

## Brock University Undergraduate Calendar 1989-1990

25th Anniversary

## The <br> Undergraduate calendar 1989/1990

The undergraduate calendar contains the current, authorized list of academic programs and courses along with regulations regarding admissions, examinations and promotions.

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

Inquiries and applications should be addressed to:

The Office of the Registrar
Brock University
St. Catharines, Ontario
L2S 3A1.


## Table of contents

Schedule of dates, 4
General Information, 8
Life at Brock, 9
Facilities and services, 10
Student services, 12
Admissions, 15
Fees, 19
Glossary of terms, 21
Course numbering system, 23
Academic programs and regulations, 24
Programs of study
Administrative Studies, (Accounting, Finance, Management, Marketing), 33
Applied Language Studies, 47
Applied Linguistics, 51
Asian Studies, 52
Bich hemistry, 53
Bioloģical Sciences, 54
Business Economics, 63
Canadian Studies, 64
Canadian and European
Community Studies, 66
Chemistry, 68
Child Studies, 74
Classics (Greek, Latin), 79
Communications Studies 86,
Computer Science and
Information Processing, 89
Economics, 94
Education, 100
English Language and
Literature, 116
Environmental Science, 120
Extradepartmental Studies, 121
Film Studies, Dramatic and
Visual Arts, 122
French, Italian and Spanish, 134
General Studies, 140
Geography, 141
Geological Sciences, 149

Germanic and Slavic Studies
(Dutch, German, Russian), 155
Health Studies, 161
History, 162
Integrated Studies, 140
Labor Studies, 167
Liberal Studies, 168
Great Books Seminars, 168
Mathematics, 170
Music, 175
Philosophy, 180
Physical Education, 186
Physics, 192
Politics, 196
Pre-Professional Studies for
the Health Sciences, 204
Psychology, 205
Recreation and Leisure Studies, 213
Sociology, 217
Urban and Environmental Studies, 223
Scholarships, awards and financial assistance, 228
Governing bodies, officers and faculty, 241
Index, 252
Maps, 254

## Undergraduate Academic Calendar 1989-90

An academic timetable giving times and locations for all courses to be offered in any one session (spring evening, summer day or fall/winter) is available at the Office of the Registrar prior to the beginning of that session.

Please refer to In-Service Education for information pertaining to dates for this program and to the Graduate Calendar for information pertaining to the MA, MSc and MEd programs.

## Schedule of dates

Winter Session 1989 - Note: All dates refer to undergraduate studies unless otherwise specified.

| Friday | March 3 | Last day for withdrawal without the assignment of a grade and last day to change from credit to audit status for all duration 1 and duration 3 courses. |
| :---: | :---: | :---: |
| Sunday through | March 12 | Spring break, College of Education, pre-service program. |
| Sunday | March 19 |  |
| Friday | March 24 | Good Friday. University closed; library open. |
| Friday | April 7 | Last day of classes, winter term. |
| Saturday through | April 8 | Final examinations. |
| Saturday | April 22 |  |
| Friday | May 5 | Last day of classes, pre-service education program. |

Spring Session 1989

| Monday <br> and <br> Tuesday | April 24 | Confirmation of registration and first day of classes. <br> Registrants pick up class timetables and ID cards in accordance with the <br> schedule published in the registration procedures booklet. |
| :--- | :--- | :--- |
| Wednesday <br> and <br> Thursday | April 25 | April 26 | | Late registration with payment of $\$ 35.00$ late |
| :--- |
| registration fee. |

See page 21 for definition of duration 1,2 and 3 .

| Wednesday | June 14 | Last day for withdrawal without the assignment of a grade and last day to change from credit to audit status for all duration 1 and duration 3 courses. |
| :---: | :---: | :---: |
| Thursday | June 29 | Last day of classes. |
| Thursday and | June 29 | Canada Day holiday. University closed; library open. Classes and examinations will be held. |
| Friday | June 30 |  |
| Friday and | June 30 | Final examinations for duration 1 and duration 3 courses. |
| Saturday | July 1 |  |
| Summer Session 1989 |  |  |
| Monday | July 3 | Confirmation of registration and first day of classes. Registrants pick up class timetables and ID cards in accordance with the schedule published in the registration procedures booklet. <br> Last day for receipt of applications for admission for fall/winter session from foreign applicants. |
| Tuesday through | July 4 | Late registration with payment of \$35.00 late registration fee. |
| Thursday | July 6 |  |
| Monday | July 10 | Last day for duration 1 and duration 2 course changes with permission of the instructor. <br> Last day for receipt of applications to graduate at fall convocation, 1989. |
| Wednesday | July 12 | Last day for withdrawal without the assignment of a grade and last day to change from credit to audit status for duration 2 courses. |
| Friday and | July 21 | Mid-term (progress) examinations in full courses numbered 1(alpha)00-1 (alpha)99. |
| Saturday | July 22 | Final examinations for duration 2 courses. |
| Monday | July 24 | First day of classes for duration 3 courses. |
| Friday | July 28 | Last day for duration 3 course changes with permission of the instructor. <br> Last day for withdrawal without the assignment of a grade and last day to change from credit to audit status for duration 1 courses. |
| Wednesday | August 2 | Last day for withdrawal without the assignment of a grade and last day to change from credit to audit status for duration 3 courses. |
| Monday | August 7 | Civic holiday. University closed; library open. Classes will be held. |
| Tuesday | August 8 | Last day for receipt of applications for admission to full or part time studies in fall/winter session in order to ensure processing prior to the normal registration period. |
| Friday | August 11 | Last day of classes. |
| Friday and | August 11 | Final examinations for duration 1 and duration 3 courses. |
| Saturday | August 12 |  |

See page 21 for definition of duration 1,2 and 3.

## Schedule of Dates 1989

## Fall Session 1989

| Monday | September 4 | Labor Day. University closed; library closed. English language test for visa students at 2:00 p.m. |
| :---: | :---: | :---: |
| Tuesday and | September 5 | Confirmation of registration. Registrants pick up class timetables and ID cards in accordance with the schedule published in the registration procedures booklet |
| Wednesday | September 6 | for fall/winter full and part time studies. |
| Wednesday | September 6 | Literacy assessment test for all incoming Year 1 students; specific times to be announced. See page 25. |
| Tuesday through | September 5 | Orientation week for pre-service education students. |
| Friday | September 8 |  |
| Thursday | September 7 | First day of fall term classes, day and evening sections, undergraduate studies. |
| Thursday through | September 7 | Late registration on payment of $\$ 35.00$ late registration fee for duration 1 and duration 2 courses. |
| Monday | September 25 |  |
| Thursday through | September 7 | Late registration on payment of $\$ 35.00$ late registration fee for duration 3 courses. |
| Tuesday | January 16, 1990 |  |
| Monday | September 11 | First day of fall term classes, pre-service education program. |
| Monday | September 25 | Last day for duration 1 and duration 2 course changes. Last day for consideration of entrance and in-course scholarships |
| Monday | October 9 | Thanksgiving Day. University closed; library closed. |
| Friday | October 27 | Fall convocation. |
| Friday | November 17 | Last day for withdrawal without the assignment of a grade and last day for change from credit to audit status for duration 2 courses. |
| *Thursday | November 30 | Last day of classes, fall term. |
| Friday and | December 1 | Reading period. |
| Saturday | December 2 |  |
| Monday through | December 4 | Mid-year (progress) examinations in full courses numbered 1 (alpha) $00-$ 1(alpha)99. |
| Friday | December 15 | Final examinations for duration 2 courses. |
| Thursday | December 14 | Last day of classes, fall term, pre-service education program. |
| Saturday through | December 16 | Christmas recess. |
| Tuesday | January 2, 1990 |  |

* The extra day in Fall Term will be used to replace Thanksgiving day classes.

See page 21 for definition of duration 1,2 and 3.

| Friday | December 22 | Christmas and New Year holiday; University closed. |
| :--- | :--- | :--- |
| through | Tuesday | January 2,1990 |

## Winter Session 1990

| Wednesday | January 3 | First day of winter term classes undergraduate and preservice education. |
| :---: | :---: | :---: |
| Wednesday through | January 3 | Late registration on payment of $\$ 35.00$ late registration fee for duration 3 courses. |
| Tuesday | January 16 |  |
| Tuesday | January 16 | Last day for duration 3 course changes with permission of the instructor. Last day for receipt of applications to graduate at spring convocation, 1990. |
| Wednesday | January 31 | Last day for receipt of applications for OSAP (Ontario Student Assistance Program) for fall/winter session. |
| Sunday through | February 18 | Winter reading week. No classes will be held in undergraduate programs. |
| Sunday | February 25 |  |
| Friday | February 23 | Administrative offices closed; library open. |
| Friday | March 2 | Last day for withdrawal without the assignment of a grade and last day to change from credit to audit status for all duration 1 and duration 3 courses. |
| Sunday through | March 11 | Spring break, pre-service education program. |
| Sunday | March 18 |  |
| *Wednesday | April 4 | Last day of classes, winter term. |
| Thursday and | April 5 | Reading period. |
| Friday | April 6 |  |
| Saturday through | April 7 | Final examinations. No examinations are scheduled for Good Friday, April 13. |
| Saturday | April 21 |  |
| Friday | April 13 | Good Friday. University closed; library open. |
| Monday and | April 23 | Confirmation of registration and first day of classes, spring session. Registrants pick up class timetables and ID cards in accordance with the |
| Tuesday | April 24 | schedule published in the registration procedures booklet. |
| Friday | May 4 | Last day of classes, pre-service education. |
| Friday | June 1 | Spring convocation. |

* The extra day in the winter term will be used to cover classes missed because of adverse weather (if needed). Otherwise it will be a reading day.


## See page 21 for definition of duration 1,2 and 3.

Note: The above dates are subject to change. Please check the academic timetable published before each session. For information regarding graduate studies registration, consult the Graduate Calendar or the Office of the Registrar.

## General Information

For twenty-five years Brock has welcomed and encouraged students in their pursuit of further knowledge. Over the years, challenge and enthusiasm are words that have been used many times in discussing the founders, faculty and staff, and students.

Scholarship is both encouraged and acknowledged. The University takes pride in commending those students who have been named to the Deans' Honors lists and those who have been given other scholastic awards. Their names appear in the section of this calendar devoted to Scholarships, awards and financial assistance (page 228).

While not all students can appear on the special honors lists, they can all benefit from the opportunity for intellectual and personal growth. Starting in year 1 emphasis is placed on individual participation by means of small group meetings in a seminar, laboratory or tutorial setting in addition to the more formal lectures.

## Location

Brock University is located on the Merrittville Highway at St. David's Road (atop the Niagara escarpment) at the southern city limits of St . Catharines. Regional, city and University maps are printed at the back of this book.

The Office of the Registrar is in Room 301 of the Schmon Tower and is open from 8:30 a.m to 7:00 p.m. Monday to Thursday during fall/winter and spring evening sessions (September through June) and from 8:30 a.m. to 4:30 p.m. at other times.

## Affiliated college

Concordia Lutheran Theological Seminary, an affiliated college of the University, prepares students for the Master of Divinity (four-year program) and Master of Theological Studies (two-year program) degrees. All degrees are granted by the University. The seminary is operated by The Lutheran Church - Canada and is an Associate Member of the Association of Theological Schools in the United States and Canada.

The calendar

The Brock undergraduate calendar contains information about the University facilities and academic structure.

The following summary might be useful to prospective students.

In order to attend classes, one must apply for admission either through the Ontario University Application Centre for enrolment in 3.5 or more courses during a fall/winter session, or directly to Brock for fewer than 3.5 courses. Early application is encouraged so that admission can be granted prior to registration; there is an additional fee for late registration. Application procedures and assessments are outlined on page 15 .

Certain rules apply to all students and to all programs. These are shown in the section called Academic Programs and Regulations, page 24. See the Glossary on page 21 for an explanation of the terminology used at Brock.

In addition to the general rules, there are departmental regulations which pertain to their single or combined major programs. Details are given in the various departmental segments of the Calendar which are arranged alphabetically starting on page 33.

A general studies or integrated studies program can be developed in consulta-
tion with the appropriate Dean if a single or combined major cannot include all of a student's anticipated courses (see page 140).

Descriptions are given for all of the courses in the Brock course bank. The selection of courses to be offered in any session will be listed in the class timetable which is published prior to registration.

Information about Fees and Financial Assistance (including scholarships) can be found on pages 19 and 228 respectively.

## Team spirit

Extracurricular activities should be included in the university experience. Brock has facilities for sports (individual and team) as well as special interest clubs that allow students to be participants not merely spectators. Sir Isaac Brock, our namesake, provided active leadership for his troops in the War of 1812. The University could do no less for its students today. His motto, Surgite (push on), is ours.

## Campus tours

Campus tours are available weekdays throughout the academic year at 10:00 a.m., or at other times by arrangement. During the summer months, tours are available at 10:00 a.m. and 2:00 p.m.

Prospective students are encouraged to make arrangements ahead of time so that appointments can be made for them to speak with professors in their areas of interest or, perhaps, to sit in on a class.

To arrange a tour, call the
Department of External Relations
Brock University,
St. Catharines, Ontario L2S 3A1
(416) 688-5550, ext. 3245

# Life at Brock 

## Student organizations

Brock University Students' Union

All registered students are members of the Brock University Students' Union (BUSU). Each spring, union members elect a president to preside over BUSU and the students' administrative council (BUSAC), comprised of student representatives from each department in the University, the College of Education, Concordia Lutheran
Seminary, and the residences.
BUSAC acts as a political lobby and a social organizer, and it is responsible for managing the affairs of the union and implementing policies for the students of the University.

Through student fees, BUSU sponsors and supports such programs as orientation week, the General Brock store, the photocopying service, the video game service, Press (the student newspaper), the book exchange, the student handbook, the student telephone directory, and more than 40 special interest clubs which all students are free to join.

Students also participate in University policy-making by electing four representatives to sit on Senate, and three to sit on the Board of Trustees. Election of these representatives coincides with the presidential election in the spring of each year, or as required by vacancy.

The BUSU office is located in room 828 in the Thistle corridor (Thistle West); telephone 688-5550, ext. 3568.

## The Ombudsman

There may be occasions which cause students to feel victims of unfair treatment. For guidance in both academic and personal matters, students can contact the ombudsman.

For assistance in getting through red tape, injustice, conflict and harassment, help and support are available. Although not a lawyer, the ombudsman has access to expert legal advice, should it be necessary. It is important that all students become familiar with their academic rights and responsibilities. Read the regulations found later in this calendar.

Election for the office of the ombudsman coincides with BUSU presidential elections in the spring of each year. The ombudsman is located in the BUSU office.

## The Brock University Students' Centre

In February of 1988 , the students overwhelmingly voted in favor of assigning an additional student fee toward the construction and financing of a Students' Centre which will contain the Students' Union offices, the Press offices, a large store, meeting rooms, photocopy and video game areas, and a large pub and food court.

It is hoped that ground-breaking will take place in the spring of 1989; occupancy of the Students' Centre is slated for September, 1990.

The planning and eventual operation of the centre is controlled by a Board of Directors made up of five students, and two members of the Brock University administration. Information is available from the president of the Students' Union, located in the BUSU office.

## Ontario Public Interest Research Group (OPIRG) - Brock)

OPIRG is a body funded by student fees that provides an outlet for Brock students to actively work on a variety of environmental and social justice issues. Through research, education, and action, students will gain insight into the interrelationships between different social issues, while improving their skills and providing valuable information in the community.

All students are invited to participate in the activities of OPIRG. Students who do not wish to support the work of OPIRG are encouraged to get a refund of their student fees from the OPIRG office, located in Thistle 101 (location subject to change).

## Alumni Association

With your graduation comes a new relationship with the University. You will have joined the more than 16,000 members of Brock's Alumni Association. Full membership privileges (including special membership prices at the physical education complex and reduced-rate borrowing privileges from the library) are available to anyone who holds a degree or certificate from the University.

The goal of the Alumni Association is to maintain and promote unity among graduates and a sense of loyalty to the University. Members of the Association are kept informed of University affairs and of graduates' activities through Surgite, published four times a year. Regional chapters have been established in such diverse areas as Ottawa and Malaysia. Programs such as exam-time Survival Kits and the Grad Event help put alumni in touch with the current student body--their future members. The Association also provides support for its sister group, the Brock Student Ambassadors.

Each year, the Association presents a number of awards. The $\$ 500$ Alumni Award is given to a third or fourth year student who has contributed to the extracurricular life of the University while maintaining a satisfactory grade average. The Jim Gayman bursary, established in 1981, is awarded to a residence student, and the Alumni Award for Excellence in Teaching is presented to an outstanding faculty member.

For information about the Alumni Association or any of its programs, contact the Alumni Office, (416) 6885550, ext. 3251.

# Facilities and services 

University Library

The University library is housed on six floors of the Schmon tower, the focal point of the campus. Its collections, numbering 800,000 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 Regiona' jollection contains materials publifned about or in the Niagara Region. The listening room, equipped with record and compact disc players and tape decks, contains 6,000 recordings of music, plays, documentaries and lectures.

Access to the collections is available through an online catalogue with computer terminals on each floor of the library. This catalogue provides 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 also 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 and the online catalogue at a central information desk. They also provide a computer search service, a quick and efficient method of searching indexes and abstracts in over 300 databases. Free access to selected databases on compact discs is available at microcomputer workstations. Individual and group orientation tours are available; bibliographic instruction and subject-related seminars can be arranged at scheduled times on request.

A private study room and specialized equipment (including a Visualtek reading machine, Braillers, a talking calculator, tape machines, magnifying glasses and a wheelchair) are provided for the use of the disabled. Further information is available from the reference department.

Photocopy machines are located throughout the library. Equipment is also available for reading microforms and for making paper copies from them.

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

## University map library

The University 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 specialpurpose maps, 500 atlases and 15,000 aerial photographs of the Niagara Region dating from 1921. The map library is equipped' with a terminal for accessing the online catalogue into
which the atlas and map holdings are being entered, 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.

## Instructional resource centre

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

## Computing services

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 B 7900 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 ${ }^{\text { }}$, IMSL, BMDP, CLUSTAN, TEMPO, and MULTIVAR.

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 two micro labs for general purpose academic use. The facilities are located in Rooms A203 and A204. One lab has thirty MACINTOSH SE devices installed and connected via MACJANET networking software. The other supports the MS-DOS operating system on forty-five UNISYS (IBM compatible) micro computers networked with NOVELL software.

## Athletics and recreation

Programs and facilities are designed to involve as many members of the University community as possible--as participants and as fans.

## Physical education centre

Recreational, instructional, intramural, and intercollegiate activities revolve around the physical education centre. Facilities include two gymnasia, combatives room, fencing/dancing studio, weight and training rooms, five squash courts, one handball court and a 50 -metre eight-lane swimming pool. Classrooms, Badger shop (clothing store), snack concession, and offices are also included.

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 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 and racquetball 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, instruc-
tion and competiton: badminton, gymnastics, ski, tai chi, skating, orienteering, karate, kung fu, and outer's. 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 indoor soccer.

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, ballet, fitness, racquet ball, squash and weight training. Certification programs including CPR, first aid, fitness leadership and national coaching levels are also available.

## Intercollegiate programs

As a member of the Ontario Women's Intercollegiate Athletic Association (OWIAA), Brock teams compete with other universities in basketball, fencing, rowing, volleyball, crosscountry 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, fencing, hockey, rowing, rugby, soccer, golf, tennis, volleyball, swimming and wrestling.

## Bookstore

Thistle south, room 219
The Brock bookstore is the primary source of required and recommended reading materials. It also stocks stationery, magazines and a wide range of other reading material. 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.

## Services for Disabled students

Brock recognizes the rights of hearingimpaired, mobility-impaired, visuallyimpaired and learning-disabled students to pursue a post secondary education and is endeavouring to provide for their physical and learning needs.

Ramps and elevators provide access to most facilities in the University. A power-operated elevating wheelchair in the science labs allows mobilityimpaired students to be within reach of the various pieces of equipment. Electric mobility devices can be stored and recharged.

A reference librarian has been assigned to work with disabled students in the the library, whether it is to locate particular material or to obtain brailled or talking books.

Students with disabilities should contact the co-ordinator for disabled students, L.A. Towe, Associate Registrar, so that appropriate arrangements for assistance can be discussed. This might include a general campus orientation, parking facilities, classroom procedures, writing of examinations, individual study carrels or other matters of concern to the student and his family.

It would also be advisable to register with Health Services, Thistle east, room 261, so that they can be prepared to offer any necessary care.

Many people on campus are willing to give assistance as required, but all disabled students need to inform us of their specific needs

For further information:
The co-ordinator for disabled students, L.A. Towe, Associate Registrar, Office of the Registrar, (416) 688-5550, ext. 3444

# Student Services 

Ronald McGraw<br>Dean of Student Services<br>Schmon tower, room 300

The University provides a number of services for students, including academic and developmental counselling, health services, housing, career planning and job placement, and financial assistance.

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

## Counselling centre

David Jordan, director
Schmon tower, room 411
The counselling centre provides a variety of psychological and educational services designed to help students take full advantage of their university experiences. Direct services for students focus on personal development, learning skills and career planning. The staff is also available to consult with any member of the Brock community on issues of common concern.

1. Learning skills programs

Learning skills programs such as study skills, effective reading, essay writing, seminar skills, math re-entry, anxiety management and statistics survival are offered throughout the year. These are publicized at registration and in Press.

## 2. Career services

Career assistants (CAs) are available on a drop-in basis Monday - Thursday, to guide students through a career planning process, and to assist them in using career resources. CAs are
students who are trained and supervised by the career services coordinator. Careers Day, in early February, provides students with a further opportunity for career planning. Many representatives from various organizations come on campus for a full day to discuss career opportunities in their organizations.
3. Individual counselling

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.

## 4. Resource area

The centre's resource area contains tapes, books and pamphlets dealing with such topics as making decisions, career planning, women's issues, personal growth and study skills. Many of these materials provide systematic, self-directed programs for developing personal resources and achieving goals.

Confidentiality
Use of counselling services is entirely voluntary. All contacts are confidential, and information is not released without the individual's expressed consent. If students would like a definite time set aside for them, they should call or drop in to make an appointment.

Joan McCurdy-Myers, programs coordinator

Cathie Closs, career services co-ordinator/counsellor

Leslie McCurdy-Myers, counsellor

Sandy Coggins, counsellor

Elinor O'Neill, counsellor

Jackie Calabretta, writing programs co-ordinator

Pamela Barkwell, writing instructor

Lorrie MacKenzie, reading instructor

## Campus Ministries

DeCew residence, rooms 201 and 202
Brock Campus Ministries is peopleoriented. We facilitate opportunities for growth and spiritual development as an integral part of the University experience. Activities include worship, spiritual direction, pastoral counselling, workshops, seminars, study groups and public lectures.

Anyone who wants to be a part of a community of faith, to share concerns and experiences, or to speak in confidence about any matter (religious or otherwise) is welcome at Campus Ministries.

Rev. George Tattrie (Protestant Ecumenical Chaplain), room 201. Father Frank Wagner, c.s.c. (R. C. Ecumenical Chaplain), room 202. (416) 688-5550, ext. 3373.

Mr. Richard Middleton (Christian Reformed Ecumenical Chaplain), Room 202.
(416) 688-5550, ext. 3134.

## Financial aid

Ann Stavina, Finanical aid
administrator
Thistle north, room 260
Applications and information about the assistance programs sponsored by the federal and provincial governments for
full and part time students are available at the financial aid office.

The University awards a number of scholarships and bursaries to students. Scholarships are awarded on the basis of academic achievement, and no application is required. Bursaries, however, are granted on the basis of academic performance and financial need. Application forms are available in the financial aid office.

For more information, see the separate section, Scholarships, awards and financial assistance.

## Health services

Melodie Shick-Porter, nurse
Thistle east, room 261
The Health Services provides a comprehensive medical service which includes clinical, health counselling and educational services. The nurse is in attendance 8 a.m. - 4 p.m., Monday through Friday.

There is a physician available by appointment every day to provide clinical services and referrals as necessary.

The Health Services is open from September to May.

All students must have Ontario Health Insurance (OHIP) coverage. Information about OHIP will be available at registration.

## Foreign student adviser

John Kaethler
DeCew residence, room 215
Foreign students may find it helpful to discuss academic or personal problems with the foreign student adviser. He can offer assistance regarding 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

Brock University, in conjunction with the St. Catharines University Women's Club, and the Foreign student adviser, offers a host family program for foreign students. This is not an accommodation service, but an opportunity for students to meet informally with Canadian families.

## Residence

James R. Fleming, director of residences and conference services DeCew residence, room $R 206$

## Residence

The University provides on-campus and off-campus accommodation for approximately 1,000 students. The residences vary in a number of aspects including: location, room type, meal plan and fees. All residence rooms provide the basic necessities and all residences provide opportunities for residents' input through the Residence action committee (RAC) 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.

Students wishing more information about residence should write directly to the director of residences and conference services.

## Off-campus accommodations

The housing office, located in DeCew residence, posts lists of off-campus rooms, apartments and houses available for rent. Contact the Housing office on how to access the listings by telephone.

## PLACEMENT OFFICE (Canada employment centre On-campus)

John Jackson, employment counsellor Ruth Unrau, employment officer

Schmon tower, room 411
Job hunting can be a frustrating experience. The placement office is here throughout the year to help parttime and full-time students and graduates to obtain permanent, parttime and summer employment.

## for

## Permanent Employment

The on-campus recruiting program assists students in their graduating year to apply for permanent, career-related jobs. A number of employers from various industries and various locations throughout Ontario visit Brock annually to interview the graduating class. October to April only.

The job boards (4th floor, Schmon Tower) advertise career-related jobs throughout the year. Registered graduates are informed about appropriate jobs by phone or mail.

Federal and provincial government recruiting program information is available.

The resource library provides information for students and graduates who want to research companies and government departments in preparation for their job search. Other employment related information that is available covers topics such as: economic trends, salary surveys, job search and resumé writing tips, starting your own business, etc.

## for

## Part-Time Employment

The job boards contain a wide variety of long and short term jobs throughout the city of St. Catharines as well as in neighbouring communities. Some of

## Student Services

the jobs are located on campus. Many jobs state "no experience necessary".
for
Summer Employment
On-campus job interviews for summer positions are available to undergraduate students.

Job descriptions and application forms for summer jobs and government programs in the local community and in your home town are available.

Registration forms for Canada Employment Centres for students are available.

## Other Services

Free workshops are offered to all students and graduates throughout the school year. Topics include: resumé and cover letter writing, ACCIS application form completion, job interview skills and job search skills.

Registration and job referral service to full time employment. Graduates only.

Individualized resumé and cover letter critiques.

Individualized assistance regarding any employment related concerns.

Day care centre

## Jane Cripps, supervisor College 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 halfday 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 College 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.

## Admissions

All prospective students are encouraged to apply, and will be considered on the basis of evidence of probable success in their chosen program. Enrolment has been limited in order that our students may continue to benefit from the University's traditions of personal contact and individual attention. Applicants must be formally admitted to the University before they can register in degree credit courses.

## Application deadline

Application for admission should be made as early as possible. Application forms and necessary documentation for full time and part time enrolment must be received by the Office of the Registrar no later than Monday, August 7, 1989 (July 1, for foreign applicants) to ensure consideration for normal September registration. Students applying after this date, who are subsequently admitted, may be required to register late and pay the late registration fee.

## How to apply

## Ontario students currently in Grades

 12 or 13OUAC 101 application forms are available at your high school guidance office. The completed form and interim grades are to be sent to the Ontario Universities' Application Centre. Applicants who wish to be considered on final marks should forward a copy of their final grades directly to Brock University.

## All other full time applicants

OUAC 105 application forms are available through the Office of the Registrar for previous Grade 13 matriculants, mature applicants, transfer, out-of-province and foreign students. The application form and appropriate fee should be forwarded to
the Ontario Universities' Application Centre, Box 1328, Guelph, Ontario, N1H 7 P4.

## Part time degree and certificate

 applicantsPart time degree applicants, as well as those seeking admission to certificate programs in public administration or urban and environmental studies, should contact the Office of the Registrar to obtain the proper application form and to discuss their admission and program objectives.

It is the responsibility of all applicants to ensure that:
i) all pertinent academic documentation is forwarded directly to the Office of the Registrar from institutions previously attended, such as secondary schools, colleges and universities;
ii) proof of change of name (i.e. marriage certificate, notarized statement or other legal document) is provided if academic documents show a name other than that under which application is made;
iii) evidence of proficiency in English is provided if English is the applicant's second language (see page 17).

Applicants withholding, misrepresenting or failing to provide information regarding previous university or college records are liable to have their registrations cancelled.

It should be noted that there is a $\$ 15$ fee for assessment of previous university or college transcripts for full-time applicants for undergraduate studies.

## Application for Residence.

Students interested in residence should indicate this on the OUAC application form. Applications for residence will be included with offers of admission.

Admission to undergraduate degree studies

## Ontario grade 13

Ontario secondary school students must present the Secondary School Honours Graduation Diploma (SSHGD) or the Ontario Secondary School Diploma (OSSD). An overall average of 60 per cent on six grade 13 or Ontario Academic Course credits is the minimum required for consideration but a higher average will be required for most programs since the number of qualified applicants normally exceeds the spaces available.

High School students are encouraged to achieve as much breadth of preparation as possible in the course of their studies leading to the OSSD while also meeting the stated admission requirements of the university program to which they intend to apply.

Academic standing accepted as equivalent to Ontario grade 13

Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland, Nova Scotia, Prince Edward Island, Saskatchewan
Grade 12 senior matriculation with high standing.

## Quebec

CEGEP General 1, or grade 12 with high standing.

United Kingdom, West Indies, East and West Africa, Hong Kong
The General Certificate of Education with passes in five subjects, of which at least two must be from distinct areas at the advanced level; or passes in four subjects, of which at least three must be from distinct areas at the advanced level. (Please note proficiency in English requirements, page 17).

## International Baccalaureate system

 Applicants who have been granted the IB diploma and accumulate a gradetotal of 28 may be considered for admission and may receive up to three transfer credits on the basis of Higher Level subjects completed with a grade of 5 or better.

## United States

Grade 12 diploma with exceptionally high grades, SAT scores of V600, M550 or T1150, or two Advanced Placement courses with scores of 3 or better will be considered for admission to year 1 .

Other students applying for admission to year 1 from the U.S.A. must have completed a minimum of 30 semester credits ( 45 quarter credits) in academic subjects with a minimum average of $B$ at an accredited post-secondary institution.

## Other countries

Applicants from areas other than those noted above will be evaluated on an
individual basis. Original or certified true copies of transcripts are required including official English translations (where required). (Please note proficiency in English requirements, page 17.)

## Transfer from other universities

## Canadian universities

Applicants wishing to transfer to Brock from degree programs at other Canadian universities must normally offer the equivalent of an overall average of 65 per cent as a minimum with a higher average being required where enrolments are limited. Applicants must also be eligible to re-register at their home institution. Normally transfer credit will be granted only for courses passed which are appropriate to the chosen program. Course attempts and transfer averages at the previous university will be recorded on the transfer students' records to place those students on an equal basis with those who take their entire undergraduate program at Brock.

No transfer credits will be granted for any courses completed at another
university in fulfillment of the basic requirements for university admission. Credit may be allowed for any additional courses completed concurrently. The grades from other universities whose grading schemes differ from that of Brock University will be translated into equivalent Brock grades and admissibility and transfer credit assessed in these terms. Evaluation of all possible transfer credits available at the time of admission must be completed within one year of the date of admission to the University. (Please see page 28 for a description of the University attempt system.)

## Ryerson and Colleges of Applied Arts and Technology <br> Students who achieve an overall standing of C or better in a degree program at Ryerson Polytechnical Institute are eligible for admission. Courses being considered for credit must have a minimum grade of $\mathrm{C}(60$ per cent) or equivalent.

Applicants must have a cumulative average of $B$ ( 75 per cent) or better in a three year diploma program at Ryerson or an Ontario College of Applied Arts and Technology (CAAT) to be considered for admission and possible transfer of up to five credits. Advance standing is based primarily upon:
i) appropriateness of previous program to Brock program;
ii) course content;
iii) grades achieved in courses.

Applicants must have a cumulative average of $B$ ( 75 per cent) or better in a two year program at Ryerson or a CAAT to be considered for admission and possible transfer of up to three credits.

Applicants who achieve a cumulative average of $\mathrm{A}(80$ per cent) in a one year diploma program at Ryerson or a CAAT may be considered for admission. No transfer credit will be awarded.

CAAT applicants who do not meet these requirements will be considered on an individual basis.

CMA, CGA, CA
Individuals with RIA, CGA, CA designations may be granted up to five transferred credits, provided a minimum grade of 70 per cent is achieved.

## Bible colleges

Applicants who have completed a degree program at a bible college accredited by the American Association of Bible Colleges will be considered for admission and may receive transfer of up to five credits.

## Admission of mature students

Applicants who are not eligible for admission in any of the categories listed above, who have been out of school for at least two years and who are at least 21 years old, may be considered for admission on a mature student basis.

Mature applicants interested in either full time or part time studies are encouraged to apply. Before being permitted to enrol in full time studies, mature applicants should complete two full course equivalents with at least a $C$ average.

In support of their full time application, students must submit official copies of all pertinent academic documentation and a letter outlining:
i) career ambitions;
ii) work experiences;
iii) why they may be successful at university.

An interview may also be required. Please note that our mature student regulations are only applicable to Canadian citizens and permanent residents.

## Admission of senior citizens

Senior citizens ( 60 years of age or older) are encouraged to apply for admission to full time or part time studies as either credit or auditing students. Tuition fees for such students are waived.

## Admission to part time studies for

 Grade 13 studentsStudents enrolled in Grade 13 may be admitted as special students and permitted to register in one course subject to the following provisions:
i) they must be registered in a sufficient number of grade 13 courses to qualify for the Ontario Secondary School Honours Graduation Diploma or in six Ontario Academic Course credits to qualify for the Ontario Secondary School Diploma.
ii) candidates must be recommended by their school and approved by the Brock department concerned.
iii) they must register in a degree credit course and pay the course fee.

University credit for a course successfully completed will be granted only when the students have been admitted to degree studies.

## Re-admission of students who were required to withdraw

Application for re-admission is to take the form of a letter addressed to the Associate Registrar, Admissions.

## January entry

A student may begin first year studies on a part time basis in the winter term beginning in January. It should be noted, however, that the number and types of courses available then are limited.

## Non-degree admission to undergraduate studies

A non-degree student is one not proceeding towards a Brock University degree. Typical non-degree students are:
(a) persons already holding a
degree who wish to take
courses for interest or
upgrading purposes
(b) students from other universities taking courses on letters of permission.

Non-degree students who successfully complete a minimum of two full courses, or the equivalent, may apply for admission as degree or certificate candidates. Such applications will be considered on an individual basis and credit may be given for work already done.

## Special admission

A special student is one whose course load has been restricted because of the student's academic standing, or one who is currently registered in a grade 13 program who has met the provisions outlined above for admission to part time studies for grade 13 students. Such students will be permitted to register in the equivalent of one full course per academic session and must obtain a minimum of 65 per cent or better on the equivalent of two full courses to be considered for further studies.

## Admission to other programs

## College of Education

For information on admission requirements and procedures for the various programs of the College of Education, see page 100 .

## Graduate studies

For information on the admission requirements for graduate degree programs, see the Graduate Studies calendar. An undergraduate degree acceptable to Brock University, normally an honors degree in the appropriate field, is the minimum requirement.

Proof of proficiency in English

All student visa applicants whose first language is not English must provide results of TOEFL. Other students whose first language is not one of the official languages of Canada may be required to provide TOEFL results. Normally only those with scores of 550 or greater will be considered for admission. Such students are required, as a condition of registration, to write an English language test. The test results determine the number of courses a student may take.

## Foreign student immigration requirements

Students entering Canada from other countries are required to comply with Canadian immigration requirements. Student visas are issued abroad by Canadian diplomatic, consular or immigration officers. Where there is no Canadian representative, prospective students may apply to representatives of the British government. An original letter of acceptance from Brock University must be presented at that time.

A pamphlet outlining immigration requirements is available from Canadian immigration officers, Canadian embassies, consulates, high commissioners' offices, British consular offices, or directly from the Immigration division, Manpower and Immigration department, Ottawa, Ontario, Canada.

## Policy statement

Brock University has had, and will continue to have, a racially nondiscriminatory 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.

Specific requirements and recommendations for various programs (see also "Ontario Grade 13" - page 15)

| Program | Required Gr 13 or <br> OAC Subjects | Strongly Recommended <br> Gr 13 or OAC Subjects | Comments |
| :--- | :--- | :--- | :--- |

## Fees

## (Subject to change)

Academic fees for both full time and part time students are charged on a per course basis (see schedule below). These include fees for registration, tuition, library and examinations.

Fee per course 1989/90
*undergraduate and College
of Education--regular $\$ 327.50$
*undergraduate--visa $\$ 1116.00$
Challenge for credit per course
$\$ 175.00$
Co-op accounting administrative fee
$\$ 200.00$
Registration cancellation fee per course
$\$ 30.00$
Students who completely withdraw from the University between September 8 and September 25 must pay this cancellation fee.

Late registration fee (chargeable to any student who registers after the official registration day) $\$ 35.00$
Replacement of lost service card
$\$ 5.00$
Transcript of record
(\$1 for each additional
copy on the same order)
$\$ 2.00$
Duplicate tax certificate --per copy (previous years' replacement only)
$\$ 10.00$
Returned cheques** $\$ 15.00$
Off-campus examination fee $\$ 35.00$
Convocation Regalia deposit $\quad \$ 10.00$ Replacement of diploma $\$ 25.00$
Another university transcript assessment
$\$ 15.00$
Letter of permission application fee
$\$ 25.00$
A $\$ 15$ fee will be levied for the verification of registration or other status.
*Students who are not Canadian citizens, landed immigrants, foreign students sponsored by CIDA, or who do not have diplomatic privileges, will pay the visa student fee. Please consult the Finance office for full details.
**Students whose cheques are returned NSF will be charged the $\$ 15$ returned cheque fee as well as the late registration fee of $\$ 35$.

The charge for auditing a course is 50 per cent of the normal course fee, or the withdrawal charge at time of change to audit status, whichever is the greater.

In addition to the academic fee, any Canadian citizen or landed immigrant taking three and one half or more courses in the fall/winter session will be required to pay a non-refundable health fee of $\$ 25$. Students increasing their load to three and one half or more courses will be assessed the health fee. Foreign students paying the foreign (visa) student fee will pay a $\$ 25$ nonrefundable health fee.

Included in the tuition fee is $\$ 5$ per course which is collected on behalf of the Brock University Students' Administrative Council (BUSAC) by the Board of Trustees, and a $\$ 7$ per course athletic, intramural and recreational program and facilities fee. Also included is a fee of $\$ 10$ per course collected on behalf of BUSAC for the construction of a Student Centre; $\$ 1.50$ per course on behalf of OPIRG and $\$ .50$ per course on behalf of OFS. This portion of the fee is non-refundable.

## Payment of fees

All fees are due and payable at confirmation of registration at which time students must have sufficient funds to pay at least the first instalment of tuition and residence fees. Students taking three or more full courses (six or more half courses) may pay in two instalments. The first instalment is due at registration, the second is due by January 4 without further notice from the University. Instalment payments are subject to carrying charges. See the following section for details.

## Carrying charges

Carrying charges for instalment payment of students' accounts (including tuition fees, residence fees, meal plan, incidental fees and any other outstanding fees and charges) will be assessed (charged) as follows: mid

November and at the first of each month, beginning in February. See the following schedule for specific dates.

Students receiving government grants will still be subject to carrying charges on their outstanding balance. This carrying charge has been included in the computation of OSAP assistance.

| Last date <br> for payment <br> without <br> carrying <br> charges | Rate <br> for <br> each <br> $\$ 100$ <br> or part <br> owing | Date <br> charges <br> assessed |
| :--- | :--- | :--- |
| Nov. 13, 1989 | $\$ 3$ | Nov. 14, 1989 |
| Feb. 5, 1990 | 2 | Feb. 6, 1990 |
| Mar. 5, 1990 | 2 | Mar. 6, 1990 |
| Apr. 2, 1990 | 1 | Apr. 3, 1990 |
| May 7, 1990 | 1 | May 8, 1990 |
| June 4, 1990 | 1 | June 5, 1990 |
| July 2, 1990 | 1 | July 3, 1990 |
| Aug. 7, 1990 | 1 | Aug. 8, 1990 |
| Aug. 30, 1990 | 1 | Aug. 31, 1990 |

First instalment (regular) SEPTEMBER 1989

| 5 full courses | $\$ 1,150$ |
| :--- | ---: |
| $41 / 2$ courses | $\$ 1,050$ |
| 4 full courses | $\$ 925$ |
| $3-1 / 2$ courses | $\$ 825$ |
| 3 full courses | $\$ 700$ |

First instalment (visa students)
SEPTEMBER , 1989

| 5 full courses | $\$ 3,925$ |
| :--- | ---: |
| $4-1 / 2$ courses | $\$ 3,525$ |
| 4 full courses | $\$ 3,125$ |
| $3-1 / 2$ courses | $\$ 2,750$ |
| 3 courses | $\$ 2,350$ |

Senior citizens (aged 60 at time of regular registration) will be permitted to enrol in a course, or courses, on a regular or audit basis without payment of the regular tuition fee. Application for admission must be made in the normal manner.

Students expecting to receive assistance through the Ontario Student Assistance Program must file their application with the Financial Aid office no later than June 30. Students who apply after
this date and who have not received written confirmation that their applications have been processed must pay the required fees at registration.

Students whose cheques presented at registration are returned by the bank (NSF or for any other reason) will have to pay the $\$ 15$ returned cheque charge. A certified cheque is required to clear outstanding accounts.

No student having an outstanding account with the University will receive a degree or a statement of final grades, or have any such statements furnished to parties outside the University until the debts have been cleared to the University's satisfaction. Final grades may be released by the Office of the Registrar only.

## Residence fees

In 1988/89 the residence rates for room and board averaged about $\$ 3500$ depending on the type of accommodation and meal plan. An increase is expected for 1989/90.

## Withdrawal charges

From September 7 through September 25 no charges are levied for dropping, adding or withdrawing from courses unless the course load is reduced to zero. Students who completely withdraw from the University by September 25 will be subject to a REGISTRATION CANCELLATION FEE of $\$ 30$ per full course. After September 25, a withdrawal charge will be levied based on the table below.

