



SURGITE

Brock University

Graduate Calendar 1991-1992

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## The graduate calendar

The calendar is published once a year by the Office of the Registrar. It includes a current official list of academic programs and courses, and regulations regarding admissions, examinations and promotions. General information about Brock is also included.

The Senate and Board of Trustees of Brock University reserve the right to make changes in the calendar without prior notice.

For further information, please contact:

Associate Registrar  
Graduate Studies  
Office of the Registrar  
Brock University  
St. Catharines, Ontario  
L2S 3A1  
(416) 688-5550

FAX (416) 988-5488

## Table of contents

Academic calendar, 2	Late registration, 16
Academic programs and regulations, 19	Libraries, 8
Admission requirements, general; (see also individual departments), 13	Loans; (see Financial assistance), 50
Athletics and recreation, 9	Map library, 8
Awards, 50	Medical services, 12
Biological Sciences, 24	Officers of the University, 53
Campus guide, 57	Period of study, 13
Chemistry, 27	Petitions and appeals, 21
Counselling centre, 10	Philosophy, 40
Course numbering system, 23	Physical Education and Recreation, 9
Course requirements; (see also individual departments), 19	Physics, 42
Day care centre, 12	Placement office, 10
Degrees offered, 6	Politics, 44
Education, 30	Proficiency in English, 14
English language proficiency, 14	Programs of study, 19
Examinations, 20	Recreation, 9
Faculty members; (see also individual department), 53	Registration dates, 2
Fees, 16	Registration procedures, 14
Financial assistance, 50	Research grant funds, 50
General information, 6	Residence, 11
Geological Sciences, 37	Scholarships, 50
Grading system, 22	Special needs, 10
Health services, 12	Student services, 10
Immigration regulations, 16	Supervisory committees, 19
Insurance, health, 10	Thesis requirements, 21
International services, 11	Visiting student plan, 14
Jobs: (see Placement office), 10	

THE LIBRARY  
BROCK UNIVERSITY  
ST. CATHARINES  
ONTARIO

## Graduate Academic Calendar 1991-92

1991

Monday	February 25	Last day for written withdrawal without assignment of a grade for fall/winter full credit and second-term half credit courses, MA, MSc, MEd. Last day for submission of theses to MA/MSc departments for students to graduate at spring convocation.
Friday	March 1	Last day for receipt of application to graduate at spring convocation.
Sunday through Sunday	March 10 March 17	March break for teachers. MEd classes will not be held.
Friday	March 22	Last day for MEd applications to be complete to be considered for summer term admission.
Friday	March 29	Good Friday. University closed; library open.
Tuesday	April 2	Last day for submission of major essays to MA departments for students to graduate at spring convocation. Last day for submission of final, proof-read copies of MEd theses/projects to department for students to graduate at spring convocation.
Friday	April 5	Last day of classes, winter term, MA/MSc.
Thursday	April 11	Last day of classes, winter term, MEd.
Friday	April 12	BIRT opens for registration Summer 1991, Fall 1991, Winter 1992, MEd.
Friday	April 19	All requirements, including deposition of theses in library, must be complete for students to graduate at spring convocation, MA/MSc.
Monday	April 29	First day of classes, spring/summer term, MA/MSc.
Wednesday	May 1	Registration for spring/summer term, MA/MSc.
Monday	May 20	Victoria Day. University closed; library open.
Monday	May 27	Last day for spring/summer term course changes with permission of instructor, MA/MSc.
Wednesday Thursday Friday	June 5 June 6 June 7	Spring convocation.
Friday	June 14	Last day for written withdrawal from spring/summer term without assignment of a grade, MA/MSc. Last day for applications to be complete to be considered for fall term admission, MEd.

Friday and Monday	June 28 July 1	Canada Day holiday. University closed; library open.
Tuesday	July 2	First day of classes, MEd summer session.
Friday	July 5	Cancellation of low enrolment courses. Last day for summer term half credit course changes with permission of the program chair, MEd.
Friday	July 26	Last day for submission of final, proofread copies of MEd theses/projects to departments for students to graduate at fall convocation. Last day for submission of MA/MSc theses to departments for students to graduate at fall convocation, 1991.
Wednesday	July 31	Last day for receipt of applications to graduate at fall convocation. Last day for written withdrawal from summer term without assignment of a grade, MEd.
Monday	August 5	Civic holiday. University closed; library open.
Friday	August 9	Last day of MEd summer session. Final date for submission of assignments, summer session. Last day of classes, spring/summer term, MA/MSc.
Friday	August 16	Last day for submission of MA major essays to departments for students to graduate at fall convocation.
Monday	September 2	Labor Day. University closed; library closed.
Wednesday	September 4	Last day for all requirements, including deposition of theses in library, to be complete for students to graduate at fall convocation, MA/MSc.
Thursday	September 12	Cancellation of low enrolment courses, MEd.
Monday	September 16	Registration and first day of classes for fall/winter terms, MA/MSc. First day of classes fall term, MEd.
Friday	September 20	Last day for fall term half credit course changes with permission of instructor, MA/MSc.
Friday	September 27	Last day for fall term half credit course changes with permission of the program chair, MEd. Last day for fall/winter full credit course changes with permission of the program chair, MEd. Last day for fall/winter full credit course changes with permission of instructor, MA/MSc.
Monday	October 14	Thanksgiving Day. University closed; library closed.
Friday	October 25	Fall convocation.
Monday	November 4	Last day for written withdrawal from fall term half credit courses without assignment of grade, MA/MSc

## Graduate Academic Calendar

Friday	November 8	Last day for written withdrawal from fall term half credit courses without assignment of a grade, MEd.
Friday	November 22	Last day for applications to be complete to be considered for winter term admission, MEd.
Friday	December 6	Last day of classes, fall term, MA/MSc.
Friday	December 13	Last day of classes, fall term, MEd.
Tuesday	December 24 (noon)	Christmas recess.
Wednesday	through January 1, 1992	
<b>1992</b>		
Monday	January 6	First day of classes, winter term, MA/MSc.
Friday	January 10	Last day for winter term half credit course changes with permission of instructor, MA/MSc.
Monday	January 13	First day of classes, winter term, MEd.
Thursday	January 16	Cancellation of low enrolment courses, MEd.
Friday	January 24	Last day for winter term half credit course changes with permission of the program chair, MEd.
Sunday through Sunday	February 16 February 23	Reading week, MA/MSc. No classes held.
Monday	February 24	Last day for written withdrawal without assignment of a grade for fall/winter full credit and second term half credit courses, MA/MSc/MEd. Last day for submission of theses to MA/MSc departments for students to graduate at spring convocation.
Monday	March 2	Last day for receipt of applications to graduate at spring convocation, 1992.
Sunday through Friday	March 15 March 20	March break for teachers. MEd classes will not be held.
Friday	March 20	Last day for MEd applications to be complete to be considered for summer term admission.
Tuesday	March 31	Last day for submission of major essays to MA departments for students to graduate at spring convocation. Last day for submission of final, proofread copies of MEd theses/projects to departments for students to graduate at spring convocation.
Friday	April 3	Last day of classes, winter term, MA/MSc.
Thursday	April 9	Last day of classes, winter term, MEd.

Friday	April 10	BIRT opens for registration, Summer 1992, Fall 1992, Winter 1993, MEd.
Friday	April 17	Good Friday. University closed; library open.
Monday	April 27	First day of classes spring/summer term, MA/MSc.
Wednesday	April 29	Registration for spring/summer term, MA/MSc.
Monday	May 18	Victoria Day, University closed; library open.

**Note:** The above dates are subject to change. Please check the academic timetable published each session. For information regarding undergraduate student registration consult the undergraduate calendar or the Office of the Registrar.

## General information

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### An introduction

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In a quarter of a century, Brock University has evolved as an intellectual, cultural and recreational centre for the Niagara region. Recognized for its emphasis on small seminars and labs, Brock stresses the traditional values of scholarship and research. Our community of students and teachers is informal, but dedicated; it represents a diversity of goals and a common desire to stimulate creativity and critical thinking. Currently 5500 full-time students and another 4500 part-time students are continuing their education at the University. The academic year consists of three sessions: spring, fall and winter. Spring session attracts approximately 4000 students.

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### The campus

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Brock is located in the south end of St. Catharines, on the edge of the Niagara escarpment. The 525 acre campus encompasses some of the most inviting woods and countryside in the peninsula and includes a piece of the scenic Bruce Trail. It is within easy commuting distance of all regional centres and has the added advantage of being reasonably close to Toronto, Hamilton and Buffalo. The University's modern teaching facilities and service buildings include the Schmon Tower, which houses administrative and academic offices as well as the library; the Thistle complex of lecture halls and seminar rooms; the classrooms, labs and offices of the Mackenzie Chown Complex; the Physical Education Centre; the Taro Hall; the Sean O'Sullivan Student Centre; the Faculty of Education; residence and the theatre

facilities of the Brock Centre for the Arts.

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### Graduate programs of study

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At Brock University there is no separate Faculty of Graduate Studies. Graduate programs are offered by individual departments and coordinated by the Graduate Studies and Research Committee. Courses of study leading to the following graduate degrees are offered:

**Master of Arts (MA)**  
Philosophy and Politics

**Master of Science (MSc)**  
Biological Sciences, Chemistry, Geological Sciences and Physics.

**Master of Education (MEd)**  
Curriculum Studies, Foundations of Learning and Teaching Behavior and Educational Administration.

Graduate programs are introduced only after appraisal and approval by the Ontario Council on Graduate Studies. All degree programs are open to full- and part-time students, although there are limitations on students in each category according to department.

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### Undergraduate programs of studies

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Brock offers undergraduate degree programs in the various disciplines of the arts and sciences, as well as certificate programs.

**Bachelor of Arts (BA)** (pass and honors) - Applied Linguistics, Canadian Studies, Canadian and European Community Studies (honors only), Child Studies, Classics, Communications Studies, Economics, English Language and Literature, Film Studies, Dramatic and

Visual Arts, French, Italian and Spanish, Geography, Germanic and Slavic Studies, Health Studies, History, Liberal Studies, Music, Neuroscience, Philosophy, Politics, Psychology, Sociology, Teaching English as a Second Language, Urban and Environmental studies, and Women's Studies.

**Bachelor of Science (BSc)** (pass and honors) - Biological Sciences, Biochemistry, Biotechnology, Chemistry, Computer Science, Environmental Science, Geography, Geological Sciences, Mathematics and Physics.

**Bachelor of Accounting (BAcc)** honors,  
**Bachelor of Business Administration (BBA)** honors

**Bachelor of Business Economics (BBE)** pass

**Bachelor of Physical Education (BPhEd)** pass and honors

**Bachelor of Recreation and Leisure Studies (BRLS)** pass and honors

Co-operative studies options are offered by the Faculty of Business (accounting) and the Institute of Urban and Environmental Studies.

The Bachelor of Education (BEd) is a professional degree; applicants must already hold an undergraduate degree.

The four-year concurrent BA/BEd degree program in child studies and the four-year concurrent BSc/BEd degree prepare students for teacher certification.

There are also certificate programs in Public Administration and Urban and Environmental Studies.

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## Background Brock

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Brock University was founded in 1964 by the people of the Niagara Peninsula who wanted a centre of education for their children. Brock today is that and more. The University (which began with fewer than fifty students in a converted refrigeration plant) dominates the escarpment and is a cultural, academic and social centre for the entire peninsula.

Named for Major General Sir Isaac Brock, commander of the British forces during the War of 1812, Brock University is known for its spirit of independence. Smaller than most Ontario universities, Brock is nonetheless highly regarded for both its high academic standards and thriving athletics program. Our teams wear scarlet and blue, the colors of Isaac Brock's battle dress. Our motto, "*Surgite!*", translates to "Push on!"; that is what we do, in the labs, in the classrooms and on the playing fields.

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## Tours

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Throughout the school year, students are invited to tour the campus and meet informally with faculty and undergraduates. A tour guide is available each weekday at 10:30 a.m. and 2:30 p.m., although special arrangements can be made if that time is not convenient. During the summer months, the Office of External Relations offers 'free 10 am and 2 pm tours', Monday to Friday, to all visitors. To arrange a tour for yourself or your group, please contact:

Office of External Relations  
Thistle East, 265  
Brock University  
St. Catharines, Ontario  
L2S 3A1

(416) 688-5550, ext. 3245

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## Smoking policy

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Smoking is permitted only in designated areas of Brock University.

# Facilities and services

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## University library

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The University Library is housed on six floors of the Schmon Tower, the focal point of the campus. Its collections, numbering 850,000 items, have been selected to support the teaching and research programs of the University. All students have access to the collections. Individual study and specialized seating is available for 750 readers. The library is open, including evenings and weekends, for 91 hours each week; hours are extended during exam periods.

The library maintains a number of separate collections. The Reserve Collection contains heavy-demand books and articles which are required course reading and is located at the circulation desk. The Documents Collection contains official publications of all levels of government and of international organizations. The Niagara Regional Collection contains materials published about or in the Niagara Region. The listening room, equipped with record and compact disc players and tape decks, contains 8,000 recordings of music, plays, documentaries and lectures.

Access to the collections is available through CD ROM (SearchMe) and online (GEAC) catalogues with computer terminals on each floor of the Library. These catalogues provide detailed information on the books, journals, documents, atlases and recordings held in the University Library and Map Library and the material located in the Instructional Resource Centre (see below).

The online circulation system provides a speedy control process and an efficient recall procedure for books requested by individual borrowers. In order to borrow materials, students must register with the library and must

present a valid University ID card.

Items not available in the library collections may be requested from other libraries through the Interlibrary Loan Service. Brock students may borrow in person, through a reciprocal agreement, from the libraries at Guelph, Waterloo, Western, Wilfrid Laurier and York universities.

Experienced librarians are available to assist in the use of the collections at a central reference and information desk. They also provide a computer search service, a quick and efficient method of searching indexes and abstracts in over 300 data bases. Free access to a growing number of data bases on compact discs is available. Individual and group orientation tours are provided; individual term paper research assistance, bibliographic instruction and subject-related seminars are scheduled on request.

The library is wheelchair accessible. A private study room and specialized equipment are provided for the use of the disabled. The library can also provide access to talking book material. Further information is available from the Reference department.

Debit card and coin operated photocopy machines are located throughout the library. Equipment is available for reading, and for making paper copies from, microforms.

More detailed information on library collections, services and hours can be found in a series of printed guides available in the library.

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## University map library

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The Map Library, administered by the University Library, is located in the Mackenzie Chown Complex, Room C306. It contains 50,000 map sheets, including a complete set of Canadian federal topographic maps and numerous special-purpose maps, 700 atlases and 15,000 aerial photographs of the

Niagara Region dating from 1921 on. The Map Library is equipped with terminals for accessing the online and CD ROM catalogue, a light table, stereoscopes and a photocopier with enlargement and reduction features.

The Map Library resources and facilities are available to the general public for reference purposes.

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## Instructional resource centre

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Located in the Faculty of Education, this centre contains selected print and audio-visual materials related to educational studies. There is a work area for the production of classroom audio-visual aids. Although geared to the specialized needs of education students, the materials and facilities are available to all students.

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## Computing services

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The University's Computing Centre, which services both the academic and administrative needs of the University, is located in section F of the Mackenzie Chown complex. It houses a UNISYS B7900 which is accessed via terminals located in various laboratories throughout the University.

The computing facilities are available to faculty, staff and students. Students requiring the use of the B7900 for their courses are supplied with a usercode by their instructor.

The system supports all the major programming languages such as ALGOL, FORTRAN IV (and FORTRAN 77), BASIC, COBOL (and COBOL 74), APL and SIMULA together with a number of application packages which include SPSS<sup>+</sup>, IMSL, and BMDP.

Brock's VAX-11/780 computer is housed in section F of the Mackenzie Chown complex. Currently this device supports PASCAL, FORTRAN,

COBOL, MACRO, MODULA-2, and SIMSCRIPT programming languages.

The University supports three micro labs for general purpose academic use. The facilities are located in Rooms A203, A204 and F316. One lab has thirty MACINTOSH SE devices installed in room A204 and connected via MACJANET another networking software. Another lab in room A203 supports the MS-DOS operating system on forty-five UNISYS (IBM-compatible) micro computers networked with NOVELL software. Room F316 contains 24 Macintosh 512 micros that can be used as stand-alone devices or as terminals to access the vax 11/780.

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### Athletics and campus recreation

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Programs and facilities are designed to involve as many members of the University community as possible--as participants and as fans. Recreational, instructional, intramural, and intercollegiate activities revolve around the physical education centre. Facilities include two gymnasias, combatives room, fencing/dancing studio, weight and training rooms, five squash courts, one handball/racquetball court and a 50-metre eight-lane swimming pool. Classrooms, *Badger Shop* (clothing store), snack concession, and offices are also included.

Four outdoor all-weather tennis courts and numerous fields compliment the indoor facilities.

As the largest assembly area on campus, the centre is also used for social events, examinations, and convocation.

### Campus recreation

The campus recreation program offers a wide range of recreational and competitive activities for all levels of ability. The aim of the program is to

provide an opportunity for physical activity through competitive leagues, recreational leagues, clubs and instructional programs that can enrich campus life.

*Recreation:* For those who prefer not to participate in structured programs, squash, racquetball and tennis courts may be booked in advance; other facilities are available as posted. Recreational programs are designed for fun with minimal focus on competition. The following clubs offer activities, instruction and competition: badminton, tai chi, skating, karate, kung fu, wilderness and field lacrosse. New clubs will be organized according to demand.

*Competition:* Team and individual physical activities are offered on a scheduled basis, with officials, league standings, and play-offs. Men's, women's, and co-ed programs are offered. Leagues include slowpitch, flag football, ball hockey, ice hockey, basketball, volleyball, and badminton.

*Instruction:* If you want to be introduced to a new activity, or want to improve existing skills, join one of the instructional programs. Lessons are offered in jazz dance, ballroom dance, fitness, squash, weight training, tennis and women's self-defence. Certification programs including CPR, first aid, fitness leadership, sports injury care and national coaching certification are available.

### Intercollegiate athletics

As a member of the Ontario Women's Intercollegiate Athletic Association (OWIAA), Brock teams compete with other universities in basketball, fencing, rowing, volleyball, cross-country running, tennis, soccer and swimming.

As a member of the Ontario Universities Athletic Association (OUAA), the men's teams compete in basketball, cross-country running, curling, fenc-

ing, hockey, rowing, rugby, soccer, golf, tennis, volleyball, swimming and wrestling.

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### Bookstore

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*Thistle South, 219*

The Brock Bookstore is the primary source of required and recommended reading materials. It also stocks stationery, magazines, a wide range of other reading material, computing supplies, clothing and memorabilia. Bookstore hours: fall/winter session: Monday - Thursday 9 a.m. to 7 p.m., Friday to 4:30 p.m; July and August: Monday - Friday 10 a.m. to 4:30 p.m.

## Student Services

Office of the Dean, Student Affairs  
David L. Jordan, Dean  
*Decew Residence, 214*

The Dean of Student Affairs works to make your life as a student better. He develops and promotes policies and programs to address these concerns, to improve the quality of student life at Brock, and to increase students' appreciation of the academic experience. No matter what you have to say, the Dean of Student Affairs wants to listen.

The dean chairs the Vice-President Academic's Advisory Committee on Student Affairs, a joint committee of students, staff and faculty. Students who are interested in the work of the committee may volunteer through the Office of the Dean of Student Affairs.

