research Methods**, eg. Statistics, Research Design.
2. **Physical and Biological Sciences**, eg. Anatomy, Physiology, Physiological Psychology, Human Biology, Neurophysiology, Physics, Acoustics.
3. **Linguistics**, eg. Language Development, Phonetics, Psycholinguistics, Neurolinguistics, Sociolinguistics.
4. **Psychology**, eg. Developmental Psychology, Abnormal Psychology, Learning Theory, Motivation.
5. **Perception and Psychophysics**, eg. Sensation, Perception, Speech Perception, Psychoacoustics.

Undergraduate grade requirements should exceed the equivalent of a (B) in the student's major and be at least the (B) level overall. Two letters of recommendation, from Professors in the student's undergraduate major, will be required as well as a statement from the applicant indicating personal reasons for pursuing graduate work in Speech Pathology or Audiology.

MSc Degree Program

This degree program is a full-time two year course with summer practicum experiences at the end of the first and second years of study. Currently the School does not offer any part-time studies.

Students will be required to attain a minimum of 12 credits (10 academic, 1 final project and 1 clinical practicum) over a two year period. It should be noted that the individual special needs of students, especially with regard to practicum experiences, final project requirements, and possible inadequate baccalaureate course work, might dictate credit requirements in excess of twelve.

Extensive supervised clinical practice is required throughout the two year program. Much of this requirement is met by attending a practicum held during the summer months.

A final project is required of all students in order to graduate from the program. In consort with a Faculty advisor, the student designs, executes, and reports a research project. Depending upon the nature

and extent of the project, students may be required to also take additional course work. Successful completion of this requirement results in the equivalent of 1 academic credit.

Core Curriculum

While students may pursue a course of study that leads to specialization in either Speech pathology or Audiology, during the first semester of the program they will be required to take classes that contain information that is basic to both professions. These classes will be described under "core curriculum" in the class listings that follow.

Classes

Core Curriculum

HC 5110A Anatomy and Physiology of the Communication System

HC 5120A Introduction to Audiology

HC 5130A Introduction to Speech Pathology

HC 5140B Aural Rehabilitation I

HC 5150A Normal Speech and Language Development

HC 5060R Practicum: open to independent completion of study.

HC 6310B Hearing and Speech Science

HC 6600B Seminars in Human Communication Disorders

HC 7060R Practicum: open to independent completion of study.

Speech Pathology Curriculum (above and beyond core)

HC 5210A Tests and Measurements: Communication Disorders.

HC 5250B Management Strategies in Speech Pathology

HC 5270B Management Strategies in Language Pathology

HC 6350B Neurogenic Disorders I

HC 6370B Fluency Disorders

HC 6390A Voice Disorders

HC 5260B Hearing Disorders

HC 6410B Cleft Palate and Cranio-Facial Anomalies

HC 6450B Neurogenic Disorders II

HC 6470B Interdisciplinary Seminar

HC 7000R Final Project

Audiology Curriculum (above and beyond core)

HC 5220B Clinical Audiology I

HC 5240A Aural Rehabilitation II

HC 5260B Hearing Disorders

HC 5280B Strategies in Clinical Audiologic Investigation

HC 6320A Paediatric Audiology

HC 6340B Aural Rehabilitation III

HC 6360B Hearing Aids

HC 6380B Advanced Principles of Clinical Investigation in Audiology

HC 6420A Clinical Audiology II

HC 6440B Noise in Industry and the Community

HC 6470B Interdisciplinary Seminar

HC 7000R Final Project

Additional Classes Available

HC 6500 Tutorial Readings

HC 6700 Research

Law

(Tel. 424-3495)

Dean of Law

William H. Charles, BA (Sir Geo. Wms.), LLB (Dal), LLM (Harvard), LLM (Mich.), *Richard Chapman Weldon Professor of Law*

Associate Dean

Innis M. Christie, BA, LLB (Dal), LLB (Cantab.), LLM (Yale), Professor of Law, *Sabb. Leave, 2nd term 1984-5*

Professors

Christopher S. Axworthy, BA (CNA), LLM (McG), *Leave of Absence 1984-7*

Clare Beckton, BA, LLB (Sask.), *Leave of Absence 1984-6*

Alastair Bissett-Johnson, LLB (Nottingham), LLM (Mich.)

Christine L.M. Boyle, LLB (Qu. U. Belf.), LLM (Qu.), *Sabb. Leave 1984-5*

Peter E. Darby, BA (Mt. Allison), LLB (Dal)

Arthur L. Foote, QC, BA, LLB (Dal), BCL (Oxon.), LLM (Mich.)

Edgar Gold, BA, LLB, (Dal), PhD (Wales), MCIT, FNI, MRIN, Master Mariner (FG), *Executive Director, Dalhousie Ocean Studies Program*

Edwin C. Harris, QC, BComm, LLB (Dal), LLM (Harvard), RIA, CA

Douglas M. Johnston, MA, LLB (St. Andrews), MCL (McG), LLM, JSD (Yale)

Hugh M. Kindred, LLB (Bristol), LLM (London), LLM (Illinois)

Ronald St. John Macdonald, QC, BA (StFX), LLB (Dal), LLM (London), LLM (Harvard)

H. Leslie O'Brien, QC, BComm, LLB (Dal), LLM (Chicago)

Paul Thomas, LLB (Wales), LLM (Yale)

Leon E. Trakman, BComm, LLB (Cape Town), LLM SJD (Harvard)

Christian L. Wiktor, LLM (U. of Wroclaw, Poland), MS in LS (Col.) Law Librarian

Bruce H. Wildsmith, BSc (Guelph), LLB (Dal), LLM (Harvard)
John A. Yogis, QC, BA (St. Mary's), LLB, LLM (Dal), LLM (Mich.)

Professor Emeritus

George V.V. Nicholls, QC, BA, BCL, LLD (McG)
John Willis, QC, BA (Oxon.), LLD (Ottawa, Queen's, Dal, York)

Associate Professors

Bruce Archibald, BA, MA, LLB (Dal), LLM (Col.)
Charles M. Arymowicz, BA (Queen's), LLB (Tor.), LLM (Mich.), Sabb. Leave 1984-5
Jennifer K. Bankier, BA (Tor.), LLB (Osgoode)
Brian C. Crocker, BA, LLB (Dal)
W. Brent Cotter, BComm (Sask.), LLB, LLM (Dal)
Thomas A. Cromwell, BMus, LLB (Qu.), BCL (Oxon.)
R.L. Evans, BA (Tor.), LLB (York)
A. Wayne MacKay, BA (MtA), MA (Flor.), BEd (MtA), LLB (Dal)
Stephen J. Mills, LLB (Hons.) (Auckland), LLM (U. of Pa.), Sabb. Leave 1984-5
Ian Townsend-Gault, LLB (Dundee)
Faye L. Woodman, BA (Dal), LLB (Queen's)

Assistant Professors

Richard W. Bauman, BA, LLB, MED (Alberta), LLM (Dal)
Vaughan Black, BA, MA (Carl.), LLB (Tor.), LLM (Calif., Berk.)
David Fraser, LLB (Laval), LLB (Dal), LLM (Yale)
Philip V. Girard, BA (Brock), LLB (McG)
H. Archibald Kaiser, BA, LLB (Dal), LLM (London)
Thomas H. Kemsley, BA, LLD (Queen's), *Assistant Director, Dalhousie Legal Aid Service*
Norman G. Letalik, MA (Kent St.), LLB, LLM (Dal)
Wade MacLauchlan, BBA (UPEI), LLB (UNB), LLM (Yale)
D.A. Rollie Thompson, BA (McG), LLB (Dal), *Ex. Dir., Dalhousie Legal Aid Service*

Post-Retirement Professors

Clayton Hutchins, QC, BA, LLB (Dal)
Arthur J. Meagher, QC, BA, LLB (Dal)
R. Graham Murray, QC, BA, LLB (Dal), LLM (Harvard)

Part-time Faculty

Claude E. Bourque, BA (StFX), MPA, LLB (Dal)
S. David Bryson, BA, LLB (Dal)
Peter MS Bryson, BA, MA (Dal), BA (Juris.) (Oxon.), LLB (Dal)
Felix Antonio Cacchione, BA (Loyola), LLB (Dal)
Alan M. Crowe, BA (Acadia), LLB (Dal)
Judge Timothy T. Daley, BA (Ottawa), BEd, MSW (StFX), LLB (Dal)
Eric B. Durnford, BA, LLB (Dal)
David S. Ehrlich, LLB (Dal)
Dana W. Giovannetti, BA (St. Mary's), LLB (Dal), LLM (Col.)
Lawrence A. Graham, BA (StFX), LLB (Dal)
Hugh Haley, BA (StFX), PhD, MBA (Alberta)
Michael J. Iosipescu, BA (Sir Geo. Wms.), BSc, MS, LLB (Dal)
The Hon. Mr. Justice M.C. Jones, QC, LLB (Dal)
Welsford G. MacArthur, BA, LLB (Dal)
D. William MacDonald, BComm, LLB (Dal)
His Honour Judge Elmer J. MacDonald, BA (King's), LLB (Dal)
Kenneth MacInnis, BA (St. Dunstan's), LLB (Dal), LLM (London)
Robert B. MacLellan, BComm (Acadia), LLB (Dal)
Theodore (Ted) L. McDorman, BA (Tor.), LLB, LLM (Dal)
Evelyne S. Meltzer, BA, LLB (Dal), LLM (Wash.)
David A. Miller, BA (Waterloo), LLB (Dal)
Alan V. Parish, BA, LLB (Tor.), LLM (Victoria U. of Wellington, N.Z.)

Andrew Pavey, BA (UBC), LLB (Dal)
F. Van W. Penick, AB (Princeton), LLB (Dal)
Darrel I. Pink, BA (Acadia), LLB (Dal), LLM (London)
Joel E. Pink, BA (Acadia), LLB (Dal)
Lorne E. Rozovsky, QC, BA (UNB), LLB (Tor.), *Adjunct Associate Professor*
Douglas J. Sampson, BComm (St. Mary's), LLB (Dal), CA
Alan M. Sinclair, LLB (Dal), LLM (Southern Methodist), LLM, SJD (Mich.), Professor
W.W. Spicer, BA (Carleton), LLB (Dal)
David Lee VanderZwaag, BA (Calvin), MDiv (Princeton), JD (Arkansas), LLM (Dal)
Graham D. Walker, QC, BA (St. Mary's), LLB (Dal), MCL (Southern Methodist)
R. James Williams, BSc (Alberta), MSW (Mar. Sch. Soc. Work), LLB (Dal)

Special Lecturers

The Hon. Mr. Justice A.G. Cooper, QC, BComm (Dal), BCL (Oxon.)
The Hon. Mr. Justice G.S. Cowan, QC, LLB (Dal), BA, (Juris.), BCL, MA (Oxon.)
W.J. MacInnes, QC, LLB (Dal)
The Hon. Ian M. MacKeigan, QC, MA, LLB (Dal), MA (Tor.), *Chief Justice of Nova Scotia*
His Honour Peter J. O'Hearn, BA (St. Mary's), LLB (Dal)

Master of Laws (LLM)

A graduate program in law leading to the Master of Laws degree is offered to well-qualified candidates by the Faculty of Law of the University. The program is primarily intended for prospective law teachers and professional specialists. The program may consist of either a combination of course work, seminars and a thesis, or a combination of course work and seminars involving substantial written papers, in either case taken on a full-time basis over one full calendar year, or on a part-time basis over two full calendar years. Applicants who plan to take the degree on the basis of course work, seminars and a thesis are required to submit outlines of their proposed thesis topic at the time of the application. Thesis topics may concentrate on any area of law in which faculty supervisors and library resources will support substantial and useful work. In recent years, thesis supervision has been provided in the following fields, among others: international law, administrative law, labour law, commercial law, tax law, tort law, criminal law and criminology, domestic relations law, law of the sea, maritime law, and environmental law. A special interest has been developed in marine and environmental law which has been designated as a field of special emphasis in the Faculty of Law. The Sir James Dunn Law Library collection for the Marine and Environmental Law Program is now one of the best in North America.

Admission Requirements

Applicants for admission to the LLM program should hold a first degree in law equivalent to the Dalhousie LLB, passed with at least a "B" average (or Upper Second Class Honours). The ability to conduct independent research and to work easily in the English language is a prerequisite for admission. Some candidates may be required to pass the TOEFL (Test of English as a Foreign Language) to the satisfaction of the Graduate Studies Committee on the Faculty of Law prior to admission.

Residency Requirements

The degree may be taken on the basis of either one calendar year (September 1 to August 31) of full-time residence at Dalhousie, or two calendar years of part-time residence at Dalhousie, after registration for

the LL.M. 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.

If the degree is taken by course work, seminars and thesis, a candidate is required to (a) in addition to the graduate seminar, complete at least two additional one-term classes from the course and seminar offerings of the Faculty of Law, the choice of courses to be determined by the Law School's Graduate Studies Committee, and (b) present a well-researched substantial thesis of scholarly quality produced under the continuous supervision of a member or members of the law faculty. In most cases, advancement to the thesis stage is permitted only if the student has completed all course work for the degree with the required average.

Such a thesis would normally be 150-300 typescript pages in length (double-spaced). The thesis for the degree must be submitted within two years of the date when an applicant first registers for the program. Five copies of the thesis, temporarily bound, must be submitted to the supervisor on or before the dates given in the almanac. The thesis requirements and regulations of the Faculty of Graduate Studies must be met. A thesis may be graded as either "Approved with Distinction," "Approved," or "Failed." In order to be "Approved," a thesis must normally be approved by (i) the thesis supervisor, (ii) the Chair of the Graduate Studies Committee of the Faculty of Law, (iii) the Dean of the Faculty of Law, and (iv) by one of the following: (a) an external reader from another university, (b) an external reader from another department or faculty of Dalhousie, or (c) an additional reader within the Faculty of Law at Dalhousie. "Approval with Distinction" must, at all times, be certified in writing by the Dean of the Faculty of Law indicating that these regulations have been complied with.

If the degree is taken by course work and seminars without thesis, in addition to the graduate seminar, candidates are required to take at least an additional five one-term courses from the advanced course work and seminar offerings of the Law Faculty considered to be suitable as graduate courses and seminars by the Law Graduate Studies Committee. Of those five courses, at least three must be designated as "major paper courses" by the Faculty of Law, or be approved by the Graduate Studies Committee as having a substantial written component. A "major paper" or "substantial written component" would normally be independently supervised by a faculty member, and would usually consist of a well-researched work of 15,000 — 20,000 words in length, based on a seminar/class presentation.

At the discretion of the Graduate Studies Committee of the Faculty of Law, a candidate may be required to submit to an oral examination by the Committee or its nominees in the field of the thesis or that of any written paper presented by the candidate. The Graduate Studies

Committee of the Faculty of Law may recommend the substitution of not more than two seminars or graduate level classes in a discipline other than law, which may be highly relevant to the candidate's thesis topic or area of specialization, provided that any such substituted course or seminar has, in the opinion of the Committee and the Dean of Graduate Studies, equivalence to the law classes being substituted.

Before deciding on the course work and seminars, or course work, seminars and thesis option, candidates who are contemplating future doctoral studies should note that some doctoral programs may require the completion of a Master of Laws degree which includes a thesis.

General

The Graduate Studies Committee of the Faculty of Law may at any time require any candidate for the degree to show cause, in such manner as it may determine, why such candidate should be permitted to continue his or her candidacy.

It should be noted that candidates taking the degree on a part-time basis are not eligible for graduate scholarships.

A student is required to comply with the directions of the supervisor and the decision of the Graduate Studies Committee of the Faculty of Law, as well as the rules and regulations of the Faculty of Graduate Studies.

Combined LLB and MBA Program

See under "Business Administration" (page 37).

Doctor in the Science of Law Degree (JSD)

An advanced graduate program in law leading to the JSD (Juris Scientiae Doctor) degree is offered to a very limited number of highly qualified candidates by the Faculty of Law of the University. Applicants who meet the admission requirements are invited to submit a detailed outline of their proposed thesis and a detailed description of their research plans with their application forms. Such topics will have to be limited to those areas of law for which faculty and library resources will support original and useful work. It is expected that such resources will normally be available in four subject areas:

- (i) Marine Law
- (ii) Environmental Law

These areas of the curriculum have been designated as a priority development by the Faculty of Law since 1974. As a result, considerable faculty expertise, library holdings, research projects and course offerings in these areas has been created. Consequently, the Faculty's Marine and Environmental Law Program has achieved international prominence.

- (iii) International Law
- (iv) Comparative Law

Although not formally designated, these areas of specialization have grown with additional seminars in comparative criminal law and comparative marine law and policy. In addition, the Faculty also offers a course in Quebec law, and participates as the common law component of a joint summer program in Canadian comparative law sponsored by the Federal Department of Justice. Other areas of comparative legal studies are being developed. A number of courses in international law are offered by faculty members of international repute.