## Tuition fees at withdrawal

Withdrawal notification in writing must be received by the Office of the Registrar by the dates noted below for the 1989/90) fall/winter session. Tuition fees charged per course to the withdrawal dates are listed below.

| Date |  | Full <br> course | $\mathbf{1 / 2}$ course <br> full year | 1/2 course <br> fall term | $\mathbf{1 / 2}$ course <br> winter term |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Sep. | 25 | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ |
| Oct | 02 | $35 \%$ | $35 \%$ | $35 \%$ | $0 \%$ |
| Oct. | 10 | $40 \%$ | $40 \%$ | $60 \%$ | $0 \%$ |
| Oct. | 16 | $45 \%$ | $45 \%$ | $75 \%$ | $0 \%$ |
| Oct. | 23 | $50 \%$ | $50 \%$ | $100 \%$ | $0 \%$ |
| Oct. | 30 | $55 \%$ | $55 \%$ | $100 \%$ | $0 \%$ |
| Nov. | 06 | $60 \%$ | $60 \%$ | $100 \%$ | $0 \%$ |
| Nov. | 13 | $65 \%$ | $65 \%$ | $100 \%$ | $0 \%$ |
| Nov. | 20 | $70 \%$ | $70 \%$ | $100 \%$ | $0 \%$ |
| Nov. | 27 | $75 \%$ | $75 \%$ | $100 \%$ | $0 \%$ |
| Dec. | 04 | $80 \%$ | $80 \%$ | $100 \%$ | $0 \%$ |
| Jan. | 08 | $85 \%$ | $85 \%$ | $100 \%$ | $0 \%$ |
| Jan. | 15 | $90 \%$ | $90 \%$ | $100 \%$ | $0 \%$ |
| Jan. | 22 | $100 \%$ | $100 \%$ | $100 \%$ | $0 \%$ |
| Jan. | 29 | $100 \%$ | $100 \%$ | $100 \%$ | $35 \%$ |
| Feb. | 05 | $100 \%$ | $100 \%$ | $100 \%$ | $60 \%$ |
| Feb. | 12 | $100 \%$ | $100 \%$ | $100 \%$ | $75 \%$ |

No refunds will be made on full courses or full year half courses after January 15 , on first term half courses after October 16, or on second term half courses after February 12.

Students should note the dates for withdrawal without academic penalty shown in the Schedule of dates section.

Inquiries concerning fees should be addressed to the Finance office, Schmon tower 1012, telephone (416)-688-5550, ext. 3286, ext. 3761 or ext. 3289.

Withdrawal charges are calculated from the first day of classes, examples below:
i.e. if you withdraw between -

September 26 \& October 2 charged $35 \%$
October $3 \&$ October 10 charged $40 \%$
October $11 \&$ October 16 charged $45 \%$
October $17 \&$ October 23 charged $50 \%$

## Glossary of terms

## Academic year

The academic year runs from the commencement of the spring evening session until the end of the fall/winter session.

## Anti-requisite or exclusion

A course which cannot be taken before, after or at the same time as the course with which it is listed.

## Attempt

Any course for which a final grade has been assigned, whether it is passed or failed. Repeated courses and any from which a student has not officially withdrawn are considered attempts. Limits on the number of attempts are imposed. See page 28.

## Auditor

Auditors attend lectures as listeners only; they do not submit assignments, write examinations or receive grades.

## BIRT

The computerized Brock Information and Registration by Telephone system which allows students to complete their course registration by touch-tone telephone. A registration guide is available prior to each session.

## Context elective

A course chosen from the lists of courses in the humanities, sciences and social sciences which satisfy the context requirements. See page 26.

## Co-requisite

A course which is to be taken concurrently with another course.

## Course

A course is a unit of study in a specific academic discipline (identified by a unique course identifier) which extends over the full session. Half courses are those normally taken entirely in one term of a fall/winter session or its equivalent in the spring or summer sessions. Any two half courses are the equivalent of one full course. Each successful full course or equivalent is one credit towards a degree.

Course numbering
See page 23.

## Course level requirements

Students are normally required to complete five credits at the year 1 level before proceeding to courses at a higher level. It is generally expected. that they will successfully complete at least three credits at the year 2 level before proceeding to third year courses and a further three credits at the year 3 level before undertaking fourth year courses.

## Credit

Credit is assigned to a course when a passing grade is awarded. The value of the credit is determined by the alpha character in the course number. See page 23.

## Cross-listed course

A course which is listed under two or more departments. It may be taken for credit in only one of the departments.

## Department

The faculty group responsible for teaching a particular subject or subjects.

## Division

A grouping of departments headed by a dean within the faculty of arts and science, the College of Education, the Schools of Administrative Studies or Physical Education and Recreation.

## Duration 1, 2 or 3

Courses taught over two terms of any session are identified as duration 1 , those taught entirely in the first term as duration 2 and those entirely in the second term as duration 3.

## Elective

Any credit course other than the named requirements for a degree program.

## Exemption

When exemption from a course (normally a required one) is granted; no credit is given for that course. It must be replaced with a course of equal credit in the degree program.

## Full time student

One who is registered in three and one half or more courses.

## Honors degree

A 20 credit honors degree is awarded upon the successful completion of an approved program with first or second class honors standing. See page 30.

## Humanities language requirement

 All students in a humanities major must complete a credit in a second language within year 1 or year 2 . Acceptable courses are listed along with other departmental requirements in the humanities sections of the calendar.
## Letter of permission

A formal document which allows a Brock student to take one or more courses at another university for credit towards a Brock University degree.
See page 30 .

## Major or Combined major

A specific concentration of credits within a degree program as required by the major department(s).

## Minor

Those credits taken toward a degree which are not specified as major courses.

## Part time student

One who is registered in fewer than three and one half courses.

## Pass degree

A 15 credit pass degree is awarded upon the successful completion of an approved program with a minimum overall cumulative average (including transfer credits) of 60 per cent. A pass degree with distinction is awarded when the overall cumulative average, including transfer average, is 75 per cent or better. This is noted on a student's transcript.

## Prerequisite

A specific requirement to be fulfilled before registration in a course, usually the successful completion of another course or permission of the instructor.

## Glossary of Terms

Registered student
Registration consists of completing a registration form and making payment of fees.

## Session

The fall/winter session extends from
September to April and consists of 2 terms of 12 weeks each; spring session consists of 10 weeks from the end of April to the beginning of July, and summer session is six weeks from the beginning of July to the middle of August. See pages 4-7 for the actual dates.

## Term

A term is a specific period of classes: fall term, September to December; winter term, January to April; spring/ summer term, May to August.

## Transcript

A cumulative printed record, of the results for all courses in which a student was officially registered at the end of the course change period. See page 27.

## Course numbering system

Brock adopted a new course numbering system in $1987 / 88$ and it is used for all courses listed in the calendar. However, old numbers are used, where appropriate, for prerequisites and exclusions.

In converting to the new system, many of the former course numbers were changed simply by the insertion of an appropriate letter between the first and second digits, e.g.

| ENGL | 191 | -- | ENGL |
| :--- | :--- | :--- | :--- |
| MATH | 19891 | -- MATH | 1P98 |

Some departments used this opportunity to renumber and restructure their course offerings, e.g.

| CHST | 300 | - - CHST | $3 F 96$ |
| :--- | :--- | :--- | :--- |
| LATI | 291 hc | -LATI | 3P10 |

Sample course designation
Course Identifier
1 I

| Subject | Number |
| :---: | :---: |
| 1 | 11 |
| BIOL | 2F03 |

1111
| ____departmental code


F -- 1.0 credit
M -- 1.0 credit, variable (multiple) topic
N -- 0.0 credit
P -- 0.5 credit
V -- 0.5 credit, variable topic
Y -- 0.25 credit (Pre-Service Education only)
year of course
1--year 1 5--graduate studies
2--year $2 \quad 7$--affiliated colleges
3-year 3 8--pre-service education
4 --year 4 --in-service education
Notes:

1. Courses numbered 2 (alpha*) 90 or higher may count for credit as second or third year courses.
2. Courses numbered $3\left(a l p h a^{*}\right) 90$ 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 full course in Theatre--may count as a second or third year course.
CLAS 2P10 -year 2 half course in Classics
POLI 3V70-3V79 -year 3 half 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 full 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 quarter course.
EDUC 9F42 -in-service education full course.
POLI 5V30-5V39 -graduate studies half 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.

## Academic programs and regulations

## Divisional structure

The academic units at Brock University are grouped into three divisions, two schools, and one college. These are:

## Division of Humanities

Applied Language Studies (includes
Teaching English as a Second
Language)
Canadian and European
Community Studies
Canadian Studies
Classics (Greek, Latin)
English Language and Literature
Extradepartmental Studies
Film Studies, Dramatic and Visual Arts (includes Drama, Film, Fine Arts, Theatre, Visual Arts)
French, Italian and Spanish
Germanic and Slavic Studies (German, Russian)
History
Liberal Studies
Music
Philosophy
Note: see page 25 for humanities language requirement.

Division of Social Sciences
Applied Linguistics
Asian Studies
Business Economics
Child Studies
Communications Studies
Economics
Environmental Science
Health Studies
Labor Studies
Geography
Politics
Psychology
Sociology
Urban and Environmental Studies

Division of Mathematics and Science<br>Biochemistry<br>Biological Sciences<br>Chemistry<br>Computer Science and Information<br>Processing<br>Geological Sciences<br>Mathematics<br>Physics<br>Pre-Professional Studies for the Health Sciences<br>\section*{School of Administrative} Studies<br>Accounting and Finance<br>Management and Marketing<br>Business Economics

## School of Physical Education and

Recreation
Physical Education
Recreation and Leisure Studies
College of Education
Pre-service Education
Continuing Studies (In-service Education)

## Degree requirements

Students may complete a program of studies under the regulations of the calendar under which they first registered, or of a more recent calendar if it is to their advantage to do so.

A student transferring from another university may earn a Brock 15 or 20 course degree with a minimum of five Brock credits or a Brock five-course BEd Route II with a minimum of four Brock credits.

It is the responsibility of each student to ensure that the courses selected meet the academic requirements for the degree being pursued.

A 15 credit pass degree is awarded on the successful completion of an approved program with an overall cumulative grade average of 60 per cent. A 20 credit honors degree is awarded on the successful completion of an approved program with first or
second class honors standing. See page 28 for honors standing terminology.

Note: Only 20 credit honors degrees are available in administrative studies and accounting. Business economics, teaching English as a second language, Italian and Russian offer pass degrees only.

In all pass degree programs, at least seven credits must be numbered $2(a l p h a) 00$ or above, three of which must be numbered 2(alpha)90 or above. In all honors degree programs, at least twelve credits must be numbered $2($ alpha) 00 or above, six of which must be numbered 2 (alpha) 90 or above, and of these, three must be numbered 3 (alpha) 90 or above.

Among the first five credits, students must have completed:
1.) courses from at least four departments;
2.) at least two of the required three context credits (see page 26 ).

Among the first ten credits, students must have completed all three of the required context credits (see page 26 ).

A maximum of five credits toward a pass BA or BSc, and seven credits toward an honors BA or BSc degree, may be taken from any combination of administrative studies, teaching English as a second language, or designated education, physical education, or recreation and leisure studies courses.

Note: please refer to the Education, Physical education, and Recreation and leisure studies sections of this calendar for listings of courses which may be used for BA or BSc credit.

Year 1 in all programs provides a student with a broad choice of options. In year 2 , students select a major field of study and program pattern. This may be either a single major, a combined major, or an integrated or general studies program.

A single major pass degree program generally requires seven credits in one department. Ten credits are normally required for a single major honors degree.

## Combined major degree programs

 permit a student to concentrate in two subject areas (excluding education, physical education and recreation and leisure studies). A minimum of ten credits (five from each discipline) is required for a combined major pass degree and a minimum of fourteen credits (seven from each) is required for a combined major honors degree. Specific course requirements for major programs are described in the individual department's section of the calendar. If a desired combined major program is not outlined in the calendar, students should consult the chairpersons of those particular departments.
## General or integrated studies

 programs permit a student to pursue a pattern of studies which does not coincide with either a single or combined major arts or science program. A credit in mathematics (or an acceptable equivalent) or computer science is required of students who choose a concentration of courses in the natural or social sciences; a credit in a language other than English is required of students who choose a concentration of courses in the humanities (see page 140).In general studies, although there are no specific course requirements, a student must include a minimum of five credits in one subject and three in another for a pass degree; for an honors degree, seven credits in one subject and five in another. All such programs must be approved by the appropriate dean or designate.

Integrated studies programs are specifically constructed programs at the pass or honors level which span two or more departm ints and are designed for students whose unique interests cannot be satisfied by a single or combined major. A clear and predetermined plan of interdisciplinary study must be approved by the appropriate dean.

Combined major and general or integrated studies program students will receive a BA degree if the majority of their credits is in arts, or a BSc if the majority of their credits is in sciences.

## Major requirements

A minimum of ' C ' in the introductory course(s) of the desired major(s) is necessary in order to continue in that program (see individual departmental requirements). Additionally, students in all programs are required to maintain a minimum overall major average of 60 per cent in order to continue in that major. Only courses taken at Brock will be used in determining a student's major average. All credits from the areas of concentration and for some programs, required courses from other departments will be designated as major credits. In a general or integrated studies program, all credits from the areas of concentration will be designated as major credits. The major average is calculated by dividing the sum of the numeric grades assigned to the major credits by the number of major credits.

Students in a single or combined major program who do not attain a grade average of 60 per cent in their major credits should select another program of study.

## Language requirement for students in the humanities

Students enrolling in a humanities single major, combined major with one or both majors in the humanities, or a general or integrated studies program with a major concentration in the humanities are required to complete one credit in a language other than English. The choice of the language is left to the student unless specifically designated by the program. Under special circumstances ENGL 3F92 (Old English) may be used to satisfy the language requirement. Other languages currently offered by the Univeristy are:

| Dutch | French |
| :--- | :--- |
| German | Greek |
| Hebrew | Italian |
| Latin | Russian |
| Sanskrit | Spanish. |

Admission to language courses beyond the 1 F00 level is dependent upon completing the prerequisite(s) for the course. Students who have acquired high school credit in the chosen language will be excluded from certain lower level courses depending upon their level of proficiency in the language. Questions should be referred to the language department concerned.

Students whose secondary school program was taught either entirely or to a significant extent in a language other than English and who would, therefore, qualify to enrol in a 2 (alpha) 00 level course or higher are exempt from the language requirement. For example, such an exemption will be granted to Ontario grade thirteen graduates of Français and French immersion programs. Other students seeking this exemption require the approval of the dean of humanities when the language of instruction is not one of the above group.

## Year 1 literacy test requirement

Prior to registration in September (see page 6) a literacy test is to be written by

1) incoming full-time first year students who have not been granted transfer of credit;
2) part-time students with a 91 student number or higher who will have completed two Brock credits prior to September 1989.

Failure to write the test will result in an incomplete registration. The results of the test will be confidential and will not be entered on university records. However, students are asked to allow the University to use the results of these tests as anonymous data for ongoing research into the relationship between reading and writing skills and university marks.

By the end of September students will be advised if their assessment indicates a need to improve their skills. A
writing workshop (\$80) and several reading programs are offered by the Brock counselling centre, Room 411 in the Schmon tower.

## Core and context

The core and context requirement is designed to permit a student to view the "core" of a particular major in a more general learning "context". All
students must include at least one credit from each of the three groupings during their first ten credits (see degree requirements, page 24 ).

Normally at least two of the context credits must be completed as part of the first five credits.

## Humanities context courses

Canadian studies 1F91
Classics (any two of) 1P91, 1P92, 1P93, 1P95, 1P97
Drama 1F93 (see Film studies, dramatic and visual arts)
English 1F91, 1F99; 1P97/1P98 (for BActg only)
Film 1F94
French 1F90
German 1F90, 1F96, both of 1P93/
1P94
Greek 1F90
*History 1F95**, both of 1P92/1P93
Italian 1F90, 1F95
Latin 1F90
***Liberal studies 1F90
Music 1F00, 1F10, 1F50
Philosophy 1F90, 1F91, 1F93, 1F94
Russian 1F90, 1F95
Spanish 1F90, 1F95, 1F96
Visual arts 1F90

## Social Sciences context courses

Economics, both of 1P91/1P92
*Geography 1F90
*History 1F95**, both of 1P92/1P93
Politics 1F90
Psychology 1F90
Sociology 1F90
Urban and Environmental Studies 1F90

## Sciences context courses

Astronomy 1F00 (see Physics department)
Biology 1F25, 1F90

Chemistry 1F85, 1F93
*Geography 1F91
Geology 1F90, 1F95
Physics 1F20, 1F90
Science 1F20 (see Chemistry department)
*In cases where subjects are listed under two categories, only one of the requirements may be satisfied by that course (e.g., if Geography 1F90 is taken to fulfill the requirement for the social sciences option, Geography 1F91 may not be taken to fulfill the sciences requirement).
**History majors may not use a history course to satisfy the social science context requirement.
***Enrolment may be limited.
Where the requirement may be satisfied by two half credits, both must be from the same subject, i.e. Economics 1P91 and History 1P92 would not satisfy the social sciences context requirement whereas HIST 1P91/1P92 or ECON 1P91/1P92 would.

## Course load

Students who are enrolled in three and one half or more credits during the fall/ winter session are considered to be full time; however, the normal course load for a full time student is five courses or their equivalent. In the spring or summer sessions, the normal load is one course. Permission to take extra courses may be granted by the appropriate academic dean or designate or by the registrar. Such permission will normally be given only if a student has completed five credits with at least second class ( 70 per cent) standing.

A student may not attempt five or more credits in any one department in a single session without the approval of the appropriate dean or designate.

Students required to take English as a second language courses (ESLX or APLS) may be required to take a reduced course load.

Mature entry students must complete two credits with an average of 60 per cent in order to be considered for full time studies.

Anyone admitted as a special student will normally be permitted to enrol in one credit per session.

Non-degree students are students taking Brock courses but not proceeding towards a Brock degree. Students on letters of permission, upgrading students and exchange students fall into this category.

Limited enrolment courses/programs

Some courses/programs are subject to enrolment limitations. Consult departmental entries in the calendar and the undergraduate registration guide for details.

## Registration and withdrawal

Students are officially registered for courses only by completing registration according to procedures outlined in registration guides published by the Office of the Registrar and by the payment of the appropriate fees. Students whose cheques are returned NSF (not sufficient funds) will be deregistered without further notice. (See page 19.)

A student will register in one lecture section of each course and will select one tutorial, seminar and/or lab section per course as appropriate. Students are expected to attend all lectures, labs, tutorials and seminars of the sections in which they are registered.

A student may withdraw in good standing from a course within the period established each term (refer to pages 4-7). Withdrawals are effective as of the date that the Office of the Registrar receives notification in writing of the student's intention to withdraw. Withdrawals received after the last date for withdrawal without

Academic Programs and Regulations

academic penalty will not be processed. 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. It should be noted that failing or withdrawing from a first term half course may necessitate withdrawal from the subsequent term half course. This is the student's responsibility and is not done automatically; if in doubt, consult the Office of the Registrar.

Grades will be recorded on students' transcripts for all courses in which they have officially registered and from which they have not officially withdrawn.

## Evaluation

To receive credit for a course, students must complete all the term work and the progress and/or final examination where the latter is required.

Final grades are based on examinations, tests, seminars, reports, essays, lab work, etc. The final grade must be computed from at least three pieces of work; no single piece of work may account for more than 50 per cent of the final grade in a full course and no more than 60 per cent of the final grade in a half course. At least two methods of evaluation (different in kind) must be used in arriving at the final grade. Students will be advised in writing of the proposed method of evaluation in each course by the last date for course changes. This will include the nature and due dates of assignments, penalties for late submission of assignments and the relationship of attendance to grades. Rounding of the final grade to comply with the university's $2,5,8$ marking scheme (see Grades, below) is at the instructor's discretion and need not necessarily be to the closer of those numbers.

## Grades

The following grades are awarded for undergraduate courses:

A $\quad 82,85,88,92,95,98,100$ An A grade is awarded for excellent, comprehensive, accurate work which demonstrates an exceptional flair for the subject.

## B $\quad 72,75,78$

A B grade indicates competent work that shows a sound grasp of the course goals without being distinguished.

## C $\quad 62,65,68$

A C grade represents work of adequate quality which suffers from incompleteness or inaccuracy.

D $\quad 50,52,55,58$
A grade of $D$ is given where the minimum requirements of a course are barely satisfied.

F $\quad 45$ or lower A grade of F means that minimum requirements have not been met and no credit has been given for the course.

AG Aegrotat Standing: (a passing grade assigned to students, who for docummented reasons were not able to write a final or a subsequently scheduled special examination and whose term work has been of at least a passing grade)

SP Special examination (see page 28)

SA Satisfactory: used for work terms and non-credit PHED/RECL courses

UN Unsatisfactory: used for work terms and non-credit PHED/RECL courses

WD Withdrawn

IN Incomplete: a temporary grade granted only in exceptional circumstances to a student who has been unable to complete some part of the term work in a course. A final grade must be submitted within 56 days of the last day of the examination period.

IP In Progress: used only for fourth year thesis and project courses or graduate courses (the list of acceptable courses is available in the Office of the Registrar). An IP for undergraduate courses must be cleared within twelve months of the initial registration, otherwise the student must re-register in that course and pay the appropriate course fee.

## NR Not reported.

$\mathrm{CH} / \mathrm{F}$ Grade awarded to indicate a successful/unsuccessful challenge for a credit course.

Grades applicable to In-service and Pre-service College of Education courses only:

P1 82, 85, 88, 92, 95, 98, 100
P2 72,75, 78
P3 60,62, 65,68
F $\quad 58$ or lower
P/F EDUC 8F08 only
WD Withdrawn
IN (as above)
NR (as above)
Grades are mailed to students about four weeks after the end of the examination period. Final grades may be released only by the Office of the Registrar.

## Transcripts

Requests for official transcripts of a student's academic record must be made to the Office of the Registrar. The fee is $\$ 2$ for the first copy and $\$ 1$ for each additional copy on the same order. It normally takes one week to process each order.

## Examinations

Mid-term and final examinations are compulsory in all courses numbered 1 (alpha) $00-1($ alpha $) 99$. Final or midyear examinations in courses numbered 2 (alpha) 00 or above may or may not be held, at the discretion of the instructor.

In courses requiring a final examination, failure to write the examination will normally result in a failing grade $(00 \mathrm{~F})$. In case of illness, a medical certificate must be submitted to the Office of the Registrar within seven days of the examination. If, for religious reasons, a student is unable to write a final examination at the time scheduled, application for a special examination must be made to the Office of the Registrar at least two weeks prior to the examination period. Supportive evidence may be required.

Special examinations may be granted to students who for valid reasons have missed final examinations. These are normally held no later than the spring examination period for fall term duration 2 courses; no later than the summer examination period for duration 1 and duration 3 fall/winter courses; no later than the fall term duration 2 final examination period for spring and summer sessions.

It is the students' responsibility to contact the course instructor to make arrangements for a special examination.

Class tests and examinations may only be written during a regularly scheduled class or during a formal examination period. Students cannot be required to write an examination or test in a time period which conflicts with any of their scheduled classes.

Lab tests (worth no more than 20 per cent of the final grade) may be scheduled in the lab period of the last week of term. No other test or examination worth more than 5 per cent is allowed in the last two weeks of term.

In some cases it may be necessary for students registered in evening courses to write examinations during the day, or vice versa. Examination timetables are posted prior to registration. It is the students' responsibility to ensure that courses in which they are registering do not have conflicting examinations.

## Academic standing

Students' grades are reviewed at the end of each session and they are informed of their academic standing.

The cumulative grade average which is used to determine academic standing is computed by dividing the sum of the numeric grades assigned to credits by the total number of credits. Failures are not included in average calculations.

## Number of Attempts

Each student will be allowed a maximum of 20 full course equivalent attempts to achieve the 15 credit pass degree or a maximum of 23 full course equivalent attempts to achieve the 20 credit honors degree. A passed course, a failed course, a replaced course, a repeated course or a course from which a student does not officially withdraw will all be considered as attempts.

A student whose attempted courses exceed the credits by more than five will not be permitted to re-register in the University for at least one academic year. After that time, the student may apply for re-admission.

To proceed to an honors degree, a student's attempted courses must not exceed the credits by more than three. A student in the fourth year who exceeds the maximum number of attempts may graduate with a pass degree, provided that the requirements for a pass degree have been met.

Attempts allowed for second degree Students are allowed two attempts in addition to the number of courses required for the second degree.

## Extra courses

Students wishing to augment a regular degree program by taking extra courses because of personal interest may enrol in such courses and designate them as extra courses, not to be included in the list of attempted courses nor used for credit towards that degree if the maximum number of attempts has been exceeded.

## Replacement of grades

Prior to graduation a student may repeat a credit or replace it with a departmentally approved substitute but it is not possible to replace a credit once a degree has been conferred. It is the student's responsibility to inform the Office of the Registrar at registration of the replacement course and the credit which it replaces.

## Repeated courses

A student may repeat no more than two full courses and may repeat any course or half course only once. In all. cases, the grade awarded for a repeated course will supersede the grade from the first attempt regardless of whether it is higher or lower, and will be used in computing the student's cumulative grade average if it is a passing grade.

## Degree categories

Honors standing terminology
First class: A minimum grade average of 80 per cent in all major credits, and 70 per cent in the remaining credits.

Second class: A minimum grade average of 70 per cent in all major credits, and 60 per cent in the remaining credits.

Third class: A minimum grade average of 65 per cent in all major credits, and 60 per cent in the remaining credits.

To proceed to year 4 (as an honors degree candidate), a student must have obtained at least second class honors standing in fifteen credits and must have departmental approval. Applica-

## Academic Programs and Regulations

tions are available in the Office of the Registrar and should be submitted by August 1.

## Standing for graduation

Four classes of Bachelor's degrees are awarded.

First class honors degrees are granted to students who have completed a twenty credit program with first class honors standing. A transfer student must have a minimum of five Brock credits, including all the departmental year 4 honors requirements with a cumulative overall average, including transfer average, of 75 per cent or better, and a cumulative major average (based on Brock courses only) of 80 per cent or better.

## Second class honors degrees are

 granted to students who have completed a twenty credit program with second class honors standing. A transfer student must have a minimum of five Brock courses, including all the departmental year 4 honors requirements, with a cumulative overall average, including transfer average, of 65 per cent or better, and a cumulative major average (basca on Brock courses only) of 70 per cent or better.An honors degree student who does not achieve second class honors standing upon the completion of twenty credits may graduate with a pass degree, provided that the requirements for a pass degree have been met.

Pass degrees with distinction are granted to students who have completed a fifteen credit program with a minimum overall average, including transfer average, of 75 per cent. Transfer students require a 75 per cent transfer average and an overall average of 75 per cent in all Brock courses (see degree requirements, page 24).

Pass degrees are granted to students who have completed a fifteen credit program with a cumulative grade average of 60 per cent or better.

Withholding of degree or grades
Final grades may be released only by
the Office of the Registrar. No student owing the University fees or fines will receive a degree or certificate or a statement of final grades, or have any such statements communicated to parties outside the University, until such time as the debts have been cleared to the satisfaction of the University.

## Application for graduation

Application for graduation at fall convocation, 1989 must be received by the Office of the Registrar by July 15, 1989. Application for graduation at spring convocation, 1990 must be received by the Office of the Registrar by February 13, 1990. Year 3 students who intend to proceed to year 4 must apply for year 4 admission. Application forms are available in the Office of the Registrar.

## Holding of two degrees

Note: An individual may hold only one BA or BSc (at the pass level), BEd, BPhEd or BRLS, BActg or BAdmin degree and may not hold two degrees which contain an area of concentration in common (e.g., it is not possible to hold both a BBE and a BA in economics).

A student who wishes to hold different undergraduate degrees (e.g. BA and BPhed) must:
i) fulfill all the course requirements for each degree; and
ii) have taken at least the number of courses indicated below.

For a pass BA, BBE, BPhEd, BRLS or BSc and a different pass degree, 20 credits.

For a pass BA, BBE, BPhEd, BRLS or BSc and a different honors degree, 25 credits (see note above).

For a pass BSc in computer science in addition to a BAdmin (computer science option), three additional computer science credits must be included in the additional five credits required.

For an honors BA, BActg, BAdmin, BPhEd, BRLS or BSc and a honors degree with a different major, 30 credits.

Note: it is not possible to hold both a BActg and a BAdmin degree.

## Certificate programs

For persons wishing to acquire specialized knowledge without proceeding immediately to a degree, the University has established certificate programs in public administration and urban and environmental studies. Since the programs are composed of degree credit courses, admission requirements are the same as for degree programs. Details appear in the relevant departmental entries of the calendar.

Holding of a degree and a certificate

To hold both a degree and a certificate, a student must:
i) fulfill the course requirements for both the degree and the certificate; and
ii) have completed 18 credits for a pass degree and certificate or 23 credits for an honors degree and certificate; and
iii) not have exceeded twenty-one attempts for a pass degree and certificate or twenty-four attempts for an honors degree and certificate.

## Academic counselling

Academic counselling for both full time and part time students is available in the Office of the Registrar as well as in academic departments and from the deans.

Applicants for admission who have questions regarding their programs, admission procedures or current admission status should consult the Associate Registrar, Admissions or the Admissions officer.

Students who are currently enrolled at Brock who have questions regarding courses, programs, or academic regulations should consult the Assistant Registrar, Student Programs. Evening appointments can be arranged.

Students with questions regarding registration, withdrawal, examinations or graduation and their regulations should consult the Associate Registrar.

The Associate Registrar, Admissions, Admissions officer, Assistant Registrar, Student Programs and the Associate Registrar, can be contacted in the Office of the Registrar, ST 300.

## Auditor status

Persons wishing to attend classes for interest only may be permitted to do so as auditors (listeners) upon payment of the required fee at the time of registration. It is not necessary for auditors to have the normal qualifications for admission to the University, but they must make application and be formally admitted prior to registration. Not all courses are available to auditors; the instructor's approval is required prior to registration. No credits will be granted for audited courses. A request to change from audit status to degree credit status must be received by the Office of the Registrar prior to the last day for course changes. For approval, the student would need to already hold the appropriate academic
qualification as shown by documentation on file in the Office of the
Registrar. Degree credit students may drop to audit status prior to the final date for withdrawal without academic penalty for the course.

## Letters of permission

To take a course at another university for credit towards a Brock degree, a student must apply for, and be granted, a letter of permission from the Brock University Office of the Registrar before registering at the other university. Application for the letter of permission must include a calendar description of the course(s) to be taken and a $\$ 25$ letter of permission application fee. If the request is approved, the Office of the Registrar will send a letter of permission to the host university and a copy to the student.

It is the student's responsibility to send to the Brock Office of the Registrar an official transcript of grade(s) from the host university at the earliest possible date. Upon receipt of the transcript, the final grade (rounded to comply with Brock University's 2, 5, 8 marking scheme) will be entered on the student's record at Brock. Such credits will be included in averages and will be counted as course attempts. Failure to provide an official transcript will result in a grade of 00F being assigned to the course. A student who does not complete registration or who withdraws from a course for which a letter of permission has been issued must notify the Brock Office of the Registrar by submitting verification from the host university.

Except with the permission of the committee on petitions and appeals, a letter of permission is not issued for a student to take more than one of the last five courses elsewhere.

Students completing their last course(s) on letters of permission in fall/winter sessions may apply to graduate at the following FALL convocation, and students completing their last course(s)
on letters of permission in spring or summer sessions may apply to graduate at the following SPRING convocation (see page 29).

## Challenge for credit

Challenge for credit is designed to provide credit at the undergraduate level for skills acquired through learning and experience outside the University. It is not designed to give credit for skills or knowledge gained through high school, college or previous university instruction, nor is it expected that time would be required to upgrade or review the material prior to the examining process. Credit can only be granted for those courses listed in the current Brock calendar. Not all courses in all disciplines are available for challenge. A list is available at the Office of the Registrar. It is the responsibility of the department concerned to evaluate the student who challenges for credit and to determine the types of work to be submitted.

The following general regulations apply:
(a) Challenge for credit is available only to students formally admitted to, and registered in, a program leading to a degree or certificate. Special students are not eligible to challenge for credit. (b) A maximum of five credits towards a Brock undergraduate degree may be acquired by challenge at Brock or elsewhere. A maximum of two credits may be obtained toward a certificate. Challenges may not be included in the minimum number of Brock credits required for a Brock degree (see page 24 ).
A challenge credit may not be used as a substitute for grade raising or special examinations, or to replace a failed course.
(d) A student may not challenge a course (or its equivalent) in which he/she is or has been previously registered or which he/she has already challenged.
(e)

The passing grade for a challenge will appear on the transcript as CH . Challenge grades therefore are not computed in averages and are not used in evaluating honor or scholarship standing, but are counted as course attempts. Failures (F) will be noted on the transcript.
A student may not withdraw the challenge once registration for a challenge course is completed.
(g) The grade for the challenge must be received in the Office of the Registrar within 60 days of acceptance of the challenge by the department.

## How to challenge for credit:

A student must fill out a challenge application form available in the Office of the Registrar. (The student may wish to discuss the challenge informally with the department prior to this step.) The Office of the Registrar forwards the application to the appropriate department which must decide whether to accept the challenge. The department may require documentary material from the student or an interview before making its decision. If the department accepts the challenge, the student is eligible to register for it at the Office of the Registrar; the fee is $\$ 175$ for a full course and $\$ 87.50$ for a half course.

A student may not withdraw the challenge after this step; failure to sit for a challenge subsequent to registration represents a failed course. It is the student's responsibility to be fully informed, prior to registration, of the time and nature of the evaluation. This may include one or more of the following: a written exam paper or papers, an essay or essays, the submission of a substantial body of work or a portfolio, an oral examination, or a laboratory test.

## Petitions and appeals

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 evidence supplied by the student.

Students who have a question regarding final grades should first discuss it with the instructor (they are entitled to inspect their final examination papers); departments are required to keep final examination papers for a period of six months following the date of the examinations. In the event of a severe disagreement between a student and an instructor, representation should be made to the chairperson of the department and, if necessary, to the committee on petitions and appeals, c/o Office of the Registrar.

Formal 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 a $\$ 10$ 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.

## Plagiarism

## Definition

Plagiarism means presenting work done (in whole or in part) by someone else as if it were one's own. Associated dishonest practices include faking or falsification of data, cheating, or the uttering of false statements by a student in order to obtain unjustified concessions.

Plagiarism is deliberate dishonesty and includes, but is not limited to, the following forms:

## Exams and tests

(a) Impersonation of a candidate in an exam or test.
(b) Copying from another student, or making information available to other students knowing that this is to be submitted as the borrower's own work.
(c) Use of unauthorized material.
(d) Submission of a take-home exam written by someone else.

## Laboratories

(a) Copying a laboratory report, or allowing someone else to copy one's report.
(b) Using another student's data unless specifically allowed by the instructor.
(c) Allowing someone else to do the laboratory work.
(d) Using direct quotations or large sections of paraphrased material in a lab report without acknowledgement.
(e) Faking laboratory data.

Essays and assignments
(a) Submission of an essay written in whole or in part by someone else as one's own.
(b) Preparing an essay or assignment for submission by another student.
(c) Copying an essay or assignment, or allowing one's essay or assignment to be copied by someone else.
(d) Using direct quotations or large sections of paraphrased material without acknowledgement.
(e) Buying or selling of term papers or assignments.
(f) Submission of the same piece of work in more than one course without the permission of the instructor.
(g) Submitting whole or part of a computer program with or without minor modifications of one's own.

Individual instructors of departments will point out areas of specific concern not covered above. Students are
encouraged to consult instructors in case of doubt.

Plagiarism should be distinguished from co-operation and collaboration. Often students may be permitted or expected to work on assignments collectively and to present the results either collectively or separately. This is not a problem so long as it is clearly understood whose work is being presented, for example, by way of a formal acknowledgement by footnoting.

Instructors should inform students what constitutes acceptable workmanship, proper form of citation and use of sources.

## Procedures

Students shall not be penalized for suspected plagiarism. It is the responsibility of the instructor to demonstrate the accuracy of the charge.

If the instructor can document a case of plagiarism, the department chairperson and the registrar shall be informed. Any application for withdrawal from the course will not be processed pending the outcome of the investigation of the case. The instructor and the chairperson together will interview the student and attempt to discover the precise circumstances. The case will then be referred to the dean of the appropriate division along with any necessary observations and/or recommendations from the department. The student may choose to be accompanied to any interviews by one of the departmental student representatives.

If the dean is satisfied that a case of plagiarism has been proven, the registrar will be informed of the details. In the case of first offenders, a note will be inserted in the student's file. The transgression will be noted on the student's transcript in the case of second offenders. The notation will be removed from the transcript when the student graduates, or in three years after the last registration.

## Penalties

The penalty for plagiarism or cheating on a test, exam, final exam or other assignment shall normally be zero for the piece of work. In some circumstances cheating or plagiarism could result in zero for the course. A student who allows his work to be copied will be subject to the same penalties.

Expulsion or suspension from the University are the recommended penalties for plagiarism which involves buying or borrowing a piece of academic work or another student's work. A student who lends or sells his work to another, knowing it is to be " used as plagiarism, shall also normally be suspended or expelled.

Second offenders shall normally be expelled from the University.

## Appeals

All appeals relating to the charge of plagiarism, penalties assigned, or notations on transcripts will be heard by the Senate committee on standing, examinations and promotions, whose judgement will be final. Appeals should be submitted in writing to the committee, c/o the Office of the Registrar.

## Part time Programs

The University provides an opportunity for formal education to be continued, or resumed, through part time studies.

Part time students must satisfy the regular admission requirements of the University. They may take courses during the fall/winter, spring evening, and summer day sessions.

The courses given in the evening or in the summer are equivalent to their counterparts in the regular day session. Where more than one section of a course is offered, all students will write equivalent final examinations. (See examinations, page 28.)

## Professional certificate courses

Brock University offers a number of certificate courses in co-operation with professional associations whose designation is granted on the successful completion of the program.

For some of the programs, students will register for regular degree courses at the University. Credits obtained are then applied to the certificate or designation awarded by the professional association. Students intending to register in the following programs must apply for admission to both Brock University and to the association concerned:

Canadian Resident Appraiser (CRA)
Accredited Appraiser of the Canadian Institute (AACI)
Institute of Chartered Accountants of Ontario (CA)
Fellows Program of the Canadian Credit Union Institute (FCCUI)
Canadian Institute of Certified Administrative Managers (CAM) (FCAM)
Fellows Program of the Institute of Canadian Bankers (FICB)
Fellows Program of the Insurance Institute of Canada (FIIC)
Fellows Program of the Trust Companies of Canada (FTCI)
Fellows Program of the Real Estate Institute (FRI).

Information brochures for these programs may be obtained from the Office of the Registrar.

## Certificates requiring application to the professional association; no application is made through Brock University <br> Program of the Association of Certified General Accountants (CGA) <br> Program of the Society of Management Accountants (CMA)

Information brochures for these programs may be obtained from the Office of the Registrar.

## School of Administrative Studies

Officers of instruction

## Dean

A. William Richardson

Department of Accounting/Finance

## Chairperson

Thomas H. Barnes
Professors
John A. Edds
J. Robert Hanrahan

Harvey Mann
A. William Richardson

Udayan P. Rege
Associate professors
Thomas H. Barnes
Robert Welch
Assistant professors
Marilyn Adams
H. Donald Brown

James A. Butko
Maureen E. Donnelly
Frank M. Engert
Sandra M. Felton
Gerard M. Grand
Lecturer
Ian Adamson

## Instructor

Allister W. Young
Director of co-operative
accounting program
Allister W. Young

## Department of Management/

 MarketingChairperson
Eli Levanoni

## Professors

Tansu S. Barker
W.D. Kenneth Kernaghan

William W. Liddell
Kenneth E. Loucks
Terrence H. White

## Visiting Professor <br> Arthur J.R. Smith

Associate professors
Barbara J. Austin
Eli Levanoni
H. Brian W. Metcalfe

Howard W. Prout
Ronald H. Rotenberg
Carol A. Sales
Mark J. Thomas
J. David Whitehead

Peter Yannopoulos
Assistant professors
Carmen W. Cullen
Thomas M. Mulligan
W. Alex Stewart

## Lecturers

Sharon S. Broderick
Bradley Davis
Scott Edgett

General information

Department of Accounting and Finance Mackenzie Chown complex A207

Department of Management and Marketing
Mackenzie Chown complex A240
The School offers honors programs in administrative studies and accounting.

The program in accounting is designed for students wishing to pursue careers in the accounting profession. The program is professionally oriented and combines a high degree of specialization in accounting with a broad base of studies in social sciences, mathematics and business.

The program in administrative studies is designed for students wishing to pursue careers in business and government. Although the program is professionally oriented, it is based on the social sciences, particularly in years 1 and 2. Its purpose is to provide students with a strong academic background as well as to prepare them for careers in the broad field of administration.

## Honors programs

## BAdmin

The minimum grade requirement for admission to the administrative studies program is a 70 per cent average from Ontario grade 13 or equivalent. The curriculum in administrative studies is offered only as an honors (four year) program. On successful completion of the program, the degree of Bachelor of Administration (BAdmin) is awarded.

## BActg

The minimum grade requirement for admission to the accounting program is a 70 per cent average from Ontario grade 13 or equivalent and two or more grade 13 mathematics credits or equivalent with an average of 75 per cent. The curriculum in accounting is offered only as an honors (four year) program. On successful completion of the program, the degree Bachelor of Accounting (BActg) is awarded.

The requirement for graduation from either program is a minimum grade average of 70 per cent in all ACTG/ FNCE/MGMT/MKTG credits and all other required major credits and a grade average of 60 per cent in the remaining credits. In accordance with academic regulations, each student will be allowed a maximum of 23 full course equivalent attempts to achieve the 20 course honors degree.

Students who do not achieve honors standing in year 2 may seek a degree in another field without loss of credit, and/or may continue to take courses in administrative studies under one of the university's options for the arts or science degrees. A maximum of five credits toward a pass degree and seven credits toward an honors degree in arts or science may be taken from courses given by the School of Administrative Studies (See General Studies section).

The BActg program is offered as a regular four year program and on a cooperative work/study basis. Students should take courses in the order prescribed below.

## Administrative Studies

The co-op program is fully accredited by the Institute of Chartered Accountants of Ontario. Students work in a wide variety of locations throughout Ontario. The program scheduling combines academic and work terms over a four and one half year period. Students must register with the Institute of Chartered Accountants of Ontario on a conditional basis at the beginning of the first work period and accumulate a minimum of three years' work experience, one year of which must follow the completion of the BActg degree.

Admission to the co-op program is on the basis of grade 13 marks and personal interviews which are usually conducted in May and early June. The basic requirement is an average of 80 per cent or more in grade 13 subjects. Promising students with lower grades may be accepted. For additional information, prospective students should contact the director. In addition to the current fees for courses in academic study terms, co-operative accounting students are assessed an annual administrative fee (1988/89, $\$ 200.00$ ) due and payable in September.

Both the regular four year program and co-operative work study program will be offered on a limited enrolment basis.

The program requirements are:
Year 1
ACTG 1P11/1P12
ACTG 1P71
ECON 1P91/1P92
ENGL 1P97/1P98
MGMT 1 P95
MATH 1P97/1P98
Year 2
ACTG 2 P21
ACTG 2P31/2P32
ECON 2P23
FNCE 3P92/3P93
POLI 2P62
MATH 2P60
Science context elective
Year 3
ACTG 3P11
ACTG 3P22/3P23

ACTG 3P33
MGMT 3P39
MGMT 3P49
MKTG 3P29
PHIL 2P82
POLI 3P50
One half credit elective
Year 4
ACTG 4P11
ACTG 4P12
ACTG 4P34
ACTG 4P41/4P42
One elective credit
Plus: for Program A*
ACTG 4P61/4P62
MGMT 4P89
For Program B*
ACTG 4P63
MGMT 4P85/4P86
*Note: In year 4 of the program there are two streams. Program A requirements are designed for students intending to pursue the CA designation after graduation. Program B requirements are designed for students intending to pursue the CMA designation after graduation. Students interested in other professional designations (such as CGA) should consult the chairperson of the department.