The dean is available to assist both individuals and groups of students with whatever concerns they may have. Students may bring their ideas and problems to the dean. If it is not possible to see the dean immediately, the secretary will arrange an appointment.

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### Counselling centre

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Cathie Closs, Co-Director  
Joan McCurdy-Myers, Co-Director  
*Schmon Tower, ST411*

The counselling centre provides a variety of psychological and educational services designed to help students take full advantage of their university experiences.

The Counselling Centre is comprised of:

- Career/Placement Services
- Learning Skills
- Personal Counselling
- Special Needs

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### Career/placement services

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Cindy Nogradi, Co-ordinator  
*Schmon Tower, ST411*

The Counselling Centre offers a variety of career services to help you with your career planning and job search. Attend an information session on how to prepare a cover letter or résumé. Have your résumé critiqued or use the career resource library. Most services are free. Take advantage of our career drop-in service by bringing your questions to a career assistant anytime between 8:30 a.m. and 4:30 p.m.

When you're looking for a part-time job to help you through the school year, or if you're ready to launch your career after graduation, the Student Placement Office is the first office you should approach. Career/placement service keeps up-to-date listings of all jobs available on a permanent, part-time or summer basis. Graduating students should ask about the on-campus recruiting and job referral programs. Our career/placement staff can help you get started on the ladder to success.

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### Learning skills programs

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*Schmon Tower, ST409*

Learning skills instructors/consultants can help you learn how to cope with academic challenges. The offer individual consultations and workshops such as study skills; essay writing; reading comprehension, efficiency and vocabulary; critical reading; seminar and presentation skills; relaxation skills; and language power. Most of these programs are available at a nominal charge.

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### Personal counselling

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*Schmon Tower, ST411*

Many students seek help with specific concerns related to peer relationships, self-confidence, loneliness, stress, sexuality, or academic difficulties. Others bring less clearly defined problems such as low motivation or a feeling that things just are not right. Through individual and/or group counselling, many students resolve their immediate concerns and learn useful skills for dealing with future issues as well.

If something is bothering you and it is interfering with your studies, there is someone who can help. Counsellor/therapists offer professional counselling, in complete confidence, and at no cost to you. Just call or drop in to set up an appointment.

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### Special needs

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Susan Wheeler, Co-ordinator  
*Schmon Tower, ST409*

Brock University encourages and supports the educational aspirations and participation of students with physical and learning disabilities.

Students are encouraged to contact Brock's Special Needs Co-ordinator, Susan Wheeler, in Room ST409 or call ext. 3242 to discuss and develop the most appropriate support services to accommodate their specific needs.

Most facilities at the University are wheelchair accessible, however, an initial orientation outlining specific access routes to buildings, classrooms and parking is advisable. There are six wheelchair accessible housing units on campus in the Village area.

The Special Needs resource area in Room ST409 offers assistance and individualized training to use both regular and more specialized computers and technical aids to assist a variety of impairments. Services such as note-takers, tutors and alternate examination considerations are co-ordinated by Ms. Wheeler.

A reference librarian has been appointed to assist disabled students with their acquisitions as well as to obtain brailled for talking books when requested.

For further information:  
Susan Wheeler  
(416) 688-5550, ext. 3242.

### Financial aid

Ann Stavina, Administrator  
*Thistle North, TH260*

For OSAP inquiries or advice about financial problems or concerns, the people in the Financial Aid Office can help. They can guide you through the paperwork, and let you know how you can qualify for Ontario Student Grants, Canada Student Loans, Ontario Student Loans, Ontario Special Bursary Plans, Ontario Work/Study Plans and Ontario Graduate Scholarships.

Applications and information about assistance for full- and part-time students are available from the Financial Aid Office which is open Monday through Friday 10:00 a.m. to 4:00 p.m. (Tuesdays 10:00 a.m. to 7:00 p.m.)

### Campus ministries

*DeCew Residence, 201 and 202*

Rev. George Tattrie (Protestant Ecumenical Chaplain)

Sister Joan Quinn, CSC (Roman Catholic Ecumenical Chaplaincy)  
Leny Holierhoek, Co-ordinator, Justice and Peace Programs (R.C.)  
Rev. Nick Overduin (Christian Reformed Ecumenical Chaplain)

Campus Ministries believes that spiritual development is an integral part of the university experience, and provides people oriented ecumenical worship, spiritual direction, pastoral counselling, workshops, seminars, study groups and public lectures.

The chaplains are appointed by several religious denominations and are available to discuss any topic with you, particularly concerning spiritual and ethical aspects of your life.

Anyone who wants to be a part of a faith community, to share concerns and experiences or to speak in confidence about any matter is welcome to contact any of the on-campus chaplains.

### Residences

James R. Fleming, Director of Residences and Conference Services  
*DeCew Residence, 205*

The Housing Office is in charge of Brock's three residences: DeCew, a traditional style on-campus residence with all-male, all-female and co-ed accommodations and self-contained cafeteria; Queenston, an off-campus traditional style residence, with alternate male and female floors and a meal plan; or the Village, that combines the independence of townhouse living with the convenience of an on-campus location.

All residence rooms provide the basic necessities and all residences provide opportunities for residents' input through the Residence Action Committee or the Residence Life Staff.

Students who indicate an interest in

residence on their OUAC form will be sent an application for residence along with the University's offer of admission.

In addition, the housing office staff can help you find outside accommodations, with listings of available rooms, apartments and houses, and a package that contains everything you need to make the search a little easier, from a list of average rents to a guide to the Landlord/Tenant Act.

### International services

John Kaethler, Co-ordinator  
*DeCew Residence, 211*

"Every student is an international student", according to John Kaethler, Co-ordinator of International Services.

International Student Advising: International students may find it helpful to discuss academic or personal problems with the co-ordinator. He can offer assistance with such things as immigration, health, banking, accommodation, and the completion of various forms, as well as providing liaison with instructors, the University administration, and the community at large. It would be useful to see him when you arrive at Brock.

Host Family Program: The co-ordinator of International Services, in conjunction with the St. Catharines University Women's Club, offers international students as Host Family Program. This is not an accommodation service, but an opportunity for international students to meet informally with Canadian families.

International Study, Employment and Development: The Co-ordinator also assists Canadian students interested in studying or working in other countries. He co-ordinates an exchange program to the United States and to Great Britain. He is also responsible for international

## Student Services

development activities on campus.

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### Health services

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Melodie Shick-Porter, Nurse  
*Thistle East, TH261*

Don't feel you have to wait for a problem to arise to visit the Health Services.

A team of nurses and physicians provide comprehensive medical/clinical services as well as health education and counselling. We can help you with a medical problem, provide treatment or a referral, discuss nutritional or weight concerns, give allergy injections or update your immunization. We can provide health education and counselling with regards to issues such as contraception, sexually transmitted diseases, stress or lifestyle issues.

Your visit and treatment is strictly confidential. The health fee you paid with registration covers all health services and a special student insurance plan to help cover prescription medication and accident expenses such as dental injuries. Physician visits are covered by OHIP.

If you have any questions or require any additional information a health issue or specific health concern, feel free to drop in - our hours are 8:00 a.m. - 4:00 p.m. Monday through Friday, September to May.

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### Day care centre

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Jane Cripps, Supervisor  
*Faculty of Education, Room 9*

The Rosalind Blauer Centre for Child Care offers two learning programs for children. They are a full-day program

which includes a hot lunch, and a half-day program which can be scheduled for mornings or afternoons. Both programs are open to the children of the community in addition to openings for the children of the students, faculty and staff of the University. A regional subsidy is available to eligible parents.

The centre, located in the Faculty of Education, is a co-operative corporation. The staff is qualified and experienced, assisted by volunteer parents and students.

Call (416) 688-5550, ext. 3515.

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### Sexual harassment adviser

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Ann Bown, Adviser  
*Decew Residence, 213*

Brock University endeavors at all times to provide a working and learning environment that is supportive of scholarship and research and the fair treatment of all employees and students at the University. The basis for interaction is mutual respect, co-operation, and understanding. The university does not condone sexual harassment because it violates personal dignity and integrity.

By working together, we can ensure an atmosphere free from sexual harassment.

The adviser's office is open weekdays. For more information drop in or call (416) 688-5550, ext. 4019.

# Admissions

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## Admission to graduate studies

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### Master of Arts program Master of Science program

The basic admission requirement for an MA or MSc program is an honors bachelor's degree or its equivalent acceptable to Brock University.

Applicants holding a pass degree, or an honors degree without sufficient concentration in the subject area of their graduate degree, will normally require a qualifying year which must be successfully completed before degree candidacy will be granted.

Individual departments may specify additional requirements, such as writing Graduate Record Examinations. Candidates are admitted by the Committee on Graduate Studies and Research upon the recommendation of the appropriate department.

### Master of Education program.

The basic admission requirements for the Master of Education degree are:

1. Completion of one of the following degrees, acceptable to Brock University:
  - a) An undergraduate degree with at least mid-B standing and successful completion of at least one year of professional education studies;\*
  - b) a four year BEd degree with at least mid-B standing;
  - c) a BA/BEd or BSc/BEd degree with at least mid-B standing.

(In practice a higher average may be required as spaces are limited).

2. Two letters of recommendation; one attesting to the academic ability of the applicant and the other to professional experience.
3. Professional experience -- evidence of at least one year of successful teaching or other acceptable professional experience in education.
4. Approved teaching certificate.\*

\*Persons with suitable educational experience in a field that does not require teaching certification (e.g. CAAT instructors) may be considered for special admission.

Applications for summer admission must be completed by March 22, for fall admission by June 14 and for winter admission by November 22, 1991.

Applicants who do not meet the admissions requirements may be considered for admission upon completion of a special qualifying program. This may consist of undergraduate upgrading courses and/or a special program of independent study including a qualifying paper. The Committee on Admissions and Standing of the department of Graduate and Undergraduate Studies in Education will determine the appropriate qualifying program for such students. Qualifying courses will not be credited to the MEd degree.

### Advanced standing

MEd candidates may receive advanced standing for a maximum of two half credit courses only. These courses must have been completed prior to the time of application to Brock. Only graduate courses completed with a grade of 'B' or higher within the last five years will be considered for advanced standing.

### Period of study

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I. For a student registered initially as a full-time graduate student, course and

thesis requirements must be completed within three years from the date of first registration. For a student doing the entire program as a part-time student, all requirements must be completed within five years of the date of first registration. Exceptions to these two limits may be granted in exceptional circumstances by the Committee on Graduate Studies and Research.

Full-time MSc programs will normally be completed in two years. All experimental work for the thesis shall normally stop by the end of the fifth-term after initial registration and, in any event, not later than the end of the second-year (24 months) after the commencement of study. Six months shall normally be allowed for analysis of data and thesis writing.

Where a student is permitted to change status from full- to part-time, or vice versa, the fraction of time remaining under the old status will apply to the new. Permission must be sought from the department and approved by the dean of the faculty.

II. Full-time students must register in the program for at least three terms before the degree will be awarded.

III. The time required to complete qualifying work is in addition to the above period of study. A qualifying year, when required, will normally be similar to year 4 of an honors undergraduate degree program. Students required to complete a qualifying year are admitted to graduate degree candidacy only after satisfactory completion of all required qualifying work.

### Application procedures

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Application for admission to graduate studies forms may be obtained from the Office of the Registrar. All applications for admission must be made on this form. Applicants are required to submit official transcripts covering all academic studies to date including any

## Admissions

graduate work. These should be sent directly from the university to the Office of the Registrar for MEd applicants and to the chair of the department for MA/MSc candidates. In addition, letters of recommendation are required. In the case of MA and MSc candidates, three letters from persons in a position to judge the applicant's academic ability, and in the case of MEd applicants, two letters, one attesting to academic ability and the other to professional experience. It is the responsibility of each applicant to ensure that all documents are submitted. Incomplete applications will not be processed.

Applicants should note that possession of minimum admission requirements does not in itself guarantee admission. The University reserves the right to refuse admission to any candidate.

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### Proof of proficiency in English

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Candidates whose first language is not English will be required to present satisfactory results from the Test of English as a Foreign Language (TOEFL) conducted by the Educational Testing Service, Princeton, New Jersey NJ08541-0001, USA. Further requirements may be established by individual departments.

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### Registration and withdrawal

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MA/MSc degree candidates are required to complete formal registration twice each year; continuing and newly admitted MA/MSc students will be advised of the time and place of these registrations. Registration for newly admitted and continuing MEd students is by touchtone telephone.

Students are officially registered only through the Office of the Registrar. A student may withdraw in good standing from a course within the period

established each term. Withdrawals are effective from the date that written notification is received by the Office of the Registrar. While it is a courtesy to inform the instructor of withdrawal from a course, this does not constitute official withdrawal from either a course or the University. Grades will be recorded on students' transcripts for all courses in which they have registered and from which they have not withdrawn.

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### Continuous registration

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#### A. MA and MSc students

MA and MSc students must maintain continuous registration. This must be done by paying full-time tuition fees for the first three terms (or part-time fees for part-time students to a maximum of twelve terms) and thereafter on a term-by-term basis until all course work has been completed and the first draft of the thesis or essay has been approved by their adviser. Thereafter, a continuing fee must be paid until degree requirements are fulfilled or the time allotted for completion of the degree has elapsed.

#### B. International students

Students who are not Canadian citizens, landed immigrants, foreign students sponsored by CIDA or having diplomatic privileges will pay the full international student fee for a minimum of three terms and until all course work has been completed and the first draft of the thesis or essay has been approved by their adviser. Thereafter, a continuing fee must be paid until degree requirements are fulfilled or the time allotted for completion of the degree has elapsed.

#### C. MEd students

All MEd students must maintain active registration in each term - Spring (for AECF only) or

Summer and Fall and Winter. If, for some acceptable reason you are unable to take courses in specific term(s), an inactive student fee of \$50 each per term is required. (i.e. NO LEAVE OF ABSENCE available). This entitles you to university library privileges and the opportunity to consult with faculty. For your convenience, an INACTIVE STUDENT FEE form is available in the MEd BIRT book. Inactive fees not received by the date specified on the form will result in your being WITHDRAWN from the program. Such students may apply for re-admission but no guarantee can be made for reinstatement. Following initial registration in tutorial, proposal, project and internship courses and thesis, continuous registration must be maintained and the Continuing Student Fee must be paid until degree requirements are fulfilled or the time allotted for completion of the degree has elapsed.

#### D. Penalties

A student who fails to maintain continuous registration will be automatically considered withdrawn from the program. Such students will not be permitted to schedule a thesis defence. A student withdrawn from the program because of non-payment of fees may be reinstated by appeal to the Committee on Graduate Studies and Research and upon payment of all fees outstanding, plus a late fee calculated on the basis of \$25 per term in arrears, and a \$50 reinstatement fee. Reinstatement will be granted only once. If enrolment is allowed to lapse a second time, the student will not be readmitted.

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### Visiting student plan

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The Ontario Visiting Student Plan allows graduate students of an Ontario

university to take graduate courses at another Ontario university while remaining registered at their own university. For details, please contact the chair of the appropriate department.

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#### **Letter of permission**

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Students wishing to take courses outside Ontario must apply to the Office of the Registrar through the chair of the appropriate department for a letter of permission.

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#### **Policy statement**

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Brock University has had, and will continue to have, a racially non-discriminatory policy and therefore does not discriminate against applicants and students on the basis of race, color, or national or ethnic origin. Such a non-discriminatory policy applies to staff and extends to non-discrimination on grounds of creed or sex.

# Fees

**1991/92 Fee schedule  
(subject to change)**

**Master of Education**

\$270.00 per half credit including initial registration in EDUC 5P90 and EDUC 5P93

\$540.00 per credit including initial registration in EDUC 5F95

\$145.00 per term for continuing registration in EDUC 5P90, EDUC 5P93 or 5F95 until requirements completed

\$30.00 thesis binding fee to be charged once only on initial registration in EDUC 5F95

\$15.00 project binding fee to be charged once only on initial registration in EDUC 5P93

\$35.00 late registration fee

For Health and Athletic Fees see next column, Incidental Charges for all Full-Time Graduate Students.

**International student**

Students who are not Canadian citizens, permanent residents, international students sponsored by CIDA or do not have diplomatic privileges will pay the full international student fee.

\$1058.00 per half credit including initial registration in EDUC 5P90 and 5P93

\$2116.00 per credit including initial registration in EDUC 5F95

\$290.00 per term for continuing registration in EDUC 5P90, 5P93 or EDUC 5F95 until requirements completed

\$30.00 thesis binding fee to be charged once only on initial registration in EDUC 5F95

\$15.00 project binding fee to be charged once only on initial registration in EDUC 5P93

\$35.00 late registration fee

**Master of Arts and Science**

There are two possible ways of obtaining a Master of Arts or Science Degree:

**Option A -** Student must complete 2 credits and a thesis.

**Option B -** Student must complete 4 credits and an essay or project.

*Full-time*

**Option A -**  
First three terms \$2667.00

Additional terms needed 889.00  
to complete course work and research on thesis. (i.e. until first draft of thesis is approved by adviser).

Each term thereafter 145.00  
the student becomes a continuing student.

Thesis binding fee to be 30.00  
charged on initial registration (ONLY APPLICABLE TO OPTION A).

**Option B -**  
First three terms \$2667.00

Additional terms needed 889.00  
to complete course work;

Additional terms needed 360.00  
to complete research on essay or project. (i.e. until first draft of essay/project is approved by adviser);

Each term thereafter 145.00  
a student becomes a continuing student.

Incidental Charges for all Full-time Graduate Students:

\$27.00 non-refundable health fee to be charged full-time students once in every 12 month period;

\$30.00 non-refundable athletic and recreation fee to be charged to full-time students for their first academic year (first 3 terms), on subsequent registration (4th term) the charge will be \$10.00 per term;

\$35.00 late registration fee.

*Part-time*

each term until course work is completed and first draft of thesis or essay/project is approved by adviser (to a minimum of 12 terms); \$360.00

each term thereafter 145.00  
the student becomes a continuing student.

Incidental Charges for all Part-time Graduate Students:

\$30.00 thesis binding fee to be charged on initial registration for those students working under Option A only;

\$35.00 late registration fee.

**International Student Fees**

Students who are not Canadian citizens, permanent residents, foreign students sponsored by CIDA or do not have diplomatic privileges will pay the full international student fee.

**Option A -**  
First three terms \$11,010.00

Additional terms until 3670.00  
course work and research on thesis is complete (i.e. until first draft of thesis is approved by adviser)

Each term thereafter 145.00  
the student becomes a continuing student.

Thesis binding fee to be 30.00  
charged on initial registration (ONLY APPLICABLE TO OPTION A)

**Option B -**

First three terms \$11,010.00

Additional terms needed to complete course work 3670.00

Additional terms needed to complete research on essay/project (i.e. until first draft of essay/project is approved by adviser) 1609.00

Each term thereafter a student becomes a continuing student. 145.00

**Incidental Charges for all International Graduate Students:**

\$27.00 non-refundable health fee to be charged full-time students (all international graduate students must be full-time) once in every 12 month period;

\$30.00 non-refundable athletic and recreation fee to be charged full-time students for the first academic year (first three terms), on subsequent registrations (4th term) the charge will be \$10.00 per term;

\$35.00 late registration fee.

Fees are payable at the time of registration. Carrying charges are assessed on all unpaid accounts. Carrying charges will be assessed on all unpaid accounts at regular intervals throughout the year.