Admission Requirements

Applicants for admission to the JSD program must have demonstrated superior academic ability during their previous legal education. Normally it will be necessary to have (i) attained at least the equivalent of a Dalhousie A- average grade at the LLB level and (ii) completed successfully a Master's degree in law. Preference will be given to applicants with established credentials in published scholarship of a professional calibre. The ability to conduct independent research and work easily in the English language is a prerequisite for admission. Foreign candidates are required to pass the TOEFL (Test of English as a Foreign Language) to the satisfaction of the Graduate Studies Committee of the Faculty of Law prior to admission.

Residency Requirements

Applicants must be prepared to spend at least one full calendar year in continuous residence at Dalhousie after registration for the JSD program. The Graduate Studies Committee of the Faculty of Law reserves the right in certain cases to require the completion of a second year of residency.

Course Requirements

Candidates for the JSD degree may be required by the Graduate Studies Committee of the Faculty of Law, on the recommendation of their thesis committee, to carry out advanced course work in the area of their thesis, or in a cognate area of a more general field of law, or in a discipline other than law, which is deemed to be highly relevant to their thesis topic. When undertaking such course work, JSD candidates must obtain an average standing of at least B+ in all classes designated as "required by the thesis committee," with no grade falling below B. A student who fails to meet these requirements is automatically dropped from the program, but may apply for readmission immediately.

Preliminary Examination Requirements

Each candidate will also be required to pass a preliminary examination not less than 1 year before submitting the thesis. The preliminary examination may be oral, written, or both, at the discretion of the thesis committee, and will cover the subjects relevant to the general area of the candidate's research. Failure to pass this examination may result in dismissal. However, the student may be permitted to repeat the examination within the subsequent 12 (twelve) months.

Special Skill Examination Requirements

A candidate may, at the discretion of the thesis committee, be required to pass a special examination designed to demonstrate the examinee's proficiency in a foreign language, statistical method, computer analysis, or other skill deemed to be important for successful completion of the candidate's thesis in the chosen area.

Thesis Requirements

The primary requirement for the JSD degree is the completion of a substantial thesis which should not only display original scholarship of high standard, but also represent a significant and professional contribution to the literature of the chosen subject. In applying for admission, an applicant is required to satisfy the Graduate Studies Committee of the Faculty of Law that the suggested topic is suitable for development as a doctoral thesis. Normally, a JSD thesis should be between 350 and 500 typescript pages in length (double-spaced). After

an applicant has been accepted, a thesis committee consisting of a supervisor and two advisors will be appointed by the Graduate Studies Committee of the Faculty of Law. All candidates are required to comply with the decisions of their thesis committees. In normal circumstances, the completed JSD thesis must be submitted to the Graduate Studies Committee of the Faculty of Law within five years of the date of original registration in the program. Submission of the thesis must follow the rules and regulations laid down by the Faculty of Graduate Studies.

Thesis Defence Requirements

Each JSD candidate is required to defend the completed thesis in an oral examination. This defence shall be conducted in accordance with the Faculty of Graduate Studies Regulations for Oral Examination of a Doctoral Candidate.

Teaching Activities

The Graduate Studies Committee of the Faculty of Law may give permission to a JSD candidate to engage in teaching activities during the period of residency, if such activities are deemed to fall within the field of the candidate's thesis topic. In no circumstances shall any JSD candidate be permitted to spend more than six hours per week in teaching activities and related preparations.

Library Service

(Tel. 424-3656)

Director of School
N. Horrocks

Professors

J.R.T. Ettlinger, MA (Oxon.), BLS (McG)
N. Horrocks, BA (W.Aust.), MLS, PhD (Pitt.), FLA, ALAA
L.G. Vagianos, BA (Hiram), MA (Suffolk), MSLS (Western Reserve), LLD (P.E.I.)

Associate Professors

L.J. Amey, BSc, BEd (Acad.), MEd (UNB), MS (Col.), PhD (Tor.)
M. Dykstra, BA (Calvin), MLS (Dal)
B. Raymond, MA, MLS (Berkeley), MA (Man.), PhD (Chic.)

Assistant Professors

E. Rasmussen, BSc (UBC), MSc (McM), MLS (W.Ont.)
E. Frick, BA (Tor.), MSLS (Syracuse)

Lecturers

C. Armour, BSc (MtA), MSc (Dal), PhD (Lond.)
D.L. Burt, BPE, MEd (Alta.), EdD (Indiana)
W.R. Katz, BA (Skidmore), MA, PhD (Dal)
A. Manning, BSc (Acadia), AMLS (Michigan)
K. Moggeridge, BA (McM), MA (Essex)

Associated Instructional Staff

R. MacG. Dawson, MA (Tor.), BLitt (Oxon.), Associate Professor, English Department

J. Dunn, B Math (Waterloo), MLS (Dal)

A.W. Harrison, BA (Northwestern), MS (Ill.), MST (Atlantic School of Theology)

W. McCurdy, B Comm (Dal)

Administrative Assistant and Graduate Coordinator

J. Brownlow, BA (St. Mary-of-the-Woods), MLS (Tor.)

Students seeking further information or help in planning courses of study in the School of Library Service should address themselves to:

J. Brownlow

Administrative Assistant, School of Library Service

Room 3621 Killam Library

Dalhousie University, Halifax, N.S. B3H 4H8

Telephone 424-3656

The Dalhousie School of Library Service is guided by a concept of librarianship as an evolutionary profession that must stimulate, interpret and respond to the changing patterns of human communication. The School has acknowledged this professional commitment by developing a program that integrates its introductory and continuing education programs, and by its policy of insisting upon work experience during the period of study. The objective is the preparation of librarians for service in every kind of information centre.

The student, therefore, is introduced to the historical development and significance of librarianship, to the underlying principles of the profession, and to the techniques of information organization. Each student is challenged to explore and question through a curriculum which attempts to balance professional studies with supervised practical experience and advanced academic study or individual research with faculty and colleagues.

The School's program is accredited by the American Library Association, the agency recognized for this purpose by the Canadian Library Association. Students interested in programs for certification as health sciences librarians or teacher-librarians should consult the *Information for Prospective Students* handbook.

The School's program has been built around three considerations:

1. Acknowledgement of the underlying principles and historical development of the profession.
2. Appreciation of the qualitative changes imposed on the profession by the proliferation of information resources.
3. Awareness of the technological developments already changing the character of the profession.

Admission Requirements

Candidates must hold a Bachelor's Degree with at least a second class standing from a university recognized by the Senate of Dalhousie University.

Applications from candidates within North America must be *complete* before August 01. Applications and documentation from outside North America must be *complete* before May 31. All applicants are urged to submit initial applications early in the year. After April 30, successful applicants will be placed on a waiting list in case of withdrawals as places are normally allotted by that date. Students are admitted only in September. Students should have had the equivalent of two years of university study in a major language other than English or be prepared to demonstrate a reading knowledge of such a language before

graduation from the School's program. Candidates whose native language is other than English must demonstrate a working as well as reading knowledge of English prior to Admission. A TOEFL score of 550 or the equivalent is the minimum accepted level.

The School's booklet, *Information for Prospective Students*, which describes the program in detail, is distributed to all applicants by the Registrar's Office. Write for a copy if one is not received with the application form.

MLS Degree Program

The degree of Master of Library Service is awarded upon satisfactory completion of:

1. A minimum of sixteen credit half-classes.
2. Three non-credit half-classes in Introduction to Computers, Audio-Visual Material Handling, and Introduction to Librarianship.
3. Work experience of 100 hours in a selected library under the supervision of a qualified librarian. This experience is designed to provide the student with exposure to everyday library routines and problems as well as the opportunity to test and evaluate class theory, to contribute by actual participation, and to discover and explore areas of particular interest for course specialization and future employment. Students may also elect to meet this requirement by such employment prior to graduation. Further details are available in *Information for Prospective Students*.

In addition to the Core Classes in the first term, students are required to:

1. attend the scheduled Friday lecture series given by visiting experts in library, information and publishing fields;
2. participate in the scheduled trips to libraries and other relevant institutions within or near the metropolitan area of Halifax/Dartmouth.

Term Timetables

Certain classes are scheduled in the evening to enable working librarians to attend. Certain workshops will involve evenings and Saturdays.

The School operates on a 4-term system, which may be varied as follows:

Two-Year Program: Full-time attendance during the Fall and Winter terms of two years.

Part-Time Program: The degree is to be completed within six years; full-time attendance during two 15 week terms is required by the School during this period, accounting for a minimum of 8 half-classes for credit. One of the two required terms of full-time residence must be the first term of entry into the School, at which time the Core Classes are taken.

Special Program Extending Over One Academic Year or One Calendar Year Where Indicated: Applicants will be considered for a special program, if they meet the requirement of the Faculty of Graduate Studies by possessing "an honours undergraduate degree in the same field as their graduate program," i.e. BLS (Honours) or, in the opinion of Faculty, an equivalent qualification.

During each academic year the School of Library Service schedules field trips for the purpose of visiting various types of libraries. Some visits will be made to libraries in the Halifax-Dartmouth area. In addition, the School of Library Service plans to schedule a field trip to a city of major importance with regard to library activity. Students are urged to take this

field trip. Approximately \$500-\$600.00 will be required to cover expenses involved in the field trip. Consult *Information for Prospective Students*.

Classes

In the following list the Core classes are number 501-504. These and classes numbered in the 500 and 050 series are required of all students. 600 and 060 classes are electives. All classes with the '0' prefix are non-credit; 700 classes are experimental or occasional classes. The curriculum has been organized with sufficient flexibility to allow students to pursue an individual research project, or to develop a subject specialty through reading classes for further academic work.

If a student chooses as an elective a class offered by a department other than the Library School approval must be obtained from the head of the relevant department and the Library School.

Class descriptions are in *Information for Prospective Students*.

LS 501 Research Methods (C)

LS 502 Reference (C)

LS 503 Classification and Cataloguing (C)

LS 504 Systems Analysis (C)

LS 510 Administration

LS 520-521 Information Sources I, II: (Both sections run for one term and carry one half credit each).

LS 600 Machines and Libraries

LS 601 Computers and Information Systems

LS 602 Information Networks, Data Banks and Systems

LS 605 Comparative Librarianship

LS 610 Collections Development

LS 615 History of the Printed Book

LS 620 Technical Services: Serials, Monographs and Non-print

LS 625 Young Adults' Literature and Media Interests

LS 630 Government Documents and Legal Bibliography

LS 635 Classification and Indexing Systems

LS 637 Records Management

LS 645 Children's Literature and Media Interests

LS 650 User Services

LS 655 Bibliography

LS 660-661 Thesis: (two credits).

LS 665-668 Academic Courses

LS 670-672 Reading Courses

LS 675 Health Sciences Literature & Information Sources: (alternate years).

LS 680 Archives

LS 685 Children's Literature and the Creative Imagination: (alternate years).

LS 686 History of Children's Literature: (alternate years).

LS 690 Non-print Media in Libraries: (alternate years).

LS 713 Seminar in Classification and Indexing

LS 722 Oral History

LS 724 Bibliographic Instruction

LS 727 Organizations and Administration of School Library Media Centre Programs

LS 730 Libraries and Continuing Education

LS 050 Introduction to Librarianship

LS 051 Audio-Visual Material Handling

LS 052 Introduction to Computers

LS 060 Practical Printing

LS 063 Conservation of Library Materials: (alternate years).

LS 064 Hand-Binding

LS 067 Printing and Publishing in Atlantic Canada

School Publications

Information for Prospective Students: (annual) *Newsletter* (twice a year).

Occasional Papers Series

Y-A Hotline: (Irregular).

Mathematics, Statistics and Computing Science

(Tel. 424-2572)

Chairperson of the Department
K.A. Dunn

Professors

J. Borwein, MSc, PhD (Oxford)
M.A.H. Dempster, MSc, PhD (Carnegie Mellon)
M. Edelstein, MSc (Jerusalem), DSc (Technion-Haifa)
C.A. Field, MSc, PhD (Northwestern)
P.A. Fillmore, MSc, PhD (Minn.), FRSC
R.P. Gupta, MSc (Agra), PhD (Delhi)
P. Keast, PhD (St. Andrews)
K. Moriarty, MSc (Dal), PhD (Imp. Coll.)
R. Paré, MSc, PhD (McG)
J. Phillips, MA, PhD (Ore.)
H. Radjavi, MA, PhD (Minn.)
R. Rosen, MA (Col.), PhD (Chic.)
W.R.S. Sutherland, MSc, PhD (Brown)
S. Swaminathan, MA, MSc, PhD (Madras)
K.K. Tan, PhD (UBC)
H.J. Thiébaux, MA (Ore.), PhD (Stanford)
A.C. Thompson, PhD (Newcastle upon Tyne)
A.J. Tingley, MA, PhD (Minn.)

Associate Professors

A. Buckley, MSc (Alta.), PhD (UBC)
J.C. Clements, MA (UBC), PhD (Tor.)
K.A. Dunn, MSc, PhD (Tor.)
B.W. Fawcett, MSc, PhD (McM)
G. Gabor, PhD (Eotvos)
J.B. Garner, MSc, PhD (Nott.)
L. Grunenfelder, PhD (ETH Zurich)
C.S. Hartzman, MS (Purdue), PhD (Colo.)
R. Rosenberg, MSc (Tor.), PhD (Mich.)
P.N. Stewart, MA (Berk.), PhD (UBC)
R.J. Wood, MSc (McM), PhD (Dal)

Assistant Professors

J. Barzilai, MSc, DSc (Technion-Haifa)
P. Borwein, MSc, PhD (UBC)
A. Coley, PhD (Lond.)
A. Garg, PhD (Tor.)
J. Gribble, PhD (St. Andrews)
D. Hamilton, MA, PhD (Queen's)
R. D. Holmes, MS (Princeton), PhD (Dal)
K. Johnson, MA, PhD (Brandeis)

J. Mulder, MSc, PhD (UBC)
R. Nowakowski, MSc, PhD (Calgary)
C.C.A. Sastri, MSc (Andhra), PhD (N.Y.)
A. Sedgwick, PhD (Tor.)
D.P. Wiens, MSc, PhD (Calgary)

Postdoctoral Fellows

K. Dilcher, MSc, PhD (Queen's)
P. O'Neill, MSc, PhD (Waterloo)
B. Solel, MSc (Tel-Aviv), PhD (U. of Penn.)
G.A. Willis, MSc (Adelaide), PhD (Newcastle)

The department offers programs leading to the degrees of MA, MSc and PhD in the following areas:

algebra, approximation theory, differential equations, functional analysis, numerical analysis, operations research, operator theory, probability and statistics, relativity theory, stochastic modeling, topology

The Department also offers graduate programs in the areas of Biomathematics and Health Evaluation Studies in cooperation with other departments.

Admission Requirements

Candidates must satisfy the general requirements for admission to the Faculty of Graduate Studies.

Candidates will normally be expected to hold a degree recognized by Dalhousie University as the equivalent of a Bachelor's degree with Honours in one of its own faculties.

GRE Aptitude and Advanced Mathematics scores are required of all applicants for graduate studies whose undergraduate work has been completed outside of Canada, and TOEFL scores are required for applicants whose native language is not English. Valid score reports must be received directly from the Educational Testing Service. To ensure consideration for scholarship funds, application should be made early and in any case, before March 31.

Graduate students receiving financial support from the University may be required to perform some department duties.

Masters Degree Program Requirements

1. At least three full-credit classes at the graduate level to be chosen in consultation with a department adviser. In addition, students whose preparation is deficient will be required to complete appropriate classes which will be designated by the adviser.
2. Attendance and participation in seminars.
3. A satisfactory thesis.
4. Students are required to give an oral presentation of their thesis and at that time to answer questions about the thesis. This presentation will be made after the thesis is in the hands of the student's committee and will be taken into account when the committee makes its decision.

PhD Degree Program

For minimum time required to complete this program see Section 2.6. A comprehensive examination must be taken which is in two parts. Part I should be completed shortly after entering the program. Part II should be completed within one calendar year of initial registration in the PhD program.

Candidates must demonstrate reading competence in at least one foreign language from the following list: French, German, Russian. Attendance and participation in seminars are required. Preparation and defence of a research thesis are required.

Classes

A selection of the following graduate classes, most of which are ½ classes, will be offered subject to demand.