## BAdmin

All BAdmin students are required to take a number of core courses. All students should take the courses in the order prescribed below, i.e., all year 1 courses should be taken before year 2 courses and so on. In year 3, and primarily in year 4 , students may specialize in one of the optional areas. No student may take more than two of ACTG 4V90-4V95, FNCE 4V904V95, MGMT 4V90-4V99, MKTG 4V90-4V95. Please consult the department for details.

Students who wish to take a general program in business administration should choose the general management option. Students who wish to pursue graduate work in administration should consult the dean for advice in selecting courses.

Students contemplating a career in the civil service are encouraged to become familiar with a language other than English (normally French).

Year 1
ECON 1P91/1P92
MGMT 1P91/1P92
MATH 1P60/1P97
POLI 1F90
one science or humanities context credit.
*Note. Students having two or more grade 13 MATH credits with an average mark of at least 75 per cent may be exempted from MATH 1P60. ECON 2P90, MATH 2P60 or any other ACTG/FNCE/MGMT/MKTG course in proper sequence must be substituted for MATH 1P60.

Year 2
ACTG 2P11/2P12
ECON 2P23
MGMT 1P94/1P95
MGMT 2P40
MATH 1P98
MATH 2 P 60 or ECON 2 P 90
one science or humanities context credit (whichever was not taken in Year 1).

Note:
In the administrative studies program, MGMT 1P91/1P92 (191hc/192hc) are prerequisites for all BAdmin courses except MGMT 1P94, 1P95, 2P40 and 2P82. MGMT 1P95 is a required course for BAdmin, BActg and combined administrative studies major programs. ACTG 2P11(2P53/253hc) is a prerequisite for ACTG 2 P 12 and all other courses in administrative studies numbered 2(alpha) 90 or above. Students planning to take upper level economics courses should consult the department of Economics before selecting elective courses.

Students interested in the computer science option should note that year 2 of that option differs from all other programs. Students interested in the quantitative analysis option should take MATH 2P60 rather than ECON 2P90.

Computer Science option, Year 2
ACTG 2P11/2P12; COSC 1P01/1P04; ECON 2P23; MATH 1F65, 1P98; one science or humanities context credit (whichever was not taken in year 1).

In year 3 or year 4 of their studies, students in administrative studies may concentrate their courses in various disciplines or functional areas of business. These are listed below as 'options'.

## Accounting

## Year 3

FNCE 3P92/3P93
MGMT 3P30/3P50
MGMT 3P41/3P42
MKTG 3P22/3P24
One elective credit numbered $2(a l$ pha) 00 or higher

Year 4
ACTG 2P21
ACTG 2P31/2P32
ACTG 3P11
ACTG 3P22
ACTG 3P41
MGMT 4P85/4P86
*One elective credit numbered 3 (alpha) 90 or higher.

Note: Students will not be able to fulfill all of the prerequisites for professional designations within this program.

Students enrolled in the BAdmin program prior to 1989 , pursuing or intending to pursue the accounting option should take the courses listed below.

Year 3
ACTG 3P56/3P57
FNCE 3P92/3P93
MGMT 3P30/3P50
MGMT 3P41/3P42
MKTG 3P22/3P24
Year 4
ACTG (3P53/3P54) or 4P54
ACTG 3P60/4P60
ACTG 4P52
ACTG 4P55/4P56
MGMT 4P85/4P86
*One or two half credits, depending on choice of ACTG 3P53/3P54 or 4P54.
*NOTE: Students planning to pursue
the C.A. designation should take ACTG 3P53/3P54 and 4P53. Students planning to pursue the C.M.A. designation should take ACTG 4P54, MGMT 4P12 and one half credit in ACTG/ FNCE/MGMT/MKTG. Students interested in other professional accounting designations (such as C.G.A.) should consult the chairperson of the department.

## Computer science

Year 3
COSC 2P03/2P07
FNCE 3P92/3P93
MGMT 2P40
MGMT 3P41/3P42
MKTG 3P22/3P24
MATH 2P60
Year 4
COSC 3F00
COSC 3P32
MGMT 3P30/3P31
MGMT 3P58/4P58 or
MGMT 3P59/4P59
MGMT 4P12
MGMT 4P85/4P86
Finance
Year 3
FNCE 3P92/3P93
MGMT 3P30/3P50
MGMT 3P41/3P42
MKTG 3P22/3P24
One elective credit numbered 2 (alpha) 00 or higher

## Year 4

FNCE 4P02/4P06
Three of FNCE 4P04, 4P05, 4P07, 4P08, 4P09
MGMT 4P85/4P86
One half credit in ACTG/FNCE/
MGMT/MKTG
One elective credit numbered 2 (al-
pha) 00 or higher
General management
Year 3
FNCE 3P92/3P93
MGMT 3P30/3P50
MGMT 3P41/3P42
MKTG 3P22/3P24

One elective credit numbered 2(alpha) 00 or higher

Year 4
MGMT 4P85/4P86
Three credits in ACTG/FNCE/
MGMT/MKTG
One elective credit numbered 2 (al-
pha) 00 or higher

## Human resource management

Year 3
FNCE 3P92/3P93
MGMT 3P30/3P50
MGMT 3P41/3P42
MKTG 3P22/3P24
One elective credit numbered 2(al-
pha)00 or higher
Year 4
MGMT 4P62/4P63
MGMT 4P79
MGMT 4P85/4P86
Three of MGMT 4P61, 4P65, 4P66, 4P67, 4P68, 4P69
One elective credit numbered 2 (al-
pha) 00 or higher

## Marketing

Year 3
FNCE 3P92/3P93
MGMT 3P30/3P50
MGMT 3P41/3P42
MKTG 3P22/3P24
One elective credit numbered $2(\mathrm{al}$ -
pha) 00 or higher
Year 4
MGMT 4P85/4P86
MKTG 4P22
Four of MKTG 4P23, 4P25, 4P26,
4P27, 4P28, 4P29, 4P31, 4P33
One half credit in ACTG/FNCE/
MGMT/MKTG
One elective credit numbered $2(a l$ pha) 00 or higher

Public administration
Year 3
FNCE 3P92/3P93
MGMT 3P41/3P42
MGMT 3P50/POLI 3P65 or MGMT 3F51
MKTG 3P22/3P24
One elective credit numbered $2(a l$ pha) 00 or higher

## Administrative Studies

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Year 4
MGMT 3P30
MGMT 4P40
MGMT 4P52/4P54
POLI 4P50
Two of POLI 3P52/4P01/4P11/4P14/
4P15/4P51/4P53/4P65/4P81/4V10-
4V19;
One credit in ACTG/FNCE/MGMT/
MKTG
One half credit elective
Quantitative analysis
Year 3
FNCE 3P92/3P93
MGMT 3P30/3P50
MGMT 3P41/3P42
MGMT 3P58/4P58 or
MGMT 3P59/4P59
MKTG 3P22/3P24
Year 4
MGMT 3P58/4P58 or
MGMT 3P59/4P59
MGMT 4P85/4P86
One and one half credits in ACTG/
FNCE/MGMT/MKTG
One half credit elective chosen in
consultation with the dean of the
School
One elective credit numbered 2(al-
pha)00 or higher
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Bachelor of Administration for students holding other degrees

Students holding a degree where the major area of concentration is other than business, commerce, or administrative studies with a minimum overall average of 65 per cent and with at least ten credits acceptable to Brock University will normally receive ten full unspecified credits towards the BAdmin degree at Brock. These students will be required to complete the following program of courses with satisfactory honors standing in accordance with School requirements.

ECON 1P91/1P92
MGMT 1P95
MATH 1 P98
ACTG 2P11/2P12
FNCE 3P92/3P93

MGMT 3P30
MGMT 3P41/3P42
MGMT 4P85/4P86
MKTG 3P22/3P24
Two and one half credits in ACTG/
FNCE/ MGMT/MKTG
Students who are granted credit in any of the above courses must, in consultation with the dean, complete a program consisting of at least ten credits that includes all of the core courses above, or substitute courses approved by the dean.

For graduation a minimum overall grade average of 70 per cent is required in the above courses.

## Combined honors programs

Combined honors programs leading to an honors Bachelor of Arts degree are available in administrative studies and economics and administrative studies and politics. These programs are described below.

## Administrative studies and Economics

## Year 1

ECON 1P91/1P92; MGMT 1P91/1P92; MATH 1P60/1P97; POLI 1F90; one science or humanities context credit.

## Year 2

ACTG 2P11/2P12; ECON 2P21 or 2 P 23 (with permission of the department); ECON 2P22, 2P90; MGMT 3F51 or MGMT 3P50/POLI 3P65; MATH 1P98; one science or humanities context credit (whichever was not taken in year 1).

Year 3
ECON 2P31/2P32; one economics credit; FNCE 3P92/3P93; MGMT 3P41/3P42; MKTG 3P22/3P24.

Year 4
ECON 3P90, 3P91, 4P13, 4P14;
MGMT 1P95/2P40; one credit in ACTG/FNCE/ MGMT/MKTG; one elective credit.

## Administrative studies and Politics

Together with politics, the School offers a special program leading to an honors BA in administrative studies and politics. The general requirements for this program are the same as for other combined honors programs, but course selection is concentrated in the areas of public administration and law. This program is designed for anyone with an interest in public administration, administrative careers in governments, courts, and related organizations.

## Year 1

MGMT 1P91/1P92; ECON 1P91/1P92; POLI 1F90; one science and one humanities context credit (French 1F90 recommended for those with necessary prerequisites).

Year 2
ACTG 2P11/2P12; MGMT 2P40; POLI 2P80(or 2P81) or MGMT 1P95; MATH 1P98; POLI 2F12; one additional credit in politics, usually POLI $2 \mathrm{F90}$ (POLI 2P01 and one of POLI $3 \mathrm{P} 04,3 \mathrm{P} 05,4 \mathrm{P} 01,4 \mathrm{P} 02$ and 4P03 may be taken in place of POLI 2F90); one half credit elective (ECON 2P21 recommended).

## Year 3

MGMT 3F51 (or MGMT 3P50 and an optional MGMT half credit), MGMT 3P41/3P42; two credits in politics chosen from POLI 3P11, 3P15, 3P18, $3 \mathrm{P} 26,3 \mathrm{P} 27,3 \mathrm{P} 33,3 \mathrm{P} 52,3 \mathrm{P} 65$ and 3P66; one elective credit (ECON 3P14/ 3P15 recommended).

Year 4
FNCE 3P92/3P93; MGMT 4P54 and one of MGMT 4P40, 4P52, 4P61, 4P62, 4P63, 4P66, 4P67, 4P68, 4P69, 4P72; POLI 4P50; POLI 3P91 (or 3P81); one credit chosen from POLI 4P01, 4P11, 4P14, 4P15, 4P51, 4P53, 4P65 and 4V10-4V19; one elective credit.

## Bachelor of Business Economics

See separate calendar entry under Business Economics.

## Description of courses

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

## ACTG 1P11

Introduction to accounting I
The nature and role of accounting information for planning, decision making, control and external reporting by businesses and other economic organizations.
Prerequisite: open only to BActg students.
Not open to students with credit in ACTG 2P11(2P53, 253hc).
Lectures, discussion, 3 hours per week.

## ACTG 1P12

## Introduction to accounting II

A continuation of ACTG 1P11 with emphasis on the application of various accounting concepts to generate information for a variety of purposes. Prerequisite: ACTG 1 P11.
Lectures, discussion, 3 hours per week.

## ACTG 1P71

The legal environment of business
The Canadian legal system as it affects the modern business environment, in particular the accounting professional. Topics include: financial disclosure and audit requirements, corporate finance and securities, corporate capacity and agency, and professional liability for negligence and other business torts.
Prerequisite: registration in BActg program.
Not open to students with credit in MGMT 2P40(240hc) or ADMI 240 hc . Lectures, seminar, 3 hours per week.

## ACTG 2P11

Introduction to financial accounting (formerly ACTG 2P53)
The fundamental concepts of financial accounting as related to the balance sheet, income statement, and statement of changes in financial position. A study of the problems of income determination, asset and equity measurements, and analysis of financial statements.

Not open to students with credit in ACTG 2P53(253hc) or ADMI 253hc. Lectures, 3 hours per week.

ACTG 2P12
Introduction to management accounting
(formerly ACTG 2P54)
Accounting for managerial decisionmaking, including relevant data, various cost accounting systems, and break-even analysis.
Prerequisite: ACTG 2P11(2P53, 253 hc ).
Not open to students with credit in
ACTG 2P54(254hc), or ADMI 254 hc . Lectures, 3 hours per week.

## ACTG 2 P21

Accounting for planning and control I
Internal recording systems devised to implement and guide management planning and control with particular emphasis on cost finding, product costing, cost behavior and cost allocations.
Prerequisite: ACTG 1P12 or
2P12(2P54, 254hc).
Not open to students with credit in ACTG 3P55 or 3P60.
Lectures, discussion, 3 hours per week.
Not offered in 1989/90.

## ACTG 2P31

Accounting for external reporting I
The theory and practice of financial statement preparation including the measurement, reporting and disclosure of assests, liabilities, equity, revenue and expenses with specific reference to generally accepted accounting principles.
Prerequisite: ACTG 1P12 or 2P12(2P54).
Not open to students with credit in ACTG 3P56.
Lectures, discussion, 3 hours per week. Not offered in 1989/90.

## ACTG 2 P32

Accounting for external reporting II A continuation of ACTG 2P31; the theory and practice of financial statement preparation in accordance with generally accepted accounting principles.

Prerequisite: ACTG 2P31.
Lectures, discussion, 3 hours per week.
Not offered in 1989/90.

## ACTG 3P11

## Aúditing concepts

The underlying concepts of auditing including the nature of verification, audit evidence, testing, the elements of effective control structures, the use of statistical sampling and evolution of external, internal and comprehensive auditing.
Prerequisite: ACTG 3P22 or permission of the instructor.
Not open to students with credit in ACTG 3P53.
Lectures, discussion, 3 hours per week. Not offered in 1989/90.

## ACTG 3P22

## Accounting for planning and control

 IIThe role of accounting information systems within the context of a management information system with emphasis on the design and implementation of systems and controls.
Prerequisite: ACTG 2P21 or permission of the instructor.
Lectures, discussion, 3 hours per week. Not offered in 1989/90.

## ACTG 3P23

Accounting for planning and control
Topics in accounting for planning and control such as performance evaluation, divisional performance measurement, transfer pricing, behavioral implications of accounting information and current issues.
Prerequisite: ACTG 3P22.
Not open to students with credit in
ACTG 3P55 or 4P60.
Lectures, discussion, 3 hours per week. Not offered in 1989/90.

## ACTG 3P33

Accounting for external reporting III A continuation of ACTG 2P32; the theory and practice of financial statement preparation in accordance with generally accepted accounting principles.
Prerequisite: ACTG 2P32.
Lectures, discussion, 3 hours per week. Not offered in 1989/90.

## Administrative Studies

## ACTG 3P53

## External auditing I

The role of external auditing (public accounting); professional and legal responsibilities of public accountants; audit evidence; principles and evaluation of external control; interim and financial statement audits.
Not open to students with credit in ADMI 353hc.
Lectures, seminar, 3 hours per week.

## ACTG 3P54

## External auditing II

Audit reports (including reservations); audit testing and statistical sampling; auditing in an environment of EDP; development of audit programs; review engagements.
Prerequisite: ACTG 3P53(353hc).
Not open to students with credit in

## ADMI 354hc.

Lectures, seminar, 3 hours per week.

## ACTG 3P56

Intermediate financial accounting I
The objectives of financial statements, including the theoretical measurement of income as well as the accounting measurement and disclosure of assets. Prerequisite: ACTG 2P11/2P12 (2P53/ 2P54 or $253 \mathrm{hc} / 254 \mathrm{hc}$ ).
Not open to students with credit in ADMI 350 or 356 hc .
Lectures, 3 hours per week.
ACTG 3P57
Intermediate financial accounting II Measurement and reporting problems relating to liabilities and equities and an examination of alternative accounting models.
Prerequisite: ACTG 3P56(356hc).
Not open to students with credit in ADMI 350 or 357 hc .
Lectures, 3 hours per week.

## ACTG 3P60

Cost and managerial accounting Systems devised to implement management planning and control with emphasis on cost accounting, product costing, allocation, and cost behavior patterns.
Prerequisite: ACTG 2P12(2P54).
Not open to students with credit in ACTG 3P55, ADMI 351hc or 355hc. Lectures, 3 hours per week.

ACTG 4F90

## Research topic

Directed intensive study and research under the supervision of a faculty member in an area in which the student has shown particular competence. To be chosen in consultation with the supervising faculty member. Prerequisite: restricted to year 4 students; consent of the dean and supervising faculty member. Not open to students with credit in ADMI 490hc/491hc.

## ACTG 4P11

## Accounting theory

An enquiry into the mathematical, economics and behavioral foundations of accounting theory including the need for and development of standards, a conceptual framework, alternatives to present accounting models and current issues.
Prerequisite: ACTG 4P34.
Not open to students with credit in ACTG 4P53.
Lectures, discussion, 3 hours per week. Not offered in 1989/90.

## ACTG 4P12

Integration and problem solving
Problem solving integrating the sub-
disciplines of accounting in the context of a wider view of organizations
through the examination of a variety of applied and theoretical issues.
Prerequisite: ACTG 3P23, ACTG 4P34
(may be taken concurrently).
Not open to students with credit in
ACTG 4P65.
Lectures, discussion, 3 hours per week.
Not offered in 1989/90.

## ACTG 4P34

Accounting for external reporting IV A continuation of ACTG 3P33; the theory and practice of financial statement preparation in accordance with generally accepted accounting principles with emphasis on accounting for complex business organizations and not-for-profit organizations. Prerequisite: ACTG 3P33.
Lectures, discussion, 3 hours per week. Not offered in 1989/90.

## ACTG 4P41

## Taxation 1

The principles underlying federal income tax in Canada through an analysis of the Income Tax Act, R.S.C., as amended, including the computation of net income for tax purposes, taxable income and tax payable by an individ-
ual.
Prerequisite: ACTG 1P12 or 2P12(2P54).
Not open to students with credit in ACTG 4P55.
Lectures, discussion, 3 hours per week. Not offered in 1989/90.

## ACTG 4P42

Taxation II
A continuation of ACTG 4P41 including the determination of federal income taxes payable by a corporation and the tax implications of changes in corporate structures, corporate distributions and rollovers, and shareholder/owner remuneration.
Prerequisite: ACTG 4P41.
Not open to students with credit in ACTG 4P56.
Lectures, discussion, 3 hours per week. Not offered in 1989/90.

## ACTG 4P52

## Advanced accounting problems

Inter-corporate investments, preparation of consolidated financial statements, foreign currency translation, estate and trust accounting, bankruptcy, liquidation, receivership and municipal accounting.
Prerequisite: ACTG 3P56/3P57(356hc/ 357hc).
Not open to students with credit in A.DMI 452hc.

Lectures, 3 hours per week.

## ACTG 4P53

Advanced accounting
theory I
The objectives and uses of financial accounting information, and the environment in which financial accounting operates. Topics may include: accounting theory construction, objectives of external reporting, setting accounting standards, GAAP, current value accounting, the implications of efficient capital markets for accounting, the impact of accounting
regulations and the positive theory of accounting.
Prerequisite: ACTG 3P56/3P57
(356hc/357hc); FNCE 3P92/
3P93(392hc/393hc).
Not open to students with credit in ADMI 453hc.
Seminar, 3 hours per week.

## ACTG 4P54

## Management auditing

This course is directed to students who do not plan to become chartered accountants but seek instruction in the basic nature and purpose of 'operational' or 'management' auditing as practised by internal auditors in industry and government. Topics include: auditing standards, audit evidence, internal control principles and evaluation, reporting, auditing in an environment of EDP, statistical sampling, auditing typical enterprise functions.
Prerequisite: MGMT 1P94(194hc), ACTG 2P12(2P54 or 254 hc ), MKTG 3P22(322hc), MGMT 3P41(341hc). Lectures and discussions, 3 hours per week.

## ACTG 4P55

## Canadian income tax I

The principles underlying federal income taxation are examined through an analysis of the Income Tax Act, R.S.C. as amended. Topics include administration, liability for income tax, tax conventions, corporate and personal income tax computation.
Prerequisite: ACTG 2P11/2P12(2P53/ 2P54 or $253 \mathrm{hc} / 254 \mathrm{hc}$ ).
Not open to students with credit in ACTG 451 hc .
Lectures, 3 hours per week.

## ACTG 4P56

## Canadian income tax II

This course is of special interest to students majoring in accounting. It will provide students with an opportunity to examine in detail specialized areas of income tax.
Prerequisite: ACTG 451hc or 4P55(455hc).
Lectures, 3 hours per week.

## ACTG 4P60

Advanced managerial accounting
The identification, measurement and communication of accounting, information. Topics include managerial decision making for control, planning and performance evaluation.
Prerequisite: ACTG 3P60.
Not open to students with credit in ACTG 3P55, ADMI 351hc or 355hc. Lectures, discussion, case studies, 3 hours per week.

## ACTG 4P61

## External auditing I

The role and nature of the financial statement audit including the professional and legal responsibilities of the auditor, generally accepted auditing standards, risk, materiality, and the planning and execution of the audit. Prerequisite: ACTG 3P11.
Lectures, discussion, 3 hours per week. Not offered in 1989/90.

## ACTG 4P62

## External auditing II

A continuation of ACTG 4P61 with emphasis on the completion of the audit, evaluation of results, audit reports, review engagements and current topics.
Prerequisite: ACTG 4P61.
Lectures, discussion, 3 hours per week. Not offered in 1989/90.

## ACTG 4P63

## Management auditing

The role of internal auditors in industry and government with emphasis on the establishment and appraisal of administrative and operational controls, and the evaluation of the effectiveness and efficiency of various enterprise functions.
Prerequisite: ACTG 3P11.
Not open to students with credit in ACTG 4P54.
Lectures, discussion, 3 hours per week. Not offered in 1989/90.

## ACTG 4P65

## Problem solving, integration and application

Applied and theoretical issues in the various accounting subdisciplines such as financial and management accounting, auditing and taxation in the context
of a wider view of the organization.
Prerequisite: ACTG 3P57.
Lectures, discussion, case studies, term projects, 3 hours per week.

## ACTG 4P91

## Research topic

Directed intensive study or research under the supervision of a faculty member in an area in which the student has shown particular competence. To be chosen in consultation with the supervising faculty member.
Prerequisite: restricted to year 4 students; consent of the dean and supervising faculty member.
Not open to students with credit in ADMI 490hc/491hc.

ACTG 4V90-4V95
Topics in accounting
A course structured by a faculty member having specialized interest in an area within the discipline. This course is normally offered on an experimental basis.
Prerequisite: restricted to year 4 students; consent of the chairperson and supervising faculty member. Lectures, seminar, discussion, 3 hours per week.

## FNCE 3P92

Introduction to finance I
The role of the finance function in the business environment is introduced. Criteria used in making investment decisions, risk concepts, and the valuation of assets. Specific topics include: financial analysis, forecasting, and leverage; the theory of interest; valuation and capital budgeting. Prerequisite: ECON 1P91/1P92 (191hc/192hc), MATH 1P98(198hc), ACTG 2P11(2P53 or 253 hc ).
Not open to students with credit in ADMI 392 hc .
Lectures, seminar, 3 hours per week.

## FNCE 3P93

## Introduction to finance II

Criteria used in financing decisions.
Specific topics include: the cost of various sources of capital, hybrid securities, capital structure, dividends, leasing, and working capital. Prerequisite: FNCE 3P92(392hc). Not open to students with credit in

## Administrative Studies

ADMI 393hc.
Lectures, seminar, 3 hours per week.

## FNCE 4F90

## Research topic

Directed intensive study and research under the supervision of a faculty member in an area in which the student has shown particular competence. To be chosen in consultation with the supervising faculty member. Prerequisite: restricted to year 4 students; consent of the dean and supervising faculty member. Not open to students with credit in ADMI 490hc/491hc.

## FNCE 4P02

## Corporate financial policy

This case course builds on FNCE 3P92/3P93(392hc/393hc). Students are provided with an opportunity to develop further and apply their understanding of the material in FNCE 3P92/3P93(392hc/393hc) to situations encountered in a variety of business decision settings.
Prerequisite: FNCE 3P92/3P93 (392hc/ 393hc).
Not open to students with credit in ADMI 402 hc .
Seminars, case discussion, 3 hours per week.

## FNCE 4P04

## Investment analysis

The financial instruments frequently traded in organized securities markets are studied in terms of their risk and return implications for the issuer and owners. Valuation models for these securities are critically reviewed. Alternate investment strategies are explored in terms of appropriate portfolios of securities for various individual and institutional investors. Prerequisite: FNCE 3P92/3P93 (392hc/ 393hc).
Not open to students with credit in ADMI 404hc.
Lectures, 3 hours per week.

## FNCE 4P05

## International finance

Alternate solutions to the problems encountered by a financial manager in a multinational company are explored. To this end, the spectrum of business,
foreign exchange, and political risks confronting such organizations are cast in the context of the economic and legal tools and institutions through which management conducts international operations.
Prerequisite: FNCE 3P92/3P93 (392hc/ 393hc).
Not open to students with credit in ADMI 405hc.
Lectures, seminar, 3 hours per week.

## FNCE 4P06

## Financial theory

The theoretical basis for the financial decisions of individuals and business firms is explored. Of particular interest are those decisions involving the valuation of fixed assets and marketable securities. These and related decisions are reviewed under conditions of certainty and uncertainty and in the context of perfect and imperfect capital markets.
Prerequisite: FNCE 3P92/3P93 (392hc/ 393hc).
Not open to students with credit in ADMI 406hc.
Lectures, seminar, 3 hours per week.

## FNCE 4P07

## Financial market analysis

Managerial approach to the nature and functions of financial markets is developed. The impact of inflation and flow of funds on interest rate mechanism is analyzed. The criteria for efficient financial markets are applied to money, capital, securities, commodities and currency markets.
Prerequisite: FNCE 3P92/3P93 (392hc/ 393hc).
Lectures, seminar, 3 hours per week.
FNCE 4P08
Management of financial institutions Managerial in focus, the course covers the process of financial intermediators. Organizational structures, operating practices and regulatory requirements of various types of financial institutions in Canada are examined. Managerial aspects associated with savings, credit, liquidity, assets, liabilities and capital problems of financial institutions are discussed. Financial planning and strategy formulation for financial institutions are also covered.

Prerequisite: FNCE 3P92/3P93 (392hc/ 393hc).
Lectures, seminar, 3 hours per week.
FNCE 4P09
Portfolio management
Theory and practice of portfolio management for the purpose of selecting various financial instruments to meet the preferences of investors. It covers diversification effects, evaluation of portfolio performance, use of portfolio models and timing strategies in portfolio selection.
Prerequisite: FNCE 3P92/3P93(392hc/ 393hc).
Lectures, seminar, 3 hours per week.

## FNCE 4P91

## Research topic

Directed intensive study or research under the supervision of a faculty member in an area in which the student has shown particular competence. To be chosen in consultation with the supervising faculty member. Prerequisite: restricted to year 4 students; consent of the dean and supervising faculty member. Not open to students with credit in ADMI 490hc/491hc.

## FNCE 4V90-4V95

## Topics in finance

A course structured by a faculty member having specialized interest in an area within the discipline, normally offered on an experimental basis.
1989-90: (4V92)

## Options and futures

Recent theoretical formulations and the various results of empirical studies of investments in options and futures and their markets. One-fifth of the course is devoted to the institutional background of investment in these instruments while the remainder is divided between their pricing principles and some of their practical applications.
Prerequisite: FNCE 3P93.
Lectures, 3 hours per week.

## MGMT 1P91

Introduction to business
A survey of the five basic business functions: marketing, production, accounting and finance, personnel, information processing. Basic concepts
of organizing, forms of business enterprises and the need for common goals and objectives in organizations. Not open to students with credit in ADMI 190 or 191hc.
Lectures, seminar, 3 hours per week.

## MGMT 1P92

Introduction to management
The role of the manager within the organization, with particular emphasis on the basic functions of planning, organizing, staffing, directing, and controlling.
Prerequisite: MGMT 1P91(191hc) or permission of instructor.
Not open to students with credit in ADMI 190 or 192 hc .
Lectures, seminar, 3 hours per week.

## MGMT 1P94

Introduction to computing (also offered as COSC 1P91) An introduction to computers and computer programming for students not intending to major in computer science. Students will choose to study one of a number of programming languages by selecting the appropriate language tutorial. Students in the course will develop a number of computer programs. A computer science major or combined major may not hold credit for this course. May not normally be taken concurrently with or after receiving credit for COSC 1 P01.
Not open to students with credit in COSC 1P93 or COSC(MGMT)1P94. Lectures, 2 hours per week, lab, 2 hours per week, tutorial, 1 hour per week.

## MGMT 1P95

Introduction to management software
A practical introduction to the kinds of software systems of use to managers, with principal attention to systems for personal computers. Major topics include word processing systems, spreadsheets, data base management systems, integrated packages, expert systems, and the effect of business computing in the workplace and in society. No previous exposure to computing will be assumed.
Prerequisite: open only to BAdmin,

BActg and combined honors administrative studies students. Lectures, lab, 3 hours per week.

## MGMT 2P40

Commercial law
An introduction to the basic legal considerations for the business organization.
Not open to students with credit in ACTG 1P71 or ADMI 240hc. Lectures, 3 hours per week.

MGMT 2P82
Business ethics
(also offered as PHIL 2P82)
Business practices, institutions, and actions in order to evaluate their contribution to the general human good. Topics to be considered may include false or misleading advertising, product safety, monopolistic price schemes, effects of pollution, discriminatory hiring policies, the role of shareholders, management, government, and the public in determining corporate policy, and economic justice. Not open to students with credit in ADMI 282hc.
Lectures, seminar, 3 hours per week.

## MGMT 3F51

Canadian public administration (also offered as POLI 3F51) Theory and practice of public administration in Canada. Some of the topics covered will be organization of departments, regulatory agencies, and crown corporations; financial and personnel administration; responsibility and accountability.
Prerequisite: POLI 2F12(212) or permission of the instructor.
Not open to students with credit in ADMI(MGMT) 320 or MGMT(POLI) 350.

Lectures, seminar, 3 hours per week

## MGMT 3P30

## Operations management I

An introduction to some topics related to the short-term management of the operations function in the manufacturing and service sectors for both profit and not for profit organizations. The managerial implications of several types of operating processes will be discussed as well as topics relating to
the role and control of inventories and workforce management.
Prerequisite: MATH 1P98(198hc) and either MATH $2 \mathrm{P} 60(260 \mathrm{hc})$ or ECON 2P90(290hc), ACTG 2P12(2P54).
Not open to students with credit in ADMI 330hc or MGMT 3P39.
Lectures, seminar, case discussion, 3 hours per week.

## MGMT 3P31

## Operations management II

An extension of Operations management I into some longer-term aspects of managing the operations function in the manufacturing and service sectors for both profit and not-for-profit organizations. Topics will include aggregate planning and scheduling, quality control, facilities planning, technology planning and operations strategy.
Prerequisite: MGMT 3P30(330hc). Not open to students with credit in ADMI 331hc.
Lectures, seminar, 3 hours per week.

## MGMT 3P39

Fundamentals of operations management
Some fundamental concepts relating to management of the operations function in manufacturing and service sectors in for-profit and not-for-profit organizations. Topics will include process analysis, materials management, scheduling and operations strategy. Prerequisite: MATH 2P60, ACTG 2P21, FNCE 3P93; open only to BActg students.
Co-requisite: MGMT 3P49, MKTG 3 329.
Not open to students with credit in MGMT 3P30 (330hc).
Seminars, discussion, 3 hours per week.

MGMT 3P41
Organizational behavior
Micro aspects of formal organizations from a behavioral science perspective. Theories, research and current practices in the management of human resources will be discussed. Topics include motivation, leadership, group dynamics, interpersonal communication, conflict and stress management. Prerequisite: MGMT 1P91/1P92
(191hc/192hc) or permission of the instructor.
Not open to students with credit in ADMI 341 hc or SOCI 344 hc or 341 he or MGMT 3P49.
Lectures, 3 hours per week.

## MGMT 3P42

Organization theory and design Macro aspects of formal organizations from a behavioral perspective. Theories, research and current practices in organizational design and redesign will be discussed. Topics include: the development of management thought, organizational goals, organizational effectiveness and efficiency, environment, technology, structural alternatives, power and politics in organizations and organizational culture. Prerequisite: MGMT 3P41(341hc). Not open to students with credit in ADMI 340hc or SOCI 343 hc or 342 hc . Lectures, 3 hours per week.

MGMT 3P49
Fundamentals of organization management
Micro as well as macro aspects of formal organizations from a behavioral perspective. Theories, research and current practices in the management of human resources and the design of organizations will be discussed. Topics include motivation, leadership, group dynamics, organizational goals and effectiveness, environment and other contingencies and organizational culture.
Prerequisite: ACTG 1P71, FNCE 3P93; open only to BActg students. Co-requisite: MGMT 3P39, MKTG 3P29.
Not open to students with credit in MGMT 3P41(341hc) or 3P42(342hc). Lectures, seminar, case discussion, 3 hours per week.

## MGMT 3P50

## Introduction to public administra-

 tion(also offered as POLI 3P50)
The role of the public sector in the marketplace and the internal operation of government organizations. Special emphasis will be given to comparing public and business administration and to government-business relations.

Prerequisite: POLI 1F90(190).
Not open to students with credit in
MGMT(POLI) 3F51 or MGMT 320(POLI 351).
Lectures, seminar, 3 hours per week.
MGMT 3P58
Operations research methods A
(also offered as MATH 3P58)
Principles of operations research; Lagrange multipliers, with applications to LP; network models and generalized network models; elements of dynamic programming; scheduling (criteria and algorithms); integer programming (theory and practice); elements of quadratic programming; optimization and quasi-Newton methods; discussion and analysis of selected cases.
Prerequisite: MATH 2P60(260hc). Not open to students with credit in ADMI 358hc.
Lectures, 4 hours per week.
Note:
MGMT 3P58/4P58 and 3P59/4P59 are offered in alternate years.

MGMT 3P59
Operations research methods B
(also offered as MATH 3P59)
Principles of modeling; decision
theory; subjective probability and Bayesian statistics; simulation; sampling theory; design and analysis of experiments; discussion and analysis of selected cases.
Prerequisite: MATH 2P60(260hc) or permission of the instructor.
Not open to students with credit in ADMI 359hc.
Lectures, 4 hours per week.

## MGMT 3P81

## Strategic management

An integration of the disciplines in the business economics program based on the viewpoint of the firm's chief executive officer. The identification, development, and implementation of corporate strategy.
Prerequisite: ECON 1P91/1P92 (191hc/192hc), MGMT 1P91(191hc), ACTG 2P11(2P53 or 253hc), MKTG 3P22(322hc), MGMT 3P41(341hc), FNCE 3P92/3P93 (392hc/393hc).

Not open to students with credit in
ADMI 381hc or MGMT 481 or 4P85/ 4P86(485hc/486hc).
Seminar, cases, 3 hours per week.

## MGMT 4F90

## Research topic

Directed intensive study and research under the supervision of a faculty member in an area in which the student has shown particular competence. To be chosen in consultation with the supervising faculty member. Prerequisite: restricted to year 4 students; consent of the dean and supervising faculty member.
Not open to students with credit in ADMI 490hc/491hc.

## MGMT 4P12

## Information systems

Principles and practice of systems analysis and design; project selection; control of EDP operations; basics of MIS.
Prerequisite: MGMT 1P94(194hc) or 1P95; ACTG 2P11/2P12(2P53/2P54 or $253 \mathrm{hc} / 254 \mathrm{hc}$ ), MKTG 3P22(322hc), MGMT 3P41 (341hc) or permission of the instructor.
Not open to students with credit in ADMI 412hc.
Lectures and case discussions, 3 hours per week.

## MGMT 4P40

## Administrative law

Judicial control of administrative action, with particular reference to the review of administrative decisions made by federal and provincial public authorities in Canada which affect business and other organizations. Not open to students with credit in ADMI 440hc.
Prerequisite: year 4 honors standing or permission of the instructor.
Lectures, seminar and cases, 3 hours per week.

## MGMT 4P52

Personnel and financial administration in the public sector (also offered as POLI 4P52)
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. Prerequisite: year 4 honors standing; MGMT(POLI) 3F51 or MGMT 320 (POLI 351) or permission of the instructor.
Not open to students with credit in MGMT(POLI) 448 hc or POLI 452. Seminars, 3 hours per week.

## MGMT 4P54

Business-government relations (also offered as POLI 4P54)
The management of relations between business organizations and governments in Canada. Special emphasis is placed on current problems in businessgovernment relations, the legislative and regulatory environment of business, government promotion of private enterprise, public enterprise, and the means by which business organizations influence government decision making. Prerequisite: year 4 honors standing; MGMT(POLI) 3F51 or MGMT 320 (POLI 351) or permission of the instructor.
Not open to students with credit in MGMT(POLI) 449hc or POLI 452. Seminars, 3 hours per week.

## MGMT 4P58

Operations research applications A
(also offered as MATH 4P58)
Practice of operations research; investment, and applications of LP to project selection, capital growth; further dynamic programming; location problems; inventory problems; cash flow as an inventory problem; personnel planning, actuarial problems; discussion and analysis of selected cases.
Prerequisite: MGMT 3P58(358hc) or permission of the instructor.
Not open to students with credit in ADMI 458hc.
Lectures, 4 hours per week.

## MGMT 4P59

Operations research applications B
(also offered as MATH 4P59) Applications of modeling; game theory (Nash equilibrium; two player NZS
games, Nash co-operative solution and others); Shapley value, voting power; values of non-atomic games; advertising and sales forecasting in heterogeneous markets; information-theory, encoding, cryptography, security, and reliability; classification and clustering; models of biological competition and military combat; discussion and analysis of selected cases.
Prerequisite: MGMT 3P59(359hc) or permission of the instructor.
Not open to students with credit in ADMI 459hc.
Lectures, 4 hours per week.
MGMT 4P61
Strategies for organizational change
An analysis of organizational change at the environmental, business and group levels; theoretical and pragmatic approaches available to the general manager for shaping and leading an organization.
Prerequisite: MGMT 3P41/3P42 ( $341 \mathrm{hc} / 342 \mathrm{hc}$ ).
Not open to students with credit in ADMI 461hc.
Lectures, seminar, case discussions, 3 hours per week.

## MGMT 4P62

## Human resource management

Manpower recruitment, selection and training, wage and salary administration, and the design and administration of benefit programs.
Prerequisite: MGMT 3P41/3P42 ( $341 \mathrm{hc} / 342 \mathrm{hc}$ ).
Not open to students with credit in ADMI 462 hc .
Lectures, seminar, 3 hours per week.

## MGMT 4P63

## Industrial and labor relations

An evaluation of various industrial relations theories and approaches applied in the Canadian setting; an examination of major elements in the Industrial Relations System and factors shaping them; the interrelationships among the various parts of the system and how emerging trends are influencing them. A critical assessment of various frameworks of industrial relations systems, theories of the labor movement, and of collective bargaining is presented.

Prerequisite: MGMT 3P41/3P42 ( $341 \mathrm{hc} / 342 \mathrm{hc}$ ) or permission of the instructor.
Not open to students with credit in ADMI 463hc.
Lectures, seminar, 3 hours per week.

## MGMT 4P65

## Negotiating in organizations,

The diagnosis of the causes and consequences of conflict in organizations. Topics include the bases of organizational conflict, including competition over resources, information, power and goal setting. Structural, group and individual conflict resolution strategies will be stressed. In addition to managing conflict through organizational and job design, the course will consider the use of bargaining and negotiation skills to reduce conflict at various organizational levels.
Prerequisite: MGMT 3P41/3P42 ( $341 \mathrm{hc} / 342 \mathrm{hc}$ ).
Not open to students with credit in ADMI 465hc.
Lectures, seminar, 3 hours per week.

## MGMT 4P66

## Motivation and compensation management

A review of motivation theories and their application. An examination of compensation theory and practice including pay and benefits determination, job evaluation and the overall planning and administration of compensation and reward systems. Prerequisite: MGMT 3P41/3P42 ( $341 \mathrm{hc} / 342 \mathrm{hc}$ ).
Not open to students with credit in ADMI 466hc.
Lectures, seminar, 3 hours per week.

## MGMT 4P67

Training and development
The three sequential steps in the training and development process in organizations i.e., assessment of training needs, development and implementation of the training program and evaluation of the training program. A critical approach to training methods used in employee orientation, skill training and management development in the context of adult education. Prerequisite: MGMT 3P41/3P42 (341hc/342hc).

## Administrative Studies

Not open to students with credit in ADMI 467hc.
Lectures, seminar, 3 hours per week.

## MGMT 4P68

## Leadership and supervision

Leadership and supervision in a variety of organizational settings. Some of the areas to be examined in this course are: the state of the art in leadership research, leadership effectiveness through the organizational hierarchy with a particular focus on middle management issues, the new supervisor, and supervisory and other managerial roles.
Prerequisite: MGMT 3P41/3P42 ( $341 \mathrm{hc} / 342 \mathrm{hc}$ ).
Not open to students with credit in ADMI 468hc.
Lectures, seminar, 3 hours per week.

## MGMT 4P69

Staffing and evaluation
Current issues in personnel selection, placement and performance evaluation in organizations in the context of Human Rights/Equal Employment legislation. A review and evaluation of recruitment and selection strategies, and the validation of selection, placement and performance evaluation practices.
Prerequisite: MGMT 3P41/3P42 ( $341 \mathrm{hc} / 342 \mathrm{hc}$ ).
Not open to students with credit in ADMI 469hc.
Lectures, seminar, 3 hours per week.

## MGMT 4P72

## Labor law

Federal and provincial statutes governing certification, negotiation, conciliation and arbitration, unfair labor/ management practices, jurisdiction and control of trade labor unions and other employee collectives; common law effects on management action. Canadian and Ontario Labor Relation Boards' practices.
Not open to students with credit in ADMI 472hc.
Lectures, seminar, 3 hours per week.

## MGMT 4P79

Personnel management research
The nature and scope of personnel management research as a managerial
tool. An examination of the means of assessing individual, group and organizational performance; the logic of research designs and analyses; and the organization and administration of personnel research programs.
Prerequisite: MGMT 3P41/3P42
(341hc/342hc).
Not open to students with credit in ADMI $395 \mathrm{hc}, 396 \mathrm{hc}, 479 \mathrm{hc}$. Lectures, seminars, 3 hours per week.

## MGMT 4P85

Business policy I
An introduction to industry analysis and competitive strategy formulation emphasizing integration of functional area strategies and positioning with regard to market opportunities.
Prerequisite: ACTG 2P12(2P54 or 254hc), FNCE 3P93(393hc), MGMT 3P30(330hc), 3P42(342hc) and MKTG 3P24(324hc); restricted to year 4
BAdmin students.
Not open to students with credit in MGMT 481 or MGMT 485 hc . Lectures, seminar, case discussions, 3 hours per week, plus major field work project.

## MGMT 4P86

Business policy II
An extension of industry analysis and competitive strategy formulation to multiple business units and international firms and an examination of the means by which strategy is implemented.
Prerequisite: MGMT 4P85 (MGMT 4P85 and 4P86 are to be taken in consecutive terms); restricted to year 4 BAdmin students.
Not open to students with credit in MGMT 481 or MGMT 486hc. Lectures, seminar, case discussions, 3 hours per week, plus a continuation of the field work project from MGMT 4P85.