**MA and MSc withdrawal credits to tuition fees***Full-time*

If full-time graduate students registered in one of their first three terms withdraw during the first month of any of those terms, they will have their account credited for that term and any subsequent term for which they were charged. The credit for each term will be equal to 1/3 of the total tuition fees. There will be a full credit for the thesis binding fee. The health fee, athletic and recreation fee and ID card fee are non-

refundable. If students withdraw one month or later after a term begins, they will not be entitled to a credit for that term, but will receive a credit for any subsequent term for which they have been charged.

*Part-time*

If a part-time student withdraws, fees shall be charged pro rata on a monthly basis, e.g. if a student withdraws in September-1/4 of fee, if a student withdraws in October-1/2 of fee; November-3/4; December-full.

**MEd withdrawal credits to tuition fees**

Credits to tuition fees for withdrawal from courses are based on various dates throughout the session on a percentage basis. Since these dates will vary from year to year, students will be advised of the exact dates and credit amounts at the time they register for each session.

**MA/MSc STUDENTS  
FEE TABLE  
1991/92  
(subject to change)**

	Initial Registration Term: 1, 2, 3	Each Add'l Term until Course Work complete	Each Add'l Term until Thesis/Proj or Essay is approved	Each Term Continuing Student
<b>FULL- TIME</b>				
Option A (Thesis)	\$2,667.00	\$889.00	\$889.00	\$145.00
Option B (Essay)	2,667.00	889.00	360.00	145.00
<b>INTERNATIONAL STUDENTS</b>				
Option A (Thesis)	11,010.00	3,670.00	3,670.00	145.00
Option B (Essay)	11,010.00	3,670.00	1,609.00	145.00
<b>PART-TIME</b>		360.00	360.00	145.00

# Academic programs and regulations

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## Programs of study

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The program of studies for the Master of Education degree is described in the departmental listing for Education.

The program of studies for the Master of Arts or Master of Science degree will follow one of the patterns shown below as approved by the chair of the department.

Further requirements may be established by individual departments.

### *Scheme A:*

At least two credits, chosen in consultation with the candidate's supervisors. These may be courses from the major department, other departments or interdepartmental courses. A majority must be graduate courses, i.e. numbered 5(alpha)00 or above. In departments where conjoint courses are offered, a student must register in 5(alpha)00 level courses.

A research project, normally involving the preparation and defence of a thesis, which demonstrates a capacity for independent work. The research project will be chosen in consultation with the chair of the department and the student's supervisor. It will be assessed in accordance with the regulations outlined below.

### *Scheme B:*

Four credits, chosen in consultation with the candidate's supervisors. These may be courses from the major department, other departments or interdepartmental courses. A majority must be graduate courses, i.e. numbered 5(alpha)00 or above. In departments where conjoint courses are offered, a student must register in 5(alpha)00 level courses.

A major essay or project assignment requiring demonstration of competence in, and familiarity with, the contents and methodology of the chosen field of study. This will be written under faculty supervision after the topic is approved by the student's supervisory committee or the departmental graduate officer. It will be a major piece of work of greater scope and/or depth than an essay done as a part of a normal course.

The thesis or essay supervisor may not offer all the courses in a candidate's program.

## Extra courses

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A graduate student may, with permission, take up to two extra (graduate or undergraduate) credits as part of the MA or MSc graduate program to be determined after a student has been granted clear admission as a graduate degree candidate. Such credits may include a course or courses in computer science, languages, or statistics. Normally, one such course will be from the candidate's major department. In the case of all extra courses, written approval must be obtained by the student from both the supervisor and the department graduate officer (or chair) of the major department. No extra fee above that charged for the graduate degree program will be levied for these courses. For any other courses taken while the student is in a graduate program, regular fees will be levied.

If, in addition to the minimum course requirements for a Master's degree, a student requires three or more credits from within the department, the admission status of the student should be that of a qualifying or upgrading student, and not that of a graduate student.

## Term Structure

SPRING:	May to August
FALL:	September to December
WINTER:	January to April

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## Graduate studies regulations

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### Supervisory committees

1. The department will appoint a supervisory committee for each graduate student consisting of the chair (or delegate), the supervisor and an additional faculty member (who need not be a member of the department).
  - i) In the absence of a supervisor (e.g. on sabbatical), the chair, in consultation with the supervisory committee, shall ensure that a resident faculty member is responsible for overseeing the student.
2. A full-time student's progress should be reviewed at least twice a year by the Supervisory Committee; a part-time student's progress at least once a year. Additional meetings may be called at the request of the student or other members of the committee.
3. The Supervisory committee shall review:
  - i) The student's course and ancillary requirements;
  - ii) The thesis or major essay topic and progress of research (departments may wish to have the student present an open "planning seminar" which outlines the thesis problem and proposed approach);
  - iii) The student's course performance;

Note: Recommendations should be made to the

departmental chair if the student is to be terminated; the chair will pass the recommendations to the dean.

iv) It is recommended that, several months before completion of the thesis, an open "progress seminar" be presented by the student.

4. If a candidate's graduate supervisor leaves Brock during the student's program, the following options are open to the student:

i) Transfer by the student to the university to which the candidate's former supervisor has moved. In most cases, graduate credit will be given for work done at Brock;

ii) The candidate remains at Brock and changes supervisor and perhaps project.

iii) The student opts to complete the existing project. In this case, the University may seek advice from experts off-campus, or may arrange for the student to work off campus. It will be the responsibility of the Supervisory Committee (augmented, if necessary, by outside expertise), to advise the candidate on all matters regarding the thesis research and preparation. The department is not precluded from seeking advice from the former faculty member, but the former faculty member has no privileged position with respect to the project and thesis; the Supervisory Committee will take precedence in all cases. All special arrangements must be approved by the appropriate dean and the chair of the Committee on Graduate Studies and Research, and the Registrar must be advised of such arrangements.

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**Examination of masters (thesis) candidates**

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1. The research project will be assessed, after a public oral examination, by an examining committee. This committee will consist of at least the chair of the department (or nominee), the dean (or nominee), either of whom may chair the committee; an external examiner, and the supervisor. The chair of the committee, in consultation with the committee, may choose an additional faculty member from another department, and the Senate Committee on Graduate Studies and Research may, in special cases, nominate a member.

2. Prior to the oral examination, three copies of the thesis must be submitted to the chair of the department. The student is expected to bring a fourth copy to the examination. All typing and other costs of preparing the thesis are the responsibility of the student.

3. The examination of master's candidates will not involve a comprehensive examination distinct from the thesis presentation and defence, though a comprehensive examination may be part of the requirement of a course, such as a broad survey or methodology course. Questions related to, but not directly covered in the thesis, may be asked at the defence.

4. The external examiner will be principally responsible for provision of an independent and objective evaluation of the academic quality of the thesis. The external examiner will be appointed by the appropriate dean on the advice of the chair of the department after consultation with the Supervisory Committee from a list of names supplied by the

Supervisory Committee. The external examiner is not to be regarded as an ad hoc member of the Supervisory Committee. The committee and the chair shall determine the nature and extent of contributions made to the thesis during its development by all potential external examiners. Casual knowledge of the thesis by a potential external examiner shall not necessarily constitute grounds for precluding such an individual from invitation to serve as an external examiner.

While external examiners need not be academics, professional competence in the field of the thesis is important, and they may be from industry, government agencies, etc.

i) The thesis should be approved by at least the supervisor and one member of the Supervisory Committee before being forwarded to the external examiner. In case of disagreement between the supervisor and the member, the chair of the department shall decide the issue.

ii) The chair of the department will define the role of the external examiner and may request a written evaluation prior to the defence. If the evaluation is so unfavorable as to jeopardize the approval of the thesis, the defence should be postponed and the chair (of the department) will set up an ad hoc committee to recommend a subsequent course of action.

5. A recommended format for the defence is as follows. The candidate will present a public seminar outlining the study (preferably limited to 30-40 minutes). This will be followed by a period of "open" questioning in which all present may participate. Immediately following, the

examining committee may meet with the candidate in camera for a further period of "closed" questioning. The examining committee will then evaluate the thesis and defence. Approval of the thesis will require acceptance by two-thirds of the committee and must include approval by the external examiner. If revisions are necessary, the committee will specify the areas for revision and the date by which the revised, typed thesis is to be returned (to the chair of the department concerned). This date will normally be within three months of the examination, or six months if additional research is required.

6. In the instance of a failed defence, the candidate may, at the discretion of the examining committee, be permitted a second and final thesis submission and defence. This will be scheduled for no later than one calendar year after the original presentation and defence. In the preparation of the thesis for resubmission the candidate will be guided by the written criticisms of members of the examining committee. Under normal circumstances the composition of the examining committee for the second thesis defence will be identical to that of the original examining committee.
7. A fee of \$75.00 may be charged for re-examination.
8. Appeals relating to the procedures followed in a thesis examination, or to the grade assigned, shall be considered by the Senate Committee on Graduate Studies and Research.

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#### Examination of masters (major essay/project) candidates

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The major essay or project for masters programs shall be evaluated by at least

two readers, and a copy of the paper or project shall be retained in the department. It is recommended that there be a public seminar on the essay or project. For graduation at the spring or fall convocation, a major essay/project must be submitted to the department by the appropriate date listed at the front of this calendar.

If revisions are necessary, the committee will specify the areas for revision and the date by which the revised, typed major essay/project is to be returned (to the chair of the department concerned). The date will normally be within three months of the examination, or within six months if additional research is required.

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#### Thesis requirements

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When the thesis is in its final, completed form, the ribbon or master copy and three other identical copies are to be submitted to the University librarian for binding. The National Library form NL 91, signed copies of the Certificate of Approval and the Graduate Record form must be included.

Two copies of the thesis will be retained by the library, one will be sent to the student's major department and the fourth will be returned to the student. Additional copies can be bound at the candidate's expense.

All typing and other costs involved in the preparation of the thesis are the student's responsibility. Binding costs are included in registration fees.

For graduation at the spring or fall convocation, a thesis must be submitted to the department by the appropriate date listed at the front of this calendar.

A document, *Instructions for students for the preparation and submission of theses for higher degrees*, which gives information regarding thesis preparation is available in the office of the appropriate dean.

To claim copyright, the author must ensure that all copies of the thesis have the international copyright notice at the bottom of the title page.

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#### Research involving human participants

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The Senate of Brock University has established ethical guidelines for the initiation and conduct of research involving human participants. (See Faculty Handbook III.9.10.)

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#### Petitions and appeals

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A petition is a request that a regulation be waived on compassionate grounds or because of extenuating circumstances.

An appeal is a request that an academic decision (e.g. a grade or standing in a program) be changed, based on the evidence supplied by the student.

Students who have a question regarding an academic decision in a course should first discuss the matter with the instructor. In the event of disagreement, the student should refer the matter to the chair of the department. If not satisfied, the student should refer the matter to the Committee on Graduate Studies and Research, c/o Office of the Registrar.

Students who have a question regarding an academic decision on their thesis, project or major essay should first discuss the matter with the chair of the department. If not satisfied, the student may then appeal to the Committee on Graduate Studies and Research, c/o Office of the Registrar.

Petitions and appeals must be submitted to the Committee in writing. Specific and reasonable grounds must be provided. Failure in itself is not a valid reason for an appeal. An appeal must be accompanied by the appropriate

## Academic Programs and Regulations

ate fee, which will be refunded if it is granted. The appeal and fee must reach the Office of the Registrar not later than thirty days after the issuing of grades. For petitions, no fee is required.

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### Plagiarism

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The general regulations covering plagiarism and associated dishonest practices (as noted in FHB III: 12 and in the current Undergraduate Calendar) apply also to graduate programs.

In addition to those procedures, the dean of the faculty involved must inform the chair of the Committee on Graduate Studies and Research of an act of plagiarism as judged.

In the preparation of projects and theses, students should acknowledge the assistance of others, where appropriate, in such matters as the collection and/or compilation of data. Students should note that tampering with raw data, or other dishonest practices, are unacceptable and fall under the general regulations on plagiarism and dishonest practices.

All appeals relating to the charge of plagiarism, penalties assigned, or notations on transcripts will be heard by the Committee on Graduate Studies and Research, whose judgment will be final.

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### Grading system

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For graduate grades only the grades A, B, C, F, IN (Incomplete) and IP (In Progress) will be recorded on the transcript. Grades A, B and C are passing grades but graduate credit will only be given for grades A and B.

If a candidate has a standing of less than B in one-half credit, continued

candidacy will be subject to review by the department.

**Note:** Incomplete, IN, is a temporary grade granted by the Department to a student who has been unable to complete some part of the term work in a course. A grade must be submitted no later than the end of the second term following the assignment of the IN grade (or earlier, at the discretion of the department). At the time of assigning the IN grade, a default grade will be submitted, to be recorded, should the student fail to complete the IN contract.

A student who receives an IP grade must re-register for the course in the term following that for which he receives an IP grade.

The numerical range of the letter grade is:

A 80 82 85 88 90 92 95 98 100  
B 70 72 75 78  
C 60 62 65 68 (no graduate credit)  
F 58 or lower

Grades are mailed to students about four weeks after the end of the examination period. Final grades may only be released by the Office of the Registrar.

Requests for official transcripts of a student's academic record must be made in writing, to the Office of the Registrar and will be filled as received. The fee is \$3 for the first copy, and \$2 for each additional copy on the same order. It normally takes five working days to process each order.

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### Application for graduation

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Application for graduation must be made in writing to the Office of the Registrar by the dates published each year. Candidates should note that in addition to this written application, all degree requirements, including the

depositing of the copy of the thesis in the library must be complete by the dates published in the academic calendar before any degree will be awarded.

# Course numbering system

## Course Identifier

<u>Subject</u>	<u>Number</u>
BIOL	2F03
	departmental code
	credit value
	D -- 1.5 credit (Pre-Service Education only)
	F -- 1.0 credit
	M -- 1.0 credit, variable (multiple) topic
	N -- 0.0 credit
	P,Q-- 0.5 credit
	V -- 0.5 credit, variable topic
	Y -- 0.25 credit
	year of course
	1--year 1      5--graduate studies
	2--year 2      8--pre-service education
	3--year 3      9--in-service education
	4--year 4

### Notes:

1. Courses numbered 2(*alpha*\*)90 or higher may count for credit as second-or third-year courses.
2. Courses numbered 3(*alpha*\*)90 or higher may count for credit as third-or fourth-year courses.
3. Courses taken prior to 1987-88 will be listed on transcripts and statements of standing using the original course number.

\**alpha* stands for any alphabetic letter in the credit value field.

### Examples:

THEA 2F99	-year 2 one credit course in Theatre--may count as a second-or third-year course.
CLAS 2P10	-year 2 half credit course in Classics
POLI 3V70-3V79	-year 3 half credit course in Politics, where the topic varies from year to year. Each separate topic will be assigned a unique number in the 70-79 range.
SOCI 3M80-3M89	-year 3 one credit course in Sociology, where the topic varies from year to year. Each separate topic will be assigned a unique number in the 80-89 range.
EDUC 8Y25	-pre-service education one-quarter credit course.
EDUC 9F42	-in-service education one credit course.
POLI 5V30-5V39	-graduate studies half credit course, variable topic.

**It should be noted that not all courses are offered each year. The class timetable publication should be consulted for offerings in each session.**

## Biological Sciences

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### Officers of instruction

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#### Chair

Alan W. Bown

#### Professors

Alan W. Bown  
William H. Cade  
Michael D. Dickman  
Arthur H. Houston  
Mohan S. Manocha  
Ralph D. Morris  
Peter Nicholls  
R. Peter Rand

#### Associate Professors

Robert L. Carlone  
J. Cameron Lewis  
Donald J. Ursino

#### Assistant Professors

Douglas H. Bruce  
Alan J. Castle  
Yousef Haj-Ahmed  
Joffre Mercier

#### Adjunct Professors

John Middleton  
Peter Ramm

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### MSc program

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The department offers a selection of studies leading to the master's degree in the life sciences. Emphasized are cellular biology (biochemistry, biophysics, microbiology, molecular biology, physiology, ultrastructural studies, genetics) and environmental biology (limnology, behavioral ecology, terrestrial ecology, environmental physiology, population dynamics).

Applications for admission to the MSc program, on either a full-time or a part-

time basis, will be accepted from students holding the BSc (honors) degree or its equivalent from a recognized college or university, with not less than B or second-class standing, and having adequate concentration in the life or physical sciences or mathematics. Those holding the three- or four-year BS or BSc degrees and meeting the above academic standards but lacking sufficient concentration will be considered for admission to the qualifying year program. Every MSc candidate must prepare and defend a thesis which demonstrates a capacity for independent work of acceptable scientific calibre. The student will be guided in all aspects of his or her graduate program by a supervisory committee. The candidate must also complete a minimum of two credits at not less than B level. At least one credit must be drawn from the 5(*alpha*)00 level courses listed below, one half credit of which must be BIOL 5P85-Graduate Seminar.

Additional credits may be required of candidates with insufficient preparation in the area of research specialization. Language, statistical and computer proficiency examinations are not normally required but the department may require demonstration of proficiency in these areas in particular cases.

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### Facilities

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The major equipment holdings of the department include a Phillips 300 electron microscope, Balzers 400T freeze-fracture apparatus, ultramicrotomes, a variety of X-ray generators, scintillation and other isotope counters, micromanipulators, a range of spectrophotometers and laser photolysis devices, an atomic absorption unit, several types of electrophysiological systems, various centrifuges and a water chemistry laboratory. A greenhouse and facilities for terrestrial and

aquatic animals are available to students. The department operates a field research station on University property.

A technical services unit, staffed by a glassblower, machinists and electronic technicians, provides facilities for the development and construction of specialized apparatus.

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### Graduate courses

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A selection of the following courses, determined in part by student interest, will be offered each year. Further information about the courses to be offered in any year may be obtained from the chair of the department.

BIOL 5F40 and 5P41

#### Selected topics in biophysics

A course offered using the combined biophysical resources of Brock, McMaster, Guelph and Waterloo universities. Participation in four symposia constitutes one credit; in two symposia, a half credit. Information concerning the course and the selection of individual symposia can be obtained from the departmental course coordinator.

BIOL 5F90

#### MSc thesis

The preparation and public defence of a thesis which will demonstrate the candidate's capacity for independent study.

BCHM 5P01

#### Advanced plant biochemistry--metabolism

A critical appraisal of the current research literature concerning selected aspects of carbon and nitrogen metabolism. Particular emphasis will be placed on the pathways by which inorganic carbon and nitrogen are assimilated into organic form.

**BCHM 5P02****Advanced plant biochemistry--transport**

A critical appraisal of the current research literature concerning transport processes at plant cell membranes. Particular emphasis will be placed on the role of postulated proton translocating ATPases at the plasma membrane and tonoplast.

**BCHM 5P04****Advanced bioenergetics**

Energy conservation and utilization in living systems; thermodynamic cycles and oxidative phosphorylation; ion pumps and membrane potentials; equilibria and dynamics of energized mitochondria; interactions between mitochondrion and cytoplasm; quantum efficiency of photosynthesis and photosynthetic phosphorylation; growth energetics and Elsdon's constant; whole organism energetics and Kleiber's law.

**BIOL 5P05****Advanced topobiochemistry**

A seminar course to study the spatial and topological problems encountered and solved by DNA- and RNA-manipulating enzymes and by membrane-associated enzyme systems.

**BCHM 5P06****Current topics in photosynthesis**

A graduate seminar/lecture course covering topics in photosynthesis. A series of lectures designed to introduce some of the major research areas in photosynthesis will be followed by student seminars on selected topics (usually two or three papers on one subject). Course content will vary but will include sections on the theory and application of spectroscopy, biochemical preparation strategies, and the application of molecular biological techniques to photosynthesis.