- 501 Abstract Measure Spaces
- 502 Time Series
- 503 Topics in Algebra
- 504 Homological Algebra
- 505 Lattice Theory
- 506 Multivariate Distributions
- 507 Multivariate Analysis
- 510 Topics in Advanced Probability and Statistics
- 512 Topics in Ordinary Differential Equations
- 513 Categorical Algebra
- 516 Data Analysis
- 517 Algebraic Topology
- 519 Topics in Topology and Functional Analysis
- 521 Topics in C^* - Algebra
- 522 Topics in Partial Differential Equations
- 523 Operator Theory
- 524 Topics in Banach Spaces
- 529 Advanced Topics in Operator Theory
- 530 Topics in Optimization
- 531 Convexity and Convex Programming
- 533 Topics in Graph Theory
- 535 Advanced Numerical Analysis
- 538 Approximation of Functions
- 540 Topics in General Relativity
- 553 Selected Topics in Biomathematics
- 600-699 Reading Classes for Advanced Graduate Students
- 703 Algebra Seminar
- 719 Topology and Functional Analysis Seminar
- 723 Operator Theory Seminar
- 732 Statistics and Operations Research Seminar

752 Biomathematics Seminar

767 Optimization Seminar

Microbiology

(Tel. 424-3587)

Head of Department

K.R. Rozee

Professors

K.B. Easterbrook, PhD (ANU), (Structure and Function in Microorganisms; Bacterial Spines)

J.A. Embil, MD (Havana), FRCP(C), FACTM, PhD (Dal), *Pediatrics* (Clinical Virology; Herpes, Cytomegalovirus, Slow Virus; Epidemiology)

L.S. Kind, PhD (Yale), (Immunology, Reaginic Antibody Synthesis)

S.H.S. Lee, PhD (Dal), (Virology; Interferon)

D.E. Mahony, PhD (McG), (Bacteriology; Bacteriocins and plasmids of Clostridia)

C.E. van Rooyen, DSc (Edin.), MD, ChB, FRCP, FRCP(C), FRC Path. (Lond.), (Virology)

K.R. Rozee, PhD (Dal), Dip. Bact. (Tor.), (Viral Pathogenesis; Epidemiology)

C. Stuttard, PhD (Dublin), (Microbial Genetics; Streptomyces)

Associate Professors

T. Ghose, PhD (Calc.), Pathology (Immunopathology; Cancer Immunotherapy)

E.S. McFarlane, PhD (Dal), (Herpesviruses HSV and CMV; Cancer Viruses)

G.C. Johnston, PhD (York), *Graduate Studies Coordinator* (Genetic Control of Cell Division)

D.B. Stoltz, PhD (McM), (Electron Microscopy; Insect Viruses; Insect Tissue Culture)

Assistant Professors

R. Rajaraman, PhD (Dal), (Cell Adhesion; Growth Regulation; Malignancy)

Lecturer

G. Faulkner, PhD (Dal), Ultrastructure

Admission Requirements

In conjunction with the general requirements for admission, candidates must have received sound basic instruction in Chemistry and Biology and four credits in Microbiology or their equivalent, with at least second class standing.

MSc Degree Program

For minimum time required to complete this program, see Section 2.6.

Normally, study at the graduate level equivalent to five credits is required. At least one credit will be taken in an allied department.

A comprehensive examination on the whole area of microbiology and immunology is required.

A research project must be completed, the result of which will be embodied in a thesis.

Part-time study is also allowed. Students must complete course requirements within 4 years and all degree requirements within 6 years of registration. Conditions for admission to this program are the same as for full-time students.

PhD Degree Program

For minimum time required to complete this program, see Section 2.6.

Class requirements as for the MSc program. Attendance and participation in seminars is required. A comprehensive knowledge of the whole area of microbiology and immunology must be demonstrated.

Research of a high calibre is required, the results of which must be embodied in a thesis which makes some significant contribution to the understanding of the subject.

5001 Microbiology Seminar: open to independent completion of study.

5002 Advanced Topics in Microbiology: seminar, G.C. Johnston.

5004R Pathobiology of Cancer: lecture 2 hours, T. Ghose.

5022A/B Microbial Ultrastructure Project: lab 5 hours, K.B. Easterbrook, D.B. Stoltz.

5024B Microscopy: Easterbrook, Stoltz, Willison, Faulkner.

5033B Advanced Microbial Genetics: lecture/seminar 3 hours, C. Stuttard and G.C. Johnston.

5025R The Mammalian Cell as a Microorganism: lecture 2 hours, lab 3 hours, R. Rajaraman.

5114B Topics in Virology: lecture 2 hours, lab 3 hours. E.S. McFarlane.

5115B Immunology: lecture 2 hours. L.S. Kind.

5117C Advanced Topics in Immunology: seminar 1 hour, L.S. Kind.

5300R Cellular Immunology: lecture 3 hours, L.S. Kind.

5500R Medical Microbiology: lecture 3 hours, K.R. Rozee.

9000 MSc Thesis

9530 PhD Thesis

Nursing

(Tel. 424-2535)

Professor and Director
P.N. Stern, RN, DNS (UCSF)

Associate Professors

M.J. Horrocks, BSN (UBC), MS, Psych. N, MS, Post Masters Diploma CMHN (UCSF)

R. MacKay, BA (McM.), MN, MA (Emory), PhD (Kentucky), RN
J.A. Ritchie, BN (UNB), MN, PhD (U. Pitts.), RN, *Coordinator of Graduate Program*

P.L. Sullivan, BScN (MSVU), MS (Boston), PhD (U. of A.), RN

Assistant Professor

F. Gregor, BN (Dal.), MN (Dal.), RN

Admission Requirements

All applicants must be licensed to practice as registered nurses in a province in Canada or in a foreign country. Applicants must have a Bachelor's degree with a minimum "B" standing. The Graduate Record Examination (Aptitude Test) must be taken and the results forwarded to the Graduate Studies Coordinator before a decision on admissibility can be made. Basic preparation for the clinical specialization study is required as is an introductory class in research and statistics. Three letters of reference are also required.

MN Program

Dalhousie University School of Nursing offers a two year program leading to a Master of Nursing degree, with specialization in a selected clinical area. A functional focus in either nursing education or administration is also offered as an elective.

The program consists of 7 credits, made up of core nursing classes (2 ½ credits), clinical classes (2 credits), statistics (½ credit), elective class(es) (1 credit), and the thesis (1 credit).

The MN Program is accepted by MPHEC as the regional program for the Maritime Provinces. Non-nursing electives may be taken at other universities (prior approval must be obtained from the School of Nursing). Some graduate nursing courses within the Program are also offered at other Maritime universities.

Part-time studies are permitted.

Required classes: N5000A, N5100A/N5120B, N5220B, N5300A/N5320B, and one of N5400R or N5500A/N5520B or N5700A/N5720B plus N9000. The elective (R or A/B) is chosen in consultation with the academic advisor.

Classes Offered

N5000A (M209) Intermediate Statistics: C.A. Field (Math Dept.) (½ credit).

N5100A/N5120B Research Methods: R. MacKay (1 credit).

N5220B Systems & Trends in Health Care Delivery: M.J. Horrocks (½ credit).

N5300A/N5320B Theoretical Bases of Nursing I & II: Faculty (1 credit).

N5400R Community Health Nursing I & II: M.J. Horrocks (2 credits), open to independent completion of study.

N5500A/N5520B Nursing of Young Families I & II: J.A. Ritchie & P.L. Sullivan (2 credits) Open to independent completion of study.

N5700A/N5720B Nursing of Adults I & II: F. Gregor (2 credits), open to independent completion of study.

N5800A/N5820B Reading Class: (1 credit).

N5900A/N5920B Reading Class: (1 credit).

N9000 Thesis .

Oceanography

(Tel. 424-3557)

Chairperson of Department

A.J. Bowen

Professors

C. Beaumont, BSc (Sussex), PhD (Dal)
 A.J. Bowen, MA (Cantab.), PhD (Calif.)
 C.M. Boyd, MA (Ind.), PhD (Calif.)
 R.O. Fournier, MSc (Wm. & Mary), PhD (URI)
 C.J.R. Garrett, BA, PhD (Cantab.), FRSC
 E.L. Mills, BSc (Carl.), MS, PhD (Yale), FLS
 G.A. Riley, MS (Wash.), PhD (Yale), DSc (URI), FRSC *Emeritus Professor*
 P.J. Wangersky, ScB (Brown), PhD (Yale)

Associate Professors

R.C. Cooke, B.S. (Randolph-Macon), PhD (Dal.)
 D.A. Huntley, BA (Cantab.), PhD (Bristol)
 R.M. Moore, BA (Oxon.), PhD (Southampton)

Assistant Professors

J.A. Koslow, BA (Harv.), BA (Wash.), PhD (Calif.)
 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 Professor (NSERC Research Fellow)

K.R. Thompson, BSc, MSc (U.Manc.), PhD (Liv.)

Research Associate

N.E. Balch, PhD (Dal), *Manager, Dalhousie Aquatron*

Honorary Research Associates

R.J. Conover, AB (Oberlin), PhD (Yale), Marine Ecology Laboratory,
 Fisheries & Environment
 J.S. Craigie, BA, MA, PhD (Qu.), Atlantic Regional Laboratory, NRC
 L.M. Dickie, BSc (Acadia), MSc (Yale), PhD (Tor.), Ocean & Aquatic
 Sciences, BIO
 F.W. Dobson, BSc, MSc (Dal), PhD (UBC), Atlantic Oceanographic
 Laboratory, Environment Canada
 R.W. Doyle, MSc (Dal), PhD (Yale), Dept. of Biology, Dal
 J.A. Elliott, BSc (U. of S.), MSc, PhD (UBC), Atlantic Oceanographic
 Laboratory, BIO
 C.E. Keen, BSc, MSc (Dal), PhD (Cantab.), Atlantic Geoscience Centre,
 Energy, Mines & Resources
 W.D. Jamieson, BSc, MSc (Dal), PhD (Cantab.), Atlantic Research
 Laboratory, NRC

S.R. Kerr, BSc (Carl.), MSc (Qu.), PhD (Dal.), Marine Ecology Laboratory,
 Fisheries & Environment

G.T. Needler, BSc, MSc (UBC), PhD (McG), Atlantic Oceanographic
 Laboratory, Environment Canada

J.A. Novitsky, BSc (Penn. St.), PhD (Ore. S.U.), Dept. of Biology, Dal

S. Pearre, BSc (Virginia), MSc, PhD (Dal)

B.D. Petrie, BSc (StFX), MSc (McG), PhD (Dal), Atlantic Oceanographic
 Laboratory, Environment Canada

M. Sinclair, BSc Hon. (Qu.), MSc (Southampton), PhD (Scripps Instit.),
 Fisheries & Oceans

P.C. Smith, BSc MS (Brown), PhD (MIT/Woods Hole Oceanography
 Instit.), Atlantic Oceanographic Laboratory, Environment Canada

F.C. Tan, BSc (Taiwan), MSc (McG), PhD (Penn. St.), Atlantic Oceano-
 graphic Laboratory, Environment Canada

Honorary Adjunct Professors

B.T. Hargrave, BSc, MSc (Dal), PhD (UBC), Marine Ecology Laboratory,
 Fisheries & Environment

D.J.W. Piper, BA, MA, PhD (Cantab), Atlantic Geoscience Centre,
 Energy, Mines & Resources

Admission Requirements

A good Honours degree, or its equivalent, is required for admission to the Oceanography Department.

Undergraduate preparation may be in any of the basic sciences — Biology, Chemistry, Physics or Geology. Degrees in Mathematics or Engineering are also acceptable if the undergraduate work includes a reasonably good background in relevant basic science.

MSc Degree Program

For minimum time required to complete this program, see Section 2.6.

Introductory classes 5110A-5140B, one or more advanced classes, ordinarily in the area of the candidate's special interest, are required.

Additional classes may be required to strengthen a student's background in basic science.

Research and a thesis are required.

PhD Degree Program

For minimum time required to complete this program, see Section 2.6.

Introductory classes 5110A-5140B and two or more advanced classes, ordinarily in the area of the candidate's special interest are required.

Candidates must demonstrate competence in their speciality and related fields in a comprehensive written examination.

Research and a thesis are required.

Classes

Classes marked * are not offered every year. Please consult the timetable on registration to determine if this class is offered.

5110B Introduction to Geological Oceanography: K.E. Loudon, L.A. Mayer.

5120A Introduction to Physical Oceanography: B. Ruddick.

5130A Introduction to Chemical Oceanography: R.C. Cooke, R.M. Moore, P.J. Wangersky.

5140B Introduction to Biological Oceanography: E.L. Mills.

5150A Introduction to Biological Oceanography: M.R. Lewis.

5160A Fisheries Oceanography: J.A. Koslow.

Oral and Maxillofacial Surgery

(Tel. 424-2280)

Head of Division
F.W. Lovely

Professors

P.E. Dresel, BSc, PhD, *Head, Department of Pharmacology*
C.E. Hope, MBChB (Edin.), FFARCS (Eng.), FRCP(C), *Head, Department of Anaesthesia*
F.W. Lovely, DDS, MSc, FRCD(C) FICD, *Head, Division of Oral and Maxillofacial Surgery, Acting Chairman, Dept. of Oral Diagnosis and Oral Surgery*

Associate Professors

B.B. Harsanyi, DDS, MS, FRCD(C), *Head, Oral Pathology*
D.S. Precious, DDS, MSc, FRCD(C), *Program Director*

Assistant Professors

A.K. Bhardwaj, BDS, DDS, FRCD(C)
A.E. Hoffman, DDS, FICD FRCD(C)
E.L. MacInnis, DDS, FRCD(C)

The four-year program in Oral and Maxillofacial Surgery 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 a DDS or DMD or its equivalent and be eligible for Licensure in the Province of Nova Scotia or a graduate of an approved Undergraduate North America Dental School and possess temporary Licensure by the Provincial Dental Board 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.

MSc Degree Program Requirements (presently under review)

1. Satisfactory completion or credit for the prescribed courses.
2. Possess satisfactory knowledge and skills in all the phases of clinical oral and maxillofacial surgery.
3. Satisfactory completion of a research study and submission of the results in the form of a thesis acceptable to the Director of the program.

*5210B Time Series Analysis: D.A. Huntley.

5221A Ocean Dynamics: K. Thompson.

5222B Estuary, Coast and Shelf Dynamics: A.J. Bowen.

*5223B Ocean Waves: D.A. Huntley.

*5230B Biology of Phytoplankton: R.O. Fournier.

*5260B Biology of Zooplankton: C.M. Boyd.

5270R Special Topics in Biological Oceanography: staff.

5290A Advanced Chemical Oceanography: P.J. Wangersky.

5290B Advanced Chemical Oceanography: R.C. Cooke.

5311A Fluid Dynamics I: D.A. Huntley.

5312B Fluid Dynamics II: C.J.R. Garrett.

*5330B Benthic Ecology: E.L. Mills.

*5331B History of Oceanography: E.L. Mills.

5340B Marine Geology: L.A. Mayer.

5350B Marine Geophysics: K.E. Loudon.

*5360B Physiology of Marine Plants: J.S. Craigie.

*5380B Marine Modelling: staff.

*5390A Experimental Design in Biological Oceanography: C.M. Boyd.

5410R Dynamic Meteorology: C.J.R. Garrett.

5440A Advanced Topics in Geophysics: staff.

*5450A Physics of the Earth: C. Beaumont.

5500R Oceanography Departmental Seminar.

In addition, each of the oceanographic subdisciplines has a regular seminar in its specialty. At the seminar, topics of specific interest are discussed and examined.

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
510	Development Oral Biology	Audit
511	Pathobiology	1 credit

Year II

600	Anaesthesia	1 credit
601	Medicine	Audit
602	Clinical Physiology	Audit
603	Oral Pathology	Audit
604	Seminar	Audit
605	Clinical Oral Surgery	1 credit

Year III

700	Oral Pathology	1 credit
701	Seminar	1 credit
702	Clinical	1 credit
703	Research	1 credit

Year IV

800	Clinical Oral Surgery	1 credit
801	Seminar	1 credit

Pathology

(Tel. 424-2091)

Head of Department

M.A. MacAulay

Professors

J.H. Cooper, MB, ChB (Glas.), FRC Path., FRCP(C)
 T. Ghose, MB, BS, PhD (Calc.), FRC Path. (U.K.)
 D.T. Janigan, BSc, MD (Dal)
 M.A. MacAulay, MD (Dal), FRCP(C)
 G. Rowden, BSc (Exeter), MSc, PhD (London), MRC Path.

Associate Professors

M.L. Givner, BSc, MSc, PhD (McG), *Graduate Studies Coordinator*
 A.A. Trillo, MD, (Nat'l. Univ. Mexico), PhD (W.Ont.)