MGMT 4P89
Business policy for accounting An introduction to the general management of a total organization, and to strategic thinking and techniques. Topics include industry and competitive analysis and corporate level strategy. Throughout, the emphasis will shift from strategy formulation to implementation, but both will be
treated as part of an ongoing process of strategic management.
Prerequisite: ACTG 2P31, MGMT 3P39, 3P49, MKTG 3P29, FNCE $3 \mathrm{P9} 9$.
Not open to students with credit in MGMT 4P81 or 4P85/4P86.
Lectures, seminar, case discussions, 3 hours per week.

## MGMT 4P91

Research topic
Directed study or research under the supervision of a faculty member in an area in which the student has shown particular competence. To be chosen in consultation with the supervising faculty member.
Prerequisite: restricted to year 4 students; consent of the dean and supervising faculty member.
Not open to students with credit in ADMI 490hc/491hc.

## MGMT 4P92

## Entrepreneurship

The integration of the skills, concepts, mental attitudes and knowledge relevant for creating and building new ventures. The focus is on the discovery and exploration of business opportunities and successful start up procedures. Prerequisite: ACTG 2P12(2P54 or 254hc), FNCE 3P93(393hc), MGMT 3P30(330hc), MGMT 3P42(342hc), MKTG 3P24(324hc); or permisssion of the instructor.
Not open to students with credit in MGMT 4V92.
Lectures, seminar, case discussions, 3 hours per week.

## MGMT 4P93

Management of small enterprises: operating problems and strategies Creativity and innovation in adapting management skills to a small enterprise facing constraints in financial and physical resources and limitations on the owner-manager's time and skills. Prerequisite: ACTG 2P12(2P54 or 254hc), FNCE 3P93(393hc), MGMT 3P30(330hc), MGMT 3P42(342hc), MKTG 3P24(324hc); or permission of the instructor.
Not open to students with credit in MGMT 4V93. Lectures, seminar, case discussions, 3 hours per week.

MGMT 4V90-4V99
Topics in management
A course structured by a faculty member having specialized interest in an area within the discipline, normally offered on an experimental basis. 1989-90: (4V90) Topics in public policy I
(also offered as ECON 4V80) Public policy planning, analysis and implementation. The central focus will be on policies relating to growth, price stability, high employment, international trade and exchange rates. Prerequisite: restricted to year 4 students.
Seminars, discussion, guest lecturers, 3 hours per week.
1989-90: (4V91) Topics in public policy II
(also offered as ECON 4V81)
Public policy planning, analysis and implementation. The central focus will be on industrial, regional, social and science and technology policies.
Prerequisite: restricted to year 4 students.
Seminars, discussion, guest lecturers, 3 hours per week.
1989-90: (4V92) Management of service operations
Topics include establishing a framework for the evaluation of existing and new service concepts and examining similarities and differences between management in the service and manufacturing sectors. Creation of an awareness of problems, issues and opportunities in the service sector, important concepts in service management and service sector practices.
Prerequisite: year 4 BAdmin standing or permission of the instructor.
Seminars, case studies, 3 hours per week.
1989-90: (4V94) Public policy: advice and processes
(also offered as POLI 4V14)
Public policy advice and implementation. The central focus will be on a variety of institutions with significant policy-oriented interests, activities and/ or mandates; as well as on key processes of policy making.
Prerequisite: restricted to year 4 students.
Seminars, discussion, guest lecturers, 3 hours per week.

1989-90: (4V95) Computer use in business strategy
The application of major business software packages for general management. Students will upgrade their computing skills through hands-on learning, and then work in groups to prepare a small number of complex and quantitatively rich business policy cases.
Prerequisite: restricted to year 4 students.
Two labs per week. 1989-90: (4V96) Administration of the collective agreement
An introduction to effectively handling issues faced by employees, union representatives, supervisors and managers in the day-to-day administration of collective agreements. Specific types of disputes addressed include discipline and discharge, seniority related disputes, compensation, management rights, and the reasons why some complaints cannot be decided by arbitrators.
Prerequisite: MGMT 4P63.
Lectures, seminar, case discussions, 3
hours per week.
1989-90: (4V97)
Public policy: key current issues
(also offered as POLI 4V17)
Key current policy issues, including the development and implementation of the Canada-U.S. Free Trade Agreement, government deficit reduction, tax reform, monetary policy and exchange rate management.
Prerequisite: restricted to year 4 students.
Seminars, discussion, guest lecturers, 3 hours per week.

## MKTG 3P22

## Introduction to marketing

The characteristics of the Canadian marketing function, basic marketing concepts and the marketing function in organizations.
Prerequisite: MGMT 1P91/1P92 ( $191 \mathrm{hc} / 192 \mathrm{hc}$ ) or permission of the instructor.
Not open to students with credit in ADMI 322hc or MKTG 3P29.
Lectures, case discussions, 3 hours per week.

MKTG 3P24
Marketing management
The use of marketing concepts in decision making and the role of the marketing manager.
Prerequisite: MKTG 3P22(322hc). Not open to students with credit in ADMI 324hc.
Lectures, seminar, case discussions, 3 hours per week.

## MKTG 3P29

Fundamentals of marketing management
Fundamentals of marketing and the management of the marketing process in manufacturing, service and not-forprofit organizations. Topics will include consumer behavior, marketing research, marketing strategy and the interrelationships of the elements of the marketing mix.
Prerequisite: MATH 2P60, ACTG
2P21, FNCE 3P93. Open only to BActg students.
Co-requisite: MGMT 3P39, 3P49.
Not open to students with credit in MKTG 3P22.
Lectures. seminar, case discussions, 3 hours per week.

## MKTG 4F90

## Research topic

Directed intensive study and research under the supervision of a faculty member in an area in which the student has shown particular competence. To be chosen in consultation with the supervising faculty member.
Prerequisite: restricted to year 4 students; consent of the dean and supervising faculty member.
Not open to students with credit in
ADMI 490hc/491hc.

## MKTG 4P22

Marketing research
The nature and scope of market research as a managerial tool including an examination of scientific method, research and questionnaire design, experimentation, sample selection, data collection, and research procedure. A field work assignment will be required. Prerequisite: MKTG 3P24(324hc). Not open to students with credit in ADMI 422hc or MKTG 422hc. Lectures, seminar, case discussions, 3 hours per week.

MKTG 4P23
Marketing communications
An examination of the major management problems which arise in the formulation, implementation and evaluation of programs in the areas of advertising, selling, and related sales promotional activities.
Prerequisite: MKTG 3P24(324hc). Not open to students with credit in ADMI 423hc.
Lectures, seminar, case discussions, 3 hours per week.

## MKTG 4P25

## Marketing strategy

An examination of the process by which a business develops and executes market strategies. Topics include analysis of industry, customer, market and competitive environments, sources of competitive advantage and methods of allocating resources to new and established products. The strategic role of market evolution and cost dynamics will also be examined.
Prerequisite: MKTG 3P24(324hc). Not open to students with credit in ADMI 425hc.
Lectures, seminar, 3 hours per week.

## MKTG 4P26

## Sales management

Management of the sales force and the role of the sales function in marketing strategy. Topics include the interface between sales strategy and marketing strategy; duties of the sales manager with respect to sales force selection, training, compensation and evaluation; time and territory management; sales forecasting; the impact of new technology on the sales management function; career paths in sales management.
Prerequisite: MKTG 3P24(324hc).
Not open to students with credit in ADMI(MKTG) 426hc.
Lectures, seminar, case discussions, 3 hours per week.

## MKTG 4P27

Marketing and society
Current issues in marketing and the role marketing plays in a changing society. Topics include the state of the consumer movement, marketing ethics and deceptive practices, truth and deception
in advertising, government regulation, consumer protection, information and product safety. New developments and their implications for future marketing strategy will be examined and discussed.
Prerequisite: MKTG 3P24(324hc). Not open to students with credit in ADMI(MKTG) 427hc. Lectures, seminar, case discussions, 3 hours per week.

## MKTG 4P28

## Retail management

The managerial role and its effect on retailing decisions. The institutional structure of retailing and its past and probable future patterns. Identifying, appraising, and formulating retail marketing strategies in order to understand the interrelationships among suppliers, customers and members of the distribution channels. Prerequisite: MKTG 3P24(324hc). Not open to students with credit in ADMI(MTKG) 428hc.
Lectures, seminar, case discussions, 3 hours per week.

## MKTG 4P29

Industrial marketing
The function of the marketer in the intermediate customer market. A study of the demand, communications and delivery processes which are very different from those of the consumer market. Emphasis is given to market identification, the role of personal communications and to solving customer problems.
Prerequisite: MKTG 3P22/3P24 ( $322 \mathrm{hc} / 324 \mathrm{hc}$ ).
Not open to students with credit in ADMI 429hc.
Seminars, case discussions, 3 hours per week.

## MKTG 4P31

## Consumer behavior

An introduction to the application of behavioral science concepts to marketing. An examination of the interactions of consumers, sellers, public policy makers and researchers.
Prerequisite: MKTG 3P24(324hc).
Not open to students with credit in ADMI 431hc.
Lectures, seminar, 3 hours per week.

## MKTG 4P33

International marketing
The marketing concept and individual components of the marketing mix in the context of the international environment; the differences between international and domestic marketing and how they affect the planning, organization and control of marketing programs. Prerequisite: MKTG 3P24(324hc). Lectures, seminar, 3 hours per week.

## MKTG 4P91

## Research topic

Directed intensive study or research under the supervision of a faculty member in an area in which the student has shown particular competence. To be chosen in consultation with the supervising faculty member. Prerequisite: restricted to year 4 students; consent of the dean and supervising faculty member. Not open to students with credit in ADMI 490hc/491hc.

## MKTG 4V90-4V95

Topics in marketing
A course structured by a faculty member having specialized interest in an area within the discipline, the course is normally offered on an experimental basis.
1989-90: (4V91)
Marketing services
Examination of the unique characteristics of services and developing skills in analyzing their marketing problems. Effective and creative ways of planning through examination of differences between services and products. Special areas of interest such as professional services, fund-raising and others.
Prerequisite: MKTG 3P24(324hc).
Lectures, seminar, case discussions, 3 hours per week.
1989-90: (4V92)
Marketing Financial Services
The application of marketing principles to financial services. Site visits will be made to Canadian and U.S. financial institutions.
Prerequisite: restricted to year 4 students.
Seminars, 3 hours per week.

## Applied Language Studies

## Officers of instruction

## Chairperson

Glenwood H. Irons
Associate professors
Glenwood H. Irons
Merle Richards
John N. Sivell
Assistant professor
Ernest V. Harris

## Lecturers

John F. Kaethler
Hedy M. McGarrell
Sessional lecturers
Jean Black
Jacqueline A. Cleland
Richard E. Soady
Director of non-credit programs
John N. Sivell
Mackenzie Chown complex C409

Teaching English as a Second Language

The Brock program in the teaching of English as a second language (TESL) includes the study of the changes that have taken place in the English language; present theories of ESL instruction and the related field of linguistics; practical application of English language instruction; and the social, psychological, historical and descriptive features of the English language. The BEd portion of the TESL program encourages an application of TESL and linguistics theory to the practical problems of teaching English as a second language in the classroom, under the direct supervision of instructors from the department.

The TESL program is offered in two stages. During the first three years of this program, the student will take courses for credit towards a pass BA degree. Following the completion of the BA, the student will take courses, for a BEd degree, which offer practical training in the teaching of English as a second language.

TESL/EDUC courses at the year 4 level are for credit towards the BEd degree only while all other courses are credited towards the BA degree.

Students proceeding towards a BA in the TESL program must complete a combined major in conjunction with one other humanities, social science, or science department.

Students already holding a relevant BA degree may be accepted into the BEd component of the TESL program. In such cases, additional courses may be required.

Students whose first language is English, who do not have a grade 13 credit in a second language, must take at least one course in a second language during the first year of a TESL program. Further language courses are strongly recommended.

No more than five credits in TESL, administrative studies, education, physical education, and recreation and leisure studies are permitted within a BA or BSc program.

TESL/EDUC courses do not lead to Ontario Ministry of Education certification to teach in the province of Ontario. Students who desire Ministry of Education certification to teach in the province of Ontario should consult the College of Education calendar entry for the BEd Route I program.

## Pass BA program

Year 1
TESL 1F91, LING 1F94*, one credit in second major area; two context credits**.

Year 2
TESL 2F50, TESL 2F60, two credits in second major area; one elective credit.

Year 3
TESL 3F92, 3F93, two credits in second major area; one elective credit.
*See Germanic and Slavic Studies.
**All three context credits must be completed within the first ten credits. If not satisfied by the introductory course in the second area and the first year electives, the missing component must be completed in year 2 .

## BEd program

TESL/EDUC 4F01, TESL/EDUC 4F02, TESL/EDUC 4F03, TESL/ EDUC 4F04, TESL/EDUC 4F05.

## Description of courses

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

## TESL 1F91

Introduction to second language acquisition
Various relevant theories of language learning. Topics discussed will include first language acquisition, comparing and contrasting first and second language, language and culture, contrastive analysis, error analysis, and numerous contemporary methods of language instruction.
Co-requisite: LING 1 F94.
Lectures, seminar, 3 hours per week.

TESL 2F50
Introduction to the comparative phonology of English and French (also offered as FREN 2F50 and APLI 2F50)
A comparative analysis of distinctive phonological features of the English and French languages.
Prerequisite: TESL 1F91(191), or
FREN 1F90 for French majors, or permission of the department.
Co-requisite: TESL 2F60 (no corequisite for French majors).
Lectures, seminar, 3 hours per week.

## TESL 2F60

## Introduction to English grammar

Relevant issues in the theory of grammar. Following an overview of English syntax, semantic theories will be studied in relation to grammatical forms. Finally, in order to create a model for instructional procedure, the structural organization of sentences will be studied.
Prerequisite: TESL 1F91(191) or permission of the chairperson. Co-requisite: TESL 2F50. Lectures, seminar, 3 hours per week.

## TESL 3 F92

## Culture ănd language

The interplay between leaming English, teaching English and English cultural orientation. In order to allow an understanding of the gaps which occur in the language learning process when cultural differences are not taken into consideration, an analysis will be made of specific language acquisition skills which are affected by cultural interference.
Prerequisite: TESL 1F91(191), or permission of the chairperson.
Lectures, seminar, 3 hours per week.
TESL 3F94
Discourse analysis
(formerly TESL 4F00)
Various techniques and frameworks for the analysis of written and spoken discourse, with special reference to applications in second-language acquisition. Lectures will outline approaches to discourse analysis and related initiatives in communicative language-teaching methodology. Seminars will examine discourse
analysis theories as well as corresponding pedagogical materials. Preparation of a practical project in discourse analysis.
Prerequisite: TESL 1F91(191), or permission of the chairperson. Not open to students with credit in TESL 4F00.
Lectures, seminar, 3 hours per week.
Note: TESL/EDUC courses do not lead to Ontario Ministry of Education certification to teach in the province of Ontario. Students who desire Ministry of Education certification to teach in the province of Ontario should consult the College of Education calendar entry for the Bachelor of Education route I program.
***TESL 4F01
Advanced English grammar (also offered as EDUC 4F01) Application of syntactic principles outlined in TESL 2F60. Advanced grammatical analysis techniques applied to the teaching of short essays and research papers.
Prerequisites: TESL 1F91(191), $2 F 60(260)$ or permission of the chairperson.
Co-requisites: TESL 4F02, 4F03, 4F04, 4F05 or permission of the chairperson. (Does not lead to Ministry of Education qualification to teach in the province of Ontario.)
Lectures, seminar, 3 hours per week.

## ***TESL 4F02

Individual project
(also offered as Educ 4F02)
An individually designed project, carried out through regular class meetings, and with the help of a faculty adviser.
Prerequisite: TESL 1F91(191) or permission of the chairperson. Co-requisites: TESL 4F01, 4F03, 4F04, 4 F 05 or permission of chairperson. (Does not lead to Ministry of Education qualification to teach in the province of Ontario.)
Lectures, seminar, 3 hours per week.

## ***TESL 4F03

Audio-lingual skills
(also offered as EDUC 4F03)
Theories and methods related to the
teaching of English pronunciation and listening comprehension skills. To be considered are the role of contrastive analysis, error analysis and interlanguage, as well as techniques derived from generative phonology. The comprehension-based approach to second language teaching and the advantages and limits of the language lab will be discussed.
Prerequisite: TESL 1F91(191), 2F50(250) or permission of the chairperson.
Co-requisites: TESL $4 \mathrm{~F} 01,4 \mathrm{~F} 02,4 \mathrm{~F} 04$, 4F05 or permission of the chairperson. (Does not lead to Ministry of Education qualification to teach in the province of Ontario.)
Lectures, seminar, 3 hours per week.

## ***TESL 4F04 <br> Curriculum design, methodology and practicum

(also offered as EDUC 4F04) An extension of introductory work in TESL 1F91. Examination of the theoretical and historical factors influential in the development of second language curricula since 1960. A project in second language course design during the first term. Practical application of second language teaching methods and approaches. Micro-peer teaching sessions, observation and teaching practice in Brock's Intensive English Language program. Prerequisites: TESL 1F91(191), or permission of the chairperson. Co-requisites: TESL $4 \mathrm{~F} 01,4 \mathrm{~F} 02,4 \mathrm{~F} 03$, 4F05 or permission of the chairperson. (Does not lead to Ministry of Education qualification to teach in the province of Ontario.)
Lectures, seminar, 3 hours per week.

[^0]language reading programs.
Prerequisite: TESL 1F91(191), or permission of the chairperson. Co-requisite: TESL 4F01, 4F02, 4F03, 4F04 or permission of the chairperson. Not open to students with credit in TESL 3F93.
(Does not lead to Ministry of Education qualification to teach in the province of Ontario.)
Lecturess seminar, 3 hours per week.
***TESL/EDUC course for credit towards BEd only.

## English as a Second Language

APLS and ESLX courses are designed to enhance and develop the English speaking and writing ability of those for whom English is not a native language. Remedial English (noncredit) and skills enhancement (credit) courses are available for students with varying levels of English proficiency.

ESL students from all disciplines who are required to register in one written English and one spoken English section until their proficiency has improved to the exemption level are also required to practise pronunciation, grammar and listening comprehension at least one hour per week in the language lab. Participants in the ESL courses are normally placed there by virtue of their scores on the placement test given in the Fall.

## Description of courses

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

## Credit courses

APLS 1P90
Advanced written English
This course will help the student refine library research techniques, complete an academically acceptable term paper with step-by-step help, and improve writing skills for academic and
professional purposes. Grammatical structures will be examined and inclass writing assignments undertaken in order to meet the specific writing requirements of each group and to explore the various types of discourse. Only available for credit to (a) Visa students whose native language is not English; (b) other students whose native language is not English and who have not attended an English-speaking high school.
Not open to students with credit in EASL 143hc.
Lectures, 3 hours per week.

## APLS 1P91

Advanced spoken English for ESL students
This course stresses the importance of seminar participation at Brock University. In order to help the student properly define and evaluate the practice of communication and intonation, a study of essential idioms and academic roleplays is undertaken. An awareness of and flexibility towards using appropriate communication methods in different contexts is developed through varied use of structure, vocabulary and organization. No challenges for credit will be accepted for APLS courses. Prerequisite: score of 80 or above on the English language placement test or successful completion of Level II spoken English.
Only available for credit to (a) Visa students whose native language is not English: (b) other students whose native language is not English and who have not attended an English-speaking high school.
Not open to students with credit in EASL 140hc.
Seminars, 3 hours per week, language lab 1 hour per week.

Non-credit (remedial) courses

The following courses are not eligible for credit towards a Brock degree.

## ESLX ON10

Level I written English for ESL students
To meet the needs of students whose scores on standardized tests show a definitive need for remedial written work. Students use prescriptive grammar texts to practise the manipulation of syntactical structures, and are introduced to rudimentary research paper techniques. Emphasis is placed on creating and developing solid sentence/paragraph writing techniques. A short essay is required. Lectures, 5 hours per week.

## ESLX 0N11

## Level I spoken English for ESL students

This course is designed to help the student to develop a corpus of twoword verbs in order to manipulate them in an academic context and understand problematic morphological structures. The lab instructor aids the student's communicative performance through rectification of any pronunciation/ comprehension/grammatical problems which lead to the production of structural errors.
Seminars, 5 hours per week, language lab, 1 hour per week.

## ESLX ON20

## Level II written English for ESL

 studentsFor students whose writing ability may not reflect scores received on standardized tests. Students who have previously acquired a basic knowledge of grammatical structures are encouraged in their attempts to expand writing skills at the sentence and paragraph levels. An outline of and emphasis on expository writing techniques to assist. students in producing a short research paper.
Lectures, 4 hours per week.

## Applied Language Studies

## ESLX 0N21

## Level II Spoken English for ESL

 studentsThe identification and correction of phonological problems to assist students in their seminar participation. Ample opportunity is provided to practise using English as the medium of expression in various academic or seminar-related contexts. Listening and note-taking skills are emphasized in order to help the student cope with the complexities of Brock's academic environment.
Seminars, 4 hours per week, language lab, 1 hour per week.

## Intensive English Language Program (IELP)

The IELP provides 25 hours of English instruction per week in: grammar and writing; guided reading; spoken English; language lab; and study skills/ orientation to Canadian culture. This program is open to all non-native speakers who wish to improve English for academic, professional or social purposes. Inquiries should be sent to the director, Non-credit programs, Department of Applied Language Studies, Room C409, Brock University.

## Applied Linguistics

Director
John G. Benjafield
Institute for Applied Human Development
Department of Psychology
Applied linguistics consists of a core of courses supplemented by recommended electives which reflect the various emphases and applications of this broadly-based field of study. These recommended electives have been chosen so that a student can concentrate on the following aspects of applied linguistics:

1. applied linguistics with an emphasis on language development and use;
2. applied linguistics with an emphasis on theoretical aspects of language.

Students should be careful to select those electives which will prepare them for the career or post-graduate program of their choice; their elective choices must be approved by the director of the program.

Students interested in teaching language in the Ontario school system should consult the Ministry of Education guidelines. In those guidelines, "Language Courses" mean English or any teachable (modern languages) subject.

Pass program

## Year 1

APLI 1F91; PSYC 1F90; three of
BIOL 1F25, LING 1F94, *MATH
1F92, humanities context credit.
*If MATH 1F92 is not taken in year 1, then either it or a social science statistics full course (e.g., PSYC 2F23
or SOCI 2 F 10 ) must be taken in year 2 .

Year 2
APLI 2F50; CHST 2F10; two of EXST 2F95, LBST 2F95, PSYC 2F90; one elective.

## Year 3

APLI 3F08; TESL 3F92 or 3F94; two full credits from CLAS 3P93, ENGL 3F91, LBST 3P93, PSYC 3F96; one elective.

## Honors program

Years 1, 2 and 3
As in pass program.
Year 4
APLI 4F01, 4F02, 4F03; PSYC 3P98, 3P99; one elective.

## Description of courses

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

## APLI 1F91

Introduction to second language acquisition
(also offered as TESL 1F91) Various relevant theories of language
learning. Topics discussed will include first language acquisition, comparing and contrasting first and second language, language and culture, contrastive analysis, error analysis, and numerous contemporary methods of language instruction.
Co-requisite: LING 1F94.
Lectures, seminar, 3 hours per week.

## APLI 2F50

Introduction to the comparative phonology of English and French (also offered as FREN 2F50 and TESL 2F50)
A comparative analysis of distinctive phonological features of the English and French languages.
Prerequisite: APLI 1F91, or TESL

1F91 (191) for TESL majors, or FREN
1 1F90 for French majors, or permission of the department.
Co-requisite: TESL 2F60 (no corequisite for French majors or Applied Linguistics students).
Lectures, seminar, 3 hours per week.

## APLI 3F08

Psychology of language
(also offered as COMM 3F08 and PSYC 3F08)
Psychological processes involved in language including the study of meaning, language development in children, language and thought, listening, as well as special interest topics such as bilingualism and written language.
Lectures, seminar, 3 hours per week.

## APLI 4F01

## Honors thesis

A research project carried out with a faculty adviser. Students must consult the program director regarding both their program and an adviser before being admitted to year 4 .
Prerequisite: admission to year 4.
APLI 4F02

## Honors seminar

A comprehensive examination of the fundamental issues in the diverse areas of applied linguistics, with various faculty members responsible for specific sections of the course. Prerequisite: admission to year 4. Lectures, seminar, 3 hours per week.

## APLI 4F03

Special topics in applied linguistics
Directed readings in an area of specialization in applied linguistics. Topics to be arranged in advance with a faculty member willing to supervise the course.
Prerequisite: admission to year 4 and permission of the instructor.
Seminar, 3 hours per week.

## Asian Studies

Co-ordinator<br>John R.A. Mayer<br>Co-operating faculty<br>Roderick Church, Politics<br>Hasan Imam, Economics<br>John R.A. Mayer, Philosophy<br>Josephine P. Meeker, Geography<br>Robert C. Nunn, Drama, Film Studies and Fine Arts<br>Joseph L. Sanders, History<br>Debabrata Sinha, Philosophy<br>Paul D. Tyson, Psychology

General information

Schmon tower 1207
Asian studies is a co-operative program of the departments of Economics, Geography, History, Philosophy, Politics and Psychology. Responsibility for its administration rests with the plenum on Asian studies.

There is no degree program in Asian studies at present. However, students can have a concentration in Asian studies by including Asian studies and Asia-related courses as electives or as part of a program in another department. In a pass program, a concentration in Asian studies requires ASIA 1F90 and the equivalent of three Asiarelated credits from at least three different departments, in an honors program, ASIA 1F90 and the equivalent of five credits from at least three departments. The words concentration in Asian studies will be added to the student's transcript if the program is certified by the co-ordinator of Asian studies. Students should consult with the co-ordinator when planning their programs.

## Course listing

The following courses concentrate wholly or substantially on Asia. They can be taken for credit towards a concentration in Asian studies. In addition, a number of special seminars, tutorials and thesis courses are available in different departments. They can be counted for Asian studies credit if the instructor certifies that in a given year the content is wholly or substantially Asia-related.

ASIA 1F90 Introduction to the civilizations of Asia

ECON 2P17 Economic development

EXST 2F20 Comparative religion
GEOG 2P06 Cultural geography
HIST 2P93 Foundations of modern Japan

PHIL 2F91 Religion and philosophy: comparative studies

PHIL 2P12 Indian philosophy: an introduction to Hindu thought

PHIL 2P13 Indian philosophy: an introduction to Buddhist thought

PHIL 2P16 Early Chinese philosophy

PHIL 2P17 Introduction to Chinese Buddhism

PHIL 4V30- Advanced studies in 4V34 Eastern philosophy

POLI 2P42 The government and politics of China

POLI 2P43 The government and politics of India

POLI 3P43 Politics in the Third World

POLI 4P43 Comparative politics of Southeast Asia

PSYC 2F97 Experiential psychology

PSYC 3F55 Perception and consciousness

SANS 1F00 Sanskrit

## Description of courses

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

## ASIA 1F90

Introduction to the civilizations of Asia
An interdisciplinary introduction to the peoples, cultures and traditions of India, Southeast Asia, China and Japan. Topics include history, philosophy and religion, art, politics, economic development and social customs. Not open to students with credit in ASIA 102.
Lectures, seminar, 3 hours per week.

## Biochemistry

Biological Sciences department<br>William H. Cade, chairperson

Chemistry department
Richard R. Hiatt, chairperson

## General information

Biochemistry is taught in some universities by separate Biology, Chemistry and Medical departments; in others the courses are offered by autonomous biochemistry departments. At Brock, biochemistry courses were developed originally by the Biological Sciences department and are now offered by that department and by the department of Chemistry.

## Pass program

## Year 1

BIOL 1F90; CHEM 1 F93 or 1F85; MATH 1P93/1P94; PHYS $1 F 90$ or 1F20; one humanities or social science context credit (see Notes 1. and 2.).

## Year 2

BIOL 2F01; one credit from BIOL 2P90, 2P91, 2P93, 2P98; CHEM 2P20/ 2P21, 2P40 and one of CHEM 2P30 or 2 P 41 ; the humanities or social science context credit not taken in year 1 (see Note 3.).

Year 3
BCHM 3P01, BIOL(BCHM) 3P49, BIOL 3P50; one of BCHM 3P02, 3P04, BIOL 3P51, 3P91; CHEM 2F10; CHEM 3P20/3P21; one elective credit*.
*CHEM 3P40 is strongly recommended; it is a prerequisite for CHEM $4 \mathrm{~F} 90 / 4 \mathrm{~F} 91$ and should be taken in year 3 by students intending to proceed to a year 4 thesis in chemistry.

## Honors program

Years 1, 2 and 3
As in pass program.
Year 4
BIOL 4F90/4F91 or CHEM 4F90/
4F91; either BCHM 4P07 or one of BCHM 3P02 or BCHM(BIOL) 3P04 (if not taken in year 3); one other year 4 BCHM half credit; one year 4 credit in chemistry; one elective credit.

In years when CHEM 4P27 is given, this is a strongly recommended option. CHEM 4P27, together with CHEM 4 P 40 , may be used to satisfy the chemistry credit requirement.

A minimum of three credits from courses numbered 3(alpha) 90 or above must be included in an honors degree.

## Notes:

1. CHEM 1 F93 required; CHEM 1F85 is permitted.
2. PHYS 1 F90 with a lab is preferred; professional schools may require an introductory physics course with a lab.
3. It is recommended that students interested in bio-inorganic chemistry should take CHEM 2P30 in year 2.
4. A minimum of ten credits (five from each discipline) is required for a combined major pass degree and a minimum of fourteen credits (seven from each discipline) is required for a combined major honors degree.

## Biological Sciences

## Officers of instruction

## Chairperson

William H. Cade

## 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 professor
Alan Castle
Research associate
S.S. Rao

NSERC University research fellow
Douglas H. Bruce
Laboratory instructors
Rae Catella
John Ciolfi
George Melvin
Glenda Nicholls-Pawlowski

## General information

## Mackenzie Chown complex F234

The biological sciences--the life sciences--encompass a broad spectrum of subjects from molecular biology to ecology as well as such disciplines as biochemistry, biophysics, genetics and physiology. The program offered by the department is designed to provide the student with a broad base in
modern biological thought, to fulfill the basic requirements for admission to professional and advanced degree studies, and to prepare the graduates for careers in the biological sciences and related fields. Although the undergraduate program provides students with flexibility in selecting the areas of biology most compatible with their interests and skills, it also ensures that students develop an overview of the major concepts and problems of modern biology as expressed at all levels of biological organization.

The objectives of the undergraduate program are realized through a group of core courses in years 1 and 2, each with an associated laboratory. The laboratory classes stress the investigative approach to experimental studies. Students move progressively from structured laboratory studies to increasingly independent investigations and in the honors year undertake individual research projects. Working from the core program, students may follow a variety of curriculum patterns to satisfy their interests.

In addition to its own programs, the department of Biological Sciences participates in combined major programs with the departments of Chemistry, Geography, Geological Sciences, Mathematics, Physics and Psychology, and with the Institute of Urban and Environmental Studies. Students also have access to a variety of field biology courses offered in association with other Ontario universities.

The laboratory and technical facilities of the department complement the undergraduate program and provide diverse opportunities for specialization at the graduate level.

Students contemplating careers in primary or secondary education should note the availability of undergraduate courses offered by the College of Education carrying credit toward the undergraduate degree.

## Pass program

Students must complete at least seven biology credits of which four must be from the core program. The core program consists of BIOL 1F90, 2F01, 2 F 03 , and one credit from $2 \mathrm{P} 90,2 \mathrm{P} 91$, 2 P 93 , and 2 P 98 . Also four ancillary science credits are to be completed, including CHEM 1F85 or 1F93, MATH 1P97/1P98, one of COSC 1P90/1P91, GEOL 1F95, PHYS 1F20, PHYS 1F90, and one further nonbiology credit offered in the division of mathematics and sciences.

Recommended program:
Year 1
BIOL 1F90, CHEM 1F85 or 1F93, MATH 1P97/1P98; one of PHYS 1F20, PHYS 1F90, GEOL 1F95, or COSC 1P90/1P91; one humanities or social science context credit.

## Notes:

1. Students registering for BIOL 1F90 should register in MATH 1P98 for the fall term, but should check with the Mathematics department regarding prerequisites.
2. Students should note that one credit in physics is required for certain professional programs.
3. Physics 1F20 is strongly recommended for students who do not have grade 13 physics.

## Year 2

BIOL 2F01, 2F03; two of BIOL 2P90, 2P91, 2P93 and 2P98. One other year 1 or year 2 level science credit other than biology (a year 2 level organic chemistry course is recommended); the humanities or social science context credit not taken in year 1 . The unspecified credit in science excludes ASTR 1F00, SCIE 1F20 and the year 1 mathematics courses.

## Year 3

Three credits in biological sciences numbered 2(alpha) 90 or above; two elective credits (one of which may be

BIOL 2F95). Students in year 3 are encouraged to take at least one of the four half credits BIOL 2P90, 2P91, 2 P 93 and 2 P 98 not taken in year 2.

## Note:

Students should note that many courses at year 3 or year 4 level are given in alternate years only, cycled with another similar course. These are:
BCHM 3P02 and BCHM 3P04
BCHM 4P01 and BCHM 4P02
BIOL 3P60 and BIOL 3P65
BIOL 3P63 and BIOL 3P66
BIOL 3P91 and BIOL 3P92
The following courses are given in alternate years only: BCHM 4 P 04 , BCHM 4P05, BCHM 4P07, BIOL 4P60, BIOL 4P62.

Students should plan their programs accordingly and are advised to refer to the applicable term timetable for details.

## Honors program

The honors year (year 4 ) provides students with the opportunity for either broadening their understanding of the biological sciences or for increased specialization. Ideally, the year 4 program provides an opportunity for the synthesis of material presented in earlier years and also provides an opportunity for independent investigative work. Each honors candidate undertakes a major research study under the direct supervision of a faculty member.

## Years 1, 2 and 3

As in pass program.

## Year 4

Four biology credits at year 3 or year 4 level including BIOL 4F90/4F91 or BIOL 4F92; one elective credit. A minimum of three credits must be numbered 3(alpha)90 or above.

## Combined major programs

The department of Biological Sciences offers combined major programs with the departments of Chemistry, Geography, Geological Sciences, Mathematics, Physics, Psychology, and with the Institute of Urban and Environmental Studies. A minimum of ten credits (five from each discipline) is required for a combined major pass degree, and a minimum of fourteen credits (seven from each discipline) is required for a combined major honors degree. Some typical programs:

## Biology and Chemistry

Pass program
Year 1
BIOL 1F90; CHEM 1F85 or 1F93; MATH 1P93/1P94; PHYS 1F90; one humanities or social science context credit.

## Year 2

BIOL 2 F 01 ; one credit in biology from 2F03, 2P90, 2P91, 2P93, 2P98; CHEM $2 \mathrm{P} 20 / 2 \mathrm{P} 21$; either CHEM 2 F 10 or CHEM 2P40 and one of CHEM 2P41 or 2 P 30 ; the humanities or social science context credit not taken in year 1.

## Year 3

BCHM 3P01; BCHM 3P02 or BIOL(BCHM) 3P04 or 3P49 (two of these recommended when available); one year 3 credit in biological sciences (BIOL 3P50 recommended); the remaining one of CHEM 2F10 or CHEM 2P40 and one of CHEM 2P41 or 2P30 if not taken in year 2 ; one of CHEM $3 \mathrm{P} 20 / 3 \mathrm{P} 21,3 \mathrm{P} 30 / 3 \mathrm{P} 31$, or 3P51/3P53; one elective credit.

Note: CHEM 3P40 is strongly recommended; it is a prerequisite for CHEM 4F90/4F91 and should be taken in year 3 by students intending to proceed to a year 4 thesis in chemistry.

Note: honors students who elect BIOL 4F90/4F91 and who have taken only the minimum five credits in chemistry
in years 1-3 may experience difficulty in obtaining the necessary two additional chemistry credits in year 4.

## Honors program

Years 1,2, and 3
As in pass program.

## Year 4

CHEM 4F90/4F91 or BIOL 4F90/4F91 or 4 F 92 ; one year 4 credit in the department of Biological Sciences in the areas of biochemistry, biophysics or molecular biology or one year 4 half credit from one of those areas plus BCHM 3 P 02 or BIOL 3P50; one year 3 or year 4 credit in chemistry; one elective credit. CHEM 4P27 is recommended.

## Biology and Geography

## Pass program

Year 1
BIOL 1F90; GEOG 1F91; MATH 1P97/1P98; one humanities and one social science context credit.

Note: GEOG 1 F90 is strongly recommended as a social science context credit.

## Year 2

BIOL 2F03; one credit from BIOL 2P90, 2P91, 2P93, 2P98; GEOG 2P07/ 2 P 08 (or equivalent); one credit from GEOG $2 \mathrm{P} 04,2 \mathrm{P} 05,2 \mathrm{P} 09$; one elective credit.

Year 3
Two credits in biology; GEOG 3P56; one and one half credits in geography from Group B (see Geography section of the calendar); one elective credit.

## Honors program

Years 1, 2 and 3
As in pass program.

## Year 4

Two credits in biology; GEOG 4F99; one year 4 credit in geography from Group B (see Geography section of the calendar); one elective credit. One of: BIOL 4F90/4F91, or BIOL 4F92 or GEOG 4F90 must be included.

## Biological Sciences

## Biology and Mathematics

Pass program
Year 1
BIOL 1F90; MATH 1P90, 1P93, 1P94, 1P98; CHEM 1F85 or 1F93; one humanities or social science context credit.

Year 2
Two credits from BIOL 2F01, 2F03, 2P90, 2P91, 2P93, 2P98; MATH 2F00 or 2F95; COSC 1P01/1P04; the humanities or social science context credit not taken in year 1.

Year 3
Two credits in biology, one of which must be at the year 3 level; MATH $2 \mathrm{~F} 96,2 \mathrm{P} 20,3 \mathrm{P} 20$; one elective credit.

Honors program
Years 1, 2 and 3
As in pass program.
Year 4
Two year 3 or year 4 credits in biology; two year 3 or year 4 credits in mathematics (either 3P58/4P58 or 3P59/4P59 and 4P19/4P20 recommended); one elective credit.

## Biology and Psychology

Pass program
Year 1
BIOL 1F90; PSYC 1F90; CHEM 1F85 or 1F93; one humanities; one elective credit (MATH 1P97/1P98 or MATH 1F92 recommended).

## Year 2

Two credits from BIOL 2F01, 2F03, 2P90, 2P91, 2P93, 2P98; PSYC 2F23, one other psychology credit numbered $2(a l p h a) 00$ or higher; one elective credit.

## Year 3

Two year 2 or year 3 credits in biology; two credits in psychology numbered 2 (alpha) 90 or higher (for students proceeding to the honors program, PSYC $3 F 40$ is required); one elective credit.

Honors program
Years 1, 2 and 3
As in pass program.
Year 4
Two credits in biology which may include BIOL 4F90/4F91 or BIOL 4F92; PSYC 4P92/4P93 and one other year 4 psychology credit (if neither BIOL 4F90/4F91 nor BIOL 4F92 is taken, PSYC 4F91 is required); one elective credit.

For combinations with geological sciences, physics, and urban and environmental studies, see the entry under the other department.

## Master of Science (MSc) program

The department of Biological Sciences offers specialized training in a wide variety of research areas leading to the MSc degree. Candidates will normally have an honors BSc or BA degree for admission to the program. A minimum of one year of full time study and research is required, which will include BIOL 5F90 (MSc thesis) and the equivalent of two full courses, one of which must be at the graduate level.

The department also offers an accelerated MSc program. Admission is an option available to students enrolled in BIOL 4F90/4F91. Permission to enter the program is subject to satisfactory performance in course work and research. Further details are available from the departmental chairperson.

## Graduate courses

BIOL 5F40
Selected topics in biophysics (inter-university program)

BIOL 5F90
MSc thesis
BCHM 5P01
Advanced plant biochemistry-metabolism

BCHM 5P02
Advanced plant biochemistry-transport

BCHM 5P04
Advanced bioenergetics
BIOL 5P05
Advanced Topobiochemistry
BCHM 5P06
Current topics in photosynthesis
BIOL 5P11
Advanced histology
BIOL 5P15
Advanced fluorescence and electron
microscopy
BIOL 5P21
Physiological plant pathology
BCHM 5P27
Advanced enzyme and coenzyme mechanisms

BIOL 5P28
Advanced neurobiology
BIOL 5P41
Selected topics in biophysics
(inter-university program)
BIOL 5P52
Advanced developmental genetics
BIOL 5P53
Immunology
BIOL 5P54
Advanced molecular biology of yeast
BIOL 5P55
Membrane structure and function
BIOL 5P56
Behavioral genetics

## BIOL 5P57

Advanced recombinant DNA techniques

BIOL 5P58
Fungal genetics
BIOL 5P60
Advanced seminar in population and behavioral ecology

## BIOL 5P61

Advanced paleolimnology
BIOL 5P62
Advanced limnology
BIOL 5P63
Advanced seminar in ecosystem theory
BIOL 5P64
Advanced insect behavior
BIOL 5P65
Advanced comparative physiology
BIOL 5P80
Selected topics in contemporary biology

BCHM 5P81
Selected topics in contemporary biochemistry

For details, refer to the Graduate
Calendar or contact the chairperson of the department.

## Description of courses

Abbreviations:

| BCHM | Biochemistry |
| :--- | :--- |
| BIOL | Biology |

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

## BIOL 1F25

## Biology, a human perspective

 The course is directed towards nonscience majors and presents topics that comment on contemporary issues of human concern. Recent topics have included exercise physiology, the biology of cancer and the biological basis of human behavior. High school biology is not a prerequisite for this course.Lectures, 2 hours per week; seminar, lab, alternating weeks, 2 hours per week.

BIOL 1F90
Concepts in biology
Topics selected from such areas of
biology as cell structure and function; transmission and molecular genetics; physiology, neurobiology and behavior; development and immunology; origins, natural selection and evolution. Weekly laboratory exercises or seminars are coordinated with lectures. Biology 1F90 is a prerequisite for most courses in the department.
Prerequisite: Ontario Academic Credit in biology (or grade 13 biology) recommended.
Lectures, 3 hours per week; lab/ seminar, 3 hours per week.

Note:
Students registering for BIOL 1F90 should normally register for MATH 1P98 Basic statistical methods in the fall term. MATH 1P93 may be substituted for MATH 1P97 in the winter term.

## BIOL 2F01

Principles of molecular and cellular biology
The examination of cellular processes and their relationship to cellular structure with emphasis on the structure and function of proteins, membranes, cell organelles and the expression of genetic information. Prerequisite: BIOL 1F90(190). Lectures, 2 hours per week; seminar, 1 hour per week; lab, 3 hours per week (weeks 7-12 in term 1 and weeks 1-6 in term 2).

BIOL 2F03
Principles of environmental biology
Biological processes at the population and community levels of biological organization; patterns and diversity in natural systems in the context of species-specific adaptations and evolution; population group characteristics; single-species and mixedspecies interactions; the growth and regulation of numbers; community structural organization; species diversity; and energy flow through ecosystems. Prerequisite: BIOL 1F90(190). Lectures, 2 hours per week; lab, 3 hours per week (weeks 1-6 in term 1 and weeks 7-12 in term 2).