**BIOL 5P11****Advanced histology**

A seminar course in comparative animal histology. The specific topics will be determined by the research interests of participants.

**BIOL 5P15****Advanced fluorescence and electron microscopy**

Experimental procedures, instrumentation, and methodology for sample examination and analysis using fluorescence microscope and electron microscopes.

**BIOL 5P21****Physiological plant pathology**

An advanced study of the physiology of host-parasite relations.

**BCHM 5P27****Advanced enzyme and coenzyme mechanisms**

(also offered as CHEM 5P27)  
Hydrolytic and other processes catalyzed by enzymes lacking non-protein prosthetic groups; transferase reactions involving biotin pyridoxal phosphate, thiamine pyrophosphate, folic acid and cobalamin; oxidation mechanisms involving pyridine nucleotides, flavoenzymes, hydroperoxidases and oxygenases; chemical patterns shown in biosynthetic pathways.  
(May not be taken if CHEM 4P27 has been taken previously.)

**BCHM 5P28****Advanced developmental neurobiology**

A seminar course on the principles of neural development. Topics include cell lineage and early determinative events, trophic functions, growth and plasticity, synaptogenesis, and gene expression in the establishment of the nervous system.

**BIOL 5P52****Advanced developmental genetics**

A seminar course on the role of specific structural and regulatory genes in development; homeotic genes in *Drosophila*; developmental lethals in mammals; maternal effect genes; temporal genes.

**BIOL 5P53****Immunology**

A seminar course on humoral and cellular immunity; structure and synthesis of immunoglobulins; origin

of antibody diversity; transplantation immunity and the importance of the major histocompatibility complex; autoimmunity and allergic reactions.

**BIOL 5P55****Membrane structure and function**

The ultrastructure and function of cellular membrane systems.

**BIOL 5P56****Behavioral genetics**

The genetics of activities performed by the organism in relation to its environment. Coverage will include single gene effects, chromosome aberrations and behavior, continuous variation and the inheritance of quantitative traits, the genetics of behavioral traits in man, *Drosophila*, rodents, and other taxa.

**BIOL 5P57****Advanced recombinant DNA techniques**

The purpose of this course will be to acquaint students with recent technical developments in the methodology and application of various recombinant DNA techniques at an advanced level. Topics will include: construction of genomic and cDNA libraries, DNA sequencing strategies and procedures, directed mutagenesis, S1 and Bal31 deletion mapping, and Southern and Northern hybridization analysis.

**BIOL 5P58****Fungal genetics**

An examination of transmission and molecular genetics of fungi. Recent advances in gene manipulation and the contribution of studies on these organisms to general genetics principles will be covered.

**BIOL 5P59****Advanced molecular virology**

A seminar course on virus-host interaction, productive cycle, effect of virus on host cell and organism, interferon, DNA and RNA tumor viruses, viral vectors, gene therapy and recombinant viral vaccines.

## Biological Sciences

### BIOL 5P60

#### **Advanced seminar in population and behavioral ecology**

A seminar course dealing with fundamental concepts of population and behavioral ecology. The topics selected vary from year-to-year partly in response to student interests.

### BIOL 5P61

#### **Advanced paleolimnology** (also offered as GEOL 5P71)

Techniques for the quantitative isolation, identification and preservation of plant and animal microfossils as well as selected invertebrate macrofossils will be covered. Interpretation of holocene fossil stratigraphy will be described in terms of benthic-planktonic heterotroph-autotroph coupling and biotic-abiotic interactions (Offered in conjunction with the department of Geological Sciences and the department of Geology, McMaster University.)

### BIOL 5P62

#### **Advanced limnology**

Current concepts in limnology will be covered using an essay and seminar format. Individual exploration of selected topics dealing with paleolimnology, biotic diversity, nutrient loading and aquatic productivity will be encouraged.

### BIOL 5P63

#### **Advanced seminar in ecosystem theory**

A seminar course focussing on the ecosystem as a level of biological organization distinct from organism, population, and community. Topics will include: implications of large temporal and spatial scales, taxon independent studies, methodological and philosophical issues.

### BIOL 5P64

#### **Advanced insect behavior**

Exploration of selected topics in the field of insect behavior. Topics will include programming and integration

of behavior, orientation and dispersal, feeding and plant-herbivore coevolution, chemical, visual, and acoustical communication, defensive behavior, reproductive behavior and the eusocial insects.

### BIOL 5P65

#### **Advanced comparative physiology**

Exploration of selected topics in the field of comparative animal physiology with particular reference to systemic interactions and physiological and biochemical responses to natural and man-induced variations in the physico-chemical environment.

### BIOL 5P80

#### **Selected topics in contemporary biology**

An investigation of a specific area or group of related topics in contemporary biology. Candidates for graduate degrees may present one such special topic course toward the completion of the formal course requirements for the MSc degree. Approval of the departmental Graduate Studies committee is required prior to registration.

### BCHM 5P81

#### **Selected topics in contemporary biochemistry**

An investigation of a specific area or group of related topics in contemporary biochemistry. Candidates for graduate degrees may present one such special topic course. Approval of the departmental Graduate Studies committee is required prior to registration.

### BIOL 5P85

#### **Graduate seminar**

An obligatory graduate course in biological sciences. Students will present seminars on one or two topics approved by the graduate co-ordinator and supervisory committee, and unrelated to their thesis topic. Attendance throughout the academic year, September-April, is required. Prerequisite: admission to the graduate program in Biological Sciences.

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## Undergraduate courses

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In addition to graduate courses, courses numbered 4(alpha)00 to 4(alpha)89 may, on decision of the candidate's supervisory committee, be accepted towards fulfillment of the formal course requirements. If a fourth-year course is offered jointly with a corresponding fifth-year course students may not use both courses towards fulfillment of formal course requirements. BCHM 4P07 may not be taken for graduate credit in addition to BIOL 5P85.

# Chemistry

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## Officers of instruction

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### Chair

Richard R. Hiatt  
Stuart M. Rothstein (as of July 1, 1991)

### Professors

Ian D. Brindle  
Eugene A. Cherniak  
Martin S. Gibson  
J. Stephen Hartman  
Richard R. Hiatt  
Herbert L. Holland  
Jack M. Miller  
David C. Moule  
Mary Frances Richardson  
Stuart M. Rothstein  
Jan Vrbik

### Assistant Professor

Kathleen M. Gough

### Research professor (honorary)

Mikio Chiba

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## MSc program

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The department provides facilities for students intending to work toward their master's degree, and for postdoctoral research students.

Candidates with either an honors or a pass BA or BSc degree in Chemistry may apply to the chair of the department for entry into the program described below. Admission may be on either a full-time or a part-time basis. Candidates holding a pass degree will be required to take a qualifying year, similar to year 4 of the undergraduate honors program, before formally enrolling for the MSc degree. Candidates may be required to write Graduate Record Aptitude and Advanced Chemistry Examinations. Candidates holding a four-year degree

with adequate academic standing but lacking sufficient concentration in Chemistry will be considered for admission to the qualifying year program.

Candidates with an honors degree, or who have completed a qualifying year, require a minimum of one year of full-time study. The program must include CHEM 5F90; two 5(alpha)00 level half credits; two half credits (or one credit) which may be at either the 4(alpha)00 or 5(alpha)00 level; and one seminar on a topic approved by the candidate's supervisor. Additional credits may be required of candidates with insufficient preparation in their area of research specialization. As part of CHEM 5F90 every MSc candidate must prepare and defend a thesis which demonstrates a capacity for independent work of acceptable scientific calibre.

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## PhD studies

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Students who have graduated from the MSc program may apply for PhD studies under a Brock supervisor through an agreement between Brock University and McMaster University, Hamilton, Ontario.

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## Research fields

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The following research fields are currently represented:

### Inorganic chemistry

Nuclear magnetic resonance both in solution and in the solid state; halogen redistribution and ionic-covalent equilibria in boron trihalide adducts; fluoroboron cations; Magic Angle Spinning NMR of inorganic solids including silicon carbide, silicate minerals, and fluorides. Synthesis and mass spectroscopy of organometallic compounds, including perhalogenoaromatic compounds and donor-acceptor

adducts; Fast Atom Bombardment mass spectroscopy; strong hydrogen bonding to fluoride, and synthetic applications in organic chemistry; X-ray structure determinations; polytypism and solid-state phase transitions.

### Organic chemistry

Synthesis of heterocyclic, aromatic and aliphatic systems; kinetics and mechanisms of autooxidative processes; reactions of organic free radicals in solution; molecular rearrangements; chemistry of electron deficient intermediates such as arynes and 1:3 dipolar species; mechanisms of thermal and photochemical rearrangements; model systems for biochemical processes; mechanism of biological reactions; biosynthetic pathways; the oxidation of organic molecules by fungi; X-ray structural studies of polymorphism in organic compounds.

### Physical and theoretical chemistry

Rovibronic analysis of electronic band spectra of polyatomic molecules; Franck-Condon calculation of geometry changes on electronic excitation; infrared and Raman spectroscopy; radiation chemistry; kinetic spectroscopy and spectrophotometry of transients produced during the flash photolysis of gases and liquids; quantum mechanical methods; atomic and molecular structure, intermolecular force, and chemical reactivity calculations; applied statistics.

### Analytical chemistry

Development of analytical methods for pesticides and their degradation compounds; studies on the fate of pesticides in plants, insects and the environment. Gas chromatography/mass spectrometry and nuclear magnetic resonance applied to environmental problems. Trace and ultra-trace determination of elements in complex matrices. Applications of FAB mass spectrometry in analytical chemistry. Applications of analytical chemistry to archaeological problems. Structure-

activity relationships in toxicology.

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### Facilities

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The facilities available in the Mackenzie Chown complex are actively used for both teaching and research. A partial list of equipment includes: Co-60-gamma irradiation facility; Bruker WP60 multinuclear FT NMR and Bruker WP-80 CW NMR spectrometers; Bruker AC200 NMR cryospectrometer for high resolution solution and solid state work. Mass spectrometry facilities include two "EB" high resolution double focussing magnetic mass spectrometers, a new Kratos Concept IS and a Kratos MS-30, interfaced to a Kratos DS-90 data system (Eclipse computer) which in turn is connected via an ETHERNET linkage to a SUN SPARC station based Kratos MACH 3 mass spectrometry workstation. Positive and negative ionization, EI, CI, FAB and dynamic FAB sources, GC, LC (particle beam and dynamic FAB) and linked scanning are available. A dedicated HP quadrupole GC/MSD is also available. HP capillary GC with mass selective detector and electron capture detector with data systems; 6m Ebert grating spectograph; Cary and Varian spectrophotometers; Spex 14018 Raman spectrometer; PE 225 IR and Analect FT IR spectrophotometers; preparative and analytical gas chromatographs; flash photolysis apparatus; X-ray precession and universal cameras and Nonius CAD-4 automated single crystal X-ray diffractometer with low temperature accessories; Nova 4x1 minicomputer with graphics terminal and plotter; laser Raman spectrometer; Perkin - Elmer series 3 high pressure liquid chromatograph; Waters Ion and HPLC Chromatographs with data system; Spectrametrics Spectraspan V Direct Current Plasma Emission

spectrometer with Dataspan computer; Rudolph autopolarimeter. SUN SPARC stations and MacIntosh II series computers for theoretical computation and molecular modelling, to be interfaced via ETHERNET to the University's new UNIX academic computing network.

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### Graduate courses

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The following, all but one of which are half credits, are available in the department. A selection of these, determined in part by students' interests, will be offered each year. Further information about the courses to be offered in any year may be obtained from the chair of the department.

#### CHEM 5F90

##### MSc research and thesis

Theoretical and/or experimental research. An external examiner will participate in the evaluation of the student's performance in this course.

#### CHEM 5P00

##### Quantum chemistry--theory

Self-consistent-field (SCF) method; configuration interaction; basis functions; electron correlation; physical properties of atoms, diatomic and polyatomic molecules.

#### CHEM 5P01

##### Quantum chemistry--applications

Application of *ab initio* molecular orbital theories to problems in atomic and molecular structure, to intermolecular forces and to chemical reactivity.

#### CHEM 5P05

##### Molecular spectroscopy--theory

Selected topics in advanced molecular spectroscopy, such as rotational-vibrational Hamiltonian, Coriolis coupling, Herzberg-Teller, Renner,

Jahn-Teller effects, inversion dynamics, overtone spectra, infrared and Raman intensities, molecular structure and conformation.

#### CHEM 5P06

##### Molecular spectroscopy--applications

Design of grating instruments; calibration and operation of Raman, infrared and ultraviolet spectrophotometers; analysis of spectra.

#### CHEM 5P09

##### Photochemistry

Nature of photophysical processes initiated by absorption of visible and ultraviolet quanta in gases and condensed media, properties of excited states, elucidation of photochemical mechanisms, laser induced photophysical and photochemical processes, transient photochemical phenomena.

#### CHEM 5P11

##### Special topics in physical chemistry

Topics may include aspects of chemical dynamics, molecular spectroscopy, and statistical mechanics.

#### CHEM 5P15

##### Nuclear magnetic resonance (NMR) spectroscopy

Applications of high-resolution NMR spectroscopy to chemical systems. Theory of chemical shifts, coupling constants, and relaxation times; instrumentation, including an introduction to pulse and Fourier Transform techniques; structure determination by NMR; chemical exchange effects.

#### CHEM 5P16

##### Mass spectroscopy

The theory and practice of modern mass spectroscopy applied to organic, inorganic and organometallic systems; systematic interpretation of organic mass spectra; high resolution mass spectra GC/MS; metastable ions; computerized mass spectrometry.

**CHEM 5P17****Special topics in nuclear magnetic resonance (NMR) spectroscopy**

Selected topics in advanced NMR spectroscopy, emphasizing pulse and Fourier transform methods and recent applications such as two-dimensional NMR spectroscopy and high-resolution NMR of solids. A continuation of CHEM 5P15.

Prerequisite: CHEM 5P15.

**CHEM 5P18****Special topics in mass spectroscopy**

Selected topics in advanced mass spectrometry emphasizing instrumentation development, ionization techniques and applications. A continuation of CHEM 5P16.

Prerequisite: CHEM 5P16.

**CHEM 5P19****Organic reaction mechanisms**

The critical study of papers of mechanistic and/or synthetic interest in the recent literature drawing attention to the ways in which mechanisms are established and applied as well as to the mechanisms themselves. Practice in the detection of fallacious or unsubstantiated reasoning.

**CHEM 5P20****Special topics in organic chemistry**

Topics may include organic photochemistry, frontier orbital theory, free radical chemistry, symmetry and stereochemistry, and a further study of mechanistic or synthetic organic chemistry.

**CHEM 5P21****Advanced organic synthesis**

Synthetic methodology. Strategy and design in organic synthesis; the concepts of retrosynthetic analysis and synthon use. Asymmetric and stereospecific synthesis.

**CHEM 5P23****Organic stereochemistry**

Symmetry and chirality. Molecular geometry and isomerism. A study of stereoselective and stereospecific reactions in both chemical and bio-

chemical systems. Stereochemistry in solid state organic reactions.

**CHEM 5P24****Natural products chemistry**

A study of the structural features, synthesis and biosynthesis of natural products selected from the acetogenin, alkaloid, steroid and terpene fields.

**CHEM 5P27****Advanced enzyme and coenzyme mechanisms**

(also offered as BIOL 5P27)

Hydrolytic and other processes catalyzed by enzymes lacking non-protein prosthetic groups; transferase reactions involving biotin, pyridoxal phosphate, thiamine pyrophosphate, folic acid and cobalamin; oxidation mechanisms involving pyridine nucleotides, flavoenzymes, hydroperoxidases and oxygenases; chemical patterns shown in biosynthetic pathways.

(May not be taken if CHEM 4P27 or BCHM 4P27 has been taken previously.)

**CHEM 5P31****Special topics in inorganic chemistry**

A directed reading course in advanced inorganic chemistry based on a critical approach to the original literature.

Topics are to be arranged between the student and instructor.

**CHEM 5P33****Chemistry of organometallic and coordination compounds**

A study of main group and transition metal organometallic and coordination compounds with emphasis on synthesis, reactivity, structure, and biological properties.

**CHEM 5P41****Special topics in analytical chemistry**

The course will include topics such as pesticide and residue analysis, advanced chromatographic techniques, chemical analysis applied to environmental and agricultural problems, preconcentration techniques and new analytical techniques, and prediction of

potentially environmentally hazardous compounds through quantitative structure-activity relationships (QSARs).

**CHEM 5P51****Basic structural chemistry and crystallography**

Stress will be laid on how molecules pack together to form 3-dimensional structures. The implications of the packing arrangement for solid state reactions, the production of organic metals, etc., will be covered. The main principles of the determination of molecular structures by single crystal X-ray methods will also be developed.

**CHEM 5P52****Advanced structural chemistry and crystallography**

Advanced topics in modern crystallography and structural chemistry, such as the reciprocal lattice, methods of solving the phase problem, unit cell transformations, analysis of thermal motion, and crystallographic aspects of solid-state phase transitions.

Prerequisite: CHEM 5P51.

All fourth-year courses can be taken for credit by graduate students. The year-four courses are listed in the undergraduate calendar.

# Education

## Officers of instruction

*Dean*  
R. Terrance Boak

*Chair Graduate and Undergraduate Studies in Education*  
John M. Novak  
Kristian Kirkwood (as of July 1, 1991)

*Professors*  
Peter J. Atherton  
R. Terrance Boak  
Ronald W. Common  
Ralph D. Connelly  
Patricia A. Cranton  
Robert Knoop  
Anthony S. Mollica  
John M. Novak  
G. Patrick O'Neill  
Sybil E. Wilson

*Associate Professors*  
Allan C. Bennett  
Raymond T. Chodzinski  
W.L. Roger Crane  
Donald H. Dworet  
Kristian Kirkwood  
James L. Love  
Wallace B. Poole  
Leonard A. Popp  
Cecilia Reynolds  
Merle Richards  
Adele Thomas  
James Wagner  
Alan E. Wheeler  
Rosemary Young

*Assistant Professor*  
Richard Bond  
Susan M. Drake  
John Kearns  
Michael Kompf

*Professor Emeritus*  
Reginald B. Moase

## MEd program

The Master of Education (MEd) degree program at Brock University is designed to improve the professional competence of practitioners. The program allows for considerable flexibility as to course selection but provides candidates with a broad background in theory, research and application within three types of programs.

- a) **Curriculum studies**  
A program which stresses issues, theories, and research related to curriculum. The development and analysis of curricular enterprises are emphasized.
- b) **Foundations of learning and teaching behavior**  
A program in foundations of education involving psychology, philosophy, history, and sociology. Emphasis is placed on making the connection between defensible theory and improved teaching practices.
- c) **Educational administration**  
A program based upon an understanding of education in its social, legal, structural and political contexts. In this program, organizational administrative behavior is analysed.

The Master of Education degree consists of required core course, research component, program electives and a required exit project or thesis to a total of ten half credits or equivalent.

Course selection will be governed by the following conditions:

- a) candidates must choose one of curriculum studies, foundations of learning and teaching behavior, or educational administration, as a specialty area of study;
- b) candidates usually first complete core course in the area of

specialty:  
e.g. Curriculum studies EDUC 5P00;  
Foundations of learning and teaching behavior EDUC 5P30;  
Educational administration EDUC 5P60;

- c) candidates must complete as an exit requirement either --  
a project (EDUC 5P93, valued at a half credit)  
or  
a thesis (EDUC 5F95, valued at one credit).