Assistant Professors

C.L. Cousins, MSc, PhD (Dal), FACB
 K.C. Dooley, PhD (UBC)
 A.D. Fraser, BA (Houghton), PhD (Boston)
 S.J. Luner, BS (Calif. Inst. of Tech.), PhD (UCLA)

B.L. Sheridan, MB, BS (New.), MRCP. (U.K.), MRC Path., FRCP(C)
 R.F. McCurdy MPH, MSc (Minn.), PhD, (TUNS)

Lecturers

L.C. Dymond, BSc (Memorial), MSc (Dal), MD (Dal), FRCP(C)
 M.A. Moss, MB, BS (London), FRCP(C)
 E.Z.M.A. Zayed, MB, BCh (Egypt) FRCP(C)

Research for the MSc degree may be conducted in experimental pathology and/or allied fields of basic medical sciences or a branch of laboratory medical science (clinical chemistry, hematology or histopathology) for those planning a career as a laboratory scientist not requiring the MD degree. Such candidates will be required to conduct this research in an appropriate working medical laboratory and to become familiar with laboratory organization.

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

Although the course may be completed in 12 months, most students take 24 months.

General Pathology 301, one or more pathology classes and one or more classes (including lab work where appropriate) in other Departments are required. Classes in other Departments must be approved by the Faculty of Graduate Studies.

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

Depending on the course of study, demonstrating will be required in the undergraduate teaching laboratories.

Classes

Classes marked with an asterisk are normally offered in alternate years. Pathology 301, 502 and 503 will be taught in the 1985-86 academic year.

301 General Pathology: This is the class given to the first year medical class and is described in the Faculty of Medicine Calendar.

***501 Clinical Medical Biochemistry:** Sessions: Two lectures and one problem solving session weekly throughout the academic year. Dr. L.C. Dymond and Dr. C.L. Cousins.

***502 Pathobiology:** Sessions: 50 lecture-seminar sessions will be given throughout the year. Dr. D.T. Janigan.

***503 Principles of Instrumentation:** Sessions: Three one hour lectures including problem session weekly, plus assigned laboratory sessions throughout the academic year. Dr. C.L. Cousins and Dr. R.F. McCurdy.

***504 Pathobiology of Cancer:** Sessions: Two sessions weekly throughout the academic year. Dr. T. Ghose.

***505 Special Topics:** Sessions: One session weekly to review students progress as required.

Seminars — Conferences

A series of weekly seminars, journal clubs, and conferences is conducted throughout the year in various areas of pathology, including immunopathology, and laboratory medicine.

Areas of Specialization for MSc Thesis

Amyloidosis: cardiovascular pathology, connective tissue histochemistry and diagnostic histochemistry: J.H. Cooper.

Immunopathology of lung, kidney, and skin diseases. Application of immunological markers. Cancer diagnosis and treatment with antibody-linked radionuclides and cytotoxic agents: T. Ghose.

Lung injury mechanisms: D.T. Janigan.

Endocrine and gastrointestinal pathophysiology and pathology; computers 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 assays: M.L. Givner.

Atherosclerosis, cardiovascular pathology, nephropathology: A.A. Trillo.

Enzymes and isoenzymes in diagnosis and therapy; two-dimensional electrophoresis of urine proteins: C.L. Cousins.

Computerization and instrumental methods in the clinical chemistry laboratory, diagnostic enzymology, clearance of proteins in renal disease: K.C. Dooley.

Forensic toxicology, new analytical procedures for drug analysis, pharmacokinetics, drug metabolism and toxicity: A.D. Fraser.

The malignant cell surface, blood cell membranes: S.J. Luner.

Trace metals, natural radionuclides and environmental health: R.F. McCurdy.

Hemopoietic microenvironment, in vitro studies of erythropoiesis: B.L. Sheridan.

Interference in digoxin assays, hypouricemic states: L.C. Dymond.

Environmental pathology, trace metals and disease, biochemical aspects of forensic medicine, investigation of porphyrias: M.A. Moss.

Platelet antibody investigations, myelodysplastic syndromes, blood transfusion (blood bank): E.Z.M.A. Zayed.

Pharmacology

(Tel. 424-3435)

Head of Department

P.E. Dresel

Professors

P.E. Dresel, BSc (Antioch), PhD (U. Rochester)
G.R. Ferrier, BSc, PhD (Man.) *Graduate Studies Coordinator*
M.M. Vohra, BPhm, MPhm, PhD (Ban.)
T.D. White, BSc, MSc (UWO), PhD (Bristol)

Associate Professors

J.W. Downie, BSc, PhD (Man.)
J.D. Gray, BSc, MD, (Alta.), FRCP(C), *Medicine*
G.M. McKenzie, BSc (U. Windsor O.), MSc, PhD (Dal)
K.W. Renton, BSc (Sir Geo. Wms.), PhD (McG)
H.A. Robertson, BA, MSc, (UWO), PhD (Cantab.)

Assistant Professors

C.R. Dean, BSc (MtA), MSc (Dal), DPhil (Oxon.), MD (Dal) *Medicine*
M. Karmazyn, BSc (Loy.), MSc, PhD (McG)
B.L. Pope, BSc, PhD (UBC)
J. Sawynok, BSc, MSc (Melb.), PhD (Queen's)

Assistant Professor Research

M.G. Murphy, BSc, MSc, PhD (Dal)

Admission Requirements

Candidates must satisfy the general requirements for admission to the Faculty of Graduate Studies. Students registered in the Faculty of Medicine may, upon completion of the second year of studies, be admitted to a PhD program.

MSc Degree Programs

For minimum time required to complete this program, see Section 2.6. Candidates must complete satisfactorily the following classes or their equivalents: 5403 (or 5402), 5404, and a minimum of three half credit courses in the 5600 series. An ancillary course chosen from courses offered by this department or other departments in the Faculty of Graduate Studies may be required. Candidates must also satisfactorily complete short research projects in two departmental laboratories (5501, 5502). Students are expected to attend research seminars within the department. Thesis research, and preparation and oral defense of a thesis are required.

PhD Degree Program

For minimum time required to complete this program, see Section 2.6. A qualifying examination for entrance into the PhD program may be required. Candidates must complete satisfactorily the course requirements listed for the MSc degree plus two additional half credit courses in the 5600 series and one additional short research project (5503). An ancillary course chosen from courses offered by this department or other departments in the Faculty of Graduate Studies may be required. Students are expected to attend research seminars within the department. A comprehensive examination is required. Thesis research, and preparation and oral defense of a thesis are required.

Areas of Research Specialization

Faculty research interests include: cardiac electrophysiology and pharmacology, prostaglandins, interferon, tumor immunology, neurotransmitter receptor mechanisms, autonomic physiology and pharmacology, behavioral pharmacology, mechanisms of analgesia, drug metabolism, and experimental therapeutics.

Classes

The 5501-5503 classes are normally for graduate students in Pharmacology, but available to others by special arrangement.

Two classes in the 5600 series are offered each year as announced by the Department.

5401 Introduction to Pharmacology

5402 Systematic Pharmacology

5403 Systematic Pharmacology: (includes laboratory).

5404 Experimental Design and Interpretation

5501 (A or B) Introduction to Research in Pharmacology I

5502 (A or B) Introduction to Research in Pharmacology II: Same as 5501 (A or B)

5503 (A or B) Introduction to Research in Pharmacology III: Same as 5501 and 5502. Required only of students in the PhD program.

5601 (A or B) Cardiovascular Pharmacology I

5602 (A or B) Cardiovascular Pharmacology II

5603 (A or B) Neuropharmacology I

5604 (A or B) Neuropharmacology II

5605 (A or B) Drug Disposition

5606 (A or B) Cellular Pharmacology

5607 (A or B) Selected topics in Pharmacology

9000 MSc Thesis

9530 PhD Thesis

Pharmacy

(Tel. 424-2378)

Director of College
D.K. Yung

Professors

R.F. Chandler, BSc Pharm, MSc (Alta.), PhD (Syd.), *Graduate Studies Coordinator*

J.G. Duff, BSP, MSc (Sask.), PhD (Fla.)

K.M. James, BSP, MSc (Sask.), PhD (Alta.)

M. Mezei, Dipl Pharm (Bp), PhD (Oregon State)

R.S. Tonks, BPharm, PhD (Wales), FPS FI Biol., *Major appointment Dean of Health Professions*

D.K. Yung, BA, BSP, MSc (Sask.), PhD (Alta.)

Associate Professors

P.S. Farmer, BSP, MSc (Sask.), PhD (Portsmouth)

M.E. MacCara, BSc (Pharm) (Dal), PharmD (Minn.)

W.A. Parker, BSc (Pharm), PharmD (Minn.), MBA (Dal)

I.S. Sketris, BSc (Pharm) (Tor.), PharmD (Minn.)

R.M. Sparkman, BSc (Northwestern), MBA (William and Mary), PhD (Houston)

Assistant Professor

I. Abraham, BPharm, MPharm (UST Ksi.), PhD (Neb.)

Lecturers

R.A. Merrett, BSc (Pharm) (Tor.), MSc (Tor.)

B. Smith, BSc (Pharm) (Dal.), PhC

J. Taylor, BSP (Sask.)

The College of Pharmacy offers an MSc program in the areas of pharmacokinetics, biopharmaceutics, drug disposition and metabolism, medicinal chemistry, pharmacognosy, physical pharmacy and toxicology. For more detailed information on the administration of these programs applicants and students are referred to a Handbook for Graduate Studies in the College of Pharmacy which is available from the Chairman of the College's Committee on Graduate Studies.

Admission Requirements

Candidates must satisfy the general requirements for admission to the Faculty of Graduate Studies (see Section 2.2). Applicants from outside of Canada must submit the results of the Graduate Record Examination (GRE, Aptitude). Canadian applicants also are advised to submit GRE scores, and the College reserves the right to make this a precondition to consideration of the student's application for admission. A score of at least 550 on the TOEFL is required of applicants whose native language is not English (Section 2.2).

Students entering with a BSc (Pharm) Degree or its equivalent will be registered in the 1-year MSc program. Students entering with an Honours BSc Degree in a field other than pharmacy (e.g., biology or chemistry) may be required to register in the 2-year MSc program, although candidates with suitable academic backgrounds will be registered in the 1-year program. Applicants holding a Pass BSc Degree may exceptionally be eligible for admission to the 2-year MSc program. In certain circumstances, a student may be admitted to a Qualifying Year program of preliminary work in order to meet admission standards for the MSc program.

An MSc in pharmacy is normally required for entry directly into the PhD program, although students in the MSc program may apply to transfer to the PhD program subject to the conditions described in the Handbook for Graduate Students in the College of Pharmacy. Ultimate approval of a student's transfer to the PhD program must be made by the Dean of Faculty of Graduate Studies.

MSc Degree Program

For minimum times required to complete this program see Section 2.6.

Experience has shown that most candidates require an additional 6-12 months to complete the thesis requirement. A Graduate Advisory Committee chaired by the research supervisor and comprised of two other members will be appointed for each student.

Candidates must complete satisfactorily a minimum of two advanced classes, the actual program of classes required to be determined by each student's Graduate Advisory Committee. To determine courses in which a student should enrol, an oral and/or written examination may be required by the Graduate Advisory Committee prior to registration of a new student coming from outside of the College. Additionally candidates must participate in the weekly graduate seminars (Pharmacy 5000C) during each year in the program. A major part of the requirements for the MSc Degree is the preparation and oral defence of a thesis (Pharmacy 9000) describing research done by the student. The primary purpose of the MSc Degree program is to develop in the student research skills in an area of the pharmaceutical sciences at a level which will enable the student to carry out research relatively independently. The dissertation is expected to be of such scope and skillful presentation as to indicate that the candidate has acquired a command of the subject, has the demonstrated ability to contribute fresh knowledge or a fresh outlook to the subject, and has mastered the research methodology of the discipline.

Candidates are normally required to demonstrate in an undergraduate Pharmacy class for at least one year.

Financial assistance is generally available for no more than two years.

PhD Degree Program

For minimum times required to complete this program see Section 2.6.

It is expected that most candidates will require an additional 12 months to complete the thesis requirement. A Graduate Advisory Committee chaired by the research supervisor and comprised of two other members will be appointed for each student. Candidates must complete satisfactorily a minimum of two graduate classes in addition to those required for the MSc program, the actual program of classes required to be determined by each student's Graduate Advisory Committee. To determine courses a student should enrol in, an oral and/or written examination may be required by the Graduate Advisory Committee prior to registration of a new student coming from outside of the College. Additionally candidates must participate in the weekly graduate seminars (Pharmacy 5000C) during each year in the program. Reading comprehension of a foreign language and/or proficiency in an ancillary research skill such as computer programming is required. Students are required to pass a preliminary oral examination not less than one year before defending the thesis.

The PhD Degree program prepares the student to conceptualise, design and execute sound independent research. Thus the completion of an extensive, original investigation and the preparation and oral defence of a thesis (Pharmacy 9530) describing this research constitutes the major part of the requirements for the PhD Degree. The PhD research project is of more substantial dimensions than that for the MSc Degree, and the demonstration of a definite advance of knowledge is expected.

Candidates are required to obtain some teaching experience by demonstrating in an undergraduate Pharmacy laboratory class for at least one year and by presenting in the order of three lectures per year in an undergraduate Pharmacy class.

Financial assistance is generally available for no more than four years post-baccalaureate or three years for a student entering with an MSc Degree.

Classes

4230A Dermopharmacy: M. Mezei, lecture 2 hours. Prerequisite: Consent of the instructor.

4330C Herbal Remedies: R.F. Chandler, lecture 2 hours first term, 1 hour second term.

4920B/5920B General Toxicology: H. Freedman, lecture 2 hours. Prerequisite: Consent of the instructor.

5000C Pharmacy Seminar

5290 Topics in Biopharmaceutics: M. Mezei, lecture 2 hours. Prerequisite: Consent of the instructor.

5320A or B Topics in Medicinal Chemistry: D.K. Yung and P.S. Farmer, lecture 2 hours. Prerequisite: Pharmacy 3300.

5330C Topics in Phytochemistry, Part I: R.F. Chandler, lecture 2 hours. Prerequisite: Consent of the instructor.

5350C Topics in Phytochemistry, Part II: R.F. Chandler, lecture 2 hours. Prerequisite: Consent of the instructor.

5980A (M2090A) Intermediate Statistics: C.A. Field (Math Dept.)

9000 MSc Thesis

9530 PhD Thesis

Areas of Specialisation

1. Studies on dose-dependent disposition kinetics of drugs; kinetics of enterohepatic circulation of drugs; drug-drug kinetic interactions. (I. Abraham)
2. Phytochemical and pharmacological investigation of the medicinal aspects of maritime flora. (R.F. Chandler)
3. Design and synthesis of drugs, particularly of nonpeptidic peptidomimetics and of structurally rigid bioactive compounds. (P.S. Farmer)
4. Design and evaluation of selective drug delivery systems. (M. Mezei)

Philosophy

(Tel. 424-3810)

Chairperson of Department
S. Sherwin

Professors

D. Braybrooke, BA (Harv.), MA, PhD (Corn.) FRSC, *also in Political Science*

R.M. Campbell, BA (Harv.), PhD (Corn.)

W.F. Hare, BA (Lond.), MA (Leic.), PhD (Tor.), *Major appointment in Education Dept.*

F.H. Page, MA (Tor.), DD (Pine Hill)
 R.P. Puccetti, BA (Ill.), MA (Tor.), Docteur de l'Université de Paris
 (Sorbonne)
 P.K. Schotch, PhD (Wat.)

Associate Professors

N.C. Brett, BA (New Hampshire), MA, PhD (Wat.)
 S.A.M. Burns, BA (Acad.), MA (Alta.), PhD (Lond.)
 R.M. Martin, BA (Col.), MA, PhD (Mich.)
 S.B. Sherwin, BA (York), PhD (Stanford)
 T. Tomkow, BA (SFU), PhD (Cantab.)
 T. Vinci, BA (Tor.), PhD (Pitts.)

Assistant Professor

J.R. Katz, BA (Wright St.), MA (Manitoba), PhD (UBC)

Candidates are expected to have some acquaintance with several areas of philosophy, including modern logic and the history of philosophy. Each student's program is arranged individually in consultation with the department in relation to the student's interests and preparation. Enquiries should be addressed to the Graduate Studies Coordinator, in the Department.

Admission Requirements

Candidates must satisfy the general requirements for admission to the Faculty of Graduate Studies.

MA Degree Program

For minimum time required to complete this program, see Section 2.6.

Normally, study at the graduate level equivalent to five classes is required.

A thesis is required.

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

Not all of these classes will be given in any one year and some will be half-year classes. Consult the department for further information.

5050R Theory of Knowledge: R.M. Campbell and T. Vinci.

5060 and 5090 Intermediate Logic: P.K. Schotch.

5080 Seminar in Exact Philosophy: P.K. Schotch.

5100R Ethics: R.M. Campbell and S. Sherwin.

5110R Theory of Ethics and Mind: R.M. Campbell and R.M. Martin.

5120 Theory of Rational Decision: R.M. Campbell.

5130 and 5140 Principles of Logic: R.M. Campbell and P.K. Schotch.