BIOL 2F95

## Bioethics

(also offered as PHIL 2F95)
An interdisciplinary course that focuses on value conflicts and moral dilemmas in biology and medicine. A major component is the discussion of specific case studies in areas such as reproductive interventions, medical experimentation, concepts of 'health' and 'disease', modification of behavior, lifestyle choices, allocation of scarce or expensive medical resources, and death and dying. May count as an elective, but not as a major course, in a biology or biology combined program. Prerequisite: university credit in biology or philosophy or permission of the instructor.
Lectures, seminar, 3 hours per week.

## BIOL 2P90

## Invertebrate zoology

The diversity, structure, function, behavior, and evolutionary relationships of the invertebrate phyla. Prerequisite: BIOL 1F90(190) or permission of the instructor.
Not open to students with credit in BIOL 292.
Lectures, 3 hours per week; lab, 3 hours per week.

BIOL 2P91
Comparative vertebrate zoology An evolutionary examination of the vertebrate taxa with emphasis on the structure, development, and function of organ systems.
Prerequisite: BIOL 1F90(190) or permission of the instructor. Not open to students with credit in BIOL 292.
Lectures, 3 hours per week; lab, 3 hours per week.

BIOL 2P93
Plant biology--an evolutionary perspective
Through the study of form, structure, and the reproductive cycles of a large diversity of plants, this course will focus on the major evolutionary trends seen in the plant kingdom.
Prerequisite: BIOL 1F90(190) or permission of the instructor. Lectures, 3 hours per week; lab/ seminar, 3 hours per week.

## Biological Sciences

## BIOL 2P97

Human physiology
An introduction to vertebrate function with specific reference to humans. Topics will focus on circulatory, excretory, respiratory, digestive, and reproductive systems, and the role of the endocrine and other systems in regulation and adaptive responses. This course may count as an elective, but not as a major course, in a biology or biology combined major.
Prerequisite: BIOL 1F90(190).
Lectures, seminar, 3 hours per week; lab, 3 hours per week for 6 weeks.

BIOL 2P98
Principles of microbiology
Lecture and laboratory course dealing with the principles of microbiology.
Structure and biology of various kinds of microorganisms will be studied.
Prerequisite: BIOL 1F90(190).
Not open to students with credit in BIOL 340hc.
Lectures, 2 hours per week; lab, 3 hours alternate weeks.

## BCHM 3P01

## Metabolic biochemistry

pH and buffers, biochemical energetics, carbon metabolism of carbohydrates, lipids and proteins; nitrogen metabolism.
Prerequisite: BIOL 2F01(201) or CHEM 2P20 (2P90(290hc)) or equivalent year 2 chemistry.
Lectures, seminar, 3 hours per week; labs to be announced.

## BCHM 3P02

Enzyme biochemistry
Enzymes as protein catalysts; enzyme mechanisms and kinetics; the active site; allostery and control of enzyme activity; membrane-bound enzymes, including ion pumps, ATPases and oxidoreductases; multienzyme systems. Prerequisite: BIOL 2F01(201), (BCHM 3P01(301hc) recommended) or permission of the instructor. Lectures, seminar, 2 hours per week; lab/simulations, 3 hours per week, alternate weeks.

BIOL(BCHM) 3P04
Introduction to biophysics and physical biochemistry
Topics in the course will include photobiology, membranes, and neurobiophysics. Emphasis will be given to ideas lying at the interfaces between the disciplines of biology, chemistry and physics. Laboratories will focus upon the techniques used to study molecular events in complex biological systems including membranes, organelles and cells. Prerequisite: Biol 2F01(201), (BCHM
3P01(301 hc) recommended), or permission of the instructor.
Lectures 3 hours per week; lab, 3 hours per week, alternate weeks.

## BIOL 3P22

An introduction to tissue structure Microscopic anatomy and functional organization of epithelia, connective tissue, blood, nervous tissue and muscle.
Prerequisite: BIOL 2F01(201) or permission of the instructor.
Not open to students with credit in BIOL 324.
Lectures, 3 hours per week; lab, 3 hours per week.

## BIOL 3P23

Histology of vertebrate organ systems
The microanatomy and functional morphology of organs and organ systems: integumentary, circulatory, digestive, excretory, reproductive, respiratory, endocrine and nervous. Prerequisite: BIOL 2P91(291hc); (BIOL 3P22(322hc) strongly recommended); or permission of the instructor.
Not open to students with credit in BIOL 324.
Lectures, 3 hours per week; lab, 3 hours per week.

## BIOL 3P28

Experimental embryology
Cell lineage studies in early embryonic development. Origin of cell heterogeneity. Cell-cell interactions and tissue organization. Morphogenesis and regeneration.
Prerequisite: BIOL 2F01(201). Lectures, 3 hours per week; lab, 3 hours alternate weeks.

## BIOL 3P34

Neurobiology
Nervous systems from the single neuron level to integrated function in the brain. Topics include sensory systems, synaptic function and transmitter substances, developmental aspects and neural plasticity, cellular basis of behavior.
Prerequisite: two credits from BIOL 2F01 (201), 2F03(203), 2P90(290hc), 2P91(291hc), 2P93(293hc).
Not open to students with credit in BIOL 320.
Lectures, 3 hours per week; lab, 3 hours per week.

BIOL 3P35
Comparative animal physiology
An introduction to organ system functions and their control and adaptation with particular reference to cardiovascular, respiratory and osmoand ionoregulatory activities.
Prerequisite: BIOL 2F01(201) and either BIOL 2P90(290hc) or 2P91(291hc).
Not open to students with credit in BIOL 321.
Lectures, 3 hours per week; lab, 3 hours per week.

## BIOL 3P42

## Microbial physiology

Microbial growth and metabolism as influenced by nutritional and environmental factors.
Prerequisite: BIOL 2P98(298hc).
Lectures, seminar, 3 hours per week.

## BIOL 3P44

Industrial and agricultural microbiology
The use of microbes, both bacteria and fungi, as tools in industry and agriculture. Topics will include: industrial fermentation; recombinant DNA approaches to industrial problems; composting and silage; edible fungi; mycorrhizal associations and biological control agents.
Prerequisite: BIOL 2P98 or permission of the instructor.
Lectures, 3 hours per week, lab, 3 hours alternate weeks.

## BIOL(BCHM) 3P49

## Molecular biology

Primary, secondary and tertiary structure of nucleic acids and proteins; their physical biochemistry; protein interactions with DNA; mutagenesis and recombination; the genetic code and information flow from nucleic acids to proteins, RNA and protein synthesis; plasmids and cloning. Prerequisite: BIOL 2F01(201) or permission of the instructor.
Not open to students with credit in BIOL 327hc.
Lectures, seminar, 3 hours per week; lab, 3 hours per week, alternate weeks.

## BIOL 3P50

## Molecular genetics

The prokaryotic and eukaryotic chromosome, DNA replication and its control; transcription and its control; gene organization and expression; RNA processing; movable genes and transposons; viruses, oncogenes and malignant transformation.
Prerequisite: BIOL 2F01(201);
(BIOL(BCHM) 3P49(349hc) strongly recommended); or permission of the instructor.
Lectures, 3 hours per week; lab 3 hours per week, alternate weeks.

## BIOL 3P51

Genetics: transmission, development, population
Concepts of classical genetics including genetic mapping, extra-nuclear inheritance, polyploidy, genetics and development, evolutionary genetics. Prerequisite: BIOL 1F90(190). Lectures, 3 hours per week; lab, 3 hours per week.

## BIOL 3P60

## Animal behavior

Behavior of animals with emphasis on the social context of behavior and natural selection: the evolution and significance of visual, auditory and olfactory communication; spacing behavior and the evolution of diversity in spacing systems; mating systems and sexual selection; the development of species-typical behavior; the development and significance of periodic behavior patterns including endogenous rhythms, orientation and
navigation.
Prerequisite: BIOL 2F03(203); one of 2P90(290hc) or 2P91(291hc).
May be taken concurrently, with the permission of the instructor.
Lectures, seminar, 3 hours per week; lab as required.

## BIOL 3P63

Field limnology
Physical-chemical aspects of limnology and their influence on the species composition of the aquatic organisms in selected lakes and streams in Ontario.
Lectures, seminar, 2 hours per week; lab, 3 hours per week.

## BIOL 3P64

## Introductory insect biology

Familiarity with insects will be gained
through field and laboratory exercises and lectures covering morphology, physiology, evolution, ecology, social behavior, and harmful and beneficial aspects of the insects.
Prerequisite: BIOL 1F90(190) or permission of instructor.
Not open to students with credit in BIOL 296hc.
Lectures, 2 hours per week; lab, 3 hours per week.

## BIOL 3P65

Investigative studies in animal ecology
A laboratory course stressing the scientific investigation of ecological studies; detailed consideration is given to experimental planning, data interpretation and investigative techniques.
Prerequisite: BIOL 2F03(203) and 2P90(290hc), 2P91 (291hc) or permission of the instructor.
Lectures, lab, 6 hours per week.

## BIOL 3P66

Aquatic plant ecology
Field and laboratory recognition of algae as well as higher aquatic plants; and adaptations to an aquatic environment; the physiology and the economic importance of these plants. Primary productivity, standing crop, collection, preservation and identification methods will be emphasized.
Prerequisite: BIOL 2F03(203).
May be taken concurrently with the
permission of the instructor.
Lectures, 3 hours per week; lab, 3
hours per week.

## BIOL 3P71

Ontario universities field biology course
In co-operation with Carleton, Toronto, Queen's, Waterloo, Western and York universities, the department of biological sciences participates in a series of one and two week field courses at established field stations in Algonquin Park, Lake Opinicon, and the OMNR station at Dorset, Ontario. In recent years, courses have been offered outside the province at field stations in Alberta, Manitoba, and the Northwest Territories. Each course is a separate unit and may include students from all participating universities. Among the units offered are: arid environments, insect sampling, limnology, fish ecology, omithology, aquatic ecology, marine biology, bat behavior, scavenging arthropods, small mammal ecology, arctic ecology, high arctic tundra and alpine ecology. The number of units offered will vary from year to year, but those available will normally be scheduled during one and two periods from late April through early September. Two one-week units or one twoweek unit will constitute the equivalent of one half course. Registrants normally defray their own travel expenses to the field station. Modest board and room costs are required in addition to the usual half course registration fee.
Prerequisite: BIOL 2F03 (203). Registration must be completed by January 25 with R. D. Morris.

## BIOL 3P72

## Ontario universities field

 ecology courseSee BIOL 3P7 1 for course description.
May not be taken until BIOL
3P71(371hc) has been completed.
Prerequisite: BIOL 2F03(203).

## BIOL 3P80

## Evolution

The idea of evolution and its development; scientific method and the past; classical, modern pre-Darwinian and Darwinian concepts; the history of the

## Biological Sciences

earth and the fossil record; biogeography; adaptation, natural selection and the origin of species; molecular evolution; evolution of specific taxonomic groups including human beings.
Prerequisite: completion of required courses in year 2 in single or combined major programs in biology or equivalent, or permission of the instructor. Lectures $11 / 2$ hours per week; seminar, $11 / 2$ hours per week.

## BIOL 3P85

Tropical biology
A specialized course, the orientation of which will be determined by the participating instructors. Held on location in the tropics it will include field experience, seminars, individual projects and written reports. Participants are expected to cover their own travel, subsistence and other personal expenses.
Prerequisite: the equivalent of two full year 2 level biology courses or permission of the instructor.

BIOL 3P91
Plant physiology--metabolic and biophysical processes
The metabolism of carbon and nitrogen compounds; photosynthetic and respiratory processes; mineral nutrition; water relations; gas exchange and transport processes.
Prerequisite: BIOL 2P93(293hc) or permission of the instructor.
Lectures, 3 hours per week; lab/ seminar, 2 hours per week.

BIOL 3P92
Plant physiology--growth and development
The processes involved in plant growth and reproduction, and the factors regulating these processes. Topics receiving special emphasis will include the flowering, hormones and growth substances, dormancy, and stress responses.
Prerequisite: BIOL 2P93(293hc) or permission of the instructor. Lectures, 2 hours per week; labs, 3 hours per week.

BIOL(BCHM) 3V90-3V99

## Special topics in biology

A lecture/seminar course in which a student may explore areas not represented by existing courses. The subject area may not overlap with that of BIOL 4F90/4F91, BIOL 4F92, or any year 3, year 4, or graduate course in biology. Under certain circumstances, a student may carry out, under faculty supervision, a detailed study of the scientific literature pertinent to a specific topic. The results of this study will be presented as a major essay and as a formal seminar.
Prerequisite: permission of supervising instructor and chairperson of the department.

## BIOL 4F90

BSc (honors) thesis
To be taken in conjunction with BIOL 4F91. Each student will undertake a limited research project involving field or laboratory study under faculty supervision. Students electing to pursue studies on non-laboratory ecological projects will be permitted to initiate their programs during the summer preceding registration in year 4 , but may not include data or observations obtained as a consequence of participation in field courses such as BIOL 3P71(371hc) or 3P72(372hc). Submission and oral defence of a thesis is required.
Prerequisite: admission to the year 4 honors program.

## BIOL 4F91

Literature research and seminar
To be taken in conjunction with BIOL 4F90. Each student will undertake a detailed study of the scientific literature relevant to the topic of the BSc (honors) thesis. The review will be included in the thesis and will be presented as a seminar.
Prerequisite: admission to the year 4 honors program.

## BIOL 4F92

Library research essays
For students not registered for BIOL 4F90 and 4F91. Each student will be required to carry out two detailed studies of the scientific literature under faculty supervision. The results of
these two studies will be presented in major essays and presented as formal seminars. One research topic is to be completed each term.
Prerequisite: admission to the year 4 honors program.

## BIOL 4F93

BSc honors research
To be taken in conjunction with BIOL 4F94. Each student will undertake a research project involving field or laboratory study under faculty supervision. Submission of a written report and the presentation of a seminar is required.
Prerequisite: admission to the accelerated MSc program.
Co-requisite: BIOL 4F94.
May not be taken concurrently with BIOL 4F90 or 4F91.

## BIOL 4F94

## Literature research

To be taken in conjunction with BIOL 4F93. Each student will undertake a detailed study of the scientific literature relevant to the topic of the honors research. The review will form an integral part of the seminar presentation associated with BIOL 4F93. Prerequisite: admission to the accelerated MSc program.
Co-requisite: BIOL 4F93.
May not be taken concurrently with BIOL 4F90 or 4F91.

## BCHM 4P01

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. Prerequisite: BCHM 3P01(301hc) or BCHM 3P02 (302hc) or permission of the instructor.Lectures, seminar, 2 hours per week.

## BCHM 4P02

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 translo-
cating ATPases at the plasma membrane and tonoplast.
Prerequisite: BCHM 3P01(301hc) or $3 \mathrm{P} 02(302 \mathrm{hc})$ or permission of the instructor.
Lectures or seminar, 2 hours per week.

## BCHM 4P04

## Bioenergetics

Energy conservation and use in the cell; thermodynamics of oxidative phosphorylation; chemical and chemiosmotic energy stores; mitochondrial, chloroplast and bacterial phosphorylation; growth and whole organism energetics; Elsden's and Kleiber's laws.
Prerequisite: BCHM 3P01 (301hc) or 3P02(302hc) or 3P04 or permission of the instructor.
Lectures, seminar, 2 hours per week.

## BCHM 4P05

## Topobiochemistry

Spatial and topological problems encountered by enzymes and associated systems interacting with membranes and linear macromolecules; kinetics, energetics and mechanisms of DNAand RNA-manipulating enzymes and of cell-membrane associated enzymes, with comparisons between onedimensional and two-dimensional cases.
Prerequisite: any two of BCHM 3P01
(301hc), 3P04 and 3P49(349hc), or permission of the instructor.
Lectures, seminar, 2 hours per week.

## BCHM 4P07

## Advanced seminar in biochemistry

A seminar course involving student presentation of selected research papers in biochemistry.
Prerequisite: BCHM 3P01 (301hc) or $3 \mathrm{P} 02(302 \mathrm{hc})$ or 3P04 or permission of the instructor.
Seminars, 2 hours per week.
BIOL 4P23
Fungal physiology
The physiology and biochemistry of fungi with a concentration on those aspects of physiology where fungi are significantly different from other organisms, and often unique. Topics will include: growth, nutrition, fungal
enzyme activity, and physiology of host-parasite interaction.
Prerequisite: BIOL 2 P98(298hc) or permission of the instructor. Lectures, seminar, 2 hours per week.

BIOL 4P28
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.
Prerequisite: BIOL 3P28(328hc) and 3P34(334hc) or permission of the instructor.
Seminars, 2 hours per week.

## BIOL 4P30

## Thermal biology

Temperature, the single most pervasive component of the physicochemical environment, will be considered in terms of lethal, controlling, directive and related effects upon aquatic and terrestrial animals. Consideration will be given to adaptive responses as these are expressed at the biochemical, physiological and organismic levels, and to the impact of waste heat discharges.
Prerequisite: BIOL 3P35(335hc) or permission of the instructor. Lectures, seminar, 3 hours per week. Field trips as appropriate.

## BIOL 4P35

Selected topics in exercise physiology The analysis and discussion of research papers in exercise physiology. Although the topics will vary from year to year, they are likely to focus on exercise metabolism, skeletal muscle function, and the responses and adaptations to exercise of the cardiovascular, respiratory, and endocrine systems. Some attention will also be given to regulatory mechanisms, and to the determinants of athletic performance.
Prerequisite: BIOL 3P35(335hc) or permission of the instructor.
Lectures, 2 hours per week; seminar, 2 hours per week.

## BIOL 4P50

Advanced seminar in physiology and biophysics
Selected topics in neuro-, sensory, and organ physiology.
Prerequisite: BIOL 3P34(334hc) or 3P35(335hc), or BIOL 320 or 321 . Lectures, seminar, 2 hours per week.

## BIOL 4P52

## 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.
Prerequisite: BIOL 3P28(328hc) or 3P50(350hc) or 3P51(351 hc). Seminars, 2 hours per week.

## BIOL 4P53

## Immunology

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.
Prerequisite: BCHM 3P01(301hc) or BIOL 3P50 (350hc).
Lectures, seminar, 2 hours per week.

## BIOL 4P54

Molecular biology of yeast Molecular genetics of simple eukaryotes using yeast as a model system. Analysis of a wide range of genetic studies which reveal the general utility of yeast as an experimental organism. Prerequisite: BIOL 3P50(350hc) or permission of the instructor.
Lectures, seminar, 2 hours per week.

## BIOL 4P56

## 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. Prerequisite: BIOL 3P51(351hc) or permission of the instructor.
Lectures, seminar, 2 hours per week.

## Biological Sciences

BIOL 4P58
Fungal genetics
(formerly BIOL 4P55)
Transmission and molecular genetics of fungi. Recent advances in gene manipulation and the contribution of studies on these organisms to general genetic principles will be covered.
Prerequisite: BIOL 3P50(350hc) or
BIOL 3P51 ( 351 hc ) or permission of the instructor.
Not open to students with credit in BIOL 4P55.
Lectures, seminar, 2 hours per week.
BIOL 4P60
Advanced seminar in population and behavioral ecology
Advanced seminar in population and behavioral ecology. The topics selected vary from year to year partly in response to student interests.
Prerequisites: one of BIOL 3P60(360hc), 3P61(361hc), 3P64(364hc), 3P65(365hc). Lectures, seminar, 2 hours per week.

## BIOL 4P61

Paleolimnology
The use of microfossils in lake sediments for interpretation of past changes in climate and biotic species composition. Pollen, diatom, Cladocera and sediment geochemical stratigraphy will be stressed.
Prerequisite: BIOL 3P63(363hc) or permission of the instructor.
Lectures, seminar, 3 hours per week.
BIOL 4P62
Concepts of limnology
Productivity of aquatic ecosystems, species diversity, indicator species assemblages, lake classification and current concepts of limnology. Prerequisite: BIOL 3P63(363hc) or permission of the instructor. Lectures, seminar, 2 hours per week; lab, 3 hours per week.

BIOL 4P64
Insect behavior
Exploration of selected topics in the field of insect behavior, including programming and integration of behavior, orientation and dispersal, feeding and plant-herbivore coevolu-
tion, chemical, visual, and acoustical communication, defensive behavior, reproductive behavior and the eusocial insects.
Prerequisite: BIOL 3P64(364hc) or 3P60(360hc) or permission of the instructor.
Lectures, seminar, 2 hours per week.
BIOL 4P70
Coral reef biology
Reef structure, flora, fauna, framework elements, zonation, physical environment, physical formation and destruction, biogenesis, biodegradation, mechanical properties of sessile forms, ecological interrelationships and other topics.
Prerequisite: BIOL 2P90(290hc), 2P91(291hc) or permission of the instructor.
Lectures, 2 hours per week; seminar/ lab 2 hours per week.

# Business Economics 

## School of Administrative Studies

A. William Richardson, dean

Economics department
Roberta E. Robb, chairperson
Isidore J. Masse (as of July 1, 1989)

General information

The Bachelor of Business Economics (BBE) is a pass (three year) degree program offered jointly by the department of Economics and School of Administrative Studies. It is designed for students who wish to combine the study of business and economics. Graduates of this program are expected to pursue careers in either the public or private sector.

While an honors degree program is not available for the BBE degree, it is possible to transfer into an honors program in economics and/or administrative studies. For transfer into the combined honors program in economics and administration, the student should consult the School of Administrative studies and the department of Economics.

Pass program

## Year 1

ACTG 2P11/2P12; ECON 1P91/1P92; MGMT 1P91, MATH 1P98; one humanities and one science context credit.

Year 2
ECON 2P21/2P22, 2P31/2P32, 2P90;
FNCE 3P92/3P93; MGMT 1P94, 3P41; MKTG 3P22.

Year 3
One and one half year 3 economics credits; MGMT 3P30, 3P81; one

ACTG/FNCE/ MGMT/ MKTG credit; one half ACTG/FNCE/MGMT/MKTG or economics credit; one elective credit.

Honors program

For students wishing to pursue an honors Bachelor of Administration: consult the School of Administrative Studies before selecting elective courses.

For students wishing to pursue an honors degree in economics:
(a) Students in the BBE program as outlined in the 1987/88 undergraduate calendar:

Years 1, 2 and 3
As in the BBE program with the exception that MATH 1P97 is required and should be taken as an elective half credit in the BBE program.

## Year 4

ECON 3P90, 3P91, 4F90, 4P13, 4P14; two year 3 economics credits.
(b) Students in the BBE program as outlined in the 1986/87 or earlier calendars:

As in the BBE program with the exception that ECON 2P31/2P32 and MATH 1P97 are required and must be taken prior to year 4 . Students should note that unless these credits are taken to fulfill BBE elective requirements, the credits will have to be completed prior to year 4.

Year 4
ECON 3P90, 3P91, 4F90, 4P13, 4P14; two year 3 economics credits.

## Canadian Studies

# Canadian Studies 

Director<br>Marilyn J. Rose<br>Department of English Language and Literature

Canadian studies offers a combined major program leading to the BA at pass and honors level.

A combined major in Canadian studies is always taken in conjunction with another humanities or social science discipline.

Canadian studies offers students the opportunity to study Canadian culture and society from a variety of disciplinary perspectives. Students take a number of interdisciplinary Canadian studies courses along with a number of Canada-centred courses offered by other departments. Emphasis is placed upon the unique nature of Canadian experience, and upon the value and practice of combining disciplinary approaches in the study of culture and society.

## Notes:

1. Canadian studies students must take one credit in French or a course related to French Canada as part of their degree program. Eligible courses appear with an asterisk (*) in the list of approved Canadian studies courses.
2. Students are designated "humanities" or "social science" students according to the designation of the collateral department. Humanities students must fulfill the language requirement of the collateral department in which they are working.
3. Humanities students must take POLI 1F90 as their social science context elective in year 1 . In year 2 , they must take POLI 2F12, and social science students must take HIST 2F09 or 2F10 as part of their program.
4. It is strongly recommended that all Canadian studies students complete one course in Canadian history, one
course in Canadian politics, one in Canadian literature, and one Canadianrelated fine arts course as part of their combined major program of study.

Each student should meet with the director of Canadian studies and the chairperson or undergraduate officer of the collateral department at the beginning of the second year of study, to ensure that his or her choice of courses will meet the criteria for the combined major degree.

## Pass program

CANA 1F91, 2F91, one of CANA
$3 \mathrm{M} 90-3 \mathrm{M} 99$, two full credits from the list of approved Canadian studies courses (one at the second year level and one at the third year level).

## Year 1

CANA 1F91; one credit from the collateral department; one social science and one science context elective; one elective credit. Note: students whose collateral major is in the humanities must take POLI 1F90 as their social science context credit, and the humanities language requirement as specified by the collateral department. CANA 1F91 will satisfy the humanities context requirement.

## Year 2

'CANA 2F91; POLI 2F12 (humanities collateral majors), HIST 2 F 09 or 2 F 10 (social science collateral majors); two credits from the collateral department; one elective credit.

## Year 3

CANA 3M90-3M99; one credit at the 2 (alpha) 90 level or higher from the list of approved Canadian studies courses; two credits from the collateral department; one elective credit.

## Honors program

CANA 1F91, 2F91, one of CANA 3M90-3M99, CANA 4F99, three full credits from the list of approved Canadian studies courses (one at the second year level, one at the third year level, and one at the fourth year level).

## Years 1, 2 and 3

As in pass program.

## Year 4

CANA 4F99; one credit at the 3(alpha) 90 level or higher from the list of approved Canadian studies courses; two credits from the collateral department; one elective credit.

It is strongly recommended that electives be chosen from the list of approved Canadian studies credits.

## Description of courses

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

## CANA 1F91

Introduction to Canadian studies An introduction to the history and development of Canadian culture from Confederation to the present. The course is interdisciplinary, and examines cultural expressions (drawn from Canadian literature and painting) as well as selected social and critical documents related to the development of the arts in Canada.
Not open to students with credit in CANA 290.
Lectures, seminar, 3 hours per week.
CANA 2F91
Canadian culture and society: interdisciplinary studies
Faculty from various departments will be participating in this course.
1989-90: Regional identities
Prerequisite: CANA 1F91(191), or permission of the instructor.
Not open to students with credit in CANA 250.
Lectures, seminar, 3 hours per week.

CANA 3M90-3M99
Special studies on Canadian issues A seminar course involving interdisciplinary work on selected Canadian issues. Topic to be announced with each offering.
Spring evening 1989-90: (3M90) The immigrant experience in Canada Prerequisite: CANA 2F91 or permission of the instructor.
Seminar, 3 hours per week.
CANA 4F99.
Honors thesis
Independent interdisciplinary study under the guidance of a faculty adviser. The results of the study will be presented as a thesis, to be evaluated by a faculty committee representing the disciplinary areas to which the thesis is related.
Departmental offerings which are
approved Canadian studies credits:

| COMM 2F24 | Canadian popular <br> culture (also <br> offered as FILM <br> 2F24) <br> Canadian cinema <br> (also offered as |
| :--- | :--- |
| COMM 3F24 | FILM 3F24) <br> Politics and the <br> mass media in <br> Canada (also <br> offered as POLI |
| COMM 3P17 | 3P17) |
| DRAM 2F97 | Canadian drama <br> Canadian radio <br> and television <br> drama |
| DRAM 2P91 |  |


| *FREN 1F00 | COMM 3F24) | POLI 3P17 | Politics and the |
| :---: | :---: | :---: | :---: |
|  | Language |  | mass media in |
|  | (introductory) |  | Canada (also |
| *FREN 1F80 | Practical language |  | offered as COMM |
| *FREN 1F90 | Language and |  | 3P17) |
|  | literature | POLI 3P18 | Law and politics |
| *FREN 2F05 | Literary and cultural movements | POLI 3P19 | The Canadian judicial process |
|  | of French Canada | POLI 3P28 | Canadian foreign |
| *FREN $2 \mathrm{F95}$ | French-Canadian |  | policy |
|  | novel and short | POLI 3P29 | Canadian - |
|  | story (in French) |  | American |
| *FREN 3P95 | French-Canadian theatre (in French) | POLI 3 P66 | relations |
| *FREN 3P96 | French-Canadian poetry (in French) | POLI 3 P6 | policy, law and administration |
| GEOG 2P91 | Geography of Canada | POLI 4P11 | Issues in local government and |
| GEOG 3P43 | The evolution of |  | politics |
|  | urban space: <br> the Canadian city | POLI 4P14 | Federalism in Canada |
|  | age | POLI 4P15 | Canadian political |
| HIST 2F09 | Canada: |  | economy |
|  | colonization to confederation | POLI 4P50 | Machinery of government |
| HIST 2F10 | Canada since 1867 <br> -- discovering the <br> "Canadian" | POLI 4P54 | Business-government relations (also offered as |
| HIST 2P94 | Canada's evolving |  | MGMT 4P54) |
|  | social fabric | POLI 4P65 | Public policy |
| HIST 3P74 | Canada, a land of immigrants |  | formulation in Canada |
| HIST 3P82 | Canadian - | POLI 4V10-4V19 | Issues in Canadian |
|  | American |  | politics |
|  | Relations | SOCI 3P42 | Canadian society |
| *HIST 3P98 | French Canada | SOCI 3P46 | Native peoples and |
| HIST 4V10-4V19 | Problems in |  | Canadian society |
|  | Canadian history | SOCI 3P47 | Ethnic groups |
| MGMT 3F51 | Canadian public administration (also | SOCI 4P42 | Special topics in Canadian society |
|  | offered as POLI | UEST 3P53 | Environmental |
|  | 3F51) |  | impact assessment |
| MGMT 4P40 | Administrative law | UEST 3P55 | Management of |
| MGMT 4P54 | Business-government relations |  | fisheries and wildlife resources |
|  | (also offered as | UEST 3P57 | Social services |
|  | POLI 4P54) |  | planning in the |
| POLI 2F12 | The government |  | urban region |
|  | and politics of Canada | UEST 3V60-3V65 | Selected issues in urban policy |
| POLI 3F51 | Canadian public administration | VISA 2F50 | Canadian art |
|  | (also offered as | Note: as many of the courses listed above have prerequisites, students should plan their programs in advance. |  |
|  | MGMT 3F51) |  |  |
| POLI 3P11 | Urban politics and administration |  |  |
| POLI 3P15 | Politics in Ontario |  |  |
| *POLI 3P16 | Politics in Quebec |  |  |

## Canadian and European Community Studies

## Canadian and European Community Studies

Director
Cecil A. Abrahams, Dean, Division of Humanities

## General information

## Schmon tower 401D

The Brock program in Canadian and European community studies explores the importance of reciprocal relations between Canada and the European community. The program is professionally oriented; it aims to help prepare its graduates for careers in transatlantic relations, especially those between Canada and Europe, in order to promote Canadian interests in Western Europe, one of the world's major trading entities. To this end, a system of courses has been co-ordinated including administrative studies, economics, geography, history, politics, sociology, urban and environmental studies, and the French and German languages.

The program is offered only as a four year honors program leading to the degree of bachelor of arts (BA) in Canadian and European Community Studies. Only students who have obtained a 70 per cent overall average in year 2 may proceed to years 3 and 4 .

## Honors program

Students will be required to pass an oral proficiency test in either French or German prior to graduation. Competence in both languages is strongly recommended.

One credit in French and German at the 1F90 level or above must be taken in years 1 and 2. At least two credits in
either French or German, numbered 2(alpha) 90 or above, must be taken during years 3 and 4.

Students must fulfill the University's core and context requirements.

Of the remaining credits, at least five must have European content and five must have Canadian content. A minimum of six credits must be taken in either history or politics, including a year 4 honors research credit.

Note:
Students enrolled in the program are invited to participate in the study year in Germany at the University of Freiburg, West Germany, and are eligible for the practicum in Germany (GERM 3P98, 4P98). Both opportunities are offered by the department of Germanic and Slavic Studies. Students may also avail themselves of the many summer programs offered by universities in Quebec and France.

Prerequisites:
Either grade 13 French (or FREN 1 F 00 (100), or equivalent), or grade 13 German (or GERM 1FO0(100), or equivalent). FREN 1 F00, or GERM 1F00, or both, may be taken in year 1 .

Course listings

A complete list of approved Canadian and European community studies courses follows below. For more information and direction, consult the departments.

CANA 1F91 Introduction to Canadian studies
CANA 2F91 Canadian culture and society: interdisciplinary studies

ECON 1P91 Principles of microeconomics
ECON 1P92 Principles of macroeconomics
ECON 2F95 Canadian economic policy
ECON 2P21 Intermediate microeconomics I

ECON 2P22
Intermediate macroeconomics I
ECON 2P31 Intermediate microeconomics II
ECON 2P32 Intermediate macroeconomics II
ECON 3F07 Comparative economic systems
ECON 3P11 International trade
ECON 3P12 International payments
ECON 3P14 Public sector economics: expenditure
ECON 3P15 Public sector economics: taxation
ECON 3P18 Urban economics
ECON 3P19 Regional economics
FREN 1F00 Language
FREN 1F80 Practical language
FREN 1F90 Language and literature
FREN 2F00 Language (intermediate)
FREN 2F95 French-Canadian novel and short story
FREN 3P95 French-Canadian theatre
FREN 3P96 French-Canadian poetry

GEOG 1F90 Introduction to human geography
GEOG 2P02 Principles of economic geography
GEOG 2P06 Cultural geography
GEOG 2P90 Geography of western Europe
GEOG 2P91 Geography of Canada
GEOG 3P42 The evolution of urban space: the European city
GEOG 3P43 The evolution of urban space: the Canadian city
GEOG 3P84 Political geography
GERM 1F00 Language (introductory)
GERM-1F90 Language and literature (intermediate I)
GERM 1F96 Culture and civilization of central Europe
GERM 1P93 Culture and civilization of central Europe: from the prehistoric to the Carolingian period

| GERM 1P94 | Culture and civilization <br> of central Europe: the | POLI 3P26 <br> POLI 3P27 | International law <br> International <br> organization |
| :--- | :--- | :--- | :--- |
| GERM 2F00 | Holy Roman Empire <br> Language and literature | POLI 3P28 | Canadian foreign <br> (intermediat II) |
| policy |  |  |  |

## Chemistry

## Chemistry

## Officers of instruction

Chairperson<br>Richard R. Hiatt<br>\section*{Professors}<br>Eugene A. Chemiak<br>Martin S. Gibson<br>J. Stephen Hartman<br>Richard R. Hiatt<br>Herbert L. Holland<br>Jack M. Miller<br>David C. Moule<br>Mary Frances Richardson<br>Stuart M. Rothstein<br>Assistant professor<br>Ian D. Brindle<br>Research professor (honorary)<br>Mikio Chiba<br>Adjunct professor Jan Vrbik<br>Senior demonstrator Gail Neff

## General information

## Mackenzie Chown complex E206

Chemistry is the study of matter and its interactions with various forms of energy. Brock students are involved in the analysis, synthesis, and purification of substances; determining their structures and properties; and explaining the mechanisms of processes. The knowledge and experience gained in this study are of great value to science, technology and society.

Our programs stress chemical principles and practice through research in organic, inorganic, analytical, physical and theoretical chemistry, as well as the related fields of bio-inorganic and bio-organic chemistry and chemical physics. Special research interests
include structures of metal-vitamin complexes, oxidation of organic molecules by fungi, fast reaction kineticś, photochemistry, molecular spectroscopy, nuclear magnetic resonance spectroscopy, quantum mechanics of small molecules, and pesticide analysis.

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 AC 200 NMR Cryospectrometer for solution and high resolution solid studies; Bruker WP60 multinuclear FT NMR and Bruker WP80 CW NMR spectrometers; two AEI MS-30 mass spectrometers with KRATOS DS-55 Data system, EI and FAB sources; HP capillary GC/MS; 6 m . Ebert grating spectrograph; Cary and Varian spectrophotometers; 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 $4 x$ mini computer with graphics terminal and plotter; lasers; Perkin Elmer and Waters high pressure liquid chromatographs with data stations; Spectrametrics Spectraspan V
DCP emission spectrometer with Dataspan computer; Waters Ion Chromatograph; Rudolph autopolarimeter.

Chemistry majors who wear glasses: It is strongly recommended that you secure your prescription glasses with 'hardened' lenses. (Safety glasses are required in the chemical labs.)

## Breakage Charges

Students in laboratory courses will be charged for excessive breakage.

## Pass program

The pass program in chemistry must include: CHEM 1F93 or 1F85 (see Note 1.); PHYS 1F90 or 1F20 (see Note 2.); CHEM 2F10, 2P20/2P21, 2P30, 2P40/2P41, 3P40; two of CHEM 3P20/3P21, 3P30/3P31, 3P51/3P53; PHYS 2P20, 2P31; MATH 1P93/1P94; and two other credits, normally in the sciences, mathematics or computer science (see Note 3.).

A typical pass program:
Year 1
CHEM 1F93 or 1F85; PHYS 1F90 (preferred) or 1F20; MATH 1P93/ 1P94; two context credits. (See Notes 1., 2. and 3.)

## Year 2

CHEM 2F10, 2P20/2P21, 2P30, 2P40/
2P41; PHYS 2P20; one elective credit. (See Notes 3. and 4.)

## Year 3

Two credits from CHEM 3P20/3P21, 3P30/3P31, 3P51/3P53; CHEM 3P40; PHYS 2P31; two elective credits. (See Notes.) A pass program must include three credits numbered 2 (alpha) 90 or higher.

## Notes:

1. CHEM 1F93 preferred; CHEM 1F85 is permitted.
2. PHYS 1F90 with a lab is preferred; note that professional schools may require an introductory physics credit with a lab.
3. Of the electives, one credit must be taken in humanities, one in social science, and the remainder normally in one or more of the sciences, mathematics or computer science (except MATH 1P60, GEOL 1F90, BIOL 1F25, SCIE 1 F 20 or ASTR 1F00).
4. MATH 2F95 is recommended for students interested in physical chemistry.
5. CHEM 3P40 is strongly recommended for students planning to enrol in CHEM 3P20 and/or CHEM 3P30.

## Honors program

The honors program in chemistry is designed to give the student a broad knowledge of chemistry as well as depth in areas in which the student is most interested. A research project must be successfully completed and a thesis written as part of the requirements for an honors degree. The honors program, and certain of the combined honors programs listed below, when taken with chemistry electives satisfy the requirements for accreditation for membership in the Chemical Institute of Canada.

The honors program in chemistry consists of 20 credits and must include: PHYS 1F90 or 1F20 (See note 2.); MATH 1P93/1P94; CHEM 1F93 or 1F85 (see Note 1.), 2F10, 2P20/2P21, 2P30, 2P40/2P41, 3P20/3P21, 3P30/ 3P31, 3P40, 3P51/3P53, 4F90, 4F91; PHYS 2P20, 2P31; two of CHEM 4P14, 4P15, 4P21, 4P22, 4P31, 4P40; and any additional three credits in the sciences, mathematics or computer science (except MATH 1P60, GEOL 1F90, BIOL 1F25, SCIE 1F20 or ASTR 1F00).

A typical honors program:
Years 1, 2 and 3
As in pass program.
Year 4
Any of CHEM 3P20/3P21, 3P30/3P31, or 3P51/3P53 not taken in year 3; CHEM 4F90, 4F91; two of CHEM 4P14, 4P15, 4P21, 4P22, 4P31, 4P40; one elective credit.

Note: 6. One humanities and one social science credit must be taken in years 1 and 2 . The remaining elective credits should be taken in one or more of the sciences or mathematics as described in Note 3. above.

## Combined major programs

Combined pass and honors programs can be taken in chemistry/biology, chemistry/computer science, chemistry/ geology, chemistry/mathematics, chemistry/physics and chemistry/urban and environmental studies. In most of the combined major programs a research project must be successfully completed and a thesis written as part of the requirements for an honors degree. Consult the department for a combined program which will satisfy the requirements for accreditation for membership in the Chemical Institute of Canada.

A minimum of ten credits (five from each discipline) is required for a combined major pass degree and a minimum of fourteen credits (seven from each discipline ) is required for a combined major honors degree.

Typical programs:
The first three years are typical pass programs.

## Chemistry and Mathematics

Pass program
Year 1
CHEM 1F93 (preferred) or CHEM
1F85 (see Note 1.); MATH 1P93/1P94 or MATH 1P93/1P95; MATH 1P12/
1P90; PHYS 1F90 or PHYS 1F20; one context credit.

## Year 2

CHEM 2F10, 2P30, 2P40/2P41;
MATH 2F00 or MATH 2F95; PHYS 2 P 20 ; one context credit.

## Year 3

CHEM 2P20, 3P40, 3P51, 3P53;
MATH 2 F 10 or 2P20/3P20 or 3F94;
MATH 2F96; one year 3 credit in chemistry or mathematics.

Honors program
Years 1,2 and 3
As in pass program.

## Year 4

CHEM 4F90, 4F91; one of CHEM $3 \mathrm{P} 20 / 3 \mathrm{P} 21$ or $3 \mathrm{P} 30 / 3 \mathrm{P} 31$; two year 3 or year 4 mathematics credits.
An honors program must include a minimum of three credits numbered 3 (alpha) 90 or higher.

## Chemistry and Physics

Pass Program

## Year 1

CHEM 1F93 (preferred) or CHEM
1F85 (see Note 1.); PHYS 1F90 (preferred) or PHYS 1F20; MATH 1P93/ 1P94; two context credits.

## Year 2

CHEM 2F10, 2P40 and one of 2 P 41 or 2P30; PHYS 2P20/2P21, 2P30/2P31; MATH 2 F95.

Year 3
CHEM 2P20, 3P40, 3P51, 3P53;
CHEM 2P30 or 2 P 41 (whichever was not taken in year 2); PHYS 3P50, 3P70; one of PHYS 3P20, 3P91, 3P92;
PHYS 3F95 or MATH 2 F96.
Honors program
Years 1, 2 and 3
As in pass program.
Year 4
PHYS 4F90/4F91 or CHEM 4F90/
4F91; one of CHEM 3P20 or 3P30; one
credit in chemistry or physics at the
year 3 or 4 level; one of PHYS 3P20,
3P31, 4P61, 4P70, one elective credit.
An honors program must include a minimum of three credits numbered 3 (alpha) 90 or higher.

For combinations with biological sciences, geological sciences, and urban and environmental studies, see the entry under the other department. For combined majors in other areas of concentration please consult the departments.

## Biochemistry

See separate calendar entry under biochemistry.

## Chemistry

Note: Students planning to pursue graduate studies in chemistry are strongly recommended to take all of: CHEM 4P14, 4P21, 4P22, 4P31 and 4P40 in addition to CHEM 4F90 and 4F91. Chemistry majors planning to pursue graduate studies in biochemistry or biological chemistry are strongly recommended to take CHEM 4P27 in place of CHEM 4P14.

## Master of Science <br> (MSc) program

Candidates with either an honors or a pass BA or BSc degree in chemistry, or equivalent, may apply to the chairperson of the department for entry into this program. Candidates holding a pass degree 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 Aptitude and Advanced Chemistry Examinations.

Candidates with an honors degree, or who have completed a qualifying year, require a minimum of one year of full time study.

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, geological samples, 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; xray structure determinations; synthesis and structures of metal complexes with vitamins and related compounds.