Students choosing to do a thesis need to schedule a thesis proposal meeting with their committee. This is usually arranged by the committee chair before the student registers for the thesis.

*N.B. Thesis/project requirements are normally scheduled after a minimum of four credits are completed. Registration for these courses should be done no later than the September of the full-time student's third year, or September of the part-time student's fifth year.*

- d) In addition to the core course and the project/thesis requirement, a student should complete a further two credits from the area of specialization. Crosslisted courses (subject to the constraints noted in the Calendar) are deemed to be within the area of specialization;
- e) Students from any specialty area must also take research courses EDUC 5P90 and EDUC 5P92;
- f) Remaining courses to make up the full degree requirement may be selected from any specialty area;
- g) The project or thesis requirement for the degree is offered only at Brock University and not at any off-campus centre. In addition to either the project (EDUC 5P93) or the thesis (EDUC 5F95) at least one additional half credit should be taken at the Brock campus.

Part-time students who wish to initially register in the project or thesis in the summer term need to secure the permission of the department chair.

A selection of courses is given during each term: fall, September-December; winter, January-April; and the summer session, July-August. Students usually commence a degree program only when the required entry core course is offered. Some core courses are offered at the campus of McMaster University, and at the Park Royal Field Office of the Peel Board of Education, Mississauga, and at Dundas Central School.

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### **MEd full-time graduate summer school**

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#### **Pre-sessions**

At least one evening class during May or June. Consult the timetable for meeting time and place.

#### **Summer session**

Regular classes in July (day); the first two weeks in August are for individual conferences and completion of final requirements.

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#### **Course load**

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The normal course load for a part-time student is as follows:

##### *fall/winter terms*

one half credit course in each term.

##### *summer term*

two half credit courses

The normal course load for a full-time student is as follows:

##### *fall/winter terms*

three half credit courses in each term

##### *summer term*

two half credit courses

Full-time students must register in the

program for at least three terms before the degree will be awarded. Any departure from this schedule must be approved by the chair of the department of Graduate and Undergraduate Studies in Education.

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### **Admissions**

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Early application for admission is advised. Application must be made on the Graduate Studies Application form and applicants should indicate if they wish to commence their program at Brock University or through classes offered in the Hamilton area or the Park Royal Field Office of the Peel Board of Education, Mississauga. Incomplete applications will not be considered.

Degree candidates may receive transfer credit for a maximum of one credit at **the time of admission only** for graduate courses completed elsewhere that are approved by the department of Graduate and Undergraduate Studies in Education. Candidates will be required to submit official transcripts, course descriptions and other supporting documentation before consideration will be given to granting transfer credit.

#### **Active Status**

MEd students must maintain active registration until they graduate or leave the program. During an inactive term they pay the Inactive Student Fee, retain library privileges and may consult faculty. Students not maintaining active registration by the payment of Inactive Student Fees, will be withdrawn from the program. Such students must apply for readmission to the program. No guarantee for reinstatement can be made.

#### **Continuous Registration**

Following initial registration in the project (EDUC 5P93) or thesis (EDUC 5F95), continuous registration must be maintained and the Continuing Student Fee paid each term until requirements are completed.

A student who fails to maintain continuous registration will be automatically considered withdrawn from the program. Such students will not be permitted access to University resources or be permitted to schedule a thesis defence.

#### **Reinstatement**

A student withdrawn from the program because of non-payment of fees, tuition, inactive or continuous registration fees, may be readmitted by appeal to the Committee on Graduate Studies and Research and upon payment of all fees outstanding, a late fee calculated on the basis of \$25 per term in arrears, and a \$50 reinstatement fee. Reinstatement will be granted only once. If enrolment is allowed to lapse a second time, the student will not be readmitted.

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### **Graduate courses**

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All the courses listed below except EDUC 5F95 and EDUC 5F96 are half courses. A selection of the courses listed below will be offered each session. Students should consult the schedule of course offerings posted before each session. It is to be noted that in the event that insufficient numbers register in a given course, the course may be cancelled. Selection of courses is usually made with a program adviser.

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### **Curriculum courses**

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#### **EDUC 5P00**

**Curriculum theory and design**  
Curriculum development, models and fundamental theory questions within a Canadian context will be examined. Foundational theory will be reviewed together with organization, design and planning of curriculum. Curriculum trends and problems will also be emphasized.

## Education

### EDUC 5P02

#### **Science in the school curriculum**

An analysis of science (elementary and secondary) curriculum organization and rationale including an overview of current approaches. Curriculum emphases in science teaching are examined via multi-media approach and the use of classroom ideas and science activities relevant to the primary, junior and intermediate student.

### EDUC 5P05\*\*\*

#### **Foundations and facilities for outdoor/environmental education**

The history, development and operation of curriculum-related, out-of-school centres are explored. The integrated practicum comprises visits to centres and the use of conceptual models for the planning, implementation and evaluation of field trips and environmental investigations. Prerequisite: permission of instructor. The department recommends that EDUC 5P05 and 5P06 be taken concurrently.

### EDUC 5P06\*

#### **Developing programs for outdoor/environmental education**

Models and designs for creating programs in natural and man-made environments are studied. Procedures for meeting learner needs, for utilizing community resources and for incorporating investigative and research techniques will be illustrated in field settings.

Prerequisite: EDUC 5P05 or permission of the instructor. EDUC 5P05 may be taken concurrently.

### EDUC 5P07\*

#### **Research seminar in social and environmental studies**

Theories of learning styles are researched for considered use in school programs which address current social and environmental issues. Planned field trips provide the means to assess the theory behind the practice.

### EDUC 5P08\*

#### **Language development**

The changes in language from childhood to maturity, and the ways in which education can enhance them. Issues in the psychology of language will be analysed in terms of their implications for language teaching and the language curriculum. A particular emphasis will be given to unresolved problems in language development and language teaching.

### EDUC 5P09\*

#### **Reading development**

The major theories in reading and learning to read will be examined in terms of their instructional implications. Emphasis will be placed on a developmental approach to the process of reading and the contribution this type of approach can make to problems in the teaching of reading. Consideration of the adequacy of theoretical, empirical and practical arguments concerning reading and reading instruction will also form a part of this course.

### EDUC 5P10

#### **Clinical diagnosis of reading and learning disabilities**

Specific diagnostic procedures with a client from the Reading Clinic of the Faculty of Education under the supervision of the course instructor. The student will be trained to administer and evaluate diagnostic tests and to write a diagnostic report.

Prerequisite: A minimum of one of the following courses: EDUC 5P08, 5P09, 5P11, 5P45.

### EDUC 5P11\*

#### **Understanding reading problems**

The theory and research on reading disabilities. The identification of the possible causes of reading problems and a critical analysis of remedial and developmental treatment programs. The problem of developing the criteria for successful classroom intervention will be a central part of this analysis.

### EDUC 5P12

#### **An introduction to school mathematics**

The goals, methods, and content of school mathematics at the elementary- and secondary-levels, emphasizes the major issues and trends in mathematics instruction and curriculum.

### EDUC 5P15

#### **Curriculum design for productive writing-- reconciling linguistic and cognitive elements**

An investigation of curriculum issues within current perspectives: basic literacy, rhetoric, language experience, linguistic development and cognitive operations. A description of the writing process which reconciles these viewpoints will be synthesized and analyzed. Intended for those involved in the design, implementation, supervision and instruction of writing from the primary division to the university level.

### EDUC 5P16

#### **Curriculum design to develop thinking skills**

An investigation of the role of models of the intellect in learning and curriculum development. The use of thinking skills, such as proportional and correlational thinking, as a basis for the design of school curricula. Thinking skills will be developed as components of an integrated system of inquiry strategies. The strategies are models of mature thinking such as case studies, decision-making, physical science and logic.

### EDUC 5P17

#### **The implementation process in curriculum design**

The effective implementation of educational change focusing on procedures for specifying and encouraging the learnings required by the various stakeholders for their new roles. Change, which is significant in nature and amount, and affects a sizeable portion of the educational system, will be the focus.

**EDUC 5P18****Contemporary issues in curriculum**

Current curriculum issues are researched, presented and discussed. Prerequisite: at least one credit in curriculum studies or permission of the instructor.

**EDUC 5P22****Technology, change and the curriculum**

An overview and understanding of the impact of computer technology and the emerging Information Age on society and schools, and the need to reflect resulting changes in the school curriculum. Candidates will examine ways to integrate new technology (including micro computers) and Information Age skills into the curriculum.

**EDUC 5P23\*\*\*****Introduction to adult education**

The theoretical foundations of adult education, including theories of instruction, theories of learning, and characteristics of the adult learner. Participants will design a segment of adult instruction based on theoretical foundations.

**EDUC 5P24\*\*\*****Techniques and methods in adult education**

Instructional techniques and methods for adult learners. Participants will have the opportunity to explore various strategies, including research on their effectiveness and an analysis of their own skill in implementing the strategies.

Prerequisite: EDUC 5P23 or permission of the instructor.

**EDUC 5P26****Curriculum processes I**

Procedures for designing defensible curriculum to bridge the gap between general goals and specific classroom practice. This first part of a two course sequence (see EDUC 5P27) emphasizes the clarification of goals, the elaboration of learnings, the specification of instructional contexts, the construction of curriculum organizers for complex objectives, and the design of growth strands for learnings.

**EDUC 5P27****Curriculum processes II**

This second part of a two course sequence (see EDUC 5P26) emphasizes the translation of growth strands into instructional objectives, procedures for developing appropriate methodologies, and principles of design for the effective formatting of curriculum materials. Implications for student assessment and program evaluation will be examined. Prerequisite: EDUC 5P26 or permission of the instructor.

**EDUC 5P28****Curriculum in elementary and secondary physical education**

An advanced course in physical education in which the nature and scope of public and secondary school physical education is considered. Issues and research in physical education curriculum theory will be reviewed within the context of general curriculum theory. Developmental consideration with respect to children, instructional strategies, evaluation and problems and future trends will be examined.

**EDUC 5P29****Leisure education**

The concept and application of leisure education with emphasis on 'education for leisure' in the schools. Special consideration is to be given to the development of integrated and interdisciplinary units of instruction in leisure education and lifestyle planning. Application of leisure research in education as it relates to Canada and other countries will be covered.

\*Course may be counted for credit in curriculum or foundations of learning and teaching behavior.

\*\*\*Course may be counted for credit in curriculum, foundations of learning and teaching behavior or educational administration.

**Foundations of learning and teaching behavior****EDUC 5P30****Foundations of learning and teaching behavior**

An overview and application of basic educational foundational theory to the types of decisions educators make before, during and after contact with students, peers, administrators and community groups. Emphasis is placed on a variety of perspectives for critical and personal analysis of issues related to teaching behavior.

**EDUC 5P31****Sociological foundations of education**

Changing relationships between groups within the school system, the local community and the larger society from different sociological perspectives. Emphasis is on both theoretical and practical aspects of current educational concerns.

**EDUC 5P32****Concepts and issues in learning and motivation.**

Study of the basic concepts of educational psychological theories as they apply to school learning. Application of theory of learner motivation for school achievement to teaching will be emphasized.

**EDUC 5P33****Life span development and the educative process**

Various phases and components of life span development with special emphasis on the implications for teacher behavior. Through an analysis of developmental issues it is intended that educators will better understand and be prepared to intelligently deal with both their own and student development.

**EDUC 5P34****Sociology of minority groups in Canadian education**

The equality of educational opportunity as it relates to various ethnic-linguistic, socio-economic and religious minorities in Canada. Educational policy-

## Education

making will be examined in relation to changing rural and urban school populations resulting from past and present immigration and migratory trends.

### EDUC 5P40

#### **Schools of educational thought**

Concepts and practices that underlie contemporary education. Problems arising in the design, organization and implementation of the various schools will be explored within different socio-political contexts. The course does not presuppose background in educational foundations.

### EDUC 5P41\*

#### **Special issues in early childhood education I**

Evaluation of early childhood education programs. Research on the effect of past and present program models on child development will be considered with a view to designing curricula for young children that encourage optimal growth.

### EDUC 5P42\*

#### **Special issues in early childhood education II**

Contemporary research on cognitive, affective, volitional and/or language processes in early childhood with a view to identifying factors that encourage optimal development.

### EDUC 5P43

#### **Humanistic approaches to education**

A critical analysis of basic theory, principles and educational implications of invitational psychology with special emphasis on the nature and development of self concept theory and its use in the helping professions.

### EDUC 5P44

#### **Human relations in the educative process**

Structured and controlled exposure to commonly encountered interpersonal classroom problems with pupils, parents and fellow teachers. Through problem simulation investigation, analysis and corrective response, clients become aware of their individ-

ual deficiencies and begin to acquire the behavioral skills needed to prevent or effectively deal with a variety of human relations problems.

### EDUC 5P45\*

#### **Learning problems in the classroom: diagnosis and programming in special education**

Major theories, research and instructional strategies developed for the learning disabled child. Current perspectives and controversies on identification, intervention and causative factors will be critically evaluated. An emphasis will be placed on implementation of effective intervention strategies through case study.

### EDUC 5P46\*

#### **Behavioral disorders in special education**

An analysis of the behavioral disturbances of children and adolescents. Topics include aggression, hyperactivity, autism, and other significant behavioral disorders. Since controversies exist over cause, symptomology and treatment of many of these disorders, several viewpoints will be presented. Case study analysis will be used to promote critical thinking skills and help relate theory to practice.

### EDUC 5P47

#### **Deviance as defined by the school and community**

Theoretical foundations of social deviance as defined by society-at-large and the school system. Particular emphasis will be placed on finding transformative solutions to practical problems. Topics can include the effects of school failure, special education labelling and student resistance, social class differences and stereotypical reactions to the elderly and minorities.

### EDUC 5P50

#### **Behavioral principles and techniques in the educative process**

An analysis and application of the behavioral approach to educational problems. An emphasis will be placed

on developing and using behavioral techniques in the classroom and the ethical considerations that should be considered when using this approach.

### EDUC 5P53\*\*

#### **Evaluating teaching effectiveness**

A survey course with the focus on the types of teacher evaluation currently employed locally, nationally and internationally. Principles and procedures involved in assessing teaching effectiveness are examined from different perspectives including self, students and superordinates.

### EDUC 5V55-59

#### **Special topics in foundations of education**

A seminar in which special topics in psychological, sociological, philosophical or historical foundations of education are designated and studied in depth.

\*Course may be counted for credit in either curriculum or foundations of learning and teaching behavior.

\*\*Course may be counted for credit in foundations of learning and teaching behavior or educational administration.

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## Educational administration courses

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### EDUC 5P60

#### **Administrative theory and behavior**

Theoretical, structural, and functional basis of administration and supervision in education, including the analysis and definition of administrative roles, issues, problems and techniques. Entry core course in educational administration.

### EDUC 5P62

#### **Politics in education**

The structure, pattern, and process of political influence on levels of education in Ontario. Policy making and implementation. The use of commissions, task forces, and other devices to determine policy. Intra- and extra-organizational bodies and their

influence on the educational system.

#### EDUC 5P64

##### **Supervisory relationships in education**

Theoretical and research bases of supervisory relationships for administrators. Concepts such as organizational climate, leadership, and interpersonal relationships are examined with implications for evaluation of staff, performance in supervision, operation of program, and in-service education. Prerequisite: EDUC 5P60 or permission of the instructor.

#### EDUC 5P65

##### **Decision making and problem solving**

This course does not focus exclusively on administrative decisions, but rather aims to develop a range of theoretical, conceptual, and practical bases for decision making in educational organizations. Topics include individual and organizational decision making as well as creative problem solving.

#### EDUC 5P70\*\*

##### **Administration: the social context**

The socio-cultural context of administration in terms of students, teachers, professional groups, community. Role theory and the context of expectations for administrative personnel. Reference groups, social control, and social determinants of educational processes.

#### EDUC 5P71

##### **Managing education**

Emphasis is on basic management skills: setting goals; strategic, tactical and operational planning; decision making; designing and organizing work and jobs; staffing and human resource management; organizational development; controlling for results, budgetary controls. A task completion approach is used to apply theory to practical situations.

Prerequisite: EDUC 5P60 or permission of the instructor.

#### EDUC 5P72

##### **Effecting change in organizations**

Organization development is a planned change process which, when adapted

for schools, seeks to relate organizational self-evaluation and organizational self-renewal to school effectiveness.

Open to practicing educators, the course seeks to provide theory of change in educational organizations, experience in the diagnosis of educational organizations, and opportunity to participate in the planning of organizational development programs.

#### EDUC 5P73

##### **Leadership in education**

Personal leadership style, behavior and potential are stressed. The case study method is used to apply current leadership theories and major research findings to situations involving leadership issues in various educational institutions.

#### EDUC 5P74

##### **Organizational behavior in educational institutions**

Concepts, models and issues are examined that bear on the behavior of people in organizations. Topics include personalities, psychological types, perceptions, attitudes, job satisfaction, problem solving and decision making, work motivation, socialization, culture, communication, group dynamics, conflict, power, politics, stress, career planning, ethics and change.

#### EDUC 5P75\*\*\*

##### **School finance**

An analysis of major problem areas in the financing of education in Canada, including the demand for and supply of educational services, factors influencing educational cost, approaches to educational planning, taxation for education grant structures, budgeting and collective bargaining.

#### EDUC 5P76

##### **Education: the legal context**

Legal constraints and influences on educational organizations and practices in Ontario. Federal, provincial, and particularly education law as related to functions, facilities, personnel, support, and administration in systems of education.

#### EDUC 5P80\*\*\*

##### **Gender issues in education**

Gender as an important aspect of school life. Emphasis is on classroom interaction patterns, curriculum materials and the procedures used to evaluate and promote teachers into administrative roles such as school principal. Historical, sociological and psychological explanations for differences in men's and women's experiences in schools are explored.

Not open to students with credit in EDUC 5V80.

#### EDUC 5V81-5V84

##### **Administrative problems in education.**

A problem-centered course for students pursuing a specialty in educational administration. Students will be expected to pursue advanced study of a problem area.

Prerequisite: At least one other specialty credit in educational administration and permission of the instructor.

\*\*Course may be counted for credit in foundations of learning and teaching behavior or educational administration.

\*\*\*Course may be counted for credit in curriculum, foundations of learning and teaching behavior or educational administration.

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#### **General purposes courses**

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#### EDUC 5F95

##### **Thesis tutorial in educational studies**

A research project carried out in collaboration with a faculty adviser and relevant resource personnel.

Prerequisite: EDUC 5P90 and approval of the department of Graduate and Undergraduate Studies in Education. Students are required to complete EDUC 5P90 before registering in EDUC 5F95.

#### EDUC 5F96\*\*\*

##### **Comparative education**

A continuous study experience during

## Education

the summer months in selected international university centres within a defined geographical area. It is analogous to field experience in other disciplines and the three geographical areas projected for usage are Africa, the Caribbean and the United Kingdom.

There is no commitment to offer this course on a regularly scheduled basis.

### EDUC 5P90\*\*\*

#### **Project/thesis proposal**

The development of a proposal which will provide the framework for the student's project or thesis. The proposal will be formally presented to the project supervisor. Students must submit a completed contract to the department upon registering in the course. May be taken concurrently with any other course, with the following exception. Students are required to complete EDUC 5P90 before registering in either EDUC 5P93 or EDUC 5F95.