5150 Problems of Self: S.A.M. Burns.

5160 Philosophical Issues of Feminism: S. Sherwin.

5180 Ethics and Education: (Same as Education 5151B) W.F. Hare.

5190R Topics in History of Philosophy: S.A.M. Burns.

5210R Philosophy of Law: N. Brett.

5260 Philosophy of Art: S.A.M. Burns.

5300 Philosophy of Language: R.M. Martin.

5350 and 5370 Ancient Philosophy: S.A.M. Burns.

5410 Philosophy of Psychology: T. Tomkow.

5420 Philosophy of Biology: R.M. Campbell.

5430 Theory of Games as an Approach to the Foundations of Ethics and Politics: D. Braybrooke.

5440 Personal Identity: R.P. Puccetti.

5450R and 5530 Theory of Action: R.M. Martin or S. Sherwin.

5460R Mind and Brain: R.P. Puccetti.

5470 Utilitarianism, Classical Liberalism, and Democracy (Seminar in Philosophy, Politics, and Economics): (Same as Pol. Sci. 5479 and Econ. 5446B), D. Braybrooke.

5480 Social Choice Theory (Seminar in Philosophy, Politics and Economics): (Same as Pol. Sci. 5480A and Econ. 5448A), D. Braybrooke.

5490 The Logic of Questions, Policy Analysis, and Issue Processing (Seminar in Philosophy, Politics, and Economics): (Same as Pol. Sci. 5490B and Econ. 5449B), D. Braybrooke.

5510R Topics in the Philosophy of Language: T. Tomkow.

5520 Philosophy of the Social Sciences: D. Braybrooke.

5550 The Marxist Approach to Historical Change: D. Braybrooke.

5600 Contemporary Philosophy of Religion: F.H. Page.

5610 The Rationalists: staff.

6520 The Empiricists: staff.

5630 Kant: T. Tomkow.

5650R and 5670 Philosophy of Science: R.M. Campbell and T. Vinci.

5700R Philosophy in Literature: R.M. Martin.

5800R Ethics and Medicine: S. Sherwin.

5810 Open Mindedness and Education: W. Hare.

5820 Philosophy and Educational Administration: W. Hare.

5850R Metaphysics: T. Tomkow.

5900 The Philosophy of J.P. Sartre: staff.

5960B, 5970R, 5980 and 5990R Directed Reading: Members of the Department.

9000 MA Thesis

Physics

(Tel. 424-2337)

Chairperson of Department
M.G. Calkin

Professor Emeritus
W.J. Archibald, MA (Dal), PhD (Virg.), DSc (UNB), FRSC

Killam Research Fellow
H.J. Kreuzer, MSc, DSc (Bonn)

Professors

D.D. Betts, MSc (Dal), PhD (McG), FRSC, *Dean of Faculty of Arts & Science*
M.G. Calkin, MSc (Dal), PhD (UBC)
D.J.W. Geldart, BSc (Acad.), PhD (McM)
C.K. Hoyt, MSc (Dal), PhD (MIT)
M.H. Jericho, MSc (Dal), PhD (Cantab.), *George Munro Professor of Physics*
D.B.I. Kiang, BSc (Mt. A), MSc, PhD (McM)
G.F.O. Langstroth, BSc (Alta.), MSc (Dal), PhD (Lond.)
R.H. March, BSc, MSc (Dal), DPhil (Oxon.)

Associate Professors

B.L. Blackford, BSc (Acad.), MSc (MIT), PhD (Dal)
J.G. Cordes, MSc (Dal), PhD (Cantab.)
D.F. Goble, BSc, MSc (Alta.), PhD (Tor.)
S.T. Nugent, BSc (Mem.), BE (NSTC), MAsc (Tor.), PhD (UNB), PEng
B.E. Paton, BSc, MSc (Waterloo), PhD (McG)
P.H. Reynolds, BSc (Tor.), PhD (UBC)
A.M. Simpson, BA (Cantab.), MSc, PhD (Dal), *Graduate Student Coordinator*
G. Stroink, PhD (McG)
C.G. White, MSc (Dal)

Assistant Professors

R. A. Dunlap, PhD (Clark)
D.A. Tindall, BA, PhD (Cantab.)

Assistant Professor (NSERC Research Fellow)
G.A. Gumbs, BSc (Cantab.), MSc, PhD (Tor.)

Research Associates

A.K. Das, DPhil (Oxon.)
K. De'Bell, PhD (London)
S. Fujiki, PhD (Tohoku)

Senior Instructor

F.M. Fyfe, MSc (Dal)

Instructor

W. Zukauskas, BSc (Dal)

MacGregor Postdoctoral Fellow

K. Dini, PhD (Sheffield)

Adjunct Professors

H.W. Jones, BSc, PhD (Lond.), F.Inst.P., PEng Technical University of Nova Scotia
H.W. King, BSc, PhD (Birm.), DIC (Lond.), FRSA, F.Inst.P., F.I.M., CEng, PEng, Technical University of Nova Scotia
A.D.J. O'Neill, MSc (McG), PhD (Sask.)
R. Ravindra, BSc (Kharapur), MA, PhD (Tor.)

MacGregor Teaching Fellows

N. Fujiki
P. Hargraves
M. Mieszkowski
K. Nath
C. Purcell
O. Sezerman

Admission Requirements

Candidates must satisfy the general requirements for admission to the Faculty of Graduate Studies. An MSc is the normal admission requirement for the PhD program.

It is recommended that all foreign students provide the Department with an official copy of the Advanced Graduate Record Examination in Physics. In some cases this will be made a precondition to consideration of the student's application for admission.

MSc Degree Program

For minimum time required to complete this program, see Section 2.6.

At least two and one half graduate classes are required.
An oral examination on the subject matter of the thesis is required.
A research thesis is required.

PhD Degree Program

For minimum time required to complete this program, see Section 2.6.

Normally, a minimum of three graduate classes is required.
Within the first year of a PhD program (and as soon as possible after a Dalhousie MSc), the candidate must take a preliminary oral examination.

Research and the preparation and oral defense of a thesis are required.

The PhD degree will be granted primarily on the basis of the candidate's ability to carry through original investigation. Part of the evidence of this will be acceptance of scientific material for publication in refereed journals and the preparation of a satisfactory thesis.

Classes

5000-level classes are fourth-year undergraduate classes which may be taken for graduate credit in certain circumstances. They are normally taken by new graduate students having background deficiencies in specific areas. 6000-level classes are full graduate classes.

All graduate students will normally take a Problems Class (6320C or 6330C) once in each degree program.

All graduate students are required to attend regular departmental seminars.

5090A/5100B Advanced Classical Mechanics and Electrodynamics: lecture, 3 hours. Prerequisite: Physics 2110, 2120, 3150B or the permission of the instructor.

5150A/5155B Quantum Mechanics: lecture 2 hours. Prerequisite: Physics 3140A.

5160A/5170B Mathematical Methods of Physics: lecture 3 hours.

5180A/B Nuclear Physics: lecture 3 hours.

5220A Microcomputer Based Instrumentation: lecture 3 hours.

5230A/B Introduction to Solid State Physics: lecture 3 hours. Prerequisite: Physics 3140A.

5300A Applied Acoustics: lecture 3 hours.

5311A/5312B Fluid Dynamics I/II: lecture 3 hours. Cross listed with Oceanography 5311A/5312B.

5330A Materials Science: lecture 3 hours. Prerequisite: Physics 3150B.

5350B Energy, Sources and Conversion: lecture 3 hours.

5440A Optics: lecture 3 hours. Prerequisites: Physics 2330B or Physics 2210, or Physics 2210B, and Mathematics 2200.

5460A/B Optics: lecture 3 hours. Prerequisite: Physics 5440A.

5480A Applied Group Theory: lecture 3 hours. Offered when there is sufficient demand.

5500A/5510B Atmospheric Physics I/II: lecture 3 hours. Prerequisite: at least 1 third year level physics.

5520A/5530B General Meteorology I/II: lecture 3 hours. Prerequisite: at least 1 third year level physics.

5540A/5550B Synoptic Meteorology I/II: lecture 3 hours. Prerequisite: at least 1 third year level physics.

6100 Nuclear Physics: lecture 2 hours.

6120 Quantum Theory: lecture 3 hours. Prerequisite: Physics 4150A or its equivalent.

6140 Advanced Quantum Theory: lecture 3 hours. Prerequisite: Physics 6120, which may be taken concurrently.

6200 Solid State Physics: lecture 2 hours. Prerequisite: Physics 5230B, 4150A.

6240 Advanced Solid State Physics

6260 Statistical Mechanics: lecture 3 hours. Prerequisite: Physics 3210B, 4150A or their equivalent.

6320C Advanced Problems

6330C Advanced Problems

The following 6000 level classes are more specialized than the above and, consequently are not offered as frequently.

6270B Order-Disorder Phenomena and Phase Transitions: Prerequisite: A basic knowledge of quantum statistical mechanics is assumed.

6280A Superconductivity: lecture 2 hours.

6350B Selected Topics in Physical Metallurgy: lecture 2 hours.

6370A Ultrasound Imaging Technique: lecture 3 hours

6470A Underwater Acoustics: lecture 3 hours.

6500C Magnetism: lecture 1 1/2 hours.

6600B Topics in Physics

6970 Selected Topics in Particle Physics: lecture 2 hours.

9000 MSc Thesis

9530 PhD Thesis

Physiology and Biophysics

(Tel. 424-3517)

Head of Department

K.B. Ruf, MD (Basle), FRCP(C)

Professors Emeritus

Bela Issekutz, Jr., MD (Szeged), Dr Med (Bud.)

Enid MacLeod, MD (Dal)

C.B. Weld, MA (UBC), MD (Tor.), FRSC

Physiology Section

Professors

J.A. Armour, BSc (McG), MD (W Ont.), PhD (Loyola U)

M. Cynader, PhD (MIT), *Major appointment, Department of Psychology*

J.D. Hatcher, MD, PhD (UWO), FRCP(C), *Major appointment Dean of Medicine*

M. Horackova, MSc, PhD (Prague)
 W.T. Josenhans, MD (Tubingen)
 G.A. Klassen, MD, FRCP(C)
 T.F. McDonald, BSc (U of Alta.), PhD (Dal)
 W.H. Moger, BS (Cornell), PhD (U of Calif.)
 K.B. Ruf, MD (Basle), FRCP(C)
 J.C. Szerb, MD (Munich), FRCP(C)
 M. Wilkinson, BSc (Southampton), PhD (Lond.)

Associate Professors

J.D. Dudar, MSc (Alta.), PhD (Dal)
 J.G. Holland, BSc, MD (Dal)
 W. Ling, BSc (Acad. U), MSc, PhD (McG), *Major appointment, Obstetrics/Gynecology*
 J. Love, DVMS (Glasgow), PhD (Tor.), MRCVS, *Major appointment Director, Animal Care Centre*
 D. Rasmusson, BA (Colo. C), PhD (Dal)

Assistant Professors

A. Bonen, PhD (U of Ill.), *Major appointment, School of Physical Education*
 M. Dickie, BA, MA, PhD (Tor.)
 D. Hirsch, MD (Dal), *Major appointment, Department of Medicine*
 D.E. Johnstone, B.Sc, MDCM (McG), FRCP(C), *Major appointment, Department of Medicine*
 S. Martin, PhD (U of Calgary), *Major appointment, Department of Biology, Mt. St. Vincent*
 T.J. Montague, BSc (StFX), MD (Dal), LMCC, FRCP(C), *Major appointment, Department of Medicine*
 N. Morgunov, BSc, MSc, PhD (U of Tor.)
 M.R. Oulton, BA (Acad. U), PhD (Dal), *Major appointment, Obstetrics/Gynecology*
 N. Swindale, PhD (U of Sussex)

Lecturer

A. Corvin, MD (Heidel), *Major appointment, Psychiatry*

Biophysics Section

Professors

P.M. Rautaharju, MD (Helsinki), PhD (Minn.)
 R. Rosen, BSc (Brooklyn College), MA (Col.), PhD (U of Chic.)
 H. Wolf, Dipl Eng (Munich), PhD (Dal)
 A.Y.K. Wong, MSc, PhD (Dal)

Associate Professors

B.M. Horacek, MSc (Eng.) (Prague), PhD (Dal)

Assistant Professor

W. Eifler, BSc (Hofstra), PhD (CWRU)

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.

The Department of Physiology and Biophysics and the Department of Mathematics cooperate to offer an MSc degree in the area of Biomathematics (refer to Section 5.2 of Interdisciplinary Studies).

Admission Requirements

Candidates must satisfy the general requirements for admission to the Faculty of Graduate Studies. For those without a background in physiology, the introductory course in human physiology must be passed with a mark of 65% before permission to submit a thesis is granted.

Unless exempted, applicants must provide the Department with an official copy of the results of the Graduate Record Examination General (Aptitude) Test and one Subject (Advanced) Test.

MSc Degree Program

Students without previous training in physiology should expect to spend two years working toward the MSc

Normally, study at the graduate level equivalent to five classes is required.

A research thesis which constitutes two of the five credits is required.

PhD Degree Program

For minimum time required to complete this program, see Section 2.6.

Selected classes of this or other departments may be required.

An examination in the field of thesis research is required.

Research and the preparation and defense of a thesis are required.

A candidate must demonstrate the ability to carry out research of high quality leading to an advance in knowledge in the areas of physiology and/or biophysics.

Classes

Physiology

5503R Respiratory Physiology: W.T. Josenhans.

5403 Human Physiology: J. Dudar.

5459 Activity of the Cardiac Muscle: A. Wong.

5494B Synaptic Transmitters: J.C. Szerb, M. Wilkinson (offered alternate years, next offered in Jan. 1986).

5495A Limbic System: J. Dudar.

5501/5502 Advanced Human Physiology: seminar class for graduate students in the department.

5505R Surgical Techniques: J. Love.

5506 Endocrine and Reproductive Physiology: W. Moger, M. Wilkinson, W. Ling (given in alternate years, next given in 85/86).

5507A Cerebral Cortex: D. Rasmusson, M. Cynader (offered every second year, next offered in 86/87).

5508A Selected Topics in Physiology: staff.

Biophysics

5452C Biophysics-Biomathematics Seminar: M. Horacek.

5455B Biological Control Systems: H. Wolf (offered every second year, next offered in 86/87).

5481B Topics in Biomathematics: R. Rosen.

5400A/B Introduction to Biophysics: H. Wolf.

5510 Biophysics Tutorial: H. Wolf.

9000 MSc Thesis

9530 PhD Thesis

Political Science

(Tel. 424-2396)

Chairperson of Department
D.W. Stairs

Professors Emeritus

J.H. Aitchison, BA, BEd (Sask.), BSc (Lond.), PhD (Tor.)
J.M. Beck, BA (Acad.), MA, PhD (Tor.)
G. Grant, BA (Queen's), DPhil (Oxon.), LLD (Trent), D Lit (Mt. A), LLD (Dal), LLD (Queen's), LLD (Tor.), FRSC, *jointly with Classics and Religion.*

Professors

P.C. Aucoin, BA (SMU), MA (Dal), PhD (Queen's), *jointly with Public Administration, Associate Director, School of Public Administration*
R. Boardman, BSc, PhD (Lond.), *Director, Centre for Foreign Policy Studies*
E. Mann Borgese, *Professor of International Ocean Affairs*
D. Braybrooke, BA (Harv.), MA, PhD (Cornell), FRSC, *jointly with Philosophy*
D.M. Cameron, BA (Queen's), MA, PhilM, PhD (Tor.), *jointly with Public Administration*
J.G. Eayrs, BA (Tor.), AM, PhD (Col.), FRSC, *Eric Dennis Memorial Professor*
K.A. Heard, BA, MA, PhD (Natal)
P. Pross, BA, MA, PhD (Tor.), *jointly with Public Administration*
T.M. Shaw, BA (Sussex), MA (Prin.-E Africa), PhD (Prin.)
D.W. Stairs, BA (Dal), MA (Oxon.), PhD (Tor.)
G.R. Winham, BA (Bowdoin), Dip in Int Law (Manc.), PhD (N Car.)

Associate Professors

H. Bakvis, BA (Hons) (Queen's), MA, PhD (UBC)
R.L. Dial, BA (Calif.-SB), MA, PhD (Calif.-Berkeley)
R. Eden, BA (Calif.-Berkeley), PhD (Harvard)
D.W. Middlemiss, BA, MA, PhD (Tor.)
D.J. Munton, BA, MA (UBC), PhD (Ohio St.)
D.H. Poel, BA (Calvin), MA (W.Mich), PhD (Iowa)

Assistant Professor

J. Smith, BA (McM), MA, PhD (Dal)

Adjunct Professors

S.K. Holloway, BA, MA, PhD (Ohio St.)
H. Silverstein, BA (Wisc.), MA, PhD (Denver)

Research Associate

Joel Sokolsky, BA (Tor.), MA (Hopkins), PhD (Harvard)

The Department of Political Science offers MA and PhD programs. For the PhD degree, the Department at present undertakes to supervise research relating only to (1) political behaviour and institutions in Canada and its provinces, (2) international politics and foreign policy, and (3) other areas of study where faculty interest and resources warrant.