Organic chemistry: synthesis of heterocyclic, aromatic and aliphatic systems; kinetics and mechanisms of auto-oxidative processes; reactions of organic free radicals in solution; transitional activation; 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; kinetic spectroscopy and spectrophotometry of transients produced during the flash photolysis of gases and liquids; quantum chemistry of small molecules; simulation of the Schrodinger Equation; intermolecular forces; statistical data analysis.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 element analysis in soils and wine; applications of FAB mass spectroscopy in analytical chemistry; applications of analytical chemistry to archaeological problems.

For further information about the MSc program see the graduate calendar.

## Graduate courses

The following courses are available in the department. A certain selection (determined, in part, by the interests of the students) will be offered each year. Further information about the courses to be offered in any year may be obtained from the chairperson of the department.

CHEM 5F90
MSc research and thesis *
CHEM 5P00
Quantum chemistry--theory
CHEM 5P01
Quantum chemistry--applications
CHEM 5P05
Molecular spectroscopy---theory
CHEM 5P06
Molecular spectroscopy--applications
CHEM 5P09
Photochemistry

## CHEM 5P11

Special topics in physical chemistry
CHEM 5P15
Nuclear magnetic resonance (NMR)
spectroscopy
CHEM 5P16
Mass spectroscopy
CHEM 5P17
Special topics in nuclear magnetic
Resonance (NMR) spectroscopy

## CHEM 5P18

Special topics in mass spectroscopy

## CHEM 5P19

Organic reaction mechanisms
CHEM 5P20
Special topics in organic chemistry
CHEM 5P21
Advanced organic synthesis
CHEM 5P23
Organic stereochemistry
CHEM 5P24
Natural products chemistry
CHEM 5P27
Advanced enzyme and coenzyme mechanisms

CHEM 5P31
Special topics in inorganic chemistry

CHEM 5P33
Chemistry of organometallic and coordination compounds

CHEM 5P41
Special topics in analytical chemistry

## CHEM 5P51

Basic structural chemistry and crystallography

CHEM 5P52
Advanced structural chemistry and crystallography

For details, see graduate calendar.

## Description of courses

Abbreviations:

| BCHM | Biochemistry |
| :--- | :--- |
| CHEM | Chemistry |
| MATH | Mathematics |
| PHYS | Physics |
| SCIE | Science |

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

## SCIE 1F20

Science, its growth and consequences Designed for the non-science major, this course traces the development of Western and non-Western science and technology. In the second term the focus is on the social, political, ethical and environmental consequences of modern scientific and technological activities and their implications for the future. Topics will include nuclear weapons, energy sources, pesticides, herbicides, drugs (medical and nonmedical), food additives, waste disposal and pollution.
High school chemistry not required. Lectures, 3 hours per week; seminar, 1 hour alternate weeks.

CHEM 1F85
Introduction to modern chemistry
Basic chemical concepts which are necessary for all scientists. Topics include modern principles of structure and bonding, chemical equilibrium, thermochemistry, acids and bases, reaction rates and a survey of organic chemistry. Problem-solving in basic areas of chemistry is stressed. Laboratory work includes synthesis and analysis of various chemical compounds. A credit in CHEM 1F85 is acceptable for entry to advanced chemistry courses.
Prerequisite: grade 13 chemistry is recommended; grade 12 required. Not open to students with CHEM 190 or 1F93(193) credit.
Lectures, 3 hours per week; seminar, lab, 3 hours per week.

## CHEM 1F93

Chemical principles and properties
General chemistry; introduction to organic and physical chemistry. Topics include atomic and molecular structure, physical properties and intermolecular forces, chemical equilibria and reactions, thermochemistry, and an introduction to organic synthesis. Laboratory work includes synthesis, analysis, reaction kinetics and thermodynamics.
Prerequisite: grade 13 chemistry is strongly recommended; grade 12 required.
Not open to students with CHEM 1 F85(185) or 190 credit. Lectures, 3 hours per week; lab, 3 hours per week.

## CHEM 2F10

Principles of physical chemistry Chemical thermodynamics of ideal and non-ideal, homogeneous and heterogeneous systems; chemical kinetics and reaction mechanisms; quantum chemistry; spectroscopy.
Prerequisites: CHEM 1F93(193) or 1F85 (185), MATH 1P93/1P94 (193hc/194hc), or equivalent. Lectures, 3 hours per week; lab, 3 hours per week.

CHEM 2P20
Principles of organic chemistry (formerly CHEM 2P90)
An introduction to the principles and techniques of organic chemistry; correlation of reactions and physical properties of organic compounds with structure and energetic concepts.
Laboratoary work emphasizes qualitative organic anyalysis.
Prerequisite: CHEM 1F93(193) or CHEM 1F85(185).
Not open to students with credit in CHEM 2P90(290hc).
Lectures, 3 hours per week; lab, 3 hours per week.

## CHEM 2P21

Principles of bio-organic chemistry
(formerly CHEM 2P91)
Organic chemistry of selected groups
of natural products; their biological
origin and significance. Laboratory work includes organic syntheses and characterization and structure determination of natural products.
Prerequisite: CHEM 2P20 (2P90 (290hc)).
Not open to students with credit in CHEM 2P91(291hc). Lectures, 3 hours per week, lab, 3 hours per week.

## CHEM 2P30

Principles of inorganic
chemistry
(formerly CHEM 2P95)
A survey of the periodic table, with stress on periodicity of chemical behavior. Emphasis will be placed on the reactions, bonding, and structures of oxides, halides and hydrides. An introduction to transition metal complexes and crystal field theory. Experiments will complement the lecture material.
Prerequisite: CHEM
2P40(2P92(292hc)).
Not open to students with credit in CHEM 2P95(295hc).
Lectures, 3 hours per week; lab, 3 hours per week.

## CHEM 2P40

Introduction to quantitative analysis (formerly CHEM 2P92)
Theoretical and practical aspects of
gravimetric and volumetric analysis
The experiments stress accurate analyses of a variety of materials. Prerequisite: CHEM 1F93(193) or CHEM 1F85(185).
Not open to students with credit in CHEM 2P92 (292hc).
Lectures, 3 hours per week; lab, 3 hours per week.

## CHEM 2P41

## Intermediate quantitative analysis

(formerly CHEM 2P93)
A continuation of CHEM 2P40). The lectures and lab work emphasize simple analytical instrumentation, separation techniques, the analysis of complex materials and the statistical evaluation of data.
Prerequisite: CHEM 2P40 (2P92 (292hc)).
Not open to students with credit in CHEM 2P93 (293hc).
Lectures, 3 hours per week; lab, 3 hours per week.

## CHEM 2P98

## Undergraduate research

Undergraduate research project carried out either in the department under the supervision of a faculty member, or as an employee in chemical industry or other suitable laboratory. (If both CHEM 2P98 and CHEM 3P98 are taken, only one of these may be based on work done in the department.)

## CHEM 3P20

## Structure and reactivity of organic molecules

Spectroscopic techniques in organic chemistry; organic stereochemistry and reaction mechanisms; synthetic methods. Laboratory work includes selected experiments in organic synthesis and structure determination with emphasis on spectroscopic methods.
Prerequisite: CHEM 2P21
(2P91 (291hc)) or permission of the department.
Co-requisite: CHEM 3P40 recommended.
Lectures, 3 hours per week; lab, 3 hours per week.

CHEM 3P21

## Organic reactions

Reactive intermediates and rearrangements in organic chemistry; the chemistry of acyclic, cyclic, and heterocyclic compounds. The laboratory work is an extension of CHEM 3P20.
Prerequisite: CHEM 3P20 (320hc). Lectures, 3 hours per week; lab, 3 hours per week.

## CHEM 3P30

Main group inorganic chemistry Systematic inorganic chemistry of the non-transition elements with emphasis on structure, bonding and reactivity in inorganic and organometallic compounds; inorganic reaction mechanisms. Selected experiments in inorganic synthesis; use of modern physical methods for determination of composition, structure and bonding.
Prerequisites: CHEM 2P30 (2P95 (295hc)), CHEM 2P40 (2P92 (292hc)). CHEM 2F10 (210)) and CHEM 2P20 (2P90 (290hc)) should be taken concurrently if not taken previously. Co-requisite: CHEM 3P40 recommended.
Lectures, 3 hours per week; lab, 3 hours per week.

## CHEM 3P31

Transition metal chemistry
A continuation of CHEM 3P30, emphasizing the transition elements; introduction to ligand field theory. Prerequisite: CHEM 3P30(330hc). Lectures, 3 hours per week; lab, 3 hours per week.

## CHEM 3P40

Instrumental methods of analysis
An introduction to the use of instrumental methods in qualitative and quantitative analysis, including methods such as: chromatography, mass spectrometry, nuclear magnetic resonance spectroscopy, dispersive and fourier transform IR spectroscopy, visible and ultraviolet spectrophotometry, atomic absorption and emission spectroscopy, differential pulse polarography, cyclic and stripping voltammetry, etc. The laboratory will concentrate on these techniques using, in most cases, microprocessor or
micro-computer controlled instrumentation, and including computerized data manipulation.
Prerequisites: CHEM 2F10 (210)), 2P20 (2P90 (290hc)), 2P21 (2P91
(291hc)), 2P30 (2P95 (295hc)), 2P40 (2P92 (292hc)), 2P41 (2P93 (293hc)). Lectures, 3 hours per week; lab, 3 hours per week.

## CHEM 3P51

Quantum chemistry
Rigid rotor, harmonic oscillator, atomic structure, molecular orbital theory (diatomics and polyatomics), simple group theory.
Prerequisite: CHEM 2F10(210). Lectures, 3 hours per week; seminar, 3 hours per week.

## CHEM 3P53

Atomic and molecular spectroscopy and photochemistry
Group theory, electromagnetic radiation, spectroscopic transitions, rotational far IR, microwave and Raman spectroscopy, vibrational near IR and Raman spectroscopy, atomic and molecular electronic, visible and UV spectroscopy, non-radiative photophysical processes.
Prerequisite: CHEM 3P51(351hc). Lectures, 3 hours per week; lab, 3 hours per week.

## CHEM 3P60

Industrial chemistry (formerly CHEM 3P92) Principles and practice of industrial chemistry and industrial chemical analysis. A survey of the chemical industry, pollution control, plant design, corrosion, and similar topics. Selected industrial processes will be discussed in detail. Tours of chemical plants and industrial laboratories will be an integral part of the course. Prerequisite: CHEM 2P40 (2P92(292hc)).
Co-requisite: CHEM 2P30 (295 (295hc)), 2P41 (2P93 (293hc)). Not open to students with credit in CHEM 3P92(392hc).
Lectures, 3 hours per week; seminar and plant tours, 3 hours per week.

## CHEM 3P98

Undergraduate research
Undergraduate research project carried out either in the department under the supervision of a faculty member or as an employee in chemical industry or other suitable laboratory.
Prerequisite: satisfactory completion of the year 2 chemistry degree program and permission of the department. (If both CHEM 2P98 and CHEM 3P98 are taken, only one of these may be based on work done in the department.)

The following two courses are normally taken together in the same year, and both must be taken to obtain credit.

## CHEM 4F90

## Research project

Experimental or theoretical research to be carried out under the supervision of a member of the staff.
Prerequisite: CHEM 3P40(340hc) and honors standing or permission of the chairperson.

## CHEM 4F91

## Thesis

This thesis will incorporate the results of the research and will form the basis for a seminar to be presented by the student.
Prerequisite: CHEM 3P40(340hc) and honors standing or permission of the chairperson.

## CHEM 4P14

Statistical thermodynamics
Systems of independent particles, chemical equilibrium, partition functions for atoms and molecules, nuclear spin statistics, fluctuations, thermodynamic properties of crystals, real gases, magnetic phenomena. Prerequisite: CHEM 3P51(351hc). CHEM 3P53(353hc) should be taken concurrently if not taken previously. Not open to students with credit in CHEM 410.
Lectures, seminar, 3 hours per week.
CHEM 4P15
Principles of polymer, colloid and surface chemistry
Physical properties of polymers and polymer solutions; polymerization
kinetics and mechanisms, polymer engineering; properties of colloids; stability of colloidal systems; properties of interfaces, monomolecular films, adsorption, chemisorption, catalysis.
Prerequisite: CHEM 2F10(210) and any two third year half courses in chemistry.
Lectures, 3 hours per week.
CHEM 4P21
Organic reactions and synthesis The developments through examples, of synthetic methodology in organic chemistry.
Prerequisite: CHEM 3P21(321hc). Not open to students with credit in CHEM 420.
Lectures, 3 hours per week.

## CHEM 4P22

Organic reactions and mechanisms
The application of reaction mechanisms in organic chemistry. Topics may include physical organic chemistry, frontier orbital theory, or stereoelectronic control of reactions. Prerequisite: CHEM 3P21 (321hc). Not open to students with credit in CHEM 420.
Lectures, seminar, 3 hours per week.

## CHEM 4P27

## Enzyme and coenzyme mechanisms

Hydrolytic and other processes catalyzed by enzymes lacking nonprotein prosthetic groups; transferase reactions involving biotin, pyridoxal phosphate, thiamine pyrophosphate, folic acid and cobalamin; oxidation mechanisms involving pyridine nucleotides, flavoenzymes, hydroperoxidases and oxgenases; chemical patterns shown in biosynthetic pathways.
Prerequisite: BCHM 3P01/3P02(301hc/ 302hc) and CHEM 2P21 (2P91 (291hc)).
Lectures, seminar, 3 hours per week.

## CHEM 4P40

## Scientific instrumentation

Review of the use of electronic components and circuits for measurements and control; analog and digital measurements, instrument optics. Application to spectroscopic, electro-
chemical and other scientific instrumentation used for analysis, measurement or control.
Prerequisite: permission of the instructor.
Lectures, 3 hours per week.
CHEM 4V30-4V35
Special topics in inorganic chemistry
Selected topics in advanced inorganic chemistry.
Prerequisite: CHEM 3P31(331hc).
Lectures, seminar, 3 hours per week.

# Child Studies 

Director<br>Linda Rose-Krasnor, Psychology<br>Participating faculty<br>Paulette Coté-Laurence, Physical Education<br>Joan Durrant, Child Studies<br>Stella Green, Physical Education<br>Nancy Johnston, Psychology<br>Darla MacLean, Psychology<br>Zopito Marini, Child Studies<br>John Mitterer, Psychology<br>Polly Pechstedt, Child Studies<br>Marion Pirie, Sociology<br>Linda Rose-Krasnor, Psychology<br>Sidney J. Segalowitz, Psychology<br>Martin Smith, Psychology<br>Rosemary Young, College of Education<br>Sessional instructor<br>Joel Hundert, Niagara Child Development Centre<br>Non-academic co-ordinator<br>Margaret Ogilvie

## General information

Students interested in the field of child studies may choose between two program streams.

The BA program is designed for students wishing to obtain an understanding of child development theory and its applications. This program is broadly based, offering an integration of psychological, sociological and educational perspectives.

The second option combines the BA program with teacher training. The BA/ BEd program is designed for persons who wish to teach at the primary and junior levels and is normally available for full time students only. Students who complete this stream and meet other Ministry requirements, such as citizenship, may be recommended to the Ministry of Education for teaching certification in Ontario. Because the BA/BEd program integrates teacher
training courses with academic courses, the student should note that the preservice education courses are credited toward the BEd while the other courses are credited to the BA. For this reason, a student who transfers out of the BA/ BEd program may not have credit in pre-service education courses applied to a BA degree. Students should refer to the calendar section of the College of Education for further details on the teacher training program.

The minimum grade requirement for admission to the BA/BEd program is a 75 per cent average from Ontario grade 13 or the equivalent. Further admissions may be made on an individual basis. This is a limited-enrolment program.

Students may enter the BA/BEd program at the year 2 level or re-enter the program at the year 3 level if (1) their average over all years is 75 per cent or above; (2) there is room in the program; and (3) their program to date matches the BA/BEd program closely. All such decisions will be made on an individual basis and must be approved by Child Studies.

Applicants holding an Early Childhood Education diploma from a College of Applied Arts and Technology with which an agreement has been reached (currently Niagara, Lambton, and Mohawk Colleges), and who also have achieved at least 75 per cent standing (or equivalent), may receive up to a maximum of four and one half credits in the concurrent BA/BEd program. Brock University graduates in child studies may also receive credits from Niagara College of Applied Arts \& Technology toward their diploma in Early Childhood Education.

## BA pass program

This is a limited enrolment program. Child studies majors require a minimum 65 per cent average in required courses to progress to years 2 and 3. Students who wish to transfer into the child studies program should apply to the director.

Year 1
PSYC 1F90; SOCI 1F90; one humanities and one science context credit; one elective credit.

## Year 2

CHST 2F10; one of MATH 1F92, PSYC 2F23, or SOCI 2F10; three elective credits;

Year 3
CHST 3F21, 3F40, 3P11, 3P50; two elective credits.

## Honors BA program

This is a limited enrolment program. Entrance into the honors BA is conditional on approval by the Director; it will be based on grade average and the availability of a thesis supervisor.

The following courses are required: PSYC 1F90, SOCI 1F90, one of MATH 1F92 or PSYC 2 F 23 or SOCI 2 F 10 ; CHST $2 \mathrm{~F} 10,3 \mathrm{~F} 21,3 \mathrm{~F} 40$ or 3F41, 3P11, 3P50 or 3P51, 4F99, 4P95, 4P98. Students are also required to take an additional two CHST credits.

Years 1, 2 and 3
As in pass program.
Year 4
CHST 4F99, 4P95, 4P98; one credit from CHST 3F96, 3V90-3V91, 4P31, 4P32, 4V35-4V36; two elective credits.

## Concurrent pass BA/BEd program

Students in the BA/BEd program must achieve a 75 per cent average in their overall standing and must maintain a 75 per cent overall average each year in all academic grade-marked courses. Students should also note that practice teaching may have to be scheduled in May and June of year 4.

The program consists of fifteen credits toward the BA and five teacher training courses over a four year period but because of the structure of the educa-
tion courses, the credits are not evenly distributed across each year.

In EDUC course numbers:
$D=11 / 2$ credits
$Y=1 / 4$ credit.
See the College of Education section of the calendar for course descriptions.

Year 1
EDUC 8Y04, 8Y05; PSYC 1F90;
SOCI 1F90; one humanities and one science context credit.

Year 2
CHST 2F10; EDUC 8P06; one of MATH 1F92, PSYC 2F23, or SOCI 2 F10; two elective credits.

Year 3
CHST 3F21, 3P11; EDUC 2F00 or
3F01; EDUC 8P30, 8Y31, 8Y32; two of EDUC $8 \mathrm{Y} 34,8 \mathrm{Y} 35,8 \mathrm{Y} 36$; one and one half elective credits.

Year 4
CHST 3F41, 3P51; EDUC 8D09, 8F08; one and one half elective credits.
N.B: It is advisable, because of the practice teaching blocks, to have taken the year 4 elective credits during or before year 3 .

Students holding an early childhood education diploma with advanced standing in four and one half credits, will normally take the following program:

## Year 2

CHST 2F10; EDUC 2F00 or 3F01; one of MATH 1F92, PSYC 2 F 23 , or SOCI 2 F10; one science context credit; one elective credit.

## Year 3

CHST 3F21, 3P11; EDUC 8P30, $8 \mathrm{Y} 04,8 \mathrm{Y} 05,8 \mathrm{Y} 31,8 \mathrm{Y} 32$; two of EDUC $8 \mathrm{Y} 34,8 \mathrm{Y} 35,8 \mathrm{Y} 36$; one and one half elective credits.

## Year 4

CHST 3F41, 3P51; EDUC 8D09, 8 F 08 ; one and one half elective credits.

## Suggested electives for Child Studies majors

Recommended science electives are BIOL 1F25 and SCIE 1F20.
Suggested non-science electives
include CHST 2P94, 3F35, 3F96, 3P23, 3P36, 3P37, 3P52(BA/BEd), 3P56, 3P60, 3P62, 3P78, 3P84, 3P88, 3P89; EDUC 2F00, 3F01; ENGL 2F10; EXST 2F50, 2F95; PHED 2P00, 2P02, 2P05, 2P07, 3P04, 3P07; PSYC
2F90, 2P94, RECL 1P00, 1P02, 1P06;
SOCI 2P22, 2P52; THEA 2F10, 3F09.
Relevant prerequisites must be met.

## Combined major program

A student taking a combined major in the BA pass program is required to complete PSYC 1F90, SOCI 1F90, CHST 2F10, 3F21, 3F40, 3P11, 3P50 and one of MATH 1F92, PSYC 2F23, or SOCI 2 F10, as well as the course requirements of the collateral department.

## Entrance into honors BA in psychology

The following courses from the child studies program may be included among the seven credits needed to enter the honors program: CHST 2F10, 3F96, 3P11, 3P23, 3P56, 3P78, 3P84, 3P88, 3P89. PSYC 1F90 and 2F23 are required.

Students planning to apply for admission to the honors program in psychology should note that PSYC 3F40 is a prerequisite. They should . consult a psychology or child studies adviser early in their child studies program about their particular courses.

## Description of courses

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

CHST 2F01
School learning
(also offered as EDUC 2F01)
The psychological processes involved
in learning in a school setting. Current cognitive theories of leaming will be applied to examples in each of the major school subject areas with emphasis on the specific nature of the learning associated with each subject. Other topics may included individual differences and problems in evaluating school learning.
Prerequisite: CHST 2 F10 or PSYC 2F90 or EDUC 2F00.
Lectures, seminar, 3 hours per week.

## CHST 2F10

Child development
Basic concepts and contemporary issues in the development of the child, including processes in cognitive and social-emotional patterns of change. Developmental theory and research provides the conceptual framework. The course is designed to promote the bridging of disciplines. Placement is required for the child studies major.
Prerequisite: PSYC 1F90(190).
Not open to students with credit in PSYC 2F10(210), 3 F17.
Lectures, seminar, 3 hours per week.

## CHST 2P94

Movement for the young child (also offered as PHED 2P94)
Movement education experiences applicable to the child aged 3 to 5 . Practical experience in various play situations through creative games, dance and activities with apparatus will comprise a major part of the course; it will also integrate various art forms with movement activities. Basis of movement for pre-school children, motor development, role of play, creativity, and suitable environment for learning will be discussed.
Prerequisite: PSYC 1F90(190) or permission of the instructor.
Not open to students with credit in CHST 292hc.
Lectures, lab, 3 hours per week.

## CHST 3F21

The family
(also offered as SOCI 3F21)
(formerly CHST(SOCI) 3P21/3P51
(290hc/294hc))
Family patterns including gender roles and the dynamics of family change and development. Topics include examina-

## Child Studies

tion of marriage and family issues, gender role socialization and change, dual careers, alternative life styles, gender roles in cross-cultural perspective, and marital and family relationships past, present and future.
Prerequisite: CHST 2F10(210) or PSYC 2F10(210).
Not open to students with credit in CHST(SOCI) 3P21(290hc) or 3P51(294hc).
Lectures, seminar, 3 hours per week.

## CHST 3F35

Integrating the special child Curriculum modification and assessment tools. Topics will include assessment and intervention for children with various handicaps through the use of a variety of devices, integration techniques, task analysis, behavior management and use of community resources.
Prerequisite: permission of the instructor.
Not open to students with credit in CHST 295, 380hc/381hc; not eligible for education certificate.
Lectures, lab, seminar, 3 hours per week; practicum required.

## CHST 3F40

## Research methods in child development

Methods for studying children, with an emphasis on observational techniques. Other topics may include research ethics, research design, data analysis and presentation, structured assessment, and program evaluation. Prerequisite: CHST 2F10, MATH 1F92 or PSYC 2F23 or SOCI 2F10; open only to CHST majors or by permission of instructor.
May not be taken concurrently with or after receiving credit for CHST 3F41. Lectures, seminar, 3 hours per week.

## CHST 3F41

Research methods in child development
Methods of studying children, with an emphasis on observational techniques. Other topics may include research ethics, research design, data analysis and presentation, structured assessment and program evaluation.
Prerequisite: CHST 2F10; MATH

1F92(192) or PSYC 2F23(223) or SOCI 2 Fl 0 (230); or permission of the instructor.
Open to BA/BEd students only. May not be taken concurrently with or after receiving credit for CHST 3 F 40.
Lectures, seminar, 3 hours per week.
CHST 3F96
Psychology of the exceptional child (also offered as PSYC 3F96)
An integration of theoretical, experimental and clinical approaches to the development of the child with special problems, i.e., the child who is mentally retarded, perceptually handicapped, etc. In a survey of current research on cognitive stimulation, attention will be given to the progress of the gifted child. Students will be required to fulfil a prearranged practicum working with an atypical child. Field trips will be arranged. Enrolment to be limited to 80 students. If restrictions become necessary, they will be made on the basis of overall average.
Prerequisite: CHST 2F10(210) or PSYC 2F10(210) or three psychology courses beyond PSYC 1F90(190).
Not open to students with credit in CHST(PSYC) 300.
Lectures, seminar, 3 hours per week.

## CHST 3P11

Theories in developmental psychology (also offered as PSYC 3P11)
(formerly part of CHST (PSYC) 3F11)
Current theories in developmental
psychology and recent controversies and evidence concerning them. The student will study human development from an integrated approach.
Prerequisite: CHST(PSYC) 2F10(210) or PSYC 2F12 or permission of the instructor.
Not open to students with credit in CHST(PSYC) 3F11.
Lectures, seminar, 3 hours per week.
CHST 3P23
Psychology of parenting
(also offered as PSYC 3P23)
The determinants, varieties and consequences of parenting. Motivations for becoming a parent, individual differences in parenting styles, and the effect of parents on children's development. The course focuses primarily on
research and theory, although applied topics such as the effectiveness of different disciplinary techniques will also be considered.
Lectures, seminar, 3 hours per week.

## CHST 3P36

Assessment and early intervention with children
Issues in the assessment of children with emphasis on infant and preschool assessment, as well as preventative and early intervention strategies. A variety of assessment techniques will be examined, including testing, observation and rating scales.
Prerequisite: CHST 2F10, PSYC 2F12, PSYC 3F17 or 2F10.
Lectures, seminar, 3 hours per week. Practicum may be required.

## CHST 3P37

## Assessment and intervention with families

Theoretical, research, and clinical issues pertaining to assessment and intervention with families. Interventions such as parent training, self-help groups, and family counselling.
Particular focus will be placed on early identification and intervention.
Prerequisite: CHST 2F10, PSYC 2F12, PSYC 2F10 or 3F17.
Lectures, seminar, 3 hours per week.
Practicum may be required.

## CHST 3P50

Focus on early childhood education I (also offered as EDUC 3P50)
Early childhood education programs for children from birth to age eight.
Topics include the historical and societal influences on early childhood education, an examination of program models derived from theories of learning and child development, and research on the effectiveness of these programs.
Enrolment limited to 65 students. If necessary, further sections may be opened.
Prerequisite: CHST 2F10.
Not open to sudents with credit in CHST(EDUC) 3F50 or 3P51. Lectures, seminar, 3 hours per week.

CHST 3P51
Focus on early childhood education I (also offered as EDUC 3P51)
Early childhood education programs for children from birth to age eight. Topics include the historical and societal influences on early childhood education, an examination of program models derived from theories of learning and child development, and research on the effectiveness of these programs.
Open only to BA/BEd students.
Enrolment limited to 65 students. If necessary, further sections may be opened.
Prereqisite: CHST 2F10.
Not open to students with credit in CHST(EDUC) 3F50 or 3P50.
Lectures, seminar, 3 hours per week.

## CHST 3P52

Focus on early childhood education II
(also offered as EDUC 3P52)
Methods in early childhood education programs for children from birth to age eight. Topics include a detailed examination of curricula, instructional strategies, and evaluative techniques. Students will be involved in a field placement working with young children in a community setting.
Enrolment limited to 25 students, to be determined by academic standing.
Prerequisite: CHST(EDUC) 3P51.
Not open to students with credit in CHST(EDUC) 3F50.
Lectures, lab/seminar, 4 hours per week.

CHST 3P56
Biological perspectives in developmental psychology
(also offered as PSYC 3P56)
Examination of current research on the role of biological factors in psychological development. Topics include the role of genes and early biological environment in normal and abnormal development, and developmental neuropsychology.
Lectures, seminar, 3 hours per week.
CHST 3P60
Conflict and development
(also offered as PSYC 3P60)
An overview of the role of conflict in
early human development, including the causes, types and phases of conflicts. Particular attention will be focussed on cognitive and social strategies used to resolve conflicts. Students' participation in labs and research projects will permit a detailed analysis of the positive as well as negative outcome of conflicts. Prerequisite: CHST(PSYC) 2F10(210) or permission of the instructor. Lectures, seminar, 3 hours per week.

## CHST 3P62

Brain laterality, development and implications for learning (also offered as PSYC 3P62) Research data and theory based on normal, learning disabled and brainaltered subjects will be discussed in the context of the developing child. An exploration of differences in cognitive function between the two hemispheres of the brain, theories of how lateralized functioning develops and the educational implications of these findings. Other topics may include individual differences in brain organization and laterality implications for music, art, math and language. No background in physiology is required.
Lectures, lab/seminar, 3 hours per week.

CHST 3P78
Nature, nurture and human development
(also offered as PSYC 3P78)
Interaction of genetic and environmental influences on human development. Topics to be examined include biosocial determinants of morphology, personality and intelligence; family, twin and adoption studies; the plasticity of human development.
Lectures, seminar, 3 hours per week.

## CHST 3P84

Advanced topics in social development
(also offered as PSYC 3P84)
Social competence, aggression, friendship and other topics in social development will be examined from a variety of developmental perspectives. Methodological and training issues relevant to the study of social development will also be examined.

Prerequisite: CHST(PSYC) 2F10(210) or PSYC 2F12 or permission of the instructor.
Not open to students with credit in CHST(PSYC) 383 or CHST 392. Lectures, seminar, 3 hours per week.

## CHST 3P88

## The psychology of reading

(also offered as PSYC 3P88)
A study of the psychological processes involved in beginning and skilled reading. Current theories of reading will be presented and evaluated in the light of current research findings. Theories of reading disability and prospects for remediation will also briefly be considered.
Recommended background: PSYC 2 F90(290) or 3F08(308) or
CHST(PSYC) 3P11 or 3F11(311). Prerequisite: PSYC 1F90(190), and one of MATH 1F92(192) or PSYC 2F23(223) or SOCI 2F10(230) (may be taken concurrently).
Lectures, seminar, 3 hours per week.
CHST 3P89
Psychology of computers in education
(also offered as PSYC 3P89)
Current and potential uses of computers
in education will be carried out in light of current theories of child development. The emphasis is upon putting the use of computers in education on firm theoretical and empirical footing.
Recommended background: PSYC
$2 \mathrm{F90}$ (290) or 3F08(308) or
CHST(PSYC) 3P11(3F11(311)).
NOTE: this is not a computer programming course.
Prerequisite: MATH 1F92(192) or
PSYC 2F23(223) or SOCI 2F10(230)
(may be taken concurrently).
Lectures, seminar, 3 hours per week.

## CHST 3V90-3V91

## Directed readings

A program of study not available among the regular course offerings, designed in consultation with the faculty member directing the course. Arrangements must be agreed upon prior to registration.
Prerequisite: year 3 standing.

## Child Studies

CHST 4F99
Thesis tutorial
A research project carried out under the supervision of a faculty adviser. Students must be admitted to the honors program and consult with the program director before registering for a thesis tutorial.
Prerequisite: CHST 3F40 or 3F41; admission to year 4.
Co-requisite: CHST 4P98.
CHST 4P31
Treatment alternatives for children: dynamic therapies
(also offered as PSYC 4P31)
The theoretical background, research and evaluation of current therapeutic approaches to emotionally and behaviorally disturbed children and adolescents. All students will participate in a practicum placement. Major topics: a) play therapies, including non-directive, expressive and Gestalt approaches; b) group methods, including use of modelling, goal setting and evaluation methods.
Prerequisite: PSYC 2F12; admission to year 4 in child studies.
Lectures, seminar, 3 hours per week.
CHST 4P32
Treatment alternatives for children: cognitive and behavioral approaches (also offered as PSYC 4P32)
Behavioral theory and techniques will be presented. Social skills training, cognitive theories, contingency management and relaxation will be included in this section. All students will participate in a practicum placement.
Prerequisite: PSYC 2F12; admission to year 4 in child studies. Lectures, seminar, 3 hours per week.

## CHST 4P95

## Contemporary issues

A seminar course exploring contemporary theoretical and empirical issues in child development, with presentations by various faculty and guest lecturers on specialty topics.
Prerequisite: admission to year 4.

CHST 4P98

## Research seminar

A seminar run in conjunction with the thesis project course. Special topics research methods will be discussed in conjunction with the student's own research.
Prerequisite: admission to year 4. Co-requisite: CHST 4F99.

CHST 4V35-4V36 Special topics seminar A seminar offered occasionally to complement current offerings. The specific focus will vary depending on the needs of the program and availability of a faculty instructor. Prerequisite: admission to year 4 and permission of the instructor.

## Classics

Officers of instruction

Chairperson
Frederick H. Casler
Professor
Noel D. Robertson
Associate professors
Alan D. Booth
Frederick H. Casler
David W. Rupp
A. Victoria Soady

Assistant professor
Richard W. Parker
Part time instructor
Laura L. Robertson, curator
Brock Museum of Cypriote Antiquities

## General information

Schmon tower 1227
The Classics department offers two types of courses: courses in Latin, Greek or Hebrew language and literature, and courses in ancient civilization in all its aspects--literature, art, philosophy, education, history, ancient art and archacology. The second type of course, labelled Classics, requires no knowledge of Latin, Greek or Hebrew.

A program in classical languages, either pass or honors, will consist mainly of Greek and/or Latin courses. A program in classical studies, either pass or honors, will consist mainly of classics courses. Details of both programs are given below.

The department has special resources for teaching both languages and civilization. New methods of language instruction have been tested and refined in the introductory Greek, Latin, and

Hebrew courses. Summer study tours abroad provide students with first hand knowledge of Greek and Roman culture. The Brock Museum of Cypriote Antiquities provides a representative collection of art and artifacts from the Neolithic period to the end of the Roman Empire and beyond. Archaeological training sessions are conducted every other summer in Mediterranean lands. The Niagara Peninsula Society of the Archaeological Institute of America and the Niagara Chapter of the Ontario Archaeological Society assist the department in organizing archaeological programs and lectures.

## Pass programs (single major)

I Classical languages: a student must take eight credits in the Classics department, with at least three credits numbered 2(alpha) 80 or above; four of the eight must be Latin and/or Greek credits.

II Classical studies: a student must take seven credits in the Classics department, with at least three credits numbered 2(alpha) 80 or above, and may specialize in one of three areas: literature (in translation), history and religion, or ancient art and archaeology.

## A. Concentration in literature: three

 credits in literature (in translation) and four other credits in the Classics department.B. Concentration in history and religion: three credits in ancient history and four other credits in the Classics department.
C. Concentration in ancient art and archaeology: three credits in ancient art and archaeology and four other credits in the Classics department.

## Honors programs (single major)

I Classical languages: a student must take twelve credits in the Classics department, with at least three credits numbered 3(alpha) 80 or above; seven of the twelve must be Latin and/or Greek credits.

II Classical studies: a student must take eleven credits in the Classics department, with at least three credits numbered 3 (alpha) 80 or above, and must specialize in one of three areas: literature, history and religion, or ancient art and archaeology:

## A. Concentration in literature: two

 credits in Latin or Greek, five credits in literature (in translation) and four other credits in the Classics department.
## B. Concentration in history and

 religion: two credits in Latin, Greek or Hebrew, five credits in ancient history and four other credits in the Classics department.C. Concentration in ancient art and archaeology: two credits in Latin or Greek, five credits in ancient art and archaeology and four other credits in the Classics department.
N.B. The ancient language requirement can be fulfilled by taking: (a) LATI 1F00 and LATI 1F90 or LATI 1F90 and one advanced Latin credit; (b) GREE 1F00 and GREE 1F90 or GREE 1F90 and one advanced Greek credit; (c) LATI 1F90 or GREE 1F90 and HEBR 1 F00.

III Classical languages and ancient history: a student must take fourteen credits in the Classics department, with at least three credits numbered 3(alpha) 80 or above; seven of the fourteen must be Latin and/or Greek credits, and five of the fourteen must be credits in ancient history.

Classics

## Combined major programs

The Classics department allows a student to combine either classical languages or classical studies with another major field. The pass program then consists of at least five credits in the Classics department, with at least two credits numbered 2(alpha) 80 or above, and the honors program of at least seven credits in the Classics department with at least two credits numbered 3 (alpha) 80 or above.

- Students must specialize in one of three areas: literature (in translation), history and religion; ancient art and archaeology. For a pass degree, three of the minimum five classics credits must be selected from one of these areas; for an honors degree, five of the minimum seven classics credits must be selected from one of these areas.

General or Integrated Studies

A student may wish to pursue a pattern of study which does not coincide with a major or combined major program. Any such program must be approved by the dean of humanities, and may include five credits in the Classics department towards a pass degree, or seven credits in the Classics department towards an honors degree. For details, see calendar entry for general and integrated studies.

Language requirement for humanities majors

Students majoring in the classical studies pass program are required to complete one full credit in a language other than English during their first two years in the program. The recommended languages are Greek, Hebrew, Latin, French, German, and Italian. Students are advised that graduate programs in classics usually require competence in French and/or German as well as Latin and Greek.
For further information about the

Classics department and its programs, students should consult the brochure Classics at Brock, available from the department, and make an appointment with the department chairperson to discuss their educational objectives and career plans.

## Description of courses

Abbreviations:

| CLAS | Classics (given in |
| :--- | :--- |
| GREE | English) |
| HEBR | Hebrew |
| LATI | Latin |

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

## CLAS 1P91

Greek civilization
The literature, art, thought and political evolution of ancient Greece, based on masterworks of classical literature. Slides are used to illustrate classical history and archaeology.
Not open to students with credit in CLAS 190.
3 hours per week.

## CLAS 1P92

Roman civilization
The literature, art, thought and political evolution of ancient Rome, based on masterworks of classical literature. Slides are used to illustrate classical history and archaeology.
Not open to students with credit in CLAS 190.
3 hours per week.

## CLAS 1P93

Culture and civilization of central Europe: from the prehistoric to the Carolingian period
(also offered as GERM 1P93)
(given in English)
The cultural development of central Europe from the earliest stone and pottery cultures through the Bronze and Iron Ages, the Celts and Romans and the first Germanic kingdoms. The emphasis is placed on beliefs and prac-
tices, artistic style and architecture. Slides are used to illustrate the cultural evidence.
Not open to students with credit in GERM 195.
Lectures, 3 hours per week.
CLAS 1P95
Greek myths and religions
The structure and function of major Greek myths with attention to ancient and modern interpretation. Aspects of Greek religion with emphasis on means of communicating with the gods. Not open to students with credit in CLAS 196.
3 hours per week.

## CLAS 1P97

Roman religions and myths
History of the development of Roman religions from the foundation of Rome until the triumph of Christianity in the Roman Empire, with attention to the formulation of a Roman mythology and eastern influences upon the traditional religious outlook.
Not open to students with credit in CLAS 196.
3 hours per week.

## CLAS 2F91

## Roman history

The history of Rome to the death of Marcus Aurelius (A.D. 180), with an emphasis on social and political developments from the Gracchi to Nero.
Prerequisite: two of CLAS
1P91(191hc), 1P92(192hc), 1P95(195hc), 1P97 (197hc).
3 hours per week.
CLAS 2F96
Education in the ancient world
The school systems of the Greeks and Romans and ancient educational theory; the development of Western education; the main issues faced by ancient and modern educators.
Prerequisite: two of CLAS 1P91(191hc), 1P92 (192hc), 1P93(193hc), 1P95(195hc), 1P97 (197hc) or permission of the instructor. 3 hours per week.

## CLAS 2P10

Fifth-century Athens
The economic and social background of Western civilization's most productive epoch, with emphasis on material evidence (vases, inscriptions, the Agora, etc.). Athenian realities, 500400 B.C.: domestic life, public works, law and government, industry and trade, warfare, slavery.
3 hours per week.

## CLAS 2P11

## Rome under the first Caesars

Economic and social conditions at the acme of Roman power, with emphasis on material evidence (coins, inscriptions, the Forum, etc.). Roman realities, 50 B.C.-A.D. 79: styles of living, law and government, work and recreation, industry and commerce, slavery. 3 hours per week.

## CLAS 2P30

## Origins of human culture

The growth and development of human society from the prehistoric beginnings through the complex societies of the ancient Near East and India.
Lectures, seminar, 3 hours per week.
CLAS 2P35
Ancient technology
The techniques developed and used in the Old World from the Palaeolithic period through the Byzantine period to provide tools, food, clothing, shelter, protection, transportation and communication. Emphasis will be placed on the social context of technology in the Greek and Roman worlds.
Prerequisite: two of CLAS 1P91, 1P92, 1P93, 1P95, 1P97 or VISA 1F90 or permission of the department.
Lectures, seminar, 3 hours per week.

## CLAS 2P49

The mystery religions and the background of early Christianity Initiation and secret societies; ethical teaching and the afterlife; purification and asceticism; ecstasy, mysticism, conversion; withdrawal, persecution, and apocalyptic beliefs. Readings from Greek and Roman sources to illustrate the Eleusinian and Dionysiac mysteries, Orphics and Pythagoreans, Isis, Mithras, Gnosticism, local sects in Palestine and Asia Minor; readings
from Jewish and Christian sources.
Prerequisite: two of CLAS
1P91(191hc), 1P92(192hc), 1P95(195hc), 1P97 (197hc). 3 hours per week.

## CLAS 2P51

Syro-Palestinian archaeology
Introduction to the archaeology of the Syro-Palestinian region with emphasis on the sites and artifacts from the Neolithic period to the rise of Islam; reconstructing the living conditions during these periods.
Prerequisite: two of CLAS
1P91(191hc), 1P92(192hc), 1P95(195hc), 1P97 (197hc), or VISA
1F90(190) or permission of the instructor.
3 hours per week.
CLAS 2P61
Women in the ancient world
Problems and issues of particular relevance to women in Greek and Roman society. Topics will include: social, political, and legal rights; prostitution; religious duties; marriage
and children; birth control and abortion.
Lectures, seminar, 3 hours per week.

## CLAS 2P62

Social problems of the ancient world: a modern perspective
Social issues in Ancient Greece and Rome. Topics will include: family law; slavery and the labor force; children and the aged; health concerns; human sexuality and sexual mores; and minorities and racial prejudice.
Lectures, seminar, 3 hours per week.

## CLAS 2P88

The history of early Greece
The social and political history of the Greek world down to 450 B.C. Minoans and Mycenaeans, the Dark Age, the colonizing period, the tyrants, the rise of Sparta, the Persian wars, and
the Athenian Empire. Readings from
Greek historians and documents in translation.
Prerequisite: two of CLAS
1P91(191hc), 1P92(192hc),
1P95(195hc), 1P97 (197hc).
Not open to students with credit in CLAS 290.
3 hours per week.

CLAS 2P89
The history of Classical Greece
The social and political history of the Greek world, 450-323 B.C. The great war between Athens and Sparta, the rivalry of the city-states, the rise of national states, Alexander the Great. Readings from Greek historians and documents in translation.
Prerequisite: two of CLAS
1P91(191hc), 1P92(192hc),
1P95(195hc), 1P97 (197hc).
Not open to students with credit in CLAS 290.
3 hours per week.