### EDUC 5P91\*\*\*

#### **Tests, measurement and evaluation for the classroom teacher**

The various types of evaluation data teachers use to make judgements about student growth, data source, management interpretation and communication.

### EDUC 5P92

#### **An introduction to educational research**

An interdisciplinary analysis of research methods used in education with an emphasis on basic research concepts and their application. This is a required course for all students.

### EDUC 5P93

#### **Project tutorial**

An individual investigation or analysis of a special problem in contemporary educational practice. The topic of the project must be approved by a faculty adviser who will also supervise and guide the student during the preparation of the project. Students are

required to prepare two copies of the final document according to the published MEd project guidelines. Prerequisite: EDUC 5P90. Students are required to complete EDUC 5P90 before registering in EDUC 5P93.

### EDUC 5P94\*\*\*

#### **Current issues in educational research**

An interdisciplinary seminar dealing with research methods and substantive issues in curriculum, foundations of learning and teaching behavior, and educational administration. Emphasis will be placed on the presentation, critique and writing of publishable research.

### EDUC 5P98\*\*\*

#### **Independent study in education**

Specialized study on an individual basis under the direction of the adviser. Prerequisite: Permission of the chair on the basis of a written application submitted through the adviser. Only one independent study course may count towards the MEd degree.

\*Course may be counted for credit in curriculum or foundations of learning and teaching behavior.

\*\*Course may be counted for credit in foundations of learning and teaching behavior or educational administration.

\*\*\*Course may be counted for credit in curriculum, foundations of learning and teaching behavior or educational administration.

# Geological Sciences

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## Officers of instruction

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### Chair

Simon J. Haynes

### Professors

Uwe Brand

Simon J. Haynes

Wayne T. Jolly

John Menzies

Jaan T. Terasmae

### Associate professors

Richard J. Cheel

Jean-Jacques Flint

Stephen Westrop

### Assistant professor

Gregory C. Finn

Frank Fueten

## MSc program

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The department offers a program leading to the Master of Science (MSc) degree. Topics are available in the research areas of Quaternary palynology, paleoecology and glacial geomorphology, carbonate diagenesis and biogeochemistry, paleozoic stratigraphy and paleontology, surface hydrology and sedimentology, volcanology, and igneous petrology, structural geology and tectonics, ore genesis, low-temperature geochemistry, industrial minerals and environmental geology.

Candidates with either an honors or a pass BA or BSc degree in Geological Sciences may apply to the graduate adviser of the department for entry into the program. Candidates holding a pass degree or without sufficient concentration in Geology will be required to take a qualifying year, similar to year 4 of the honors program, before formally

enrolling for the MSc degree. Candidates may be required to write Graduate Record or language examinations. Candidates with an honors degree, or who have completed a qualifying year, require a minimum of one year of residency and satisfactory completion of a program which must include GEOL 5F90, four 5(alpha)00 level half credits, or two such half credits and two GEOL 4(alpha)00 level half credits. Completion of additional course work in specific areas may be required in some cases. All candidates are required to present a seminar on the topic of their thesis project.

## Research fields

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The following research fields are currently represented: Quaternary geology, volcanology, thermal processes, fluvial processes, geomorphology, structural geology, tectonics, sedimentology, geochemistry, stratigraphy, palynology, paleoecology, limnogeology, micropaleontology, invertebrate paleontology, industrial minerals, metallogeny, mineral genesis, low grade metamorphic processes, and environmental geology. The interrelated aspects of these fields provide both a basic understanding of the geological processes that have shaped the earth and the basic knowledge needed to cope effectively with some of the most pressing problems facing society today. Students are encouraged to undertake graduate studies programs involving other disciplines.

The department places special emphasis on field studies in order to acquaint students with geological problems in their proper environmental setting.

## Facilities

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Equipment in the department includes X-ray diffraction equipment, particle analysis lab with Quantimet image--analysing computer, MCID image

analysis system and Sedigraph 5000, DTA, automated Varian 1475 AA spectrophotometer, computerized GTA96-400 P graphite furnace, Atomic Absorption Spectrometer, Philips PW 1450/20 AHP X-ray fluorescence analyser, ion-selective electrode equipment, ultraphot photomicroscope, Nuclide cathode luminescope, seismic, fluorometric and resistivity equipment, digitizer, Carbon 14 dating equipment, a scanning electron microscope, digital diluters and an automatic diluting station. The University's mainframe and departmental Apple, IBM and HP computing facilities are also available.

These are supported by fully equipped geochemistry, palynology, sedimentology, hydrology, dendrochronology, paleontology, and X-ray laboratories. The department shares the facilities of electronic, machine, woodworking, and glassblowing shops with the other science departments.

## Graduate courses

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The following courses are available in the department. A certain selection of these, determined in part by student interests, will be offered each year. All are half credit courses, except GEOL 5F90 (MSc thesis).

GEOL 5F90  
MSc thesis

GEOL 5P30  
**Structural geology**  
Study of the relationship between strain and fabric elements in tectonites. Textures. Multiple strain histories and textures. Relationships between strain and geotectonics.

GEOL 5P31  
**Tectonics**  
Structural evolution of different types of 'orogenic' belts. Emphasis will be on Canadian examples where possible. Limitations that structural evolution places on the acceptability of proposed

tectonic models. Global systems of orogenic belts through time.

GEOL 5P35

**Quaternary palynology**

Concepts and techniques in palynological investigations of Quaternary deposits; the Pleistocene and Holocene climatic changes; applied atmospheric palynology, dispersal of palynomorphs.

GEOL 5P40

**Quaternary geochronology**

Geochronological methods and techniques applicable to correlation and dating of Quaternary deposits and events (radiocarbon dating, varved sediments, the fossil record, paleomagnetism, tephrochronology, dendrochronology, paleotemperatures). Quaternary chronology in Canada and correlation with other parts of the world.

GEOL 5P41

**Glaciology**

Study of the physics of glaciers. Mass balance and glacier budget. Mechanics of glacier movement. Conditions of the ice/glacier bed interface. Dynamics of large ice masses. Glacier surges. Response of glaciers to changes in mass balance. Glaciers and climate. Glacier dynamics and glacial landforms.

GEOL 5P45

**Advanced paleoecology**

Correlation between modern ecosystems and those in the fossil record; reconstruction of past environments and the time-sequence of such environments. Applied paleoecology; delineation of past sedimentary basins using biofacies and lithofacies; evolutionary development of ecosystems; paleoecosystems analysis and models.

GEOL 5P46

**Evolutionary paleobiology**

Paleoecology of the marine biosphere. Taphonomy and information loss in fossil record. Changes in composition of marine communities over the Phanerozoic. Regulation of taxonomic

diversity through geologic time. Mass extinctions. Punctuated equilibria. Heterochrony and evolution.

GEOL 5P50

**Sedimentary environments**

Study of modern depositional environments with emphasis on processes and the resulting facies organization. Development of facies models and their application to selected ancient examples.

GEOL 5P55

**Volcanology**

A detailed survey of volcano morphology, distribution of Quaternary volcanic belts, experimental volcanic petrology, and volcanic geochemistry. The current ideas on the interrelations between volcanics and the plate tectonics are summarized and the volcanic processes of the present are compared to those of the geological past, including the ancient continental shield volcanic rocks.

GEOL 5P56

**Ore genesis**

Examination of the geological controls of ore genesis. Thermodynamics and chemistry of metal transport and deposition. Use of isotopes and phase diagrams as indicators of physicochemical environments. Geomorphological control of metal mobility.

GEOL 5P58

**Chemical sedimentology**

Geochemistry of inorganic and organic carbonate grains. Low temperature thermodynamics of elemental and isotopic re-distribution. Application of biogeochemistry and chemostratigraphy to global events and evolutionary processes. Descriptive and chemical diagenesis of carbonates.

GEOL 5P59

**Carbonate geochemistry**

Crystal chemistry and phase relations of rhombohedral and orthorhombic carbonates. Kinetics of calcium carbonate dissolution and precipitation.

Solubility and solid solution of magnesian carbonates. Trace element and isotope distribution of carbonate minerals.

GEOL 5P61

**Quantitative methods in geology**

Elements of data analysis and programming. Applications of statistical methods to geological data. Stochastic models in geology. Prerequisite: an undergraduate course in statistics.

GEOL 5P70

**Fluvial geology**

Principles of flow dynamics. Origin and measurement of turbulent and laminar flows; bed roughness; shear stress and velocity. Flow competence; drag and lift forces, initiation of motion, suspension and bedload. Flow capacity, deterministic and probability models of sediment transport. Channel response and adjustment, armouring and bar formation.

GEOL 5P71

**Advanced paleolimnology**  
(also offered as BIOL 5P61)

Techniques for the quantitative isolation, identification and preservation of plant and animal microfossils as well as selected invertebrate macrofossils will be covered. Interpretation of Holocene fossil stratigraphy will be described in terms of benthic-planktonic, heterotroph-autotroph coupling and biotic-abiotic interactions. (Offered in conjunction with the department of Biological Sciences and department of Geology, McMaster University.)

GEOL 5P75

**Limnogeology**

Formation of lake basins; physical and chemical characteristics of lake sediments and the water column; geological factors in the development of lakes; eutrophication; the fossil record in lake deposits; lakes as a resource (water, recreation, conservation).

GEOL 5P76

**Industrial minerals**

Geology and genesis of industrial mineral deposits. Use of these in the construction and chemical industries.

Aggregate resources and testing.

Urban requirements and land use planning.

Prerequisite: 4th year or graduate standing.

GEOL 5P85

**Pleistocene geology**

Modern concepts of glaciers and glaciation as landscape forming factors; techniques and methods for study and mapping of Quaternary deposits and physiographic features; the influence of glaciation as a factor in Canadian land use.

GEOL 5V90-5V99

**Selected topics in contemporary geology**

An investigation of a specific area or group of related topics in contemporary geology. This special research course will be designed for individual students by the graduate studies advisory committee and approved by the department.

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**Undergraduate courses**

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Some year 4 undergraduate courses can be taken for credit by graduate students with the approval and permission of their advisory committee and the department.

The year 4 courses are listed in the undergraduate calendar.

# Philosophy

## Officers of instruction

### Chair

Martha Husain

### Professors

John R.A. Mayer  
Debabrata Sinha

### Associate professors

Richard S.G. Brown  
David L. Goicoechea  
Martha Husain  
Robert W. Malone  
Murray L. Miles  
George J. Nathan

### Professors emeriti

John H. Nota  
G. Mervyn C. Sprung

## MA program

The master's program focuses on two areas: recent and contemporary European thought, and Asian (especially Indian) thought. Consequently, the majority of courses offered in any one year will be selected from:

- I. Studies in 19th century philosophy: Hegel, Kierkegaard, Nietzsche, Marx, Schopenhauer.
- II. Contemporary studies: Husserl, Heidegger, Sartre, Marcel, Buber, Scheler, Merleau-Ponty, Gadamer, Ricoeur and some contemporary European schools such as Structuralism, the Frankfurt School, Post-Modernism.
- III. Eastern philosophy: Upanishadic thought; texts from the six

orthodox schools of Indian philosophy, especially Advaita Vedanta; Indian Buddhist traditions, especially Mahayana.

- IV. Comparative studies: comparison of Eastern and Western traditions with respect to problems of being, knowledge, person, values and philosophical method.

In addition, from time-to-time, half credit courses may be offered in the following topics: Issues in Recent Anglo-American (Analytic) Philosophy, Studies in Classical Philosophy (Pre-Socratics, Plato and/or Aristotle), Early Modern Philosophy (Descartes, Hume, Kant), Process Philosophy (Bergson, Whitehead, Hartshorne). These areas of specialization fall outside the principal focus of the graduate program, but are represented by individual members of the department.

If in a given year a half credit in one of the above happens not to be offered, an individual tutorial therein may be arranged. Scheme A candidates are limited to a maximum of two half credits as tutorials; scheme B candidates may take up to three half credits as tutorials. The program of any graduate student must be approved by the graduate officer of the department.

Although the time limit for completion of the degree by full-time students is three years, it is to be noted that the program is designed to be completed in one year (twelve months) of full-time studies. Full-time students receiving financial assistance should not expect such assistance to extend beyond the first year.

Candidates should normally have an honors BA in Philosophy. Those with a pass BA in Philosophy will normally

require a qualifying year. Students may choose either scheme A or scheme B. As appropriate, knowledge of languages other than English may be required.

## Graduate courses

Graduate credits are to be obtained by completing courses designated at the 5(alpha)00 level. A course previously taken for undergraduate 4th year credit may not be taken for graduate credit.

Students are advised to consult the departmental **Philosophy Handbook** (available in ST 1233) for detailed descriptions of courses offered in 1991-92.

PHIL 5F80  
MA major essay

PHIL 5F90  
MA research and thesis

PHIL 5P07  
**Husserl and Transcendental Phenomenology**  
Basic issues and methods of Phenomenological philosophy will be studied and explored with reference to some of the major works of Husserl. (Not open to students with credit in PHIL 506hc.)  
Seminar, 3 hours per week.

PHIL 5P08  
**Advanced studies in 19th century Existential philosophy**  
(formerly part of PHIL 500)  
An advanced seminar course in the continental European philosophy of the 19th century, e.g. Kierkegaard, Nietzsche.  
(Not open to students with credit in PHIL 500.)  
**1991-92: Nietzsche**  
Seminar, 3 hours per week.

PHIL 5V06-5V14

**Studies in contemporary European philosophy**

A study of the work of one or more thinkers prominent in recent continental thought.

1991-92: (5V06)-Merleau-Ponty  
(5V09)-Heidegger on  
Nietzsche  
(5V10)-Sartre  
(5V14)-Derrida

Seminar, 3 hours per week.

PHIL 5V15-5V29

**Modern philosophical studies**

An advanced course devoted to one or more of the major thinkers of the tradition from Descartes to the present day.

1991-92: (5V15) - Heidegger  
(5V16) - Hegel  
(5V18) - Freud

Seminar, 3 hours per week.

PHIL 5V30-5V39

**Advanced studies in Indian philosophy**

Concentrated critical and interpretative study of selected texts in the areas of: Advaita Vedanta, Yoga, etc.; or Madhyamika and Yogacara schools of Buddhism.

1991-92: (5V31) - Buddhism  
(5V33) - Eastern Philosophy

Seminar, 3 hours per week.

PHIL 5P76

**Graduate tutorial**

Research course with directed study and regular meetings with a faculty member covering topics not offered in a designated course.

PHIL 5P77

**Graduate tutorial**

Research course with directed study and regular meetings with a faculty member covering topics not offered in a designated course.

PHIL 5P78

**Graduate tutorial**

Research course with directed study and regular meetings with a faculty member covering topics not offered in a designated course.

## Physics

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### Officers of instruction

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#### Chair

John A. Moore

#### Professors

John E. Black  
Frans P. Koffyberg  
John A. Moore  
Colin A. Plint  
Ramesh C. Shukla

#### Associate professor

Bozidar Mitrovic  
Fereidoon S. Razavi

#### Assistant professor

Shyamal K. Bose

#### Senior laboratory instructor

Frank A. Benko

#### Research and teaching associate

H. Zaleski

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### MSc program

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Candidates with an honors BA or BSc degree in Physics may apply to the chair of the department for entry into the program. Candidates holding a pass degree without sufficient concentration in Physics may, with the consent of the department, enrol in a qualifying year similar to year 4 of the honors program before formally applying for entry to the MSc program.

Applicants may be required to write a Graduate Record Examination and/or an English language examination. Full-time candidates with an honors degree or who have completed a qualifying year require a minimum of one year of resident study in a program that must be approved by the chair of the department. The program must include PHYS 5F90 (MSc thesis) and two credits, of which at least one must be a

graduate course. Further credits may be required where a candidate is deficient in a particular area. Part-time candidates may be considered, in which case at least two years study beyond the honors degree is required.

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### Research fields

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The department's main research emphasis is on solid state physics. The following research fields are currently being pursued:

#### *Theoretical physics*

Theoretical studies of the vibrations of atoms and molecules on catalytic metal surfaces. A variety of mathematical and computational techniques, including molecular dynamics, are employed to determine the vibration spectra. This work is done in close collaboration with experimental surface physicists and chemists.

Lattice dynamics: lattice vibrations in simple metals, thermodynamics of anharmonic crystals, formalism of interacting many-body systems, Monte Carlo and molecular dynamics simulations.

Superconductivity: localization and superconductivity, high- $T_c$  materials, superconducting glassy state.

Transport in metals: transport properties of heavy fermion systems.

Non-crystalline materials: calculation of electronic structure and transport properties of amorphous and liquid metals, alloys and semiconductors, vibrational and magnetic properties of amorphous solids.

Theoretical studies of spectroscopy of solids, collision-induced absorption.

#### *Experimental physics*

Conductivity and optical properties of semiconducting oxide glasses; electrical properties of semiconducting oxide compounds; bandgap determination of

oxides using photoelectrolysis.

MeV ion beam analysis of composition and structure of the surface region in solids using Rutherford back scattering, ion induced X-ray and channelling techniques. Study of dopant and impurity atoms in semiconductors and metals.

Tunneling spectroscopy of superconductors, transport studies in metals and alloys, magnetic susceptibility measurements, transport and superconducting properties under pressure, heavy fermions and amorphous compounds, high- $T_c$  materials.

Brillouin and Raman spectroscopy of amorphous and crystalline solids.

Experimental research facilities are supported by electronics, glassblowing and machine shop services. The University provides computing facilities with a Burroughs B7900 computer.

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### Graduate courses

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A selection of the following courses, determined in part by student interest, will be offered each year. Further information about the courses to be offered in any year may be obtained from the chair of the department.

#### PHYS 5F90

##### MSc thesis

A research project involving the preparation and defence of a thesis which will demonstrate a capacity for independent work. The research shall be carried out under the supervision of a faculty member and the thesis defended at an oral examination.

#### PHYS 5P50

##### Advanced quantum mechanics I

Angular momenta, relativistic Schrodinger equation, Dirac equation, positron theory, and many electron problems.

**PHYS 5P51**

**Advanced quantum mechanics II**  
Symmetry, collision theory, Green's function, S-matrix, field quantization.

**PHYS 5P70**

**Advanced solid state physics**  
Topics to be selected.

**PHYS 5P71****Defect solid state**

Line defects and point defects in ionic and covalent crystals: their energies, interactions and influence on electrical and optical properties of materials.

**PHYS 5P72****Many body theory**

Green's functions at zero and finite temperature; perturbation theory and Feynman diagrams; linear response theory; electron-electron interaction; electron-phonon interaction; electrons in disordered systems; Fermi liquid theory; BCS theory of superconductivity.

Prerequisite: PHYS 5P50 and 5P51.

**PHYS 5P73**

**Light-scattering in condensed matter**  
Raman and Brillouin scattering in liquids and crystals, role of crystal symmetry, photoelastic constants, first and second order Raman spectrum of semiconductors and insulators, classical and modern many body polarizability theories of Raman scattering.

**PHYS 5P74****Anharmonicity in crystals**

General theories of anharmonicity and its effect on material properties, perturbation theory techniques in anharmonic problems, Helmholtz free energy, thermodynamic properties and neutron scattering in crystals.

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**Undergraduate courses**


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A number of fourth-year courses carrying graduate credit are offered by the department and can be selected with the permission of the supervisor and the chair.