Admission Requirements

Candidates must satisfy the general requirements for admission to the Faculty of Graduate Studies.

MA Degree Program

For minimum time required to complete this program, see Section 2.6. The normal program is made up of three full-year class credits. A thesis, normally worth two credits, is also required. Students whose background is deficient may be required to take as many as five additional classes.

PhD Degree Program

For minimum time required to complete this program, see Section 2.6. A course program of from three to eight classes is required.

Comprehensive examinations in Political Theory and Methodology and two other fields chosen from Canadian Government and Politics, Comparative Politics with respect to selected states, International Relations and Foreign Policy, Public Administration, and Special Alternative Field, must be prepared. Proficiency in a language other than English, usually French, must be demonstrated.

Preparation and defence of an acceptable thesis are required.

The Department may require students to acquire additional language or methodological skills where these seem necessary in the pursuit of the student's interest.

Classes

Classes offered by the Department have, for the purposes of this calendar, been grouped into the following classifications:

Canadian Government and Politics and Public Administration
Comparative Politics
Political Theory and Methodology
International Relations and Foreign Policy

(Note: Classes are not necessarily offered each year. Consult timetable for final listing of course offerings.)

Canadian Government and Politics and Public Administration

5204 The Politics, Government, and Constitution of Canada: seminar 2 hours, J. Smith.

5208 Canadian Provincial Politics: lecture and seminar 2 hours, D.H. Poel.

5212B The Politics and Government of Nova Scotia: seminar 2 hours, P.C. Aucoin.

5216A Local and Regional Government: seminar 2 hours, D.M. Cameron.

5220A Intergovernmental Relations in Canada: seminar 2 hours, H. Bakvis.

5221B Case Studies in Intergovernmental Relations: seminar 2 hours, D.M. Cameron.

5224B Canadian Political Parties: lecture and discussions 3 hours, H. Bakvis.

5226A: seminar 2 hours, P. Pross.

5240 Policy Formulation in Canada: seminar 2 hours, staff.

5242B Science Policy in Canada: seminar 2 hours, P.C. Aucoin.

5243 Health Care Policy in Canada: seminar 2 hours, P.C. Aucoin.

5245B Urban Policy in Canada: seminar 2 hours, D.M. Cameron.

5254B Canadian Public Administration: seminar 2 hours, A.P. Pross.

5258A Provincial Government and Administration: seminar 2 hours, R. Johnson.

5526A Natural Resource Administration: seminar 2 hours, A.P. Pross.

Comparative Politics

5301B Comparative Analysis: seminar 2 hours, R. Boardman and D. Poel.

5303B Human Rights and Politics: lecture and discussion 2 hours, K.A. Heard.

5304A Comparative Federalism: seminar 2 hours, H. Bakvis.

5315A African Politics: seminar 2 hours, T. Shaw.

5340A Problems of Development: seminar 2 hours, K.A. Heard.

5345A South Africa: The Dynamics of Political Groups and Group Dominations: seminars 2 hours, K.A. Heard.

5370 American Government: lecture and discussion 2 hours, J.H. Aitchison.

Political Theory and Methodology

5410 Man, Society, and Politics: The Concept of Community: seminar 3 hours, staff.

5430C The Political Philosophy of Plato: seminar 2 hours, R. Eden.

5435A Machiavellian Politics: seminar 2 hours, R. Eden.

5438B Rousseau and the Founding of Modern Democracy: seminar 2 hours, R. Eden.

5451A The Critique of Democracy in Modern Political Philosophy: lecture and seminar 3 hours, R. Eden.

5455B Marxist Theory and Its Upshot in the Modern World: seminar 2 hours, R. Eden.

5470B Futurology and Politics: seminar 2 hours, D. Munton.

5479A Utilitarianism, Classical Liberalism, and Democracy: seminar 2 hours, J. Smith.

5480A Social Choice Theory: seminar 2 hours, D. Braybrooke.

5485B The Theory of Games as an Approach to the Foundations of Ethics and Politics: seminar in Philosophy, Politics and Economics 2 hours, D. Braybrooke.

5495 Problems of Quantification: seminar 2 hours, staff.

5490B The Logic of Questions, Policy Analysis, and Issue Processing: seminar 2 hours, D. Braybrooke.

5495B Research Methods and Data Analysis: seminar 2 hours, S.K. Holloway.

5496C Philosophy of the Social Sciences: seminar 2 hours, D. Braybrooke.

International Relations and Foreign Policy

5520 Theories of International Relations: lecture and discussion 2 hours, staff.

5531A The United Nations in World Politics: seminar 2 hours, R. Boardman.

5535A Towards a New World Order: seminar 2 hours, staff.

5540B Foreign Policies of African States: lecture and seminar 2 hours, T.M. Shaw.

5544B Conflict and Cooperation in Southern Africa: lecture and seminar 2 hours, staff.

5570 Canadian Foreign Policy: seminar 2 hours, D.W. Stairs and D.W. Middlemiss.

5571 Strategy and Canadian Defence Policy: seminar 2 hours, D.W. Middlemiss.

5572 American Foreign Policy: seminar 2 hours, G. Winham.

5590 The Politics of the Sea: seminar 2 hours, staff.

5595 Theories of War and Peace: seminar 2 hours, D. Munton.

5596 Strategic Studies: seminar/lecture 3 hours, staff.

5695A Research Methods for Program Evaluation: D.H. Poel.

9000 MA Thesis

9530 PhD Thesis

Psychology

(Tel. 424-3417)

Chairperson of Department
R.S. Rodger

Professors

M. Cynader, BSc (McG), PhD (MIT), *Killam Research Professor*

P.J. Dunham, BA (DePauw), MA, PhD (Missouri)

J.C. Fentress, BA (Amherst), PhD (Cantab.)

D.O. Hebb, BA (Dal), MA (McG), PhD (Harv.), DSc, DHL, LLD, *Honourary Professor*

W.K. Honig, BA (Swarthmore), PhD (Duke)

V.M. LoLordo, AB (Brown), PhD (Penn.), *Graduate Studies Coordinator*
 J.A. McNulty, BA, MA, PhD (Tor.)
 D.E. Mitchell, BSc, M.App.Sc. (Melb.), PhD (Berkeley)
 S. Nakajima, BA (Chiba), MA (Wash.), PhD (McG)
 K.E. Renner, BS (Penn.), MA, PhD (Northwest)
 R.S. Rodger, MA (Edin.), PhD (Belf.)
 M.G. Yoon, BS (Seoul), PhD (Berkeley)

Associate Professors

J. Barresi, BS (Brown), MA (S Calif.), PhD (Wisc.)
 K. Bloom, BS (Loyola), MA, PhD (N Car.)
 R.E. Brown, BSc (Victoria), MA, PhD (Dal)
 J.W. Clark, BA, MA (McG), PhD (Qu.)
 B. Earhard, BA, MA, PhD (Tor.)
 R. Klein, BA (SUNY), MA, PhD (Oregon)
 I.A. Meinertzhagen, BSc (Aberdeen), PhD (St. Andrews)
 B.R. Moore, AB (Emory), PhD (Stan.)
 M. Ozier, BA, MA, PhD (Tor.)
 R.L. Rudolph, BA, MA (DePauw), PhD (N Car.)
 B. Rusak, BA (Tor.), PhD (Berkeley)
 S. Shaw, BSc (London), PhD (St. Andrews)

Assistant Professors

S. Bryson, BA (Guelph), PhD (McG)
 J. Enns, BA (Winnipeg), MA, PhD (Princeton)
 J.F. Werker, BA (Harv.), MA, PhD (UBC), *On leave*

NSERC University Research Fellows

R. Croll, BSc (Tufts), PhD (McG)
 M. Spetch, BA, MA, PhD (UBC)
 D. Treit, BA, MA, PhD (UBC)

Senior Instructors

R.S. Hoffman, BSc (Col. Coll.), MA (Dal)
 L.E. White, BSc (Calgary), MS (Sask.), PhD (Cantab.)

Research Associate

A. Froehlich

Postdoctoral Fellows

K. Berridge
 C. Edwards
 R. Erickson
 K. Grasse
 D. Phillips
 R. Ross
 N. Swindale

Admission Requirements

Candidates must satisfy the general requirements for admission to the Faculty of Graduate Studies.

MA Degree Program

Students are expected to complete the MA program within 12 months from their admission.

All candidates for the MA degree in general experimental psychology take Statistics and Experimental Design (6000) and at least two other courses in the 6000 series.

All MA candidates are expected to gain a basic competence in computer programming, and competence in the use of Fortran is a prerequisite to admission to the class Statistics and Experimental Design.

A thesis is required.

Students whose background is inadequate will be required to complete appropriate undergraduate classes designated by the Department.

PhD Degree Program

For minimum time required to complete this program, see Section 2.6.

While the PhD thesis is the main focus of the program, the candidate in consultation with his thesis supervisor chooses a minor area of study from the classes offered by other departments in Dalhousie University.

Students are required to pass a preliminary examination at least one year before submission of the thesis. The form of this examination is optional and is conducted by an examination committee of between three and five faculty members.

Candidates are encouraged to enroll in graduate seminars selected from the 8000 series during each year of PhD study.

Research and preparation and oral defence of a dissertation are required.

Classes

Not all these classes are offered every year. Please consult the current timetable on registration to determine which classes are being offered.

5000 Research Assignment: staff.

6000 Statistics and Experimental Design: R.S. Rodger.

6020 Application of Experimental Clinical Procedures: K.E. Renner.

6040 Animal Learning: W.K. Honig.

6050 Perception: D.E. Mitchell, M. Cynader.

6070 Physiological Psychology: staff.

6090 Biosocial Issues in Development: K. Bloom.

6100 Instrumentation and Computers in Psychology: D. Conrad, R. Hoffman.

6130 Cognitive Psychology: R. Klein.

6160 Comparative Psychology: R. Brown, J. Fentress.

6270 Comparative Neurobiology: I.A. Meinertzhagen, M.G. Yoon.

6370 Neuroscience Laboratory: M.G. Yoon.

8040 Learning: W.K. Honig, V.M. LoLordo.

8050 Selected Topics in Perception: D. Mitchell, M. Cynader.

8070 Selected Topics in Physiological Psychology: S. Nakajima.

8090 Biosocial Processes in Development: K. Bloom.

8100 Methodology in Psychology: R.S. Rodger.

8120 Clinical Methods and Issues: K.E. Renner.

8130 Human Learning/Information Processing: B. Earhard, R. Klein, J. Barresi.

8140 Learning Theory: staff.

8160 Ethology: R. Brown, J. Fentress.

9000 MA Thesis

9530 PhD Thesis

Public Administration

(Tel. 424-3742)

Director of School
Peter Aucoin

Professors

K. Antoft, BA, MA (Dal)
Peter Aucoin, BA (SMU), MA (Dal), PhD (Qu.)
D.M. Cameron, BA (Qu.), MA, Phil M, PhD (Tor.)
L.J. Nestman, B Comm (Sask.), CA (Alta.), MHSA (Alta.)
A.P. Pross, BS, MA (Qu.), PhD (Tor.)
C.C. Tuck, B Comm (St. Pats.) MPA (Syracuse), *On leave*
A. Peter Ruderman, BS, MA, PhD (Harv.), MBA (Chic.)

Associate Professors

H. Bakvis, BA (Qu.), MA (UBC), PhD (UBC)
M.G. Brown, BA (W Ont.), MA (Qu.), AM, PhD (Chic.)
W.J. Coffey, AB (Dartmouth), MS, PhD (W Ont.)
D.H. Poel, BA (Calvin), MA (W Mich.), PhD (Iowa)

Assistant Professors

M. Paul Brown, BA (MtA), MA (Dal), PhD (Tor.)
Barbara Jamieson, BA (UBC), MA, PhD (Tor.)

Lecturers

F.M. Cleland, BA, (UBC), MPI (Qu.)
W.D. Cochrane, BA Hons, LLB (Dal)
L.A. Currie, BSc (StFX), MSW, (Dal), Cert. in Social Science (Labour College of Canada), Diploma in Gerontology (Mt. St. Vincent), MPA (Dal), PhD pending (Dal)
Murray G.K. Davidson, B Comm (Tor.), MPA (Dal), CA
R.S. Gunn, B.Comm. (Dal), CA
J.E. Hodgetts, BA, MA (Tor.), PhD (Chic.)
J.D. Love, BA, MA (Tor.)
A.M. MacIntosh, BA, LLB (Dal), MPH (Harvard)
A.D. Thomson, MB, ChB (Aberdeen), MSc (Social Medicine) (Lond.)

Students seeking further information or help in planning courses of study in the School of Public Administration should address themselves to:

Graduate Co-ordinator
School of Public Administration
1229 LeMarchant Street
Halifax, Nova Scotia B3H 3P6
(902-424-3742)

The Programs

The graduate programs of the School have been designed to provide the professional education essential to a career in modern public service. They are offered to students who either are preparing for initial employment or are returning to university with work experience.

The programs are professional in that they equip students with both the administrative skills required in public sector management and an understanding of the organization, process, and activities of government. Each component is essential, and consequently required of all students. The professional requirements have been developed in consultation with senior officials of all levels of government (including graduates of the School).

Students entering the School will be expected to acquire an education as well as a profession, a matter which is properly of particular concern for a university-based program. Accordingly, admission requirements for the Diploma and the MPA are those of the Faculty of Graduate Studies, and the standard must be maintained throughout the duration of the program. The quantity and quality of work expected in individual classes will reflect the high scholarly standards expected of graduate education.

Taken together, these requirements provide the rationale for the uniquely professional academic preparation for public service upon which the programs of the School are predicated. It is expected that graduates will evince high standards of professional and academic competence, and expanded awareness of the public interest, and a personal appreciation of the ethical standards appropriate to a career in the service of the public.

The curriculum has been structured in order to encompass the essential components of financial, personnel and statistical techniques on the one hand, and economic, organizational and policy analysis on the other. The Diploma program and the first year of the Masters program require students to complete courses in these basic fields. The second year of the Masters program offers the student the opportunity to pursue further studies in one or more of these fields and to concentrate her or his program in light of career plans. The offerings of related programs and disciplines, such as economics, planning, business administration, education, social work, law, and resource management, can be used by students as desired and necessary. The second year usually will also include a research project in the field of concentration.

Applications Procedure

Application forms are available from the Admissions Office of Dalhousie University. Applications should be submitted as early as possible.

Application forms must be accompanied by the following:

- transcripts of all previous work;
- at least two letters of reference;
- a statement of career interests and reasons for seeking admission to the School and Resume;
- GMAT (see below);
- TOEFL for Foreign Students (see below).

The application *must* be complete by no later than August 01.

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

The Test may be taken at conveniently-located centres throughout North America and in many other parts of the world. In the case of North American candidates, applications for the test are accepted by the ETS

in Princeton until approximately six weeks before test dates. For candidates in other countries, closing dates are eight weeks before test dates.

School of Public Administration GMAT Number is 0957.

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

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

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

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

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

For foreign students it is strongly recommended that all documents (transcripts and references) be submitted prior to May 31.

Any applications received after this date will be considered on a first-come first-served basis because of limited class size. Applications received after August 01 cannot be guaranteed normal processing.

Grading System and Good Standing

Under the regulations of the Faculty of Graduate Studies, MPA students are required to achieve a grade of B- or better in all classes taken. One C grade is permitted in any year if an overall B average is maintained for that year, but the C class must be repeated or replaced, and passed (i.e. B- or better), depending on whether a required or elective class is involved. This special exception is available to full-time students only.

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

For further information, contact the Administrative Secretary of the School.

Part-time Study

The programs offered through the School are available to students on a part-time basis. A part-time student may enrol in up to two full classes (or equivalent) in any one year.

In order to ensure that graduate students benefit from a reasonable concentration of their studies, part-time programs leading to the DPA must be completed within four years, and part-time programs leading to the MPA must be completed within six years.

Further Information

Prospective applicants who do not meet the academic admission requirements of a graduate program may wish to consider improving their qualification by means of a no-degree program in the Faculty of Arts and Science or the Certificate in Public Administration in the Faculty of Administrative Studies.

It should be emphasized that any such undertaking carries no assurance of subsequent admission to a graduate program.

General Admission Requirements for DPA, MPA and MPA (HSA)

Candidates must satisfy the general requirements for admission to the Faculty of Graduate Studies. Enrolment in the School is limited. In general successful applicants should have attained a good second class standing in their previous university work.

Admission is based on an assessment of:

professional experience and/or promise;

all previous academic work;

letters of reference;

GMAT;

TOEFL.