## CLAS 2P93

## Field archaeology

An introduction to basic archaeological theory, field techniques and procedures, and to the study of archaeological materials.
Prerequisite: two of CLAS
1P91(191hc), 1P92(192hc), 1P95(195hc), 1P97 (197hc), or VISA 1F90(190) or permission of the instructor.
3 hours per week.

## CLAS 2P97

Classical archaeology
(also offered as VISA 2P97)
A survey of classical archaeology, and
a detailed study of selected Greek and
Roman sites.
Prerequisite: two of CLAS
1P91(191hc), 1P92(192hc),
1P95(195hc), 1P97 (197hc), or VISA
1F90(190).
3 hours per week.

## CLAS 3F10

## The ancient Near East

The history of the ancient civilizations of Egypt, Mesopotamia, Anatolia, the Levant and Iran.
Prerequisite: two of CLAS
1P91(191hc), 1P92(192hc),
1P95(195hc), 1P97 (197hc), or CLAS
2P51(251hc).
3 hours per week.
CLAS 3F20
Greek art and architecture
(also offered as VISA 3F20)
Greek art and architecture from the
Bronze Age through the Hellenistic
period within the framework of historical and cultural change.

## Classics

Prerequisite: two of CLAS
1P91(191hc), 1P92(192hc), 1P95(195hc), 1P97 (197hc), or VISA 1F90(190).
Not open to students with credit in CLAS(VISA) 298.
3 hours per week.
CLAS 3F21
Roman art and architecture
(also offered as VISA 3F21)
Roman art and architecture from the early Iron Age through the late Empire within the framework of historical and cultural change; with attention to the influence of the Classical heritage on early Christian/Byzantine art.
Prerequisite: two of CLAS
1P91(191hc), 1P92(192hc), 1P95(195hc), 1P97 (197hc), or VISA 1F90(190).
Not open to students with credit in CLAS(VISA) 299.
3 hours per week.
CLAS 3P00
Homer and Greek epic
(given in English)
The two heroic epics of Homer, the
Iliad and Odyssey. Topics for discus-
sion include the conventions of epic,
the oral transmission of epic verse, and
the Homeric concept of the gods.
Prerequisite: two of CLAS
1P91(191hc), 1P92(192hc),
1P95(195hc), 1P97 (197hc).
Not open to students with credit in
CLAS 292.
3 hours per week.
CLAS 3P01
Vergil and the literary epic
Literary epics inspired by the works of
Homer. The Argonautica of Apollonius and the Pharsalia of Lucan are used to frame a lengthy treatment of Vergil's masterful and patriotic epic of Rome, the Aeneid.
Prerequisite: two of CLAS
1P91(191hc), 1P92(192hc),
1P95(195hc), 1P97 (197hc).
Not open to students with credit in CLAS 292.
3 hours per week.
CLAS 3P02
Greek tragedy
The origins of tragedy and its develop-
ment as entertainment and literature through the Classical period. Works studied may include: Aeschylus, The Oresteia; Sophocles, Oedipus Rex and Oedipus at Colonus; and Euripides, Medea and Hippolytus.
Prerequisite: two of CLAS
1P91(191hc), 1P92(192hc),
1P95(195hc), 1P97 (197hc), or DRAM
1F93(193).
Not open to students with credit in CLAS 294.
3 hours per week.
CLAS 3P03
Greek and Roman comedy and melodrama
Ancient comedy is illustrated from the works of Aristophanes, Menander, Plautus and Terence. The tragi-comic melodramas of Euripides are studied in comparison with the violent, tragic melodramas of Seneca.
Prerequisite: two of CLAS
1P91(191hc), 1P92(192hc),
1P95(195hc), 1P97 (197hc), or DRAM 1F93(193).
Not open to students with credit in CLAS 294.
3 hours per week.

## CLAS 3P30

## Historical linguistics

The development of ancient writing systems (hieroglyphs, syllabaries and alphabets) into modern scripts with emphasis on Egyptian hieroglyphs, cuneiform, Phoenician, and the Greek and Latin alphabets. Also a study of language change, the comparative method, and reconstruction of ancient languages.
Prerequisite: one of the following: GERM 1F00(100), GREE 1F00(100), HEBR 1F00(100), LATI 1F00(100), LBST 1F92(192) LING 1F94(194), PSYC 3F08(308), RUSS 1F00(100), SANS 1F00(100), TESL 2F50 (250). Not open to students with credit in CLAS 420.
3 hours per week.

## CLAS 3P48

Religion and society in the ancient world
The main patterns of religious behavior and belief in the ancient Near East, Greece and Rome with special refer-
ence to social functions. Topics will include sacrifice, seasonal festivals, the consecration of the social order, household and kinship rites, the cult of the dead.
Prerequisite: two of CLAS
1P91(191hc), 1P92(192hc),
1P95(195hc), 1P97 (197hc).
Not open to students with credit in CLAS 350.
3 hours per week.

## CLAS 3P49

Religion and the individual in the ancient world
Personal religion and private rites and beliefs in the ancient Near East, Greece and Rome. Topics will include magic, healing, omens and prophecy, miracles and epiphanies, the cult of heroes, the high god, moral dictates and the afterlife, revelation and conversion, mysticism.
Prerequisite: two of CLAS
1P91(191hc), 1P92(192hc),
1P95(195hc), 1P97 (197hc).
Not open to students with credit in CLAS 350.
3 hours per week.

## CLAS 3P91

Greek and Roman dialogue and dialectic
The philosophical dialogue in ancient life and literature. Popular origins; the sophists; schools and teachers; moral, social and scientific issues; the closetdialogue. Study of Plato, Cicero, Plutarch, Lucian.
Prerequisite: a classics credit numbered 2 (alpha) 90 or above, or permission of the department.
3 hours per week.
CLAS 3P92
Greek and Roman satire and the novel
The satiric genre and the birth of the novel; the history of abuse from Homer to Apuleius. Incantation, invective, wonder tales, romantic novels, with special reference to models for mediaeval and Renaissance satirists and to the emergence of the picaresque hero. Prerequisite: a classics credit numbered 2 (alpha) 90 or above, or permission of the department.
3 hours per week.

CLAS 4F40
Provinces and frontiers of the GrecoRoman world
The impact of Greek and Roman culture on other ancient peoples, especially after Alexander and under the Roman Empire; with attention to Scythians, Iranians, Egypt and Judaea in the Hellenistic period; to Rome's provinces, including Gaul, Britain and North Africa; and to the barbarian invaders of the Late Empire. Topics will include the role of technology and science, military resources and strategy, imperial and local administration, education and social mobility, nationalism and sectarian religion, provincial art and architecture.
Prerequisite: a classics credit numbered 2 (alpha) 90 or above, or permission of the department.
3 hours per week.

## CLAS 4F75

Archaeological practicum
First hand training at an ancient site (fieldwork, demonstrations, and lectures); study tours of other ancient sites, monuments and museums, and/or topographical survey. Conducted at different times in France, Italy, Greece, Cyprus, and Israel. All practicums run daily for six weeks during the summer and are conducted with the assistance of local authorities.
Prerequisite: permission of the department.

## CLAS 4F85

The end of the ancient world and the beginning of mediaeval Europe, A.D. 180-600
An analysis of two of the most significant transformations in European history: the fall of the Roman Empire and the emergence of early mediaeval society, and the victory of Christianity in Europe.
Prerequisite: a classics credit numbered 2 (alpha) 90 or above, or permission of the department.
3 hours per week.
CLAS 4M00-4M09
Study in Mediterranean lands
(also offered as VISA 4M00-4M09)
First hand topographical investigations of ancient sites and monuments. Study
tours of the great cities and museums of the Mediterranean world with emphasis on the art and architecture of the prehistoric, Classical and later periods. Offered in the summer day session for approximately three or four weeks of intensive study abroad. Prerequisite: permission of the department.

CLAS 4M95-4M99
Advanced study and directed research
Individual study of one of the three areas: archaeology, ancient history or classical literature. Content to be determined by the interests of the student and the advice of the department.
3 hours per week.
CLAS 4P01
Ancient historical writing and theories of history
Royal chronicles and other records in the Near East; legends and epics; national and local history; travellers' tales and mariners' guides; contemporary history; universal history, chronology, antiquities; church history; biography and eulogy; historical romance. Readings from ancient Near Eastern and Greek and Roman literature and documents in translation. Prerequisite: A classics credit numbered 2 (alpha) 90 or above, or permission of the department.
Not open to students with credit in CLAS 399.
3 hours per week.
CLAS 4P10
The city in the ancient world (also offered as VISA 4P10)
The origins and evolution of the city in the Near East; the development of the city and of city planning in Greece, Italy, and the Roman Empire from the end of the Late Bronze Age through the early Byzantine period. The forms and uses of public and private buildings, religious and secular.
Prerequisite: a classics credit numbered $2(a l p h a) 90$ or above or VISA 1F90(190), or permission of the department.
Not open to students with credit in CLAS(VISA) 388hc or CLAS 396. 3 hours per week.

CLAS 4P11
The art and architecture of the ancient Near East
(also offered as VISA 4P11)
The art and architecture of Egypt, the Levant, Mesopotamia, Iran and eastern Anatolia from the Neolithic period through the Early Iron Age.
Prerequisite: a classics or a visual arts
credit numbered 2 (alpha) 90 or above
Not open to students with credit in CLAS(VISA) 389 hc .
3 hours per week.

## CLAS 4P12

Greek sanctuaries
(also offered as VISA 4P12)
The great Panhellenic shrines (Delphi, Olympia, Epidaurus, and others): topography, architecture, art, with emphasis on the interplay between tradition and changing needs and values.
Prerequisite: a classics credit numbered
2 (alpha) 90 or above or VISA
1F90(190) or permission of the department.
Not open to students with credit in CLAS(VISA) 397hc.
3 hours per week.
CLAS 4P13
The art and archaeology of Cyprus (also offered as VISA 4P13)
The cultural history of Cyprus from the Neolithic period through the early Byzantine period, based on the archaeological record, and of the role of Cyprus in the civilization of the eastern Mediterranean.
Prerequisite: a classics credit numbered
2 (alpha) 90 or above or VISA.
1F90(190), or permission of the
department.
Not open to students with credit in
CLAS(VISA) 398hc.
3 hours per week.

## CLAS 4P14

The Aegean Bronze Age
(also offered as VISA 4P14)
The development of the Bronze Age cultures of the Aegean basin from 3000 to 1100 B.C. The art and architecture of the Minoans on Crete and the Mycenaeans on the Greek mainland will be stressed.
Prerequisite: a classics credit numbered

## Classics

2(alpha)90 or above or VISA 1F90(190), or permission of the department.
Not open to students with credit in
CLAS(VISA) 395 or 402 hc .
3 hours per week.
CLAS 4P15
Topics in archaeology
Current topics and problems in Greek, Roman, Cypriote and/or Near Eastern
archaeology. Emphasis will be given to theoretical considerations, scientific analytical techniques, multidisciplinary research strategies and interpretation. Prerequisite: CLAS 2P93(293hc), two ancient art/archaeology credits, one of which must be at the year 3 level, or permission of the instructor.
Not open to students with credit in CLAS 405hc.
3 hours per week.

## GREE 1F00

Language (introductory)
The fundamentals of Greek. Selections from various Greek authors.
4 hours per week plus computer lab.
Note: Students who have studied Classical Greek before coming to university should identify themselves to the department; such students may be eligible to enrol in GREE 1 F90.

GREE 1F90
Language and literature
Review of grammar. Graded selections from various Greek authors.
Prerequisite: GREE 1F00(100) or permission of the department.
Not open to students with credit in GREE 200.
4 hours per week plus computer lab.

## GREE 3P10

## Plato

Selections from the dialogues of Plato.
Greek prose composition.
Prerequisite: GREE 1F90(190).
Not open to students with credit in GREE 291.
3 hours per week.
GREE 3P20
Euripides
Selected passages from the plays of Euripides. Greek prose composition.

Prerequisite: GREE 1F90(190).
Not open to students with credit in GREE 292hc.
3 hours per week.

## GREE 3P30

The Attic orators
Readings from the Attic orators.
Prerequisite: GREE 1F90(190).
Not open to students with credit in
GREE 296hc.
3 hours per week.
GREE 3P40
Homer
Selected passages from Homer's epic
poems, the Iliad and the Odyssey.
Greek prose composition.
Prerequisite: GREE 1F90(190).
Not open to students with credit in GREE 294hc.
3 hours per week.
GREE 4M95-4M99
Advanced reading and directed

## research

Prerequisite: permission of the depart-
ment.
3 hours per week.
GREE 4P10

## Sophocles

Selected passages from the tragedies of Sophocles. Greek prose composition. Prerequisite: GREE 1F90(190).
Not open to students with credit in GREE 291.
3 hours per week.

## GREE 4P20

## The Greek historians

Selections from the historical writings of Herodotus, Thucydides and Xenophon.
Prerequisite: GREE 1F90(190).
Not open to students with credit in GREE 298hc.
3 hours per week.
GREE 4P30
Greek lyric poetry
Selected poems from Alcaeus, Alcman, Anacreon, Archilochus, Mimnermus, Pindar, Sappho and Theognis. Greek prose composition.
Prerequisite: GREE 1F90(190).
Not open to students with credit in GREE 396hc.
3 hours per week.

GREE 4P40
Greek comedy
Selections from the comedies of Menander and Aristophanes. Greek prose composition.
Prerequisite: GREE 1F90(190).
Not open to students with credit in
GREE 395hc.
3 hours per week.

## HEBR 1F00

Hebrew language (introductory)
Biblical Hebrew, with selected read-
ings of Old Testament passages.
Not open to students with credit in REST 100.
Lectures, language lab, 4 hours per week.

## LATI 1F00

Language (introductory)
The fundamentals of Latin. Selections from various Latin authors.
4 hours per week plus computer lab.
Note: Students who have studied Latin before coming to university should identify themselves to the department; such students may be eligible to enrol in LATI 1F90.

LATI 1F90
Language and literature
Review of grammar. Intermediate selections from Latin authors.
Prerequisite: LATI 1F00(100) or permission of the department.
Not open to students with credit in LATI 200.
4 hours per week plus computer lab.
LATI 3P10
Literature of the Republic: Roman comedy
Selections from the plays of Plautus
and Terence. Excerpts from early Latin
prose and poetry.
Prerequisite: LATI 1F90(190).
Not open to students with credit in
LATI 291hc.
3 hours per week.

## LATI 3P20

Literature of the Republic: prose and poetry
Ideals and atoms: selections from the writings of Cicero, Lucretius, and Catullus.

Prerequisite: LATI 1F90(190).
Not open to students with credit in LATI 292 hc .
3 hours per week.
LATI 3P30
Augustan poetry: Vergil
Selections from Vergil's Georgics and Aeneid.
Prerequisite: LATI 1F90(190).
Not open to students with credit in LATI 293hc.
3 hours per week.
LATI 3P40
Roman verse satire
Readings from Horace, Juvenal and Persius.
Prerequisite: LATI 1F90(190).
Not open to students with credit in
LATI 396hc.
3 hours per week.
LATI 3P50
Historians and biographers of the
late republic and principate
Selected readings from the works of Nepos, Sallust, Caesar and Livy.
Prerequisite: LATI 1F90(190).
Not open to students with credit in LATI 390.
3 hours per week.
LATI 4M95-4M99
Advanced readings and directed research
Prerequisite: permission of the department.
3 hours per week.

## LATI 4P10

Historians and biographers of the
Empire
Selected readings from the works of Tacitus, Suetonius and Ammianus Marcellinus.
Prerequisite: LATI 1F90(190).
Not open to students with credit in LATI 390.
3 hours per week.
LATI 4P20
Literature of the early Empire Readings from Seneca, Lucan, Pliny the Younger, Martial and Quintilian. Prerequisite: LATI 1F90(190). Not open to students with credit in LATI 300 or 301 hc .
3 hours per week.

LATI 4P30
Augustan poetry: Horace
Selections from the Odes and Epodes
of Horace.
Prerequisite: LATI 1F90(190).
Not open to students with credit in LATI 294hc.
3 hours per week.
LATI 4P40
Roman prose satire
Readings from Petronius, Seneca and Apuleius.
Prerequisite: LATI 1F90(190).
Not open to students with credit in LATI 397hc.
3 hours per week.
LATI 4P50
Roman elegy and pastoral poetry
Readings from Catullus, Propertius, Tibullus, Ovid, and Vergil's Eclogues. Prerequisite: LATI 1F90(190).
Not open to students with credit in LATI 420.
3 hours per week.

## Communications Studies

# Communications Studies 

## Director

John A. Lye
Associated faculty
Nicolas Baxter-Moore, Politics
John G. Benjafield, Psychology
Scott Edgett, Management/Marketing
Barry K. Grant, Film Studies, Dramatic and Visual Arts
Deborah A. Harrison, Sociology
William H.N. Hull, Politics
James C.M. Leach, Film Studies, Dramatic and Visual Arts
John A. Lye, English Language and Literature
Mary Jane Miller, Film Studies, Dramatic and Visual Arts
Joan Nicks, Film Studies, Dramatic and Visual Arts
Joan M. Preston, Psychology
Merle Richards, College of Education
Walter Watson, Sociology

## Co-operating faculty from:

English Language and Literature, Film
Studies, Dramatic and Visual Arts, Management/Marketing, Politics, Psychology and Sociology.

## General information

## Mackenzie Chown complex A305

Communications Studies consists of a core of communications courses supplemented by three streams which reflect the various emphases and applications of this broadly-based field of study:
(1) Communications: social policy
(2) Communications: culture and language
(3) Communications: business communication.

The Communications: social policy stream focuses upon the interaction of specific media of communication (the electronic, film and print media and
drama) and social and political forces in society. The structures of government, the processes of public policy formulation and issues of media ownership and regulation are studied in conjunction with the political and social functions and impacts of the mass media. Particular emphasis will be given to material drawn from the Canadian context. Stress will be placed upon the development of the student's analytical and critical skills.

The Communications: culture and language stream provides the student with an understanding of Canadian media, with an emphasis on critical analysis as well as the cultural, linguistic and psychological bases of communication within their social contexts.

## The Communications: business

 communications stream combines the study of communications with a study of the fundamentals of business policy, management and marketing. The stream aims to equip the student with a sound theoretical basis for analyzing and practising communications within the business environment.Satisfactory completion of the first three years of the program entitles the student to a pass degree. The honors degree requires four full years of study.

Communications: social policy

## Year 1

COMM 1F90; ENGL 1F91; MGMT 1P91/1P92; POLI 1F90; SOCI 1F90.

Year 2
COMM 2F24, 2P23, 2P50; POLI 2F12;
SOCI 2F10; one science context credit (sce Note 1.).

Year 3
COMM 3P17, 3P50, 3P60; POLI 3F51; one of COMM 2P55, PSYC 3P82, SOCI 3P76; one credit from COMM
3F05, 3F08, 3F10, 3F24, DRAM 2F97,
ENGL 2F91, 3F60, FILM 3F25; one elective credit.

Honors program
Years 1, 2 and 3
As in pass program.
Year 4
COMM 4F80, 4F99, 4P32; one of PSYC 3P82, SOCI 3P76, 4P23; one credit from POLI 4P20, 4P51, 4P53, 4P81, 4V25-4V29, SOCI 4P23, 4P42, 4P45; one elective credit.

All honors programs must contain at least three credits numbered 3 (alpha) 90 or above.

Communications: culture and language

## Year 1 <br> COMM 1F90; ENGL 1F91; FILM 1F94; PSYC 1F90; SOCI 1F90.

Year 2
COMM 2F24, 2P23, 2P50; SOCI
2 F 10 ; one credit from COMM 1F94, 2F54, 2M90-2M99, 3F24, VISA 1F90 or one credit in DRAM, ENGL, or FILM; one science context credit (see Note 1.).

## Year 3

COMM 2F54 or 3F24, COMM 3P17, 3P50, 3P60; one of COMM 2P55, 4P54, DRAM 2P91, PSYC 3P82; one credit from COMM 3F05, 3F08, 3F10, DRAM 2F97, ENGL 2F91, 3F60, FILM 3F25; one elective credit.

Honors program
Years 1, 2 and 3
As in pass program.
Year 4
COMM 4F80, 4F99; one credit from COMM 2P55, 3P77, 4P32, DRAM 2P91, PSYC 3P82, SOCI 2P52, 3P76; one credit from COMM 3F05, 3F08, 3F10, DRAM 2F97, ENGL 2F91, 3F60; FILM 3F25; one elective credit.

All honors programs must contain at least three credits numbered 3(alpha) 90 or above.

Communications: business communication

## Year 1

COMM 1F90; ENGL 1F91; MGMT 1P91/1P92, 1P94; MATH 1P98; POLI 1 F90.

Year 2
COMM 2F24, 2P23, 2P50; MKTG $3 \mathrm{P} 22 / 3 \mathrm{P} 24$; one science context credit (see Note 1.); one elective credit.

Year 3
COMM 3P17, 3P50, 3P60; MGMT 2P40, 3P41/3P42, 3P50; POLI 3P65; one of COMM 3F05, 3F10, 3F24, DRAM 2F97, ENGL 2F91, 3F60, FILM 3F25.

Honors program
Years 1, 2 and 3
As in pass program.

## Year 4

COMM 4P32; one of COMM 4F80, 4F99; two MGMT/MKTG credits at the year 4 level, to be chosen in consultation with the program director; one and one half elective credits.

Note 1.
BIOL 1F25 or SCIE 1F20 recommended.

## Description of courses

Please note that not all courses are offered in every session. Refer to applicable term timetable for details.

## COMM 1F90

## Introduction to communications

Basic approaches and issues in communications from both humanities and social science perspectives. Topics will include non-verbal communication, the cultural use of symbols and signs, qualitative and quantitative mass media analysis, critical analysis of texts, the cultural character of the Canadian media and the impact of the media and media institutions upon public attitudes and social problems.
Lectures, seminar, 3 hours per week.

COMM 1F94
Introduction to linguistics
(also offered as LING 1F94)
The study of language and language use. Concepts related to disciplines in the humanities, social sciences and education will be discussed. Not limited to any specific language; questions common to all tongues. Open to students in any year of study.

## COMM 2F24

## Canadian popular culture

(also offered as FILM 2F24)
The mass media in Canada. Studies in the popular arts, with special reference to the ways in which institutions (e.g. $\mathrm{CBC}, \mathrm{NFB}$ ) and selected artists identify and express a Canadian cultural imagination.
Prerequisite: COMM 1F90 or CANA
1F91 or FILM 1F94 or permission of the instructor.
Lectures, seminar, 4 hours per week.

## COMM 2F54

The documentary film
(also offered as FILM 2F54)
The documentary film from its beginnings in photography and the actualitiés of the Lumières through traditions and developments in documentary practice. The history, theory and aesthetics of documentary film and its cultural implications. Prerequisite: COMM 1 F90 or FILM 1F94 or SOCI 1F90 or permission of the instructor.
Lectures, seminar, 3 hours per week; plus weekly film lab.

COMM 2M90-2M99
Special studies in communications Topics selected from year to year on the basis of specific areas of instructional expertise and student interest. Lectures, seminar, 3 hours per week.

## COMM 2P23

## Mass media

(also offered as SOCI 2P23)
The organization of the mass media, with special emphasis on the Canadian media and their unique difficulties. Topics may include the media's use for socialization, reproduction of the social structure, and social change.

Not open to students with credit in COMM(SOCI) 248 hc .
Lectures, seminar, 3 hours per week.

## COMM 2P50

Communicationstheory
Issues in communications, including mass media.
Prerequisite: COMM 1F90(190) or permission of the instructor.
Lectures, seminar, 3 hours per week.

## COMM 2P55

Interpersonal communication
(also offered as SOCI 2P55)
Perspectives on human communication
including both verbal and non-verbal communication.
Not open to students with credit in COMM(SOCI) 247hc.
Lectures, lab, 3 hours per week.

## COMM 3F05

Theory and criticism of television
(also offered as FILM 3F05)
The aesthetics of television. Historical and international perspectives and alternative practices will be considered. Prerequisite: COMM 1F90 or FILM 1F94 or permission of the instructor. Lectures, seminar, 3 hours per week plus weekly lab.

## COMM 3F08

## Psychology of language

(also offered as APLI 3F08 and PSYC 3F08)
Psychological processes involved in language including the study of meaning, language development in children, language and thought, listening, as well as special interest topics such as bilingualism and written language.
Lectures, seminar, 3 hours per week.

## COMM 3F10

Psychology of television
(also offered as PSYC 3F10)
Psychological aspects of the visual, auditory and content dimensions of television will be examined. The applicability to television of several psychological theories, such as cognitive and information processing, perceptual and attentional theories,

## Communications Studies

social learning, interpersonal communication, mass communication and developmental perspectives will be evaluated.
Lectures, seminar, 3 hours per week.

## COMM 3F24

Canadian cinema
(also offered as FILM 3F24)
A critical history of the Canadian cinema and a study of the work of major directors.
Prerequisite: FILM 1F94 or DRAM 2 F 97 or permission of the instructor. Lectures, seminar, 3 hours per week plus weekly film lab.

## COMM 3P17

Politics and the mass media in Canada
(also offered as POLI 3P17)
The Canadian mass media and their relationship to the political process. Lectures, seminar, 3 hours per week.

## COMM 3P50

Media analysis
Content, formal and semiotic analysis
of the various media, and a study of the communications capacities and attributes of mass media.
Prerequisite: COMM 1F90(190) or permission of the instructor. Lectures, seminar, 3 hours per week.

## COMM 3P60

Practicum in communications The practical application of studies in the program in various media and forms, including promotional and analytical writing, media research and reporting projects, and media production.
Prerequisite: COMM 2P50(250hc), 3P50(350hc) and admission to the communications studies program. Lectures, lab, 3 hours per week.

## COMM 3P77

## Politics and literature

 (also offered as POLI 3P77) Politics in literature, especially in selected novels and plays. The seminar emphasizes political issues and insights drawn from literary works. Some attention is given to the differing expectations of authors, literary critics,and students of politics.
Not open to students with credit in COMM(POLI) 376hc.
Seminars, 3 hours per week.

## COMM 4F80

Directed reading
Directed individual or group reading, in an area of communications studies. Students are responsible for arranging their course with a faculty member, in consultation with the program director, and must submit a written proposal signed by the faculty member to the director before registration. In addition to their reading and written work, students in the course will be required to attend bi-monthly course seminars and to participate in staging an annual communications colloquium. The reading may not be on the topic or with the faculty member of the student's COMM 4F99 thesis.
Prerequisite: admission to year 4 of the program
Hours as arranged with supervisor, plus seminar, 1 hour bi-monthly.

## COMM 4F99

## Honors thesis

A thesis to be based on individual study and research carried out under the supervision of a faculty adviser. Prior to registration in the honors year, the student must consult the director about topics and regulations and about the selection of an adviser. Prerequisite: admission to year 4 of the program.

## COMM 4P32

## Comparative mass media

(also offered as POLI 4P32)
A critical examination of selected problems concerning the mass media and the political process in Canada and other states.
Prerequisite: year 4 honors standing or permission of the instructor.
Not open to students with POLI 435 taken between SE 1979 and WE 1982.
Seminar, 3 hours per week.
Prerequisite: permission of instructor.
Not open to students with credit in COMM(SOCI) 396hc.
Seminars, 3 hours per week.

Computer Science and Information Processing

Officers of instruction

## Chairperson

David J.F. Hughes

## Professors

F. Raymond Skilton

Paul A.V. Thomas
Associate professors
Jerzy Barchanski
James Bradford
David J.F. Hughes
David McCarthy
John Mitterer
Jonathon E. Radue
Vladimir Wojcik
Technical assistant
Ross Drabble

General information

## Mackenzie Chown complex B305

The department of Computer Science and Information Processing offers courses leading to pass and honors BSc degrees in single major programs and BSc honors degrees in combined major programs. The honors program consists of two streams: software and artificial intelligence.

## Department facilities

The main computing facilities available to computer science students consist of a Digital Equipment Corporation VAX 11/780, and a Burroughs B7900 computer as described on page 10 . In addition to the terminals in the junior laboratory (F-317), there are further terminals (including graphics terminals) housed in the senior software laboratory (B304).

The department has two microcomputer labs: B309 containing Macintosh
personal computers and B304A containing SUN supermicro workstations. In additon, a robot and robot arm are used in the robotics course.

## Options for honors program

A student in the honors computer science program must select one of the two streams prior to registration for year 3. Students should consider their desired stream when selecting elective courses in years 1 and 2.

## Prerequisite courses

A grade of C is desirable in all prerequisites for computer science courses. A student who does not achieve a $C$ in a prerequisite course is strongly advised to upgrade the mark in the course before proceeding.

## Non-computer science prerequisites

Some courses have prerequisites in other departments. Students are advised to plan their programs so that all prerequisites will be satisfied.

## Service courses

COSC 1P90 and 1P91 may not be held for major credit by students enrolled in the major or combined major programs.

## Students with high school computer science credit <br> Students with 2 high school computer science credits may be eligible for exemption from COSC 1P01 and for permission to enrol in COSC 2P07 in its place. Please consult with the department chairperson.

## Pass program

## Year 1

COSC 1P01, 1P04; MATH 1F65; one
humanities context credit (see Note 1.); one science context credit; one elective credit (see Note 2.).

Year 2
COSC 2F00, 2P03, 2P07 (see Note 3.);

MATH 1P12, 1P97; one social science context credit; one elective credit (see Note 2.).

Year 3
COSC 3F00, 3P02, 3P04, 3P32; one other COSC half credit (see Note 4.); one mathematics credit (see Note 5.); one elective credit (see Note 2.).

Notes:

1. ENGL 1F99 strongly recommended; it is a preferred prerequisite for COSC 3F00.
2. A student intending to pursue data processing should select MGMT 1P91, 1P92 (in year 1,2 or 3 ).
3. COBOL strongly recommended for the pass degree; C strongly recommended for the software system option; LISP strongly recommended for the artificial intelligence option.
4. For a pass degree, University regulations require three credits numbered 2(alpha) 90 or above.
5. To be selected from MATH 1P98, 2P20, 2P60, 3F65 (recommended as it is required in the honors degree.), 4P19, 4P20.

## Honors program

## Years 1 and 2

As in pass program.

## Software systems option

## Year 3

COSC 3F00, 3P01, 3P02, 3P04; one other COSC half credit (see Note 6.); MATH 3F65; one elective credit.

## Year 4

COSC 4P07, 4P13, 4P14; one and one half COSC credits (see Note 6.); one mathematics credit (see Note 7.); one elective credit.

## Artificial inteligence option

## Year 3

COSC 3F00, 3P02, 3P04, 3P71, one

## Computer Science and Information Processing

other COSC half credit (see Note 6.); MATH 3F65; one elective credit.

Year 4
COSC 4P07, 4P78, 4P79, one and one half COSC credits (see Note 6.); one mathematics credit (see Note 7.); one elective credit.

Notes:
6. For an honors degree, University regulations require 6 credits numbered 2(alpha) 90 or above, including 3 credits numbered 3(alpha) 90 or above.
7. To be selected from MATH 1P98, $2 \mathrm{P} 20,2 \mathrm{P} 60,4 \mathrm{P} 19$ or 4 P 20 .

Computer science as a second degree

A student holding a pass or honors degree other than a Brock BSc may obtain a pass BSc in computer science by completing a minimum of five credits. A student holding an honors degree may obtain an honors degree in computer science by completing a minimum of ten credits. Previous or transfer credits may be used to satisfy some of the requirements. The normal prerequisite structure must be fulfilled. Students should refer to the University regulations concerning second degrees for further information.

For a pass BSc in computer science in addition to a BAdmin (computer science option), three additional computer science credits must be included in the additional five required credits.

## Required courses:

Pass program
COSC 1P01, 1P04, 2F00, 2P03, 2P07, $3 \mathrm{~F} 00,3 \mathrm{P} 02,3 \mathrm{P} 04$; one other COSC credit; MATH 1F65, (1P12 or 1P98), 1 P97.

Honors program
In addition to the requirements for a second pass degree:

Three COSC credits numbered 3 (alpha) 90 or above.

## Combined honors programs

The COSC requirements for combined honors programs with all other disciplines are outlined below. For the requirements in the other discipline, consult that section of the calendar.

## Computer science and another science

Year 1
COSC 1P01, 1P04; MATH 1F65; one MATH credit (see Note 8.); one credit in the other discipline; one social science context credit.

Year 2
COSC 2F00; one additional science credit (see Note 9.); two credits in other discipline; one humanities context credit (see Note 10.).

Year 3
COSC 2P03, 2P07; one COSC credit;
MATH 1P12; two credits in other discipline; one half credit elective.

## Year 4

COSC 3F00, 3P02, 3P04; one COSC
credit numbered 3 (alpha) 90 or above; two credits in other discipline numbered 3 (alpha) 90 or above.

## Notes:

8. MATH 1P97/1P98 for geology. MATH 1P93/1P94 for physics and chemistry.
9. MATH 2F95 for physics. PHYS 1F20 or 1F90 for chemistry and geology.
10. ENGL 1F99 strongly recommended; it is a preferred prerequisite for COSC 3F00.

## Computer science and mathematics

Year 1
COSC 1P01, 1P04; MATH 1F65, 1P93, 1P95; one science and one social science context credit.

Year 2
COSC 2F00, 2P03, 2P07; MATH
1P12, 2F95, 2P60; one humanities context credit (see Note 11.).

Year 3
COSC 3F00, 3P02, 3P04; MATH $2 \mathrm{~F} 96,2 \mathrm{P} 20,3 \mathrm{~F} 65$; one half credit elective.

## Year 4

Two COSC credits numbered 3(alpha) 90 or above; MATH 2 F10 or 3F10; MATH 4P19/4P20; one elective credit.

## Note:

11. ENGL 1 F99 strongly recommended; it is a preferred prerequisite for COSC 3F00.

## Computer science and a humanities or a social science

## Year 1

COSC 1P01, 1P04; MATH 1F65; one credit in other discipline; one science and one social science context credit (see Note 12.).

## Year 2

COSC 2F00, 2P03, 2P07; two credits in other discipline; one humanities context credit (see Note 13.).

Year 3
COSC 3P02, 3P04; one other COSC credit; MATH 1P97/1P98; two credits in other discipline.

Year 4
COSC 3F00; one other COSC credit numbered 3 (alpha) 90 or above; two credits in other discipline numbered 3(alpha) 90 or above; one elective credit.

## Notes:

12. One context credit and one elective credit if the required course in the other discipline is a social science context credit.
13. ENGL 1F99 strongly recommended; it is a preferred prerequisite for COSC 3F00

## Description of courses

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

Most courses involve hands-on programming experience.

## COSC 1P01

Computer programming
An introduction to computers and programming; topics include: computer organization, algorithms, problem solving, and structured programming in a high-level language (currently Modula-2).
Not open to students with credit in COSC 103hc or COSC 195hc. Lectures, 3 hours per week, lab, 2 hours per week, tutorial, 1 hour per week.

COSC 1P04
Programming methodology and data structures
An introduction to software engineering and intermediate level data structures; topics include: top-down design, modular decomposition, abstraction, information hiding, program testing and debugging; strings, files, stacks, queues, lists; advanced programming language features. (Knowledge of Modula-2 is assumed.)
Prerequisite: COSC 1P01(101hc) or 2P07.
Not open to students with credit in COSC 230hc.
Lectures, 3 hours per week, lab, 2 hours per week, tutorial, 1 hour per week.

## COSC 1P90

## Computer applications

An introduction to computers and their use. This course introduces word processing, spreadsheets, data management and statistical analysis on micro computers. This is a nonprogramming course.
A computer science major or combined major may not hold major credit for this course.
May not normally be taken concurrently with or after receiving credit for

COSC 1P01(101hc).
Not open to students with credit in COSC(MGMT)194hc taken in 1985/86 or 1986/87.
Lectures, 2 hours per week, lab, 2 hours per week, tutorial 1 hour per week.

COSC 1P91
Introduction to computing (also offered as MGMT 1P94) An introduction to computers and computer programming for students not intending to major in computer science. Students will choose to study one of a number of programming languages by selecting the appropriate language tutorial. Students in the course will develop a number of computer programs.
A computer science major or combined major may not hold major credit for this course.
May not normally be taken concurrently with or after receiving credit for COSC 1P01(101hc).
Not open to students with credit in
COSC 193hc or COSC(MGMT) 194hc.
Lectures, 2 hours per week, lab, 2 hours per week, tutorial, 1 hour per week.

## COSC 2F00

## Computer systems

An introduction to computer architecture and assembly language programming, emphasizing a specific machine architecutre (currently the VAX computer). Topics include: assembly language programming, macros, microprogramming, elementary logic circuits, basic computer architecture. Prerequisite: COSC 1P04(104hc) and MATH 1F65(165).
Not open to students with credit in COSC 2P02 and/or 2P12(200).
Lectures, 3 hours per week, lab, 2 hours per week.

## COSC 2P03

## Advanced data structures

Advanced data structures and an introduction to file structures; the implementation and usage of data structures; topics include: trees, graphs, advanced list structures, introduction to file organizations and database
structures. (Knowledge of Modula-2 is assumed.)
Prerequisite: COSC 1P04(104hc) and MATH 1F65(165).
Lectures, 3 hours per week, lab, 2 hours per week

## COSC 2P07

## Programming languages

Advanced introduction to a number of programming languages. Students will select one tutorial for each language (minimum of two) they wish to study. Care should be taken to select languages to meet the needs of subsequent courses. A list of languages available can be obtained from the department secretary. Prerequisite: COSC 1P04 or permission of the chairperson. Not open to students with credit in COSC 2P04, 3P77 or 4P17. Tutorials, 1 hour per week per language; lab, 2 hours per week per language.

## COSC 3F00

Project organization and management
An introduction to the development of medium to large scale software projects and discussion of professional issues in computing; topics include: systems analysis, the software development cycle, analysis, design, coding, testing, integration, installation, maintenance;
project teams, project management; legal, ethical, moral and social issues. The class will be involved in the development of a major project in a team environment. (Knowledge of Modula-2 is assumed.)
Prerequisite: COSC 2P03(203hc), 2P07 and preferably ENGL 1F99(199).
Not open to students with credit in
COSC $351 \mathrm{hc} / 398 \mathrm{hc}$ or 390.
Lectures, 3 hours per week.

## COSC 3P01

## Data communications

An introduction to data communications with emphasis on computer communications networks; topics include: basic concepts of data communications, transmission media, multiplexing and switching techniques, error recovery, network architecture and topology, communications protocols,
local area networks and public data networks.
Prerequisite: COSC 2F00 (2P02/2P12 or 200), MATH 1F65(165).
Not open to students with credit in COSC 314hc.
Lectures, 3 hours per week.

## COSC 3P02

Principles of operating systems
An introduction to computer operating systems from a user's viewpoint. Emphasis is on the functionality of operating systems rather than their implementation. Topics include: file, processor, input/output, and memory management; concurrent processes. Prerequisite: COSC 2 F 00 (2P02 or 200).

Not open to students with credit in COSC 312hc.
Lectures, 3 hours per week.

## COSC 3P04

## Introduction to user interfaces

Introduction to the study of design of human/computer interfaces. Topics include: human factors (design and support of systems for human use), command languages, grammars, menu and window systems, user documentation and on-line help systems.
Prerequisite: COSC 2P03 (203hc). Not open to students with credit in COSC 4V97.
Lectures, 3 hours per week.

## COSC 3P13

Principles of programming languages
The fundamental concepts of highlevel programming languages are discussed with references to both traditional and modern languages. Topics include: data types, data control and bindings, sequence control, modularity and separate compilation and compiled vs. interpreted languages. Prerequisite: COSC $2 \mathrm{~F} 00(2 \mathrm{P} 12$ or 200 ) and 2P07.
Not open to students with credit in COSC 295hc or COSC 303hc. Lectures, 3 hours per week.

## COSC 3P32

Database management
Fundamental database concepts: specification and design of databases
and applications; the relational model and processing with SQL; microcomputer databases; the CODASYL DBTG model; database administration; fundamentals of distributed databases. (Knowledge of C or Cobol assumed.) Prerequisite: COSC 2P03(203hc). Not open to students with credit in COSC 342hc.
Lectures, 3 hours per week.
COSC 3P71
Artificial intelligence
(formerly COSC 4P71)
An introduction to the study of artificial intelligence; topics include: heuristic programming, analysis of solution space searching, pattern recognition, artificial learning, decision making, and problem solving; problem areas discussed include: game playing, text recognition, natural language translation, and question answering. (Knowledge of LISP assumed.) Prerequisite: COSC 2P03(203hc). Not open to students with credit in COSC 4P71 (470 or 472 hc ). Lectures, 3 hours per week.

## COSC 3P78

Interactive computer graphics Line and raster graphics, display processors, display files, graphical transformations, graphics hardware, interactive techniques, graphics languages, introduction to curved surfaces and the hidden line problem. (Knowledge of C and Pascal assumed.) Prerequisite: COSC 2P03(203hc). Not open to students with credit in COSC 376 hc or 380 hc .
Lectures, 3 hours per week, lab, 2 hours per week.

## COSC 3P91

## Computer system management (formerly COSC 4P31)

An introduction to management of a computer installation; a discussion of the physical installation of a computer: layout, site preparation, environmental control, fire protection, insurance, and security of the installation; other topics include: usage accounting, system balancing and tuning, staffing, contracts, and the implications of federal and provincial regulations.
Prerequisite: COSC 3P02(302hc).

Not open to students with credit in COSC 4P31.
Lectures, 3 hours per week.

## COSC 3P92

Computer architecture
(formerly COSC 3P21)
Variations in computer architectures including: different data types and operations, instruction sets, addressing spaces, store structures and I/O
facilities of various machines. Autonomous processors and specialized computers.
Prerequisite: COSC 2F00(2P02 or 200).

Not open to students with credit in COSC 3P21 or 392 hc .
Lectures, 3 hours per week, lab, 3
hours per week for 6 weeks.
COSC 3V90-3V99
(formerly COSC 3P97)
Computing topics I
Selected topics in computer science and information processing. Prerequisite: permission of the chairperson.

COSC 4F70
Introduction to cognitive science (also offered as PSYC 4F70)
The use of computers in the creation of models of human information processes. Such computer models are examined from a computational, psychological and philosophical perspective in order to emphasize the interdisciplinary nature of cognitive science. (Knowledge of LISP assumed.)
Prerequisite: permission of the instructor.
Not open to students with credit in
COSC 3V90 or 4V90 (1987-88).
Lectures, 3 hours per week, lab, 1 hour per week.

## COSC 4P07

## Computing project I

A half year project course under the supervision of a faculty member from the department.
Prospective students should contact the project course coordinator, prior to registration, for further details of requirements and available projects. Prerequisite: $\operatorname{COSC} 3 F 00(300)$.

## COSC 4P13

## Operating systems: design and implementation

The design and implementation of operating systems including user interface, process management, I/O device control, memory management and file systems. The practical component will involve the extension and/or modification of an existing operating system. (Knowledge of C assumed.)
Prerequisites: COSC 2 F 00 (2P12 or 200) and 3P02(302hc).

Not open to students with credit in COSC 412hc.
Lectures, 3 hours per week.

## COSC 4P14

## Computer networks

The principles of computer network design and implementation with the OSI reference model as framework. Topics include: functional layers of the OSI model, subnetwork design for local and wide-area communication, methods and protocols for provision of network services.
Prerequisite: COSC 3P01(301hc), 3P02(302hc), MATH 3F65(365). Lectures, 3 hours per week.