# Politics

## Officers of instruction

### Chair

David T. Siegel  
William Mathie (as of July 1, 1991)

### Professors

Carl Baar  
William H. N. Hull  
W. D. Kenneth Kernaghan  
J. Patrick Sewell  
Garth Stevenson

### Associate professors

Nicholas Baxter-Moore  
Leah Bradshaw  
Terrance G. Carroll  
Roderick Church  
Gerald E. Dirks  
Juris Dreifelds  
Daniel Madar  
William A. Matheson  
William Mathie  
David T. Siegel

### Assistant Professors

Charles Burton

### Professor emeritus

Victor M. Fic

## MA program

The MA program in Politics began in 1973 and admits twelve to fifteen new full-time students each year. Generous fellowships and other forms of assistance are awarded on the basis of merit and need. The program is small enough to allow students to be treated as individuals and to have close contact with faculty, yet it is large enough to provide diversity and an active intellectual community. Students come from across Canada, as well as from Africa, Asia, Europe, and the United States.

Courses of study and research are designed to meet the needs and

interests of each student. The department of Politics can provide for a wide range of specific interests, including political philosophy, Canadian politics, comparative politics, international relations, judicial administration, and public administration. Faculty expertise and library resources support each area of concentration.

The program provides a sound basis for those wishing to proceed elsewhere to PhD or professional programs, or for those seeking creative careers with government, international organizations, the courts, schools, and public service groups.

Admission normally requires at least a high second-class average and an honors degree. Full-time candidates are required to complete at least three terms of study. The program is designed so that students can fulfil degree requirements within twelve months of admission. Government policy requires that full-time MA candidates who do not complete their program within twelve months shall continue to pay full fees on a term-by-term basis until all course work has been completed and the first draft of their thesis or major essay has been approved by their adviser.

## Graduate courses

There are three types of courses in Politics MA program and all are one term in length. First, there are core courses, which are taught as seminars and which are reserved for graduate students.

- POLI 5P80: Great works in politics
- POLI 5P81: Public policy analysis
- POLI 5P82: Graduate seminar in Canadian politics and administration
- POLI 5P83: Graduate seminar in international and comparative politics

These core seminars bridge the traditional fields of political science and examine some of the most significant works of traditional and contemporary political analysis. These seminars are a key component in the Brock MA program. POLI 5P80 is normally required for all students, and one or two additional core courses must be included in each program of study. The four core seminars listed above will normally be offered each year, but other courses may also be offered as core seminars in some years.

Second, there are specialized courses, some of which are limited to graduate students, but most of which are taught in conjunction with 4(alpha)00 level honors courses. These are also seminar courses with small class sizes. Students in the graduate course have assignments and responsibilities different from those students in the 4(alpha)00 level honors course when the two meet as a combined class.

Third, there are tutorial courses. These are offered on an individual basis, except where there is enough student interest to warrant the creation of a seminar. The precise requirements and topics are a matter of agreement between instructor and student, subject to general departmental regulations.

A thesis or major essay is also a part of all courses of study. In designing their programs in consultation with the graduate officer, graduate students follow either scheme A or scheme B.

Scheme A consists of four half credit courses, normally including POLI 5P80 and one other core seminar, and a thesis (POLI 5F99). The thesis is a major piece of research and writing, equivalent to three credits. Scheme A is intended for students who are prepared to do advanced research on a specialized topic.

Scheme B consists of eight half credit courses, normally including POLI 5P80 and two other core seminars, and a major essay (POLI 5F90). The major

essay is equivalent to one credit. Scheme B is for students who will benefit from a broader range of courses.

Students who lack background in empirical methods will be required to take POLI 5P81 as part of their program.

In some cases, courses in other departments may also be appropriate parts of an MA program in Politics. Honors courses in Business Administration and graduate courses in Philosophy are examples. It is also possible to arrange to take graduate courses at other Ontario universities.

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#### Areas of concentration: sample programs

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Programs of study are developed with the needs and interests of individual students in mind, and these are often quite specialized -- for example, modern political philosophy, Canadian political economy, municipal administration, and Third World development. What follows are some of the typical patterns of course selection in the most common general areas of concentration. It should be noted that these are not required patterns of course selection. Students are free to do courses from two or three areas of concentration, and in many cases this may be preferable to specializing in a single field.

Individual courses and concentrations cannot be guaranteed every year. A student who is interested in a particular professor's courses or a particular concentration should indicate this when applying to the MA program. The department will advise the student whether or not these opportunities will be available in the coming year.

#### Canadian politics

Several areas of Canadian politics are of particular concern to Brock faculty, including federalism, cabinet gover-

ment, the mass media, and political economy. A study of Canada is also an important part of many of the other concentrations.

Scheme A: POLI 5P80; at least one of POLI 5P81, 5P82 and 5P83; up to one credit selected from POLI 5P11, 5P14, 5P15, 5P50, 5P54, 5P56, 5P65 and 5V10-19; and a thesis in Canadian politics.

Scheme B: POLI 5P80; at least two of POLI 5P81, 5P82 and 5P83; up to two credits selected from POLI 5P11, 5P14, 5P15, 5P50, 5P54, 5P56, 5P65 and 5V10-19; at least one additional credit; and a major essay in Canadian politics.

#### Comparative politics

Western Europe, Eastern Europe, the Middle East, South Asia and the Asia-Pacific nations are geographical areas of focus for the department. Subjects of special interest are federalism, the integration and disintegration of political communities, elites, and mass media.

Scheme A: POLI 5P80; at least one of POLI 5P81, 5P82 and 5P83; up to one credit selected from POLI 5P32, 5P33, 5P38, 5P39, 5P40, 5P43, 5P45, 5P53 and 5V30-39; and a thesis in comparative politics.

Scheme B: POLI 5P80; at least two of POLI 5P81, 5P82 and 5P83; up to two credits selected from POLI 5P32, 5P33, 5P38, 5P39, 5P40, 5P43, 5P45, 5P53 and 5V30-39; at least one additional credit; and a major essay in comparative politics.

#### International relations

Brock's concentration in international relations provides the diverse viewpoints necessary to understand today's world of threat and opportunity. Several faculty members specialize in international relations and offer courses which reflect actor-oriented and system-oriented perspectives and which address problems of effective action as well as intellectual comprehension.

Scheme A: POLI 5P80, at least one of POLI 5P81, 5P82 and 5P83 up to one credit selected from POLI 5P20, 5P21, 5P22, 5P26, 5P27 and 5V20-29; and a thesis in international relations.

Scheme B: POLI 5P80, at least two of POLI 5P81, 5P82 and 5P83; up to two other credits selected from POLI 5P20, 5P21, 5P22, 5P26, 5P27 and 5V20-29; at least one additional credit; and a major essay in international relations.

#### Judicial administration

Brock's concentration in judicial administration is the first of its kind in Canada. It recognizes the distinctive problems faced by the courts and the need for a special course of study which links public administration and management to the Canadian courts. An internship in a court is part of this concentration. Students completing this concentration will receive a MA in Politics with a designation indicating a concentration in judicial administration.

Scheme A: POLI 5P80; at least one of POLI 5P81, 5P82 and 5P83; up to one credit selected from POLI 5P56, 5P57, and 5P58; and a thesis in judicial administration.

Scheme B: POLI 5P80; at least one of POLI 5P81, 5P82 and 5P83; POLI 5P56, 5P57, 5P58, and 5P71; an additional one-half or one credit (POLI 5P52 recommended); and a major essay in judicial administration.

#### Political philosophy

Political philosophy addresses the perennial questions posed by conflicting accounts of how the political community should be organized and by the tension between the requirements of political life and the pursuit of truth. This concentration pays particular attention to the distinctive features of ancient and modern political philosophy, to such themes as justice, law, and the theory of rights, and to a close study of major political philosophers.

## Politics

Scheme A: POLI 5P80; at least one of POLI 5P81, 5P82 and 5P83; up to one credit selected from POLI 5P01, 5P02, 5P06, and 5V00-09; and a thesis in political philosophy.

Scheme B: POLI 5P80; at least two of POLI 5P81, 5P82 and 5P83; up to one and one-half credits selected from POLI 5P01, 5P02, 5P06, and 5V00-09; one additional credit; and a major essay in political philosophy.

### Public administration

This concentration provides a distinctive blend of the political, legal, and administrative dimensions of public administration at the federal, provincial and local levels. Special areas of focus are business-government relations, public administration theory, and policy making. Students completing this concentration will receive a MA in Politics with a designation indicating a concentration in public administration.

Scheme A: POLI 5P80; at least one of POLI 5P81, 5P82 and 5P83; up to one credit selected from POLI 5P11, 5P50, 5P51, 5P52, 5P53, 5P54, 5P55, 5P56, and 5P65; and a thesis in public administration.

Scheme B: POLI 5P80; at least two of POLI 5P81, 5P82 and 5P83; up to two credits selected from POLI 5P11, 5P50, 5P51, 5P52, 5P53, 5P54, 5P55, and 5P65; at least one additional half credit; and a major essay in public administration.

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### Further information

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For further information about the MA program, specific concentrations and fellowships, write to the Graduate Admissions Co-ordinator, Department of Politics.

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### Course descriptions

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All course selections require the permission of the graduate officer.

Students who wish to arrange tutorial courses must first consult the graduate officer.

#### POLI 5F90

##### MA major essay

A major essay required of students following the scheme B.

#### POLI 5F99

##### MA research and thesis

A research project involving the preparation and defence of a thesis which shall demonstrate a capacity for independent work. The research shall be carried out under the supervision of a faculty member and shall be defended at an oral examination.

#### POLI 5P01

##### The philosophy of law

An examination of traditional and contemporary accounts of law and of their implications for issues of contemporary concern. (Taught in conjunction with POLI 4P01).

#### POLI 5P02

##### Principles of classical political philosophy

An examination of the character of pre-modern political philosophy through the careful analysis of specific works of such philosophers as Plato and Aristotle. Special attention will be paid to those features of Ancient philosophy that most markedly distinguish Ancient political science and philosophy from that of modernity. (Taught in conjunction with POLI 4P02.)

#### POLI 5P06

##### Topics in political philosophy

Guided research on particular authors or themes in political philosophy. Philosophers to be studied might include Plato, Aristotle, Hobbes, Montesquieu, Rousseau, Kant, Nietzsche, Max Weber, Gandhi, Habermas and Rawls. Themes might include the issues dividing ancient and modern political philosophy, natural right, theories of justice, concepts of political community, federalism, democratic theory and neo-Marxist theories of the state.

Tutorial.

#### POLI 5P10

##### Topics in Canadian politics

Guided research on a particular topic in Canadian politics. Possible topics include political economy, the prime minister and cabinet, political culture, parties and pressure groups, provincial government and politics, urban government and politics, and such policy areas as communications, immigration, industrial, social and foreign policy. Tutorial.

#### POLI 5P11

##### Issues in local government and politics

An intensive examination of selected issues in local government and politics. Topics may include regional and metropolitan government, provincial-municipal relations and theories of local government. (Taught in conjunction with POLI 4P11.)

#### POLI 5P14

##### Federalism in Canada

A study of aspects of the Canadian federal system. Specific topics will vary from year to year, but may include social diversity and federal institutions; the role of courts; federal-provincial financial relations; federalism and the policy process; the evolving role of provincial authorities; and intergovernmental relations. (Taught in conjunction with POLI 4P14.)

#### POLI 5P15

##### Canadian political economy

This course will take an historical perspective on the development of the political economy tradition in Canada, from the writings of Innis, Mackintosh, and Creighton to contemporary neo-Marxist and dependency theorists. The course will also examine selected issues which might include foreign investments, regional development, the labour movement, resources, and Canada's place in the new international economic order.

(Taught in conjunction with POLI 4P15)

**POLI 5P20****International political, legal and organizational processes**

A study of international phenomena in light of their relationship to theories of international relations. Matters for seminar investigation may include such problems as the patterns of relations between the great powers, including spheres of influence; the use and disuse of international law by various actors as a means of coordinating international relations; and the difficulties of organizing effective international action. (Taught in conjunction with POLI 4P20).

**POLI 5P21****Topics in international politics**

An examination of a particular topic in international affairs. Possible topics include external affairs, bureaucracies and administration, immigration, refugees and international politics, the functioning of international organizations and the international economic order.  
Tutorial.

**POLI 5P22****Foreign policies of the great powers**

An examination of factors shaping the foreign policies of selected major powers along with the techniques adopted to achieve policy goals. (Taught in conjunction with POLI 4P22.)

**POLI 5P26****International politics and national security**

The study of the threat and use of armed force, conventional and nuclear, in the international system. The dynamics of deterrence, coercion and arms races will be examined, along with problems of arms control and non-violent conflict resolution. (Taught in conjunction with POLI 4P26.)

**POLI 5P27****Theories of international relations**

A critical examination of international relations theory with emphasis on the nature of the international system and

its relationship to the choices and actions of individual states. (Taught in conjunction with POLI 4P27.)

**POLI 5P32****Comparative mass media**

A critical examination of selected problems concerning the mass media and the political process in Canada and other states. (Taught in conjunction with POLI 4P32.)

**POLI 5P33****Comparative federalism**

An examination of the theory and practice of federalism as a system of government. Though emphasis will be placed upon United States, Canada and Australia, application of federal principle in other cases of particular interest will also be considered. (Taught in conjunction with POLI 4P33).

**POLI 5P38****Ethnicity and politics**

A comparative analysis of the relationships between ethnicity and politics focussing upon those ethnic communities that produce autonomist or separatist movements. Topics include the nature of ethnic identities; persistence and change in ethnic communities; the politicization of ethnicity; ethnic politics and the state; ethnic nationalism and autonomist and separatist movements; inter-ethnic conflicts; and conflict regulation in plural societies. Taught in conjunction with POLI 4P38.

**POLI 5P39****Elites and power**

An examination of the bases of power and of the degree of power concentration in government, industry, bureaucracy and media in Canada, the U.S.A. and other selected countries; and an analysis of the individuals in top positions of power. (Taught in conjunction with POLI 4P39.)

**POLI 5P40****Problems of Communism**

Through assigned reading, research design, and research paper, the course

explores problems in the field of Communist studies. (Taught in conjunction with POLI 4P40.)

**POLI 5P43****Comparative politics of Southeast Asia**

Through assigned reading, research design, and research paper the course explores problems in comparative politics in selected countries of Southeast Asia. (Taught in conjunction with POLI 4P43.)

**POLI 5P45****Western European politics**

A comparative study of political institutions and processes of selected states in Western Europe. (Taught in conjunction with POLI 4P45.)

**POLI 5P50****Machinery of government**

An advanced treatment of the structures and processes of federal and provincial government in Canada. There will be particular emphasis on the operation of government departments, central agencies, regulatory agencies, and crown corporations. (Taught in conjunction with POLI 4P50).

**POLI 5P51****Public administration theory**

An examination of selected major issues in the theory of public administration. (Taught in conjunction with POLI 4P51.)

**POLI 5P52****Personnel and financial administration in the public sector**

This course focusses on the politics and management of human and financial resources in Canadian governments. Special emphasis is placed on financial management, the budgetary process, collective bargaining and such personnel processes and problems as recruitment, selection, training and affirmative action. (Taught in conjunction with POLI 4P52)

## Politics

### POLI 5P53

#### **Comparative public administration**

A study of the theory of comparative public administration and a comparative analysis of administrative processes, institutions and problems in selected states. (Taught in conjunction with POLI 4P53.)

### POLI 5P54

#### **Business-government relations**

The management of relations between business organizations and governments in Canada. Special emphasis is placed on current problems in business-government relations, the legislative and regulatory environment of business, government promotion of private enterprise, public enterprise, and the means by which business organization influences government decision making. (Taught in conjunction with POLI 4P54.)

### POLI 5P55

#### **Topics in public administration**

Guided research on a particular topic in public administration. Possible topics include the political executive and the public service, federal-provincial administrative relations, public servants in the political process, pressure groups and the public service, and public administration in such policy areas as welfare, justice and foreign affairs.  
Tutorial.

### POLI 5P56

#### **Judicial administration**

An examination of the constitutional, political and managerial problems surrounding the administration of courts including the nature of adjudication, the design of court systems, the concepts of judicial independence, court delay and case flow management, and the administrative roles of judges and court administrators.

### POLI 5P57

#### **Civil and criminal procedure for court administration**

A survey of rules of court as they apply to the administration of justice, including jurisdiction, pleadings, pre-trial procedures, trials and appeals.

### POLI 5P58

#### **Current problems in judicial administration**

A continuation of POLI 5P56 with topics including alternative dispute resolution, the use and limits of computer technology in courts, the problems of personnel, fiscal and records management in court setting, family law and procedure, and gender bias and the courts.  
Prerequisite: POLI 5P56.

### POLI 5P65

#### **Public policy formulation in Canada**

An evaluation of the contribution of political and administrative structures and processes to the definition of problems, selection of solutions and implementation of policies in selected areas in Canadian politics. (Taught in conjunction with POLI 4P65)

### POLI 5P71

#### **Internship in judicial administration I**

Time in a court setting, arranged to allow interns to participate in a variety of administrative work, and thus to gain experience with court procedures and the problems of judicial administration.

Prerequisite: participation in the judicial administration program.

### POLI 5P72

#### **Internship in judicial administration II**

A continuation of POLI 5P71, designed to provide additional knowledge and experience in court administration.

Prerequisite: POLI 5P71.

### POLI 5P80

#### **Great works in politics**

A critical examination of some of the most significant writings in political science.

Core seminar.

### POLI 5P81

#### **Public policy analysis**

An introduction to the various quantitative and non-quantitative techniques used in efforts to improve public sector decision making; concepts of rationality and uncertainty; the role of the

policy analyst; social forecasting and futures research; cost-utility techniques and decision theory; policy and program implementation, monitoring and evaluation.

Core seminar.

### POLI 5P82

#### **Graduate seminar in Canadian politics and administration**

An examination of major aspects of Canadian government and politics and of different approaches to the study of Canadian politics through the discussion and analysis of significant books in the field. Topics may include political and bureaucratic institutions, parties and interest groups, political culture, the politics of specific regions, and the politics of bureaucracy.

Core seminar.

### POLI 5P83

#### **Graduate seminar in international and comparative politics**

An examination of significant books and other readings in comparative and international politics and political economy. The seminar will explore differences in the perspectives of comparative and international politics and will consider ways of integrating research in these two fields.

Core seminar.

### POLI 5V00-5V09

#### **Problems in political philosophy**

A particular theoretical problem or concept in political philosophy or an especially demanding work in political philosophy will be carefully examined. (Taught in conjunction with POLI 4V00-4V09).

### POLI 5V10-5V19

#### **Issues in Canadian politics**

A study of selected issues in Canadian politics. (Taught in conjunction with POLI 4V10-4V19.)

### POLI 5V20-5V29

#### **Selected problems in international relations**

A study of selected problems and issues drawn from both the system and nation-state levels of international politics which may focus on a variety

of questions associated with international relations theory, national foreign policies and international non-governmental organizations. (Taught in conjunction with POLI 4V20-4V29).

**POLI 5V30-5V39**

**Selected topics in comparative politics**

Topics vary from year-to-year on the basis of faculty and student interests. (Taught in conjunction with POLI 4V30-4V39.)

**POLI 5V70-5V79**

**Special graduate tutorial**

Directed intensive and individual study in an area where the student has shown particular competence, to be chosen in consultation with a faculty adviser.

Prerequisite: permission of the graduate officer and faculty adviser.

## Financial assistance and awards

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### University awards

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The University awards a limited number of graduate and/or research assistantships. Prospective candidates should direct their inquiries to the chair or graduate officer of the department.

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### University Scholarships

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#### The Gordon R. Finlay Scholarship

Value: to be determined.