In certain circumstances the School may consider applications from individuals who do not satisfy the general requirements for admission to the Faculty of Graduate Studies. Individuals with a minimum of ten years work experience in administrative positions who either have completed a full year of university study, or possess a relevant professional certification or have completed a relevant correspondence program (such as the Institute of Public Affairs' Municipal Administration course) can be considered for a special one year undergraduate course of study leading to a CPA. Successful completion of the year with an average grade of B+, with no grade below B-, would constitute a basis for a recommendation from the School for admission to the Faculty of Graduate Studies. Please direct enquiries to the Graduate Co-ordinator of the School in regard to the above.

The Diploma in Public Administration (DPA) Program

The Diploma in Public Administration is a one-year graduate program designed for public servants who hold a first degree, and for students wishing to obtain professional preparation for a career in public administration.

The DPA may also serve as a program qualifying students for subsequent admission to the MPA with advanced standing.

Course Requirements

The DPA requires the successful completion of five credits:

- PA 5100A Government Structure and Organization
- PA 5110B Public Sector Management
- PA 5120 Policy Formulation
- PA 5130 Applied Economics
- PA 5140 Quantitative Methods
- PA 5150 Public Sector Finance and Accounting

When a student has a demonstrated competence in the area of a required class, an alternate class may be substituted if approved by the student's advisor.

The Master of Public Administration (MPA) Degree Program

The MPA is a graduate program designed for individuals prepared to undertake advanced professional study. Individual programs will vary in content to reflect each student's background and interests, while at the same time recognizing the central principles and functions of public administration.

Course Requirements

The MPA will require the successful completion of 10 credits, which must include: PA 5100A, 5110B, 5120, 5130, 5140, 5150 and 6000B. The remaining credits will be elective.

Areas of Concentration

In the second year, students normally specialize in a concentrated program, consisting of three credits in the field of specialization and two electives, selected in consultation with the student's faculty advisor. Concentrations are currently available in four areas: Personnel Management, Financial Management, Municipal Management and Policy and Program Management.

The Masters of Public Administration (Health Services Administration) Degree Program (MPA (HSA))

The MPA (Health Services Administration) is a two year graduate program designed for individuals who wish to specialize in the professional area of health services administration.

A new degree "Master of Health Services Administration" may replace the Master of Public Administration (Health Services Administration) in the 1985/86 academic year. Curriculum would remain the same as the present MPA (HSA) degree.

Admission Requirements

See general admission requirements for School. Students must apply for SPECIFIC admission to the Health Services Administration program. A personal interview may be required.

Course Requirements

The MPA (HSA) will require the successful completion of 11 credits which must include: 5100A, 5110B, 5130R, 5140R, 5150R, 5300A, 5310B, 6380B, 6390R, and three and one-half credits from the health services administration courses (numbered in the 6300's) plus one credit elective.

Advanced Standing

Advanced Standing of up to five credits (one year) may be granted to students admitted with an Honours BA, DPA, Masters, or other professional degree (MBA, MLS, MSW, LLB, etc.). This is the maximum that may be granted; the actual extent of advanced standing depends upon the program of studies in the previous degree and the intended area of concentration within the MPA.

Classes

School classes include:

- 5100A Government Structure and Organization: P. Aucoin.
- 5110B Public Sector Management: D. Love.
- 5120R Policy Formulation: P. Brown.
- 5130R Applied Economics: B. Jamieson.
- 5140R Quantitative Methods: H. Bakvis.
- 5150R Financial Management & Accounting: M. Davidson.
- 5300A Canadian Health Care Delivery System: P. Ruderman.
- 5310B Health Institutional Management: staff.

- 6000B Senior Seminar in Public Administration: staff.
- 6100A Financial Administration & Budgeting: M. Davidson.
- 6110A Government Information Systems and Auditing: R. Gunn.
- 6140A Applied Research for Public Management: W. Coffey.
- 6246A Policy Analysis: Jamieson/Pross.
- 6300A Health & Government Management Accounting: L. Nestman.
- 6310B Management Control & Reimbursement for Health & Government: L. Nestman.
- 6320A Epidemiology: A. Thomson.
- 6330B Health Care Planning: A. Thomson.
- 6340A Health Economics: M. Brown.
- 6350B Advanced Health Economics: M. Brown.
- 6360A Health Care Law: W. Cochrane.
- 6370B International Comparative Health Care Systems: P. Ruderman.
- 6375A Problems of Physician Remuneration: P. Ruderman.
- 6380B Advanced Seminar Health Services: L. Nestman.
- 6390R Health Services Residency: L. Nestman.
- 6400A Local Government: D. Cameron.
- 6410B Municipal Management: P. Brown.
- 6420B Municipal Financial Administration: K. Antoft.
- 6500B Business & Government: Cleland/Davidson.
- 6520R Program Evaluation: D. Poel.
- 6530A Natural Resource Administration: P. Pross.
- 6540B Canadian Regional Development Policy: W. Coffey.
- 6600A Personnel Administration: D. Love.
- 6610B Compensation & Collective Bargaining: L. Currie.
- 6750A Intergovernmental Relations: H. Bakvis.
- 6760B Cases in Intergovernmental Relations: staff.
- 6770B Provincial Public Administration: P. Brown.
- 6780B International Development Administration: staff.
- 6800R Project: staff.
- 6850R Internship: P. Brown.

6900R Directed Reading: staff.

6910A Directed Reading: staff.

6920B Directed Reading: staff.

Not all classes are offered each year. Consult Department for current year offerings. In addition to the above, classes may be selected from other schools, departments, or faculties, subject to the approval of a faculty adviser.

Recreation, Physical and Health Education

(Tel. 424-2152)

Director of School
T.L. Maloney

Professors

E.G. Belzer, Jr., BS (West Chester), MA (Maryland), PhD (Ill.)
A. Bonen, BA (Western), MS, PhD (Ill.)
L.E. Holt, BS, MS (Springfield), PhD (S Ill.)
J.C. Pooley, Teach. Cert. (Bede), Dip PE (Carnegie), MS, PhD (Wisconsin)
A.J. Young, BS (West Chester), MA, PhD (Maryland)

Associate Professors

R.P. Beazley, BA, BEd (Acadia), BPE (McM), MPE (Dal), EdD (Tennessee)
J.F. McCabe, BPE, BA (NB), MS, EdD (Tenn.)
T.L. Maloney, BPE, BEd (Alta.), MA (West.), PhD (Alta.)
A. Richards, Dip PE (Carnegie Schl. PE, England), Teach. Cert. (Trent Park Coll.), MSc (Dal), EdD (Colo.)

Assistant Professors

P.D. Campagna, BPHE (Windsor), BEd (Qu.), MEd (SUNY-Buffalo), PhD (Alta.)
G.C.B. Elder, Dip. P.E. adv. (St. Mary's, London), MEd (Georgia Southern College), PhD (McM)
R.F. Lyons, BA (Dal), MEd (Xavier), PhD (Ore.)
W.R. Mitic, BA (W Ont.), MHK (Windsor), EdD (SUNY-Buffalo)
C.A. Putnam, BPE (Man.), MS (Wash.), PhD (Iowa)
J.F. Singleton, BA (Waterloo), MS (Penn. St.), PhD (Maryland)
S.M. Shaw, BPE, MSc (Dal), PhD (Carl.)
L.J. Verabioff, BA, BPHE (Qu.), MS (Mich.), PhD (Ohio St.)

Lecturer

D.P. McGuire, BA (Wright St.), MS (Cinn.)

The School of Recreation, Physical, and Health Education has ongoing research projects conducted in the areas of health and education, leisure studies (leisure and the family, disabled persons, gerontology, and sports history and sociology), and kinesiology (exercise physiology, motor behaviour, biomechanics).

Admission Requirements

Candidates must satisfy the general requirements for admission to the Faculty of Graduate Studies.

MSc Degree Program

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

Completion of the Master of Science degree is also possible through part-time study.

In this program students must complete all course work within a five-year period and all degree requirements within a six-year period following initial registration. Financial assistance is not available for students undertaking the degree on a part-time basis.

A thesis proposal must be made to the graduate faculty of the School. A thesis is required of all students for completion of the MSc Degree.

Five credits (30 units) of graduate credit are required for the MSc Degree.

Required Classes

PE 5501A Research Methods for Natural Sciences: G.C.B. Elder, ½ credit (3 units).

or

PE 5502C Research Methods for Social Sciences: S.M. Shaw, ½ credit (3 units).

PE 9000R Thesis: 1 ½ credits (9 units).

Total, 2 credits (12 units).

Elective Classes

The remaining three credits (18 units) of credit are elected by students from the following class offerings: (Each class is worth three (3) units of credit.) In addition, graduate classes from other departments at Dalhousie University may be used to fulfill degree requirements. In certain instances, undergraduate classes may count toward MSc requirements.

PE 5503A Intermediate Statistics: C. Field, Dept. of Mathematics.

PE 5504A Research Statistics and Experimental Design: A. Young.

PE 5600-5699A, B, or C Independent Studies: staff. Class numbers and titles assigned by School — open to independent completion of study.

PE 5510 Cardiorespiratory Dynamics in Exercise: P. Campagna.

PE 5511B Regulation of Substrate Metabolism in Muscle: A. Bonen.

PE 5512B Current Issues in Leisure & Special Populations: R. Lyons.

PE 5514B Scientific Preparation of Athletes: P. Campagna.

PE 5515C Laboratory Methods in Exercise Physiology: A. Bonen/G. Elder.

PE 5516A Neuromuscular Physiology: G. Elder.

PE 5520A Advanced Anatomy and Kinesiology: L. Holt.

PE 5521B Advanced Movement Analysis: L. Holt.

PE 5523A Biomechanics of Human Motion: C. Putnam.

PE 5524B Research Techniques in Biomechanics: C. Putnam. Prerequisite: PE 5523A or permission of instructor.

PE 5525B Sport Science Seminar: L. Holt.

PE 5530A Motor Learning and Performance: J. McCabe.

PE 5550B History of Sport and Physical Education in North America: A. Young — open to independent completion of study.

PE 5551A History of Sport in Ancient Civilizations: A. Young — open to independent completion of study.

PE 5553A Comparative Physical Education and Sport: J. Pooley.

PE 5560B Sociology of Sport: J. Pooley.

PE 5570A Psychology of Sport and Physical Activity: J. McCabe.

PE 5572B Topics in Human Performance: Motor Control: J. McCabe.

PE 5580B Principles of Skill Acquisition: L. Verabioff.

PE 5592B Leisure & Society: S.M. Shaw.

HE 5506B Scientific Bases of Health Education: D. McGuire.

HE 5514A Status and Trends in Health Education: W. Mitic.

HE 5516A Seminars on Health-Related Theories: E. Belzer.

J.E. Cummings, BA (Dal), MSW (St. FX), DSW (Tor.)

D.P. Kerans, BA (Loyola), MA (St. Louis), STL (Innsbruck), DRS (Strasbourg)

D. O'Brien, BComm, MSW (SMU), Adv. Dip. SW, DSW (Penn.)

Associate Professors

M.L. Courtney, BA (Dal), MSW (SMU)

J. Gilroy, BA (Dal), MSW (King's), MA (Tor.)

D. Moore, Dip. Soc. Stud. (Lond.), BA, MA (Dal), PhD (Boston U)

R. Morris, BComm (Dal), MSW (McG)

R. O'Day, BA (UBC), MA, PhD (Mich.)

F.C. Wien, BA (Qu.), MA, PhD (Cornell)

D. Williams, AB (Chic.), MSW (Calif.)

Assistant Professors

J.B. Duplisea, BA, MSW (Mt. A)

G. Fitzgerald, BA (Dal), MSW (King's)

J. Harbison, BA, BSS (Dublin), Grad. Dip. SW (Edinburgh)

E. MacDonald, BA (St. Dunstan's), BSW, MSW (Ottawa) (Resident Faculty Member, Charlottetown)

M.J. MacDonald, BA (UNB), MSW (Dal) (Resident Faculty Member, Sydney)

B.K. Richard, BA (Mt. A), MSW (Dal)

E. Ruiz, BA, MA (Boston)

A. Sexton, BA (St. Thomas), MSW (Dal)

R. Williams, BA (Acadia), MA (Tor.)

Lecturer

J. Pace, BSW (Dal), MSW (WLU)

Sessional Lecturers (1984/85)

J. Williams, BSc (Alberta), MSW (Dal), LLB (Dal)

E.A. Young, BSW, MSW (Tor.) (Resident Faculty Member, Saint John)

Master of Social Work (MSW)

The one-year MSW program is intended to advance knowledge about the resolution of social problems in the Maritime region, and especially to aid in increasing the effectiveness of regional social services. It is intended to offer to professional social workers, and to other persons with a good background for addressing social welfare problems, an opportunity to study in depth subject matter of interest to the student, within one of two specializations.

Specialization topics are community practice, and individual and family practice. The latter is subdivided into concentrations dealing with family and child welfare on the one hand, and social work in physical and mental health settings on the other.

Admission Requirements

Candidates must hold a Bachelor of Social Work degree from a university of recognized standing, or the equivalent. Candidates with some background in social work learning who do not possess a BSW degree may be admitted to a two year program or to a qualifying year, depending on qualifications. Students registered in a qualifying year must reapply for admission. Relevant work experience is an important consideration for admission to both specializations.

Applicants must demonstrate a sound plan of study. The plan will indicate the specialization chosen, classes to be taken in other departments of the university, and the applicant's preference for a specific Master's project or thesis. Persons who meet the minimum admissions requirements can obtain help in developing their study plans from faculty members of the School. The deadline for receiving applications to the program is January 31. The study proposal and supporting documentation must reach the Admissions Office by March 1st. Further information

The Maritime School of Social Work

(Tel. 424-3760)

Director of School

F.C. Wien

Professors

R.W. Carlson, BA, MSW (Penn.), PhD (Chic.)

R.A. Craig, BA (UNB), MSW (MtA)

may be obtained from the Coordinator of Graduate Program, Maritime School of Social Work of Dalhousie University, 6414 Coburg Road, Halifax, N.S., B3H 3J5.

The program can be taken in the form of one calendar year of full-time study or three calendar years of part-time study.

The Program

Individual and Family Practice Specialization: Required Courses

MSW 6335R Theory and Methods of Intervention: 1 credit.

MSW 6340R Social Work in Family and Child Welfare: 1 credit, for students of this concentration.

or

MSW 6345R Social Work in Physical and Mental Health: 1 credit, for students in this concentration.

MSW 6220R Master's Project in Individual and Family Practice: 1 ½ credits, open to independent completion of study.

or

MSW 6230R Thesis in Individual and Family Practice: 1 ½ credits, open to independent completion of study.

Community Practice: Required Courses

MSW 6355R Theories of Community and Community Level Analysis: 1 credit.

MSW 6360R The Theory and Practice of Community Work: 1 credit.

MSW 6220R Master's Project in Community Practice: 1 ½ credits, open to independent completion of study.

or

MSW 6230R Thesis in Community Practice: 1 ½ credits, open to independent completion of study.

Electives

In addition to the 3 ½ credits specified above for each specialization, each student is required to complete 1 ½ credits of electives. At least one half-credit elective must be taken outside the School of Social Work. The School currently offers two electives:

MSW 6350A/B Legal Issues in Social Work

MSW 6365A/B Community Socio-Economic Development

Other

Students are also required to take a non-credit course dealing with contemporary issues in social work. This is:

MSW 5990 Colloquium: (Non-credit).

Students should note that the MSW program includes a field experience component in appropriate agencies for 300-500 hours.

Sociology and Social Anthropology

(Tel. 424-6593)

Chairperson of Department

Victor Thiessen

Professors

J.H. Barkow, AB (Brooklyn), AM, PhD (Chic.)

D.H. Clairmont, BA, MA (McM), PhD (Wash. U)

R.C. Kaill, BA (Dal), BD, MA (Tor.), PhD (McG)

L. Kasdan, MA, PhD (Chic.)

J.J. Mangalam, PhD (Corn.)

W.N. Stephens, AB (Colo.), MA (Bost.), EdD (Harv.)

Associate Professors

P.M. Butler, BA, MA, PhD (U of Tor.)

D.H. Elliott, BA (Yale), PhD (Pitt.)

J.L. Elliott, BA (Wells), MA (Kan.), PhD (Pitt.)

H.V. Gamberg, BA (Brandeis), AM, PhD (Princ.)

V.P. Miller, BA (U. of Calif.-Berkeley), MA, PhD (U of Calif.-Davis)

J.G. Morgan, BA (Nott.), MA (McM), DPhil (Oxon.), *Graduate Coordinator*

J.D. Stolzman, BA (Ore.), MS (Fla.), PhD (Ore.)

V. Thiessen, BA (Man.), MA, PhD (Wis.)

Assistant Professors

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

M. Binkley, BA, MA, PhD (Tor.)

P.G. Clark, BA, MA (McM), PhD (UBC)

N.W. Jabbra, BA (U of Calif.-Santa Barbara), MA (Indiana), PhD (Catholic)

Research Associates

B. Keddy, BScN (MSVU), MA (Dal)

R. McKay, BA (McM), MN, MA (Emory), PhD (Kentucky)

B. Raymond, MA (U of Calif.-Berkeley), PhD (Chic.)

The Department of Sociology and Social Anthropology offers a program of both full-time and part-time study leading to the degree of Master of Arts in Sociology.

Admission Requirements

All candidates must satisfy the general requirements for admission to the Faculty of Graduate Studies. Candidates will normally be expected to hold a four-year degree in sociology with at least an upper second class (B+) standing. It is expected that a candidate's undergraduate work will have included classes in sociological theory, research methods, and statistics. Promising applicants who fail to meet these requirements may be admitted to a qualifying year which, if successfully completed, would permit subsequent enrolment in the MA program.

MA Degree Program

For the minimum time required to complete this program, see Section 2.6. The full-time program is normally of one year's duration. Part-time students are expected to complete all requirements within five years of their initial enrolment in the program.

The normal program is made up of five full-year credits. A thesis, worth two credits, is required as are the following classes: Sociology 5050A (½ credit); Sociology 5060B (½ credit); and Sociology 5200 (one credit). An elective class approved by the Graduate Education Committee constitutes the final credit.

An examination in the student's chosen area of specialization as well as defence of a thesis proposal are required.

Classes

Many of the classes listed below are not offered every year. Please consult the current timetable on registration to determine which classes are to be offered in 1985-86.

- 5010A Sociology of Work Roles
- 5020B Comparative Economic Organizations
- 5030 Social Problems and Social Policy
- 5050A Advanced Theory
- 5060B Advanced Methods
- 5060A Modernization and Development
- 5070 Human Nature and Anthropology
- 5090 Population and Society
- 5120 Social Conflict
- 5130 Sociology of Health & Illness
- 5140B Sociology of Mental Disorders
- 5150 Sociology of Education
- 5160 Dawn of Civilization
- 5180 Issues in the Study of Society
- 5190 Social Movements
- 5200 Graduate Seminar
- 5210 Peasant Society and Culture
- 5220B Coastal Communities
- 5240 Criminology
- 5250 Sociology of Science and Ideas
- 5260 Development of Sociology as a Discipline
- 5270 Sociology of Careers
- 5280 Juvenile Delinquency
- 5290 Penology and Corrections
- 5300 Cross-cultural Study of Socialization
- 5310 Time and Society
- 5510A Graduate Readings in Sociology
- 5520B Graduate Readings in Sociology
- 9000 MA Thesis

Institutes and Centres

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

The Institute of Public Affairs

Acting Director: Michael S. Cross, BA, MA, PhD

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

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

While the Institute of Public Affairs has no direct responsibilities towards academic programs, many of the Institute's educational and research projects involve faculty members of academic departments and schools of Dalhousie University and other universities. Moreover, Institute staff members teach at the graduate and undergraduate levels, and regularly are invited to consult and to participate in research programs of University departments. In the past, Institute research activities have provided opportunities for graduate students to participate in studies related to their own academic pursuits.

The Institute's full-time staff comprises professionals in economics, geography, political science, sociology, psychology, adult education, business management, and public administration. This core staff is augmented by persons who hold joint appointments in the Institute and other departments of the University; in addition, over fifty visiting fellows, special lecturers, researchers, and resource persons contribute to the Institute's work.

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

The Atlantic Institute of Criminology

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

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

Policy for the Atlantic Institute of Criminology is the responsibility of an Advisory Board comprising twelve representatives from the academic and professional community of the region. Associate memberships are available to interested and qualified persons. Workshops and training courses provide opportunities for professional development for employees of the Criminal Justice system in the Atlantic Region.

Dalhousie Ocean Studies Program

Director: Edgar Gold, BA, LLB, PhD, FNI, MCIT, MRIN

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

The Institute of Oceanography

Director: Anthony J. Bowen, MA, PhD

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

The Atlantic Research Centre for Mental Retardation

Director: M.W. Spence, MD, PhD

Established in 1967, the Centre conducts basic biomedical research and population studies in the field of mental retardation. It also provides education in this field to undergraduate and graduate students and the general public. Special tests and consultative services for the prevention and treatment of diseases causing mental retardation are provided by the Centre. The Centre's professional staff hold appointments in various departments of the Faculty of Medicine. Its work is supported by grants from agencies such as the Medical Research Council of Canada, the Department of National Health and Welfare, the Scottish Rite Charitable Foundation of Canada, and the governments of the three Maritime provinces, and by private donations.

The Atlantic Region Magnetic Resonance Centre

Director: W.E. Jones, BSc, MSc, PhD

Established in 1982 with assistance from the Natural Sciences and Engineering Research Council, the Centre is concerned with teaching and research programs in magnetic resonance. The Centre has modern nuclear magnetic resonance (NMR) and electron spin resonance (ESR) instruments including a 360 MHz Narrow Bore Nicolet NMR instrument. In addition to providing well-equipped laboratories and instrumentation for resident and visiting faculty, research scientists and students, the Centre provides NMR spectra and expertise to scientists of eleven universities and research institutes in the Atlantic Region.

The Centre for Foreign Policy Studies

Director: Robert Boardman, BSc, PhD

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

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

The Trace Analysis Research Centre

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

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

The Institute for Resource and Environmental Studies

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

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

The Centre for African Studies

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

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

The Centre for International Business Studies

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

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

The Canadian Centre for Marine Transportation

Director: John Gratwick, BSc

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

Centre for Regional and International Development Projects

Director: R.I. McAllister, MA, Dipl. Econ. Dev., MA

Associate Director: F.M. Cleland, BA, MPI

Established on January 1, 1979, this Centre fosters involvement by Dalhousie faculty and students in selected Canadian regional and international economic development projects including exchange programs for faculty and students. The Centre is responsible for the direction of a number of training and applied research projects in Ghana, Zimbabwe, the European Economic Community, and in Northern and Eastern Canada. The Centre fosters interdisciplinary seminars on development issues and publishes reports and papers undertaken by the Centre. Project support is from a variety of sources, including the Canadian International Development Agency, Council of Maritime Premiers, Institute for Research on Public Policy, and several provincial governments.

Centre for Research in Sensory Psychology and Medical Physics

Director: D.M. Regan, BSc, MSc, DIC, PhD, DSc

Established in 1979, the Centre is supported by grants from the MRC, NSERC, Multiple Sclerosis Society of Canada, NEI (DHEW) and the U.S. Air Force. It links the Departments of Physiology and Physics with the Departments of Medicine, Ophthalmology, Otolaryngology, Pediatrics and Psychiatry. Its aims are (a) to carry out research into diseases that affect vision, hearing and the central nervous system, and (b) to carry out research into visual guidance of vehicles and aircraft.

Centre for Marine Geology

Director: J.M. Hall, BSc, PhD

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

Continuing Education

Continuing Education at Dalhousie is the university's newest academic unit, constituted on 1 October 1984. It was created to serve the needs of part-time and adult learners, both those pursuing degree programs and those studying in non-credit classes. The formation of Continuing Education at Dalhousie signals the university's commitment to make itself more accessible to those who have particular educational needs: those who can study only on a part-time basis; those who cannot attend during the working day; those who are returning to study after an absence from formal education; those seeking to improve skills and qualifications through degree, non-credit or special programs.

Continuing Education at Dalhousie has brought together two existing agencies, the Office of Part-Time Studies and Extension, and the Institute of Public Affairs. The former has had responsibility for summer school, general interest extension classes and the expansion of part-time studies. The latter has been concerned with social policy studies, community service, and non-credit programs in public administration, management and labour leadership. To these has been added a new division for credit programs, charged with expanding evening credit offerings, developing new types of part-time programs, and investigating "distance education," the offering of off-campus classes. Continuing Education at Dalhousie also offers support to the university's professional schools in their programs of continuing professional education.

Part-time and adult students are invited to use the services offered by Continuing Education at Dalhousie. In September of each year, a "Returning to Learning" orientation is held, sponsored by Continuing Education and Counselling Services. The Mature Student Advisor and the Dean are available to offer program advice. Calendars and brochures are published describing summer school and evening credit classes, non-credit and general interest classes and the continuing education programs of the Institute of Public Affairs.

Continuing Education at Dalhousie is located in the Henson Centre, at University Avenue and Seymour Street, as well as 6100 University Avenue and several adjacent houses.

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Douglas Myers, MA (Tor.), PhD (Edinburgh) Professor of Education

Mature Student Advisor
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Research Coordinator, Regional and Urban Studies Centre
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Coordinator, Degree Programs
Stephen Frick, BA (Tor.), PhD (Cornell)

Academic Credit Programs

Part-time students are admitted to many of the credit programs. Admission requirements and regulations generally are the same for all students, although special provision is made for the admission of mature persons who lack normal entrance qualifications.

For information on admission and registration procedures, degree requirements, etc., see the entries for the programs of interest elsewhere in this calendar or in the calendar for the Faculty of Graduate Studies. Fee information is found on page 16. Note also the general university regulations on page 22.

Scholarships and Financial Aid

Certain awards and financial assistance are available for part-time students who qualify. Details may be found in the booklet *Scholarships, Prizes and Financial Aid*, available from the Awards Office.

Special Opportunities for Study and Development

A wide variety of non-credit courses is available in such areas as computers, self-instructional language programs, skill development in many areas, the arts, law, health, social issues, career development and career change.

Information may be found in a separate calendar for Continuing Education available from Continuing Education or the Registrar.

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Innis M. Christie, BA, LL.B., LL.M., from July 1, 1985.

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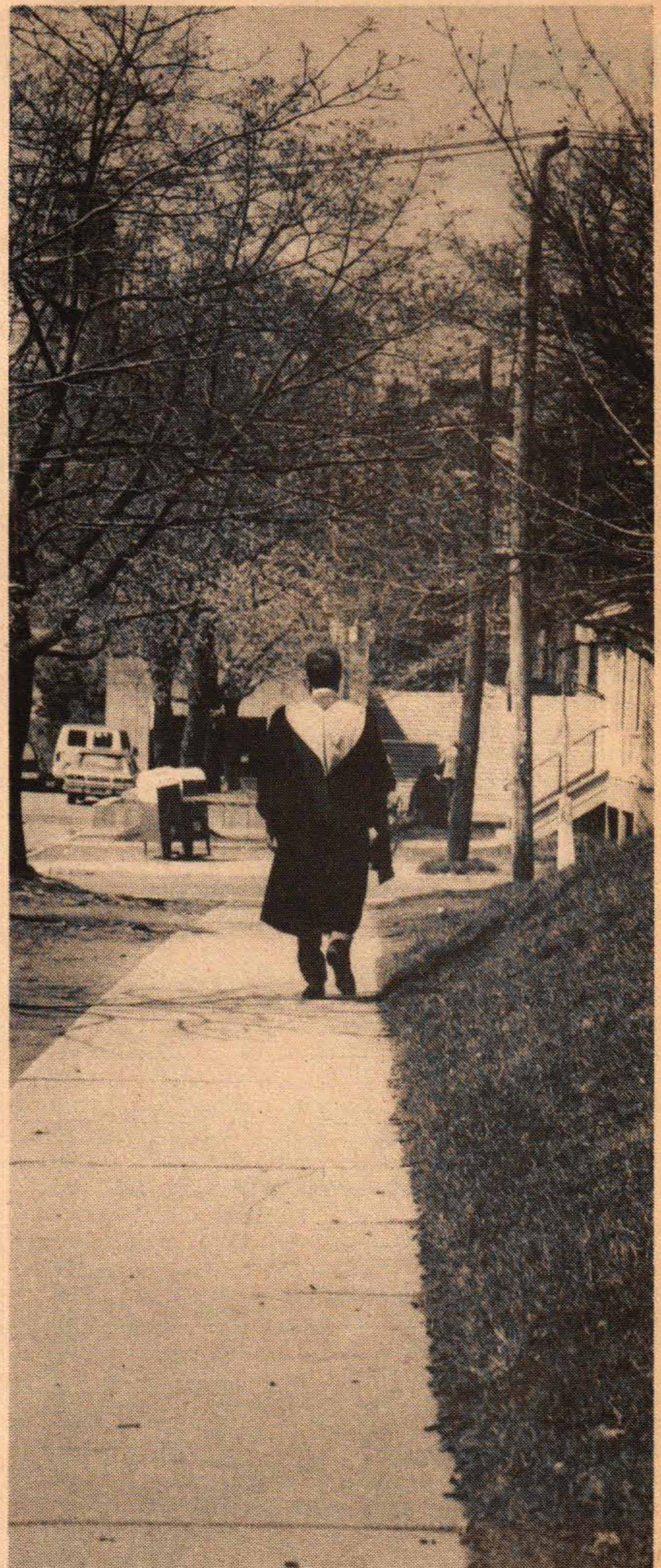
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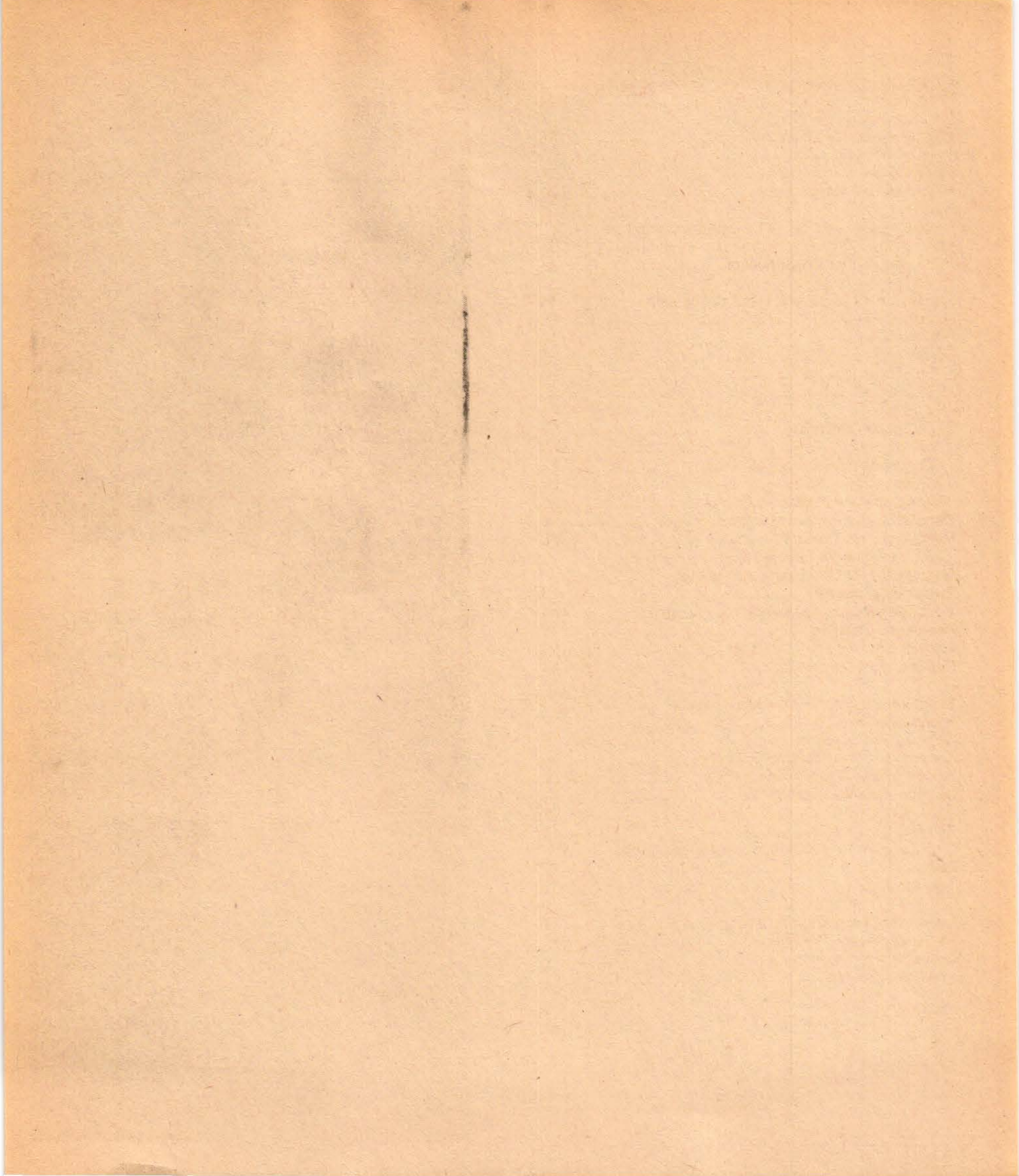
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