To be awarded annually to an outstanding graduate student majoring in Chemistry.

Donor: the G. R. Finlay Family

#### W. D. Hatch Memorial Postgraduate Scholarship

Value: \$1500.

To be awarded to an outstanding student during the first or second year of a graduate program. Restricted to students of first-class academic standing whose thesis research is concerned with a significant aspect of viticulture or oenology.

Donor: W. D. Hatch Family.

Established: 1986.

For further information, please contact the Office of the Dean, Faculty of Mathematics and Sciences.

#### Richard L. Hearn Scholarship

Value to be determined.

To be awarded to the Brock physics graduate, with the highest major average, entering the graduate program in physics. Established in 1989 in memory of Dr. Richard L. Hearn, Brock University's first Chancellor.

Donor: The family of R. L. Hearn.

#### Women in Science Scholarship

Value: \$2000.

This scholarship is intended to encourage women to resume their study in science at the MSc level at Brock

University. It will be awarded to a women entering a qualifying program preparatory to admission to the MSc program at Brock.

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### Awards by government agencies

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#### Commonwealth scholarships and fellowships

The government of Canada, through the Commonwealth Scholarships and Fellowships committee, offers annually a number of scholarships and fellowships, normally tenable for two years, which cover such expenses as travelling costs, tuition fees, other university fees, and a living allowance, to students of other Commonwealth countries.

Under a plan drawn up at a conference held in Oxford in 1959, these scholarships and fellowships are awarded mainly for graduate study, and are tenable in the country making the offer.

Students are advised to contact the Office of the Deans, Humanities and Social Sciences, for details of the terms of the awards offered by Canada and other countries, or to write to the Association of Universities and Colleges of Canada, 151 Slater Street, Ottawa, Ontario, K1P 5N1.

#### Department of National Defence scholarships

The Department of National Defence annually offers scholarships valued at \$7,750. These awards are to support military and strategic studies of interest to Canada, including work on the national and international aspects of security, studies of strategic theory, alliances and the United Nations, and civil-military relations.

Applicants must be Canadian citizens and must hold an honors bachelor's degree or its equivalent. The awards are available for one year, with the possibility of renewal once for the master's program.

Application forms and additional information may be obtained from the Director of Awards, Association of Universities and Colleges of Canada, 151 Slater Street, Ottawa, Ontario, K1P 5N1. The closing date for receipt of completed applications is February 1.

#### I.O.D.E. War Memorial scholarships for graduate study

Applicants must be Canadian citizens; hold a first degree from a Canadian institution; hold a master's degree or be in the final year of studies leading to a Master's degree; and be age 35 or under the year the scholarship begins.

Applications must be submitted by December 1 each year. Seven to nine scholarships are awarded each academic year. Value for study in Canada is \$8,500; value for study in other commonwealth countries is \$12,000.

For further information and application contact office of the deans, Humanities and Social Sciences or: Head office, IODE, 40 Orchard View Blvd., Suite 254, Toronto, Ontario, M4R 1B9

#### NSERC post-graduate scholarships

The Natural Sciences and Engineering Research Council (NSERC) offers two types of post-graduate scholarships for students attending Brock.

#### Postgraduate scholarships

Valued at \$13,500 per year are offered to excellent students working towards a master's or doctoral degree in the natural sciences or engineering. Applicants must be Canadian citizens (or permanent residents living in the country). Support at the master's degree level is limited to a maximum of two years.

Application forms are made available through the Research Grants Office, room D407, Mackenzie Chown Complex in mid-October. The deadline for return of completed applications to the appropriate department chair is usually mid-November.

#### 1967 Science and Engineering scholarships

Valued at \$18,600 per year are offered

to outstanding students to enable them to undertake graduate studies and research leading to a doctorate degree in one of the natural sciences or in engineering. Candidates are nominated by the university and must, at the time of application, be either in the final year of an honors degree program in science or engineering, or in a qualifying year after citizenship (or permanent residency, living in the country). Awards are made initially for three years, with possible renewable for the fourth.

Information on these, and other NSERC awards may be obtained from the Research Grants Office, room D407, Mackenzie Chown Complex, or from the Scholarships Officer, Natural Sciences and Engineering Research Council, 200 Kent Street, Ottawa, Ontario, K1A 1H5.

#### **Ontario graduate scholarship program**

The ministry of Colleges and Universities awards up to 1,200 scholarships annually in two categories, as follows:

##### *Institutional awards*

Brock University may nominate up to ten students who, if they meet the citizenship requirements and are approved by the selection board, will receive scholarships tenable only at Brock University.

##### *Open competition awards*

The selection board may recommend up to 1200 awards which will be tenable at the Ontario university of the students' choice.

To be eligible for an OGS, students must intend to pursue graduate studies at an Ontario university. Applicants must have a high level of academic achievement, with first-class standing in most courses, and meet certain citizenship requirements.

Holders of Ontario graduate scholarships will receive \$3,766 for 1991-92 per term. Awards will be for two or three consecutive terms; one-term awards will not be made.

Application forms are made available through the student awards office, and offices of the deans of humanities, social sciences, and mathematics and science in early September. The deadline for return of completed applications, to the student awards office is October 31.

For further information, contact the Student Awards Office or the Inquiry Section, Student Awards branch, Ministry of Colleges and Universities, Mowat Block, Queen's Park, Toronto, Ontario, M7A 2B4.

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#### **Awards by non-governmental agencies**

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##### **Bell Canada fellowships**

Bell Canada awards eight \$5,000 fellowships annually, covering a 12 month period, for students who are proceeding towards a master's degree. Applicants must be Canadian citizens or have had permanent resident status for 12 months prior to submitting applications; they must also have been residents of Ontario, Quebec, or the parts of the Northwest Territories served by Bell Canada, for 12 consecutive months immediately prior to submitting their applications.

Further information and application forms are available through the Awards Officer, National Programs division, Association of Universities and Colleges of Canada, 151 Slater Street, Ottawa, Ontario, K1P 5N1. The deadline is March 1.

##### **The Phi Delta Kappa Award of Excellence**

This award is made available by the Niagara Ontario Chapter of Phi Delta Kappa in recognition of the contribution being made to educational research by graduates of the Brock University Master of Education degree. Interested candidates in the MEd program may obtain applications from the chair of Graduate studies, Faculty of Education.

#### **J.H. Stewart Reid Memorial Fellowship**

This fellowship provides an award of \$5,000 for 12 months for any field of study in a graduate program in any Canadian university. It is open to students who are Canadian citizens or who have held permanent resident status from for one year prior to application for the award and have completed one full academic year of graduate work. Applications, due February 28, may be obtained from the Awards Officer, Canadian Association of University Teachers, 75 Albert St., Suite 1001, Ottawa, Ontario, K1N 5E7.

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#### **The Canadian federation of university women awards**

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##### **Margaret McWilliams Pre-doctoral Fellowship**

This is a pre-doctoral fellowship which provides an award of \$7,000, open to any woman who holds a master's degree or equivalent from a recognized university and who is at least one year into a doctoral program at the time of application. An applicant may be studying abroad when applying. One fellowship is awarded.

##### **Margaret Dale Philip Award**

(donated by Kitchener-Waterloo club, CFUW)

This award provides the amount of \$1000 and is open to any woman who holds a bachelor's degree or equivalent from a recognized Canadian university at the time of application, who resides in Canada and who wishes to enter into, or continue, a program leading to an advanced degree in the field of humanities or social sciences. Special consideration will be given to candidates who wish to specialize in Canadian history.

##### **Professional fellowship**

This fellowship, worth \$4,000, is open to any woman who at the time of application holds a bachelor's degree or equivalent from a recognized Canadian university, and who wishes to pursue graduate work at a recognized profes-

## Financial Assistance and Awards

sional school. One fellowship is awarded.

### **Alice E. Wilson Grants**

These grants, worth \$1,000, are to assist women wishing to do refresher work in their chosen field; to do specialized study or to retrain in new techniques applicable to their field. Applicants must have a bachelor's degree or equivalent from a recognized university. At least four awards shall be made.

Applications may be obtained from:  
Canadian Federation of University Women (CFUW)  
55 Parkdale Avenue  
Ottawa, Ontario  
K1Y 1E5.

Deadline for completed applications:  
December 1.

*Note:* A candidate for ANY of the above awards must be a citizen of Canada or must have held landed immigrant status for one year prior to submitting application.

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### **Ontario student assistance program(OSAP)**

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This program is comprised of the Ontario Study Grant (OSG), the Canada Student Loans Plan (CSL), and the Ontario Student Loans Plan, (OSLP).

### **Canada Student Loans (CSL) under OSAP**

This federally-sponsored plan is a component of OSAP. It makes interest-free loans available to full-time students in programs of study at least 26 weeks in length. Although there is no limit on the number of periods for which a student may seek a Canada student loan, recipients are ineligible for CSL assistance if more than 10 years have elapsed since they were awarded their first Canada student loan.

The allowable maximum is \$105 per week. These loans are interest-free until six months after the student ceases to take at least 60 percent of a full course load.

To qualify for assistance under this program, the student must be: --a Canadian citizen or permanent resident who has resided in the province of Ontario for 12 consecutive months, excluding time spent at a post-secondary institution, immediately prior to the first day of the month in which classes commence; --taking at least 60 per cent of a normal full course load and paying full fees for all registered courses.

*Note:* Students who do not meet the residence requirements of the province of Ontario may apply for CSL to the appropriate authority of the province of which they are considered to be resident (addresses may be obtained through the awards office).

### **Ontario Student Loans Plan (OSLP)**

Full-time students whose financial needs are not fully covered by the Canada Student Loans Plan, will have their awards automatically topped off by interest-free loans through OSLP up to the extent of their assessed needs, but not to exceed an additional \$1000 per term (the lifetime maximum being \$8,000). The provincial loan plan also helps part-time students enrolled in some short courses which are not covered by other plans. The terms of repayment are similar to those of the CSL plan. Ontario student loan assistance is available only to students studying at a ministry-approved institution in Ontario.

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### **Further information**

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Prospective graduate students may wish to consult the publication entitled Canadian Directory of Awards for Graduate Study obtainable from the Association of Universities and Colleges of Canada, 151 Slater Street,

Ottawa, Ontario, K1P 5N1.

### **Note:**

The value of the awards described above are subject to change.

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*assistant professor of Biological Sciences*

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*professor of Geological Sciences*

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*professor of Biological Sciences*

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*professor of Politics and Business*

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Wallace B. Poole, BA (McMaster),  
MSc (SUC, Buffalo), EdD (SUNY,  
Buffalo)  
*associate professor of Education*

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BEEd (Toronto), EdD (SUNY, Buffalo)  
*associate professor of Education*

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R. Peter Rand, BSc (Carleton), MSc,  
PhD (Western Ontario)  
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Fereidoon S. Razavi, BSc (Mashad,  
Iran), MSc, PhD (McMaster)  
*associate professor of Physics*

Cecilia A. Reynolds, MA, PhD  
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State), PhD (California, Berkeley)  
*professor of Politics*

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(Allahabad)  
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(Carleton) PhD (Toronto)  
*associate professor of Politics*

Debabrata Sinha, MA, PhD (Calcutta)  
*professor of Philosophy*

Garth Stevenson, BA (McGill), PhD  
(Princeton)  
*professor of Politics*

Jaan T. Terasmae, Fil. Kand (Uppsala),  
PhD (McMaster), FRSC  
*professor of Geological Sciences*

Adele Thomas, BA (St. Joseph's  
College, NY), MA (NYU) PhD  
(CUNY)  
*associate professor of Education*

Donald J. Ursino, BA (Pomona  
College), DipEd (Toronto), MSc, PhD  
(Queen's)  
*associate professor of Biological  
Sciences*

Jan Vrbik, MSc (Charles', Prague),  
MSc, PhD (Calgary).  
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Chemistry*

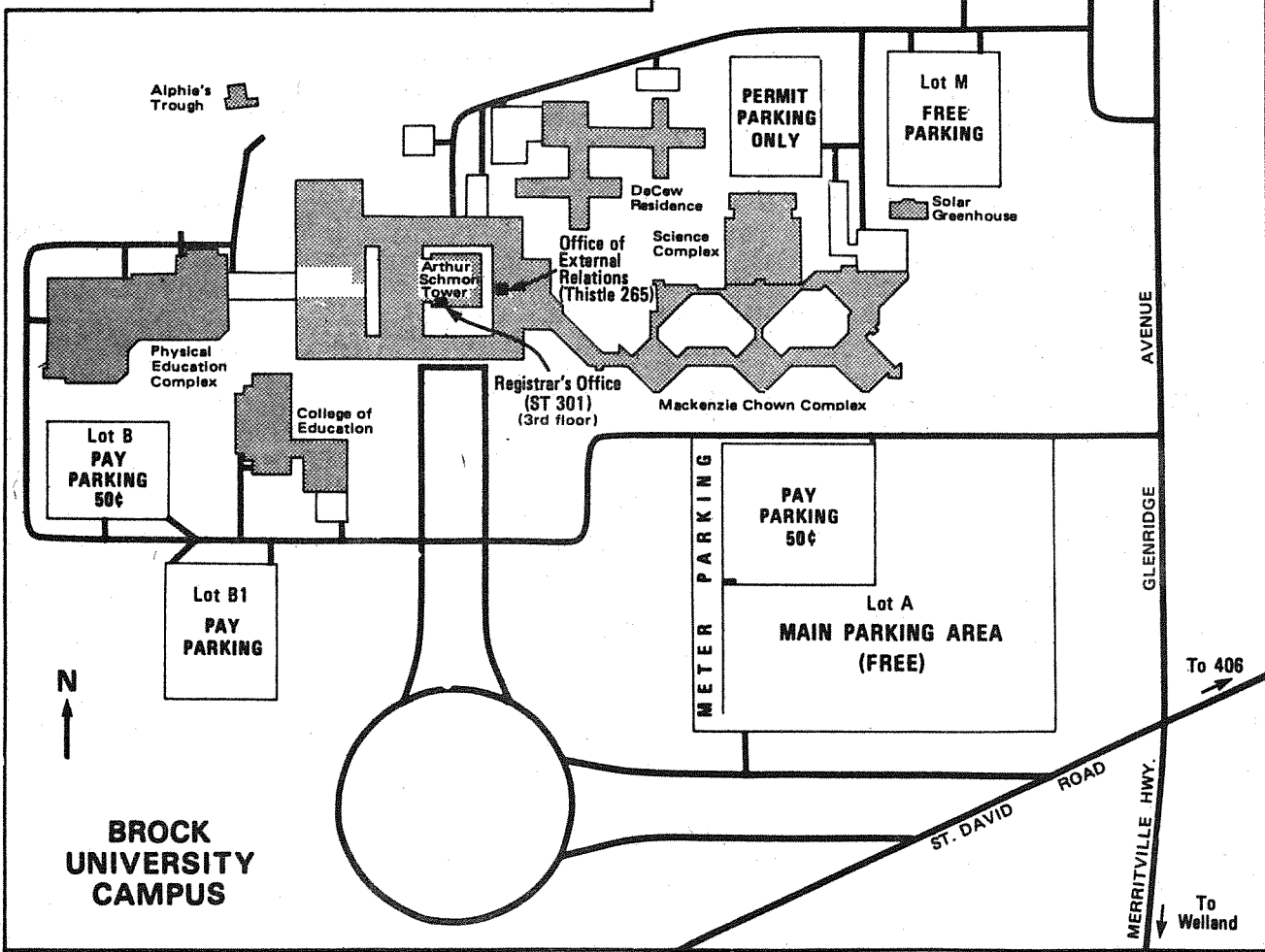
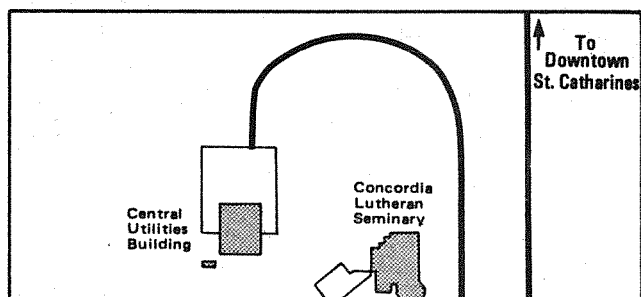
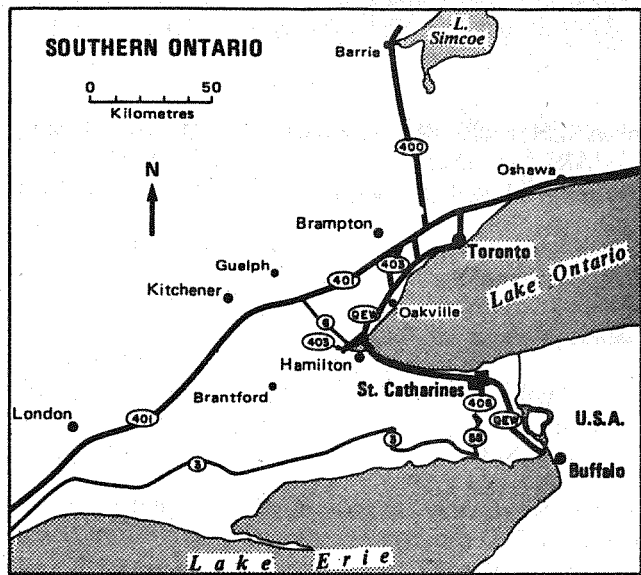
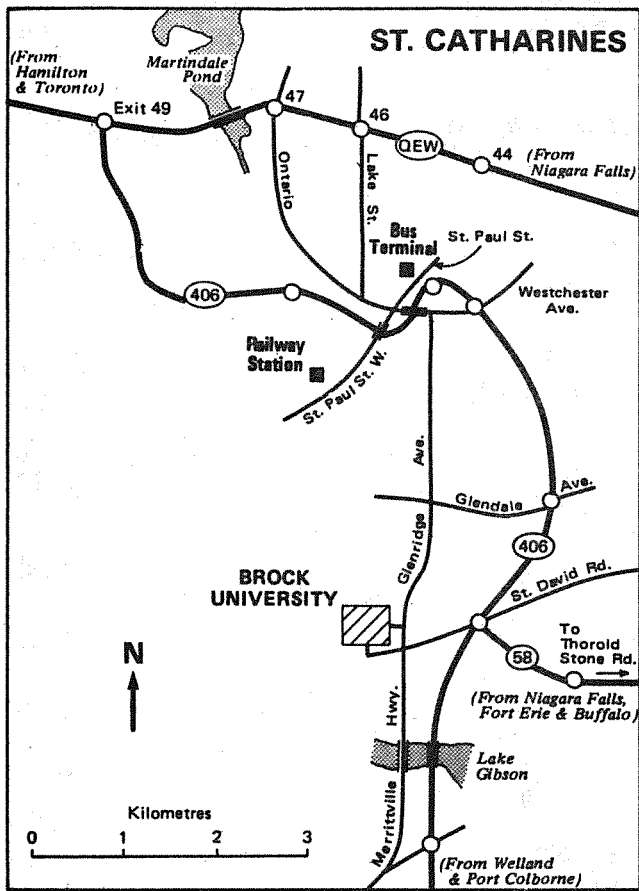
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EdD (Toronto)  
*associate professor of Education*

Stephen Westrop, MSc, PhD (Toronto)  
*associate professor of Geological  
Sciences*

Alan E. Wheeler, BSc, MEd, PhD  
(Alberta)  
*associate professor of Education*

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*professor of Education*

Rosemary Young, BA (McMaster),  
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*associate professor of education*



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