## $\operatorname{COSC} 4 \mathrm{P} 21$

## Computer logic design

Review of basic logic concepts; mixed logic, algorithmic state machines; topdown design of logic systems using integrated circuit elements; design of a small computer.
Prerequisite: COSC 2F00(2P02 or 200).

Not open to students with credit in COSC 393hc.
Lectures, 3 hours per week.

## $\operatorname{COSC} 4 \mathrm{P} 22$

## Real-time computing systems

Computer systems used to observe and control a physical process or object, typically sensor or clock driven. A structured approach to real-time systems development based on a rigorous model for system behavior. Implementation using appropriate hardware and software.
Prerequisite: COSC 3P02(302hc). Lectures, 3 hours per week.

COSC 4P27
Microprocessor systems Historical development of microprocessors; microprocessors and their operations, system support components, microprocessor systems, lowlevel programming, software support, interfacing to the real world, systems development, advanced microprocessors.
Prerequisite: COSC 2F00 (2P02/2P12 or 200).
Not open to students with credit in COSC 322 hc or COSC 394 hc .
Lectures, 3 hours per week, lab, 2
hours alternate weeks.

## COSC 4P32

## Personal computing systems

An investigation of a modern microcomputer system, primarily from the perspective of the operating system; programming to interact with the operating system. Topics include: memory management, file management, windows, menus, events and graphics. (Knowledge of C and Pascal assumed.)
Prerequisite: COSC 3P02(302hc). Lectures, 3 hours per week.

## COSC 4P75

## Compiler construction

An introduction to the study of compilers; topics include: lexical, syntactic and semantic analysis of high level languages; symbol table organization; code generation and optimization. Prerequisite: COSC 3P13(313hc). Not open to students with credit in COSC 395hc.
Lectures, 3 hours per week.

## COSC 4P77

Discrete event simulation
(also offered as MATH 3P57) Classification of simulation problems; discrete, continuous, Monte Carlo, general discrete modeling concepts, .discrete system models; basic analysis techniques: sampling, estimation, inductive inference, random number generators, queuing theory, time series analysis; simulation experiments: variance reduction techniques, optimization procedures, sample size and stopping rules; modeling techniques for system inputs; verification and validation procedures; a critique of the
simulation approach.
Prerequisite: COSC 1P04(104hc), MATH 1P97/1P98(197hc/198hc). Lectures, 3 hours per week.

## COSC 4P78

## Robotics

Computer control aspects of robots with special emphasis on some applicable artificial intelligence techniques; topics include robot sensors, end effectors, actuators, vision and tactile sensing, voice synthesis and recognition, expert systems and robot programming.
Prerequisite: COSC 2F00(2P02/2P12 or 200), 3P71(4P71), MATH 3F65. Lectures, 3 hours per week, lab, 1 hour per week.

COSC 4P79
Expert systems
Development of expert systems. Topics include: recognition of problems solvable by an expert system; knowledge engineering; languages for expert systems development. Students will experiment with expert system development using an expert system shell and expert system building tool. (Knowledge of LISP and Prolog assumed.)
Prerequisite: COSC 2P03(203) and 3P71(4P71).
Not open to students with credit in
COSC 397hc (1986-87) or 3V97 (1987-88).
Lectures, 3 hours per week, lab, 2 hours per week.

## COSC 4P98

Computing project II
A half year project course under the supervision of a faculty member from the deparment.

Prospective students should contact the project course coordinator, prior to registration, for further details of requirements and available projects. Prerequisite: COSC 4P07(407hc).

COSC 4V90-4V99
Computing topics II
(formerly COSC 4P97)
Selected topics in computer science and information processing. Prerequisite: permission of the chairperson.

## Economics

## Officers of instruction

## Chairperson

Roberta E. Robb
Isidore J. Masse (as of July 1, 1989)

## Professor

Mohammed H. Dore
Associate professors
Robert W. Dimand
Lorraine B. Eden
Joseph Kushner
Isidore J. Masse
Roberta E. Robb
Lewis A. Soroka
Assistant professors
Hasan Imam
Zisimos Koustas
Felice F. Martinello
Thomas A. Peters
William Veloce
Farrokh Zandi

## Lecturers

Steven J. Renzetti
Anthony J. Ward
Professor emeritus
Maurice F. Perkins

## General information

## Schmon tower 1217

Economics is the study of how people and society choose to employ scarce resources to produce various goods and services over time and distribute them for consumption among various groups in society. The basic theoretical framework in economics is divided into two parts: micro-economic theory, where the focus of analysis is on the determination of prices and the allocation of scarce resources among competing uses; and macro-economic theory, which focuses on the level of utilization of resources--especially the level of employment and the general level of prices. The basic theoretical
tools are then applied to the analysis of problems with respect to the labor market, industrial organization, international trade, economic development, urban studies, public finance, etc. From these analyses, theoretical predictions emerge which are often used as a basis for the formulation of economic policy.

ECON 1P91/1P92(191hc/192hc) are prerequisites for all other economics courses.

All students in economics, especially those proceeding to graduate work or to a career in the civil service, will be encouraged to become proficient in a language other than English (normally French).

A knowledge of the other social sciences is advisable for all students in economics programs. Students are encouraged to consider courses in administrative studies, sociology, politics and history.

Mathematics is an important analytical tool for professional economists. Students intending to pursue graduate work are strongly advised to take additional mathematics courses and should consult the department regarding appropriate choices.

Students who wish to qualify for the civil service ES1 classification are reminded that the minimum requirement for such classification is eight credits in economics.

## Pass program

Seven and one half credits are required for a pass degree in economics.

## Year 1

ECON 1P91/1P92; MATH 1P60/1P97; one humanities and one science context credit; one elective credit.
Please note: Students having two or more Grade 13 MATH credits with an average mark of at least 75 per cent, or who have completed MATH 1P97 without completing MATH 1P60 may
be exempted from MATH 1P60. MATH 2P60 or an economics course in proper sequence must be substituted for MATH 1P60 in such cases.

## Year 2

ECON 2P21/2P22, 2P31/2P32, 2P90; one economics credit; MATH 1P98; one elective credit.

Year 3
Three year 3 economics credits; two elective credits.

## Honors program

## Years 1, 2 and 3

As in pass program with the exception that ECON 3 P91 is required, and should be taken prior to year 4.

## Year 4

ECON 3P90, 4F90, 4P13, 4P14; one and one half year 3 or year 4 level economics credits; one elective credit.

## Combined major programs

Students may take economics as part of a combined major pass or honors program. The programs for combined degrees in administrative studies, computer science, geography, mathematics, and politics are listed below. Other combinations are available; students may consult the department about these programs.

## Economics and Administrative Studies

Honors program

## Year 1

ECON 1P91/1P92; MGMT 1P91/1P92; MATH 1P60/1P97; POLI 1F90; one science or humanities context credit.

## Year 2

ECON 2P21 or 2P23 (with permission of the department); ECON 2P22, 2P90, ACTG 2P11/2P12; MGMT 3F51 or MGMT 3P50/POLI 3P65;

MATH 1P98; one science or humanities context credit (whichever was not taken in year 1).

## Year 3

ECON 2P31/2P32, one other economics credit; FNCE 3P92/3P93; MGMT 3P41/3P42; MKTG 3P22/3P24.

Year 4
ECON 3P90, 3P91, 4P13, 4P14;
MGMT 1P95, 2P40; one credit in
ACTG/FNCE/MGMT/MKTG; one elective credit.

## Economics and Computer

 ScienceHonors program

## Year 1

ECON 1P91/1P92; COSC 1P01/1P04; MATH 1F65, 1P97/1P98; one science context credit.

Year 2
ECON 2P21/2P22, 2P31/2P32; COSC $2 \mathrm{~F} 00,2 \mathrm{P} 03 / 2 \mathrm{P} 07$; one humanities context credit (see Note 1.).

Year 3
ECON 2P90; one and one half year 3 or year 4 level economics credits; COSC 3P02, 3P04; one computer science credit; one elective credit.

## Year 4

ECON 3P90, 3P91, 4P13, 4P14; COSC 3 F 00 ; one COSC credit numbered 3(alpha) 90 or above; one elective credit.

Note 1.
ENGL 1F99 is strongly recommended; it is a preferred prerequisite for COSC 3F00.

## Economics and Geography

Pass program
Year 1
ECON 1P91/1P92; GEOG 1F90;
MATH 1P60/1P97; one humanities and one science context credit.

Year 2
ECON 2P21/2P22, 2P31/2P32; MATH 1P98/ECON 2P90 or GEOG 2P07/ 2 P 08 ; GEOG 2P02, 2P03, 2 P 06 and one further half credit in geography.

Year 3
Two year 3 credits in economics; GEOG 3P57; one ane one half year 3 credits in geography from group A (see
Geography section of the calendar) excluding GEOG 2P90, 2P91 and 2P92; one elective credit.

Honors program
Years 1, 2 and 3
As in pass program.
Year 4
ECON 3P90, 3P91, 4P13, 4P14;
GEOG 4F99; one year 4 credit in geography from group $A$; one elective credit.

## Economics and Mathematics

Pass program

## Year 1

ECON 1P91/1P92; MATH 1P12, 1P93; MATH 1P94 or 1P95; COSC 1P91; one humanities and one science context credit.

Year 2
ECON 2P21/2P22, 2P31/2P32; MATH 1P98/ECON 2P90 or MATH 2F96 (the latter is the prerequisite for MATH 4 F 21 in the honors program); MATH 2F95, 2P20, 2P60.

## Year 3

ECON 3P58/4P58 or 3P59/4P59; two
year 3 economics credits; MATH
2 F 10 ; one elective credit.
Honors program
Years 1, 2 and 3
As in pass program.
Year 4
ECON 3P58/4P58 or 3P59/4P59
(whichever was not taken in year 3),

3P90, 4F90, 4P13, 4P14; MATH 4F21; one half credit elective.

## Note:

MATH 2F96 is a prerequisite for
MATH 4F21 and must be taken for the honors program.

## Economics and Politics

Pass program
Year 1
ECON 1P91/1P92; MATH 1P60/1P97;
POLI 1F90; one humanities and one science context credit.

## Year 2

ECON 2P21/2P22, 2P31/2P32; MATH 1P98/ECON 2P90; two politics credits including POLI 2P01/2P80(or 2P81).

## Year 3

Two year 3 economics credits; two year 3 politics credits; one elective credit.

Honors program
Years 1, 2 and 3
As in pass program with the exception that POLI 2F90 is recommended. If POLI 2P01 is taken, one of POLI 3P05, $4 \mathrm{P} 01,4 \mathrm{P} 02$ or 4 P 03 is required by the end of year 4.

## Year 4

ECON 3P90, 3P91, 4P13, 4P14; two year 4 politics credits (including POLI 3P91 (or 3P81); one elective credit.

Economics and Urban and Environmental Studies

See Urban and Environmental Studies.

## Bachelor of Business Economics

See separate calendar entry for Bachelor of Business Economics degree requirements and for transition to the honors economics degree.

## Description of courses

Please note that not all courses are offered in every session. Refer to applicable term timetable for details.

## ECON 1P91

Principles of microeconomics
An introduction to microeconomics. Topics include the nature of economics, the price system, demand, production and cost, markets and pricing, factor pricing and the distribution of income.
Not open to students with credit in ECON 190.
Lectures, seminar, 4 hours per week.

## ECON 1P92

Principles of macroeconomics An introduction to macroeconomics. Topics include the nature of economics, the determination and control of national income, money, banking and monetary policy, macroeconomic policy and the balance of payments. Not open to students with credit in ECON 190.
Lectures, seminar, 4 hours per week.

## ECON 2F95

Canadian economic policy
Canadian economic and business problems and policies. Specific topics will vary from year to year and may include stabilization policies, competition policies, tax policies, foreign trade and exchange policies, etc.
Prerequisite: ECON 1P91/1P92
(191hc/192hc).
Lectures, 3 hours per week.

## ECON 2P09

Canadian economic history
The economic development of Canada. Prerequisite: ECON 1P91/1P92
(191hc/192hc).
Lectures, 3 hours per week.

## ECON 2P10

United States economic history
The economic development of the United States.
Prerequisite: ECON 1P91/1P92
(191hc/192hc).
Lectures, 3 hours per week.

## ECON 2P11

European economic history
The economic history of the western world including an analysis of the factors explaining the industrial revolution.
Prerequisite: ECON 1P91/1P92
(191hc/192hc).
Lectures, 3 hours per week.

## ECON 2P15

The economics of unions
Trade unions in the marketplace.
Topics such as: theory of collective
bargaining, unions and discrimination, the effect of unions on productivity, the impact of unions on relative wages and income distribution, how unionized markets influence national output, the political and economic power of unions and the differences between public and private sector unions will be discussed. Prerequisite: ECON 1P91/1P92 (191hc/192hc).
Lectures, 3 hours per week.

## ECON 2P17

## Economic development

The economic factors affecting the growth of developing countries. Topićs examined include growth models, inequality and poverty, education, urbanization, agriculture, international trade, and the historical emergence of today's underdeveloped nations.
Prerequisite: ECON 1P91/1P92
(191hc/192hc).
Not open to students with credit in ECON 317hc.
Lectures, 3 hours per week.

## ECON 2P21

## Intermediate microeconomics I

The fundamental demand and supply model including individual consumer and producer theory, the basic market structure of a perfectly competitive industry and an introduction to imperfectly competitive markets. Applications of theory are emphasized throughout the course.
Prerequisite: ECON 1P91/1P92 (191hc/192hc).
Not open to students with credit in ECON 201, 203, 251 he or 2 P23. Lectures, seminar, 4 hours per week.

ECON 2P22
Intermediate macroeconomics I
The main determinants of aggregate output and national income in an open economy with the basic IS-LM model. Topics will include money and interest, trade and capital flows under different exchange rate regimes.
Prerequisite: ECON 1P91/1P92 (191hc/192hc).
Not open to students with credit in ECON 202, 203, 252hc.
Lectures, seminar, 4 hours per week.

## ECON 2P23

## Managerial economics

The application of fundamental microeconomic concepts to business decision making. Topics include consumer theory, production theory and the various market structures. Prerequisite: ECON 1P91/1P92 (191hc/192hc).
Not open to students with credit in ECON 201, 203, 2P21( 251 hc). This course is primarily designed for students in the honors administration program.
Lectures, seminar, 4 hours per week.

## ECON 2P31

## Intermediate microeconomics II

A continuation of ECON 2P21. Topics include the models of market structure such as monopoly, duopoly, oligopoly and monopolistic competition; the demand and supply of factors of production under perfect and imperfect markets; and an introduction to the general equilibrium model and welfare theory. Applications of theory areemphasized.
Prerequisite: ECON 2P21 (221hc) or 2P23.
Not open to students with credit in ECON 201; 203.
Lectures, 3 hours per week.

## ECON 2P32

## Intermediate macroeconomics II

 A continuation of ECON 2 P 22 with an extension of the macroeconomic model to include the price level. Both aggregate demand and aggregate supply are studied. Topics will include money supply, inflation, unemployment, and the effectiveness of monetary and fiscal policy in an open economy.Prerequisite: ECON 2P22(222hc).
Not open to students with credit in ECON 202, 203.
Lectures, 3 hours per week.

## ECON 2P90

Introduction to econometrics
Probability, random variables and density functions; correlation analysis; estimation and hypothesis testing in the classical linear regression model. Practical applications to different areas of economics and business.
Prerequisite: MATH 1F92(192), or 1P98(198hc), or equivalent; ECON 1P91/1P92(191hc/192hc).
Not open to mathematics majors, or students who have taken or are taking MATH 2F96(296).
Lectures, seminar, 4 hours per week.

## ECON 3F02

## History of economic thought

The development of economic analysis including mercantilism, the classical school, Marx, marginalism, Keynes, and others.
Prerequisite: ECON 2P21(221hc) or 2 P 23 or equivalent.
Lectures, 3 hours per week.

## ECON 3F03

## Money and banking

Topics include the flow of funds, a detailed analysis of the demand for, and supply of, money, the level and structure of interest rates, the behavior of financial institutions and issues in monetary policy.
Prerequisite: ECON 2P21(221hc) or 2P23, ECON 2P22(222hc) or equivalent.
Lectures, 3 hours per week.

## ECON 3F06

## Industrial organization

The structure, conduct and performance of industrial markets with readings on the role of government in maintaining effective competition. Prerequisite: ECON 2P21 (221hc) or 2P23 or equivalent.
Lectures, 3 hours per week.

## ECON 3F07

Comparative economic systems
Alternative economic systems, including centrally directed economies, with
emphasis on planning as a substitute for markets.
Prerequisite: ECON 2P21(221hc) or, 2P23 or equivalent.
Lectures, 3 hours per week.
ECON 3P11
International trade
The pure theory of international trade and commercial policy.
Prerequisite: ECON 2P21(221hc) or 2 P 23 or equivalent.
Not open to students with credit in
ECON 301 or 4P21.
Lectures, 3 hours per week.

## ECON 3P12

## International payments

Foreign exchange markets and the balance of payments, adjustment in the balance of payments and international monetary institutions.
Prerequisite: ECON 2P22(222hc) or equivalent.
Not open to students with credit in ECON 301 or 4P21.
Lectures, 3 hours per week.
ECON 3P13
Economics of the multinational enterprise
Economic theory of, and public policy towards, the multinational enterprise. Topics include: theories of foreign direct investment, macroeconomic and microeconomic effects of direct investment in host countries, home country issues, industry studies, public policy towards multinationals.
Prerequisite: ECON 2P21 (221hc) or 2P23 or equivalent.
(ECON 3P11 is recommended).
Lectures, 3 hours per week.

## ECON 3P14

Public sector economics: expenditure The role and nature of the government sector; economics of public expenditure with reference to equity and efficiency considerations; techniques of public expenditure analysis; intergovernmental fiscal relations and economics of public debt.
Prerequisite: ECON 2P21 (221hc) or 2 P 23 or equivalent.
Not open to students with credit in ECON 304 or 4P15. Lectures, 3 hours per week.

ECON 3P15
Public sector economics: taxation An introduction to the theory of taxation; economic consequences of various federal and provincial taxes. Theory of optimum taxation; analysis of Canadian tax system.
Prerequisite: ECON 2P21(221hc) or 2 P 23 , or equivalent.
(ECON 3P14 is recommended).
Not open to students with credit in ECON 304 or 4P15.
Lectures, 3 hours per week.

## ECON 3P16

## Economic growth and business cycles

The features of business cycles as well as the main theories that attempt to explain the cyclical fluctuation of total output and employment. Attention will also be given to postwar business cycles in Canada.
Prerequisite: ECON 2P22(222hc) or equivalent.
Lectures, 3 hours per week.

## ECON 3P18

## Urban economics

Theories of location, city formation and urban spatial structure. Selected urban problems, e.g. housing, transportation, poverty, financing of municipal governments and the economics of city size. Social welfare implications of problems and policies are stressed.
Prerequisite: ECON 2P21 (221hc) or 2 P 23 or equivalent.
Not open to students with credit in ECON 308.
Lectures, 3 hours per week.

## ECON 3P19

## Regional economics

Theories of regional income determina-
tion; classical and other theories of regional growth; regional business cycles. Canadian regional disparities and the nature of the 'Canadian Economic Union'. Regional development policies in Canada, the U.K. and France.
Prerequisite: ECON 2P22(222hc) or equivalent.
Not open to students with credit in ECON 308.
Lectures, 3 hours per week.

## Economics

## ECON 3P24

## Labor economics

Introduction to the economics of the labor market. Topics include the demand for labor; the supply of labor; investment in human capital. Policy applications are stressed.
Prerequisite: ECON 2P21(221hc) or 2P23 or equivalent.
Not open to students with credit in ECON 205.
Lectures, 3 hours per week.

## ECON 3P25

Topics in labor economics
Topics may vary from year to year, but examples are as follows: the economics of trade unions; discrimination in the labor market; unemployment; labor migration; unemployment and inflation.
Prerequisite: ECON 2P21(221hc) or 2 P 23 or equivalent. (ECON 3P24 is recommended.)
Not open to students with credit in ECON 205.
Lectures, 3 hours per week.

## ECON 3P26

## Monetary theory

Theories of the role of money in the determination of output and the price level, starting from the controversies of the banking and currency schools.
Other topics include the quantity theory of money, interpretations of Keynes, as well as the quantity theory in the form of Rational Expectations. Emphasis on contemporary issues such as government deficit-financing and money neutrality.
Prerequisite: ECON 2P22(222hc) or equivalent.
Not open to students with credit in ECON 4P26.
Lectures, 3 hours per week.

## ECON 3P27

The economics of natural resources The application of economic analysis to the management of natural resources; market failure, environmental efforts and conservation policies; both non-renewable resources such as minerals and oil, and renewable resources such as fisheries will be considered.

Prerequisite: ECON 2P21(221hc) or 2P23 or equivalent.
Lectures, 3 hours per week.
ECON 3P58
Operations research methods A
(also offered as MATH 3P58)
Principles of operations research; Lagrange multipliers, with applications to LP; network models and generalized network models; elements of dynamic programming; scheduling (criteria and algorithms); integer programming (theory and practice); elements of quadratic programming; optimization and quasi-Newton methods; discussion and analysis of selected cases. Prerequisite: MATH 2P60(260hc). Lectures, 4 hours per week.

Note: ECON 3P58/4P58 and 3P59/ 4P59 are offered in alternate years.

## ECON 3P59

Operations research

## methods $B$

(also offered as MATH 3P59)
Principles of modeling; decision
theory, subjective probability, and
Bayesian statistics; simulation;
sampling theory; design and analysis of experiments; discussion and analysis of selected cases.
Prerequisite: MATH 2P60(260hc) or permission of the instructor. Lectures, 4 hours per week.

## ECON 3P90

## Intermediate econometrics

(formerly ECON 4P12)
Specification, estimation, hypothesis testing and prediction with the classical linear regression model. Relaxation of some of the standard assumptions of the regression model pertinent to economic modeling such as autocorrelation, heteroscedasticity, stochastic regressors will be studied. An introduction to simultaneous equations modeling. Course blends theory and application with examples taken from many different areas of economics. Prerequisite: ECON 2P21(221hc) or 2P23, 2P22(222hc), and 2P90(290hc), or permission of the department.
Not open to students with credit in ECON 4P12(412hc).
Lectures, 3 hours per week.

## ECON 3P91

## Mathematical economics

The application of quantitative techniques to economic theory and business problems. Quantitative techniques will include differential calculus, integral calculus, differential and difference equations and matrix algebra. Applications of quantitative techniques to business and economics will include inventory control, maximizing tax revenues, utility maximization, producer and consumer surplus, growth theory, etc. Wherever possible the application of the quantitative techniques will be explained in an economic context.
Prerequisite: ECON 2P21(221hc) or 2P23, ECON 2P22(222hc) or equivalent; MATH 1P97(197).
Not open to students with credit in MATH 411hc or students majoring in mathematics or in general studies programs with a major focus in mathematics.
Lectures, 3 hours per week.
ECON 3P92

## Forecasting in economics

Forecasting methods in business and economics such as: time series extrapolative methods, Box-Jenkins, and econometric model based approaches. Combined forecasting methods and their evaluation. Practical applications in business and economics will be emphasized.
Prerequisite: ECON 2P21(221hc) or 2P23; ECON 2P22(222hc) and 2P90(290hc).
Lectures, 3 hours per week.

## ECON 4F90

## Research topic

A program of semi-independent reading and research under the supervision of a member of the staff on a topic acceptable to the department.
Prerequisite: restricted to students in year 4 who are taking an honors degree in economics.

## ECON 4P13

## Advanced macroeconomics

Advanced macro theory supplemented with readings and discussions of recent periodical literature.
Prerequisite: fourth year honors
standing or permission of the department.
Lectures, 3 hours per week.

## ECON 4P14

## Advanced microeconomics

Advanced micro theory with emphasis on mathematical presentation. Topics covered will include theory of consumer behavior, theory of the firm market equilibrium, imperfect competition, welfare economics, input-output analysis, game theory and linear programming.
Prerequisite: fourth year honors standing or permission of the department.
Lectures, 3 hours per week.

## ECON 4P15

## Advanced public finance

Selected topics in taxation and public expenditure will be discussed. Topics in taxation such as incentive effects of taxation on labor supply, saving and risk-taking, analysis of tax incidence and theory of optimal taxation; topics in public expenditure such as theory of public goods, public enterprises, costbenefit analysis, intergovernmental fiscal relations and theory of social choice.
Prerequisite: ECON 2P31/2P32(231hc/ 232 hc ) and 3P91(391hc) or permission of the department.
Lectures, 3 hours per week

## ECON 4P21

Advanced international economics Selected topics in international trade and finance. Topics in international trade may include recent theories of trade, strategic behavior in trade policy, tariff and non-tariff barriers and the theory of economic integration; topics in international finance may include the recent theories of balance of payments and exchange rate determination, exchange rate dynamics, currency substitutions and international monetary arrangements.
Prerequisite: ECON 2P31/2P32
(231hc/232hc) and 3P91(391hc) or permission of the department. Lectures, 3 hours per week.

ECON 4P26
Advanced monetary economics
The role of money in the macroeconomy: money demand and supply, multi-asset models, the theory of stabilization policy, rational expectations, rules versus discretion, recent Canadian monetary policy, inflation and real interest rates, and money and economic growth.
Prerequisite: ECON 2P31/2P32
( $231 \mathrm{hc} / 232 \mathrm{hc}$ ) and 3P91(391hc) or permission of the department.
Lectures, 3 hours per week.
Note: One of ECON 4P15, 4P21, 4P26
will be offered each year.

## ECON 4P58

Operations research applications A
(also offered as MATH 4P58)
Practice of operations research, investment, and applications of LP to project selection; capital growth; further dynamic programming; location problems; inventory problems; cash flow as an inventory problem; personnel planning, actuarial problems; discussion and analysis of selected cases.
Prerequisite: ECON 3P58(358hc) or permission of the instructor. Lectures, 4 hours per week.

## ECON 4P59

## Operations research applications B

(also offered as MATH 4P59)
Applications of modeling; game theory (Nash equilibrium; two player NZS games, Nash co-operative solution and others); Shapley value, voting power; values of non-atomic games; advertising and sales forecasting in heterogeneous markets; information theory, encoding, cryptography, security and reliability; classification and clustering; models of biological competition and military combat; discussion and analysis of selected cases. Prerequisite: ECON 3P59 (359hc) or permission of the department. Lectures, 4 hours per week.

ECON 4V80-4V89
Topics in public policy
(Also offered as MGMT 4V90-4V99
and POLI 4V10-4V19)
1989-90: (4V80)
Topics in public policy I
(also offered as MGMT 4V90)
Public policy planning, analysis and implementation. The central focus will be on policies relating to growth, price stability, high employment, international trade and exchange rates.
Prerequisite: fourth year honors standing.
Seminars, discussion, guest lecturers, 3
hours per week.
1989-90: (4V81)
Topics in public policy II
(also offered as MGMT 4V91)
Public policy planning, analysis and implementation. The central focus will be on industrial, regional, social and science and technology policies. Prerequisite: fourth year honors standing.
Seminars, discussion, guest lecturers, 3 hours per week.

## Education

## College of Education

## Officers of instruction

## Dean

Peter J. Atherton (until June 30, 1989)
Associate Dean
Allan C. Bennett
Department of Continuing Studies

## Chairperson

## Victor Cicci

Members of this department are selected from the departments of Graduate and Undergraduate Studies in Education and Pre-service Education.

Department of Graduate and Undergraduate Studies in Education

## Chairperson

Patricia Cranton

## Professors

Peter J. Atherton
Robert Knoop
John M. Novak
Associate professors
Allan C. Bennett
Ronald W. Common
Patricia A. Cranton
Kristian Kirkwood
G. Patrick O'Neill

Leonard A. Popp
James Wagner
Alan E. Wheeler
Assistant professors
Richard Bond
Cecilia Reynolds
Rosemary Young
Lecturer
Michael Kompf
Professor emeritus
Reginald B. Moase

Department of pre-service education
Chairperson
Ralph D. Connelly
Professor
Ralph D. Connelly
Associate professors
Joyce Castle
Raymond T. Chodzinski
Victor D. Cicci
W.L. Roger Crane

Donald H. Dworet
Robert C. Henderson
James H. Love
William B. MacDonald
Anthony S. Mollica
Wallace B. Poole
Merle Richards
Adele Thomas
Sybil E. Wilson
Assistant professors
Lynette Fast
John Kearns
Marian R. Walsh
Special lecturers
James W. Kerr
Susan E. Ward
Sessional lecturers
Anne Elliott
Irma Purchase
Tutors
P. Cheevers, Governor Simcoe S.S., computer science
K. Draayer, Governor Simcoe S.S., English
J. Gammage, Sir Winston Churchill
S.S., physical education
B. Hartley, College of Education, Brock, French
G. Huber, Port Colborne S.S., political science
B.L. Lakatos, Grantham High, science, biology
A. Moss, Stamford C.I., biology/chemistry/science/physics
B. Mozina, Beamsville S.S., mathematics
T. Palmer, Lincoln Board Office, business education/accounting
J. Page, St. Catharines Collegiate, secretarial science, marketing/merchandising
R. Rosinski, Bertie Elementary School, Ridgeway, intermediate basics

General information

The College of Education is a fully integrated part of the University occupying its own building on campus. It has its own gymnasium and instructional resource centre including a well equipped micro-computer lab.

The College offers programs leading to BEd and MEd degrees. It also provides courses which can be used as electives in undergraduate programs in the University.

Bachelor of Education programs are field-oriented and are based on an approach unique in Ontario. Much of the orientation to and instruction in professional practice takes place under the supervision of counsellors working with small groups of students in teaching centres located in schools throughout the Niagara peninsula and the city of Hamilton. Students who are accepted into the BEd program to teach in secondary schools are assigned to work with specialized subject area tutors in peninsula high schools.

Those interested in a teaching career in Ontario are advised to read Ministry of Education regulations with respect to teachable subjects as outlined below.

A four year concurrent program in child studies leading to combined BA/ BEd degrees and teacher certification is also available. Interested students should consult the entry under Child Studies.

A program in teaching English as a second language is also available. It should be noted that this program does not lead to Ontario teacher certification. Students who wish to prepare themselves for teaching English as a second language in the public schools of Ontario should first pursue the BEd (Route I) program. Those interested in TESL should consult the Applied Language Studies entry in the calendar.

## Graduate programs .

The College of Education offers a Master of Education degree in curriculum studies, foundations of learning and teaching behavior, and educational administration. For further information and course listings, refer to the Graduate Calendar or contact the Office of the Registrar.

## Undergraduate courses

Undergraduate courses for those interested in obtaining a greater understanding of the field of education are offered for both full and part time students. Undergraduate degree credit may be given for EDUC 1F90, 2F00, 2F01, 3F01, 3P50, 3P51, 3P52.

## Bachelor of Education programs

The College offers three routes leading to the conferring of the BEd degree.

## Route I

Pre-Service program
A BEd program leading to Ontario Ministry of Education certification to teach in the province in the form of the Ontario Teacher's Certificate (OTC).

## Route II

A BEd program open to educators wishing to further their professional education beyond the basic level in specialized areas. Although the program is designed specifically for those who already hold an undergraduate degree and the OTC, enquiries from those who possess equivalent* background are welcomed.

Under the condition noted in program requirements, candidates who hold the OTC at the time of their admission to the program and who successfully complete specified courses in the program will be recommended to the Ministry of Education for the endorsement of their OTC for additional qualifications.
*Equivalence to the OTC will be determined by the chairperson of the
department of Continuing Studies. In general, possession of a teaching qualification valid in a publicly supported school system or a minimum of two years experience teaching in an educational setting for which teacher certification is not a prerequisite for employment would be considered as equivalent.

## Route III

A BEd program leading to the awarding of the BEd as a first degree.

## Pre-Service program

## Admission requirements

## BEd Route I

Candidates are encouraged to have some experience in working with children and youth.

Enrolment in the College of Education is limited to approximately 300 positions. Applicants must have completed the requirements for a bachelor's degree acceptable to Brock University prior to the beginning of classes in September. Selection will be based on the academic average of the best ten university courses and experience as submitted on the Brock Experience Profile form. Only candidates with a minimum $B$ average (equivalent to 75 per cent at Brock) on their top ten courses will be considered. The experience profile is a significant part of the selection process so applicants are asked to fill it out with care.

## Applications must be received by

 December 16, 1989 to be considered and documentation should be received by that time for an applicant to be assured of consideration for the first round of offers in March 1990. All required documentation including official transcripts and experience profiles must be received by February 1, 1990.(i) Primary/Junior
(Kindergarten through Grade 6)
Candidates must have an area of concentration. Some preference will be
given to Primary/Junior candidates with a major in Child Studies.
(ii) Junior/Intermediate
(Grade 4 through Grade 10)
Candidates must have at least THREE full credits in one of the teachable areas as listed under Program requirements.
(iii) Intermediate/Senior
(Grade 7 through Grade 12)
Candidates must have at least FIVE
full courses in one teachable area and THREE full courses in a second teachable area as listed under Program requirements.

Note: An extension of the secondary program is offered in cooperation with the University of Waterloo. Admission is limited to students enrolled at the University of Waterloo with a major in French. For details see the chairperson.

In addition to the general requirements outlined above, candidates for the OTC shall submit the following:
(a) a certificate of birth or baptism, or other acceptable proof of the date and place of birth;
(b) a certificate of change of name where applicable; in the case of a candidate who is a married woman who wishes to have her certificate issued in her married name, a certificate of marriage or other acceptable proof that she is the person referred to in the certificate or other document submitted under clause (a);
(c) proof of freedom from active tuberculosis (O.Reg 407/78, s.2).

Candidates must also:
(d) be able to demonstrate an acceptable level of fluency and accuracy in spoken and written English;
(e) attend an interview, and/or submit a written resume if requested.

Note: An applicant who is not a Canadian citizen or landed immigrant may be admitted to the program for a

## Education

BEd degree. Such persons are eligible for the OTC program where they show evidence of authorization to work in teaching in Canada. Such persons receive a temporary letter of standing (O. Reg. 222/86).

Because of the highly integrated nature of the program, students who have preregistered must be present for orientation on registration day.

A few students who have already completed part of their teacher training elsewhere may be accepted for the BEd/OTC on a part-time basis. For regulations and program details, see the department chairperson.

## Program requirements

Route I
The student in Route I is expected to gain competence in the following main fields of study:
(i) a concentrated study of one of the following combinations:

Primary-Junior division
(Grades K-6)
Junior-Intermediate division
(Grades 4-10)
Intermediate-Senior division
(Grades 7-12).
A student who wishes to specialize at the Junior/Intermediate level must select a teachable subject at the Junior/ Intermediate level. Teaching subjects offered are as follows:
dramatic arts
English
environmental science
French (second language)
geography
history
mathematics
music--vocal
physical and health education
science--general
visual arts.
A student who wishes to specialize at the Intermediate/Senior level must select two teachable subjects at the Intermediate/Senior level. Teaching
subjects offered are as follows:
accounting data processing
marketing and merchandising
secretarial studies
computer science
English (first language)
French (second language)
geography
German
history
Italian
mathematics
physical and health education
science--general
science--biology
science--chemistry
science--physics.
N.B. For information concerning prerequisites for teaching subjects refer to the section on program admission requirements.
(ii) studies in education including learning and development throughout the primary, junior, intermediate, and senior division;
(iii) teaching methods designed to meet the individual needs of pupils;
(iv) the acts and regulations respecting education;
(v) a review of the curriculum guidelines related to all of the divisions and a study of curriculum development;
(vi) ten weeks of practical experience in schools.

The program requirements may be met through the successful completion of a combination of compulsory and elective courses.

The following patterns reflect the combination of compulsory and elective courses necessary to meet Ministry certification requirements.

Compulsory core for all students
EDUC 8D09 - Field studies, individualized instruction and practicum EDUC 8F08 - Teaching techniques for the classroom

EDUC 8 Y04 - Current trends and issues in special education EDUC 8 Y05 - The education enterprise EDUC 8P06 - Classroom dynamics teaching and learning

## Teaching options

Depending on the selected concentration and subject background, each student will select from the following:
a) Primary/Junior compulsory EDUC 8P30 Primary/junior language arts and reading
EDUC 8Y31 - Primary/junior mathematics
EDUC 8 Y 32 - Primary/junior social and environmental studies
two electives from:
EDUC 8Y34 Primary/junior art EDUC 8Y35 Primary/junior music EDUC 8 Y36 Primary/junior physical education
(b) Junior/Intermediate compulsory EDUC 8Y20 Junior/intermediate language arts
EDUC 8Y21 Junior/intermediate mathematics
EDUC 8Y22 Junior/intermediate social studies
EDUC 8Y23 Junior/intermediate science
two electives from:
EDUC 8Y24 Junior/intermediate art EDUC 8 Y 25 Junior/intermediate music EDUC 8Y26 Junior/intermediate physical education EDUC 8 Y27 Junior/intermediate reading
(c) Intermediate/Senior compulsory -

EDUC 8P70 Intermediate basics
two electives from:
EDUC 8P71 Business education intermediate/senior EDUC 8P72 Computer science intermediate/senior EDUC 8P73 Theatre arts intermediate/senior EDUC 8P74 English (first language) intermediate/senior EDUC 8P75 Family studiesintermediate/senior

EDUC 8P76 French as a second language - intermediate/senior EDUC 8P77 Geography intermediate/senior
EDUC 8P78 German intermediate/senior
EDUC 8P79 History and political science - intermediate/senior
EDUC 8P80 Italian and Spanish intermediate/senior
EDUC 8P81 Mathematics -
intermediate/senior
EDUC 8P82 Physical and health
education - intermediate/senior
EDUC 8P83 Science -
intermediate/senior
EDUC 8P84 Visual arts intermediate/senior

In addition to the above requirements the College offers a number of noncredit elective courses which are mounted in order to meet with student interest and professional need. Typical offerings include: audio visual, computer literacy, drama, guidance, outdoor education, religion (R.C.), religion (other).

Candidates who successfully complete one of the patterns described above will be recommended to the Minister of Education, Government of Ontario, for the award of an Ontario Teacher's Certificate. For full time students, these courses are co-requisite and must be taken concurrently. Students will, in consultation with their faculty adviser, choose elective courses as may be appropriate to their academic background and professional plans. An essential part of the pre-service program is visitation to schools for observation and practice teaching. A student whose performance in practice teaching is recorded as seriously inadequate will be assessed externally. The result of this assessment will determine eligibility to proceed with practice teaching. In the interest of the pupils' welfare, the College will exercise the responsibility to remove a student from the classroom where performance so warrants.

Note: Though placements for practice teaching will be arranged by College faculty, transportation for these visits,
many of which require the use of a car, is the responsibility of the student.

For further information regarding the Route I program, candidates should contact the chairperson, Pre-Service department.

## Continuing Studies

## Admission requirements

## BEd Route II

Candidates for admission are required to hold an undergraduate degree acceptable to Brock University or the OTC or its equivalent. Candidates who hold the OTC but who have not completed the requirements for an undergraduate degree may be admitted to Route II and complete the requirements for the BEd. The conferring of the degree will be withheld until evidence of the attainment of the undergraduate degree is presented to the registrar.

Note:
The BEd Route II degree does not lead to the basic teacher certification (OTC) in Ontario. Those interested in obtaining the Ontario Teaching Certificate should refer to the BEd Route I program.

All candidates admitted to the BEd (Route II) should note, however:

1) transcripts showing work completed towards the degree will be available from the registrar;
2) recommendation to the Ministry of Education for endorsement of the OTC is not dependent on a candidate's completing the total requirement for the BEd degree;
3) education courses numbered 9 (alpha) 00 and above may not be used * for initial basic certification (OTC) purposes.

## Advanced standing

Candidates for admission to Route II may be granted advanced standing in one credit at the time of initial application. Advanced standing will be based on the relationship between work already completed and the content of courses required for the Brock degree. Advanced standing will not be granted on the basis of courses credited towards a completed degree or diploma unless such courses have been taken as electives beyond the minimum requirement for the degree or diploma. Students completing continuing studies courses prior to June 30, 1979 cannot count these courses towards the BEd Route II degree. For further information, contact the chairperson, department of Continuing Studies.

## Note Re: QECO

The University has been advised that the Qualifications Evaluation Council of Ontario (QECO)normally accepts each course in the BEd (Route II) program as either a university credit or a Ministry course credit depending upon how the individual wishes the course applied. However, the University cannot guarantee the applicability of any specific course to QECO insofar as salary evaluation is concerned. Students who have concerns in this regard should contact QECO directly.

Where Ministry of Education regulations require documentation of qualifications (i.e., experience, specialized employment), it is the responsibility of the student to provide this documentation to the chairperson of the department of Continuing Studies in the College of Education. Documentation must be complete before any recommendation can be made to the Ministry.

## Program requirements

## Route II

Candidates entering Route II are required to complete a minimum of five credits numbered EDUC 9(alpha) 00 or above, of which a minimum of three will be in a specialized area of study. Specialized areas of study may be identified in the course descriptions
by sequential titling, e.g. EDUC 9F11, Teaching French as a second language, part I; EDUC 9F12, Teaching French as a second language, part II; and EDUC 9F13, Teaching French as a second language, part III. Students who already hold the OTC and who successfully complete courses numbered 9 (alpha) 00 or above will be recommended to the Ontario Ministry of Education for appropriate endorsement of the OTC.

Students should note that the number of hours required for successful completion of these courses is in excess of the number of hours normally allocated to full course equivalents at Brock. The increase is required to satisfy the practicum component.
N.B. All Continuing Studies courses have minimum and maximum enrolments. Courses with enrolments of fewer than 20 students may be cancelled. Candidates are encouraged to apply early. For further information and details of Route II programs, candidates should consult the chairperson, department of Continuing Studies.

## BEd as a first degree

(Does not lead to Ontario certification.)

## Admission requirements

## BEd Route III

Generally speaking, the admission requirements for admission to the BEd (Route III) are the same as those for admission to other undergraduate degrees offered by the University. In addition, the department of Graduate and Undergraduate Studies normally requires that candidates provide evidence of sustained and continuing career interest in an education related occupation. Interested candidates should first contact the chairperson of the department of Graduate and Undergraduate Studies in the College of Education.

## Program requirements

## Route III

Programs of study are individually approved by the department of Graduate and Undergraduate Studies and are usually greater than the minimum requirements outlined below, dependent on the applicant's background. The minimum requirement is ten credits including the following:

Five arts and/or science credits beyond introductory or first year level;

Three credits beyond introductory or first year level from the College of Education (EDUC 2F00, 3F01, or 3F50) or others as approved by the department of Graduate and Undergraduate Studies; and

EDUC 3F99, study undertaken with the guidance and supervision of an assigned faculty adviser.

Note: Should a student's program include graduate courses in education, such courses carry credit for the BEd degree only.

## Description of courses

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

## (Undergraduate courses)

EDUC 1F90, 2F00, 2F01, 3F01, 3P50, 3P51 and 3P52 are available either as electives or as part of a general or integrated studies program. Participants need not be teachers nor do they need to take these courses to enter a teacher certification program. A maximum of five full courses (or equivalent credit) towards a pass BA or BSc and seven full courses (or equivalent) towards an honors BA or BSc degree may be taken from administrative studies, teaching English as a second language or designated education, physical education or recreation courses.

## EDUC 1F90

Introduction to education studies
Major issues and problems in the organization, staffing, and planning of schools and school services today, with special reference to the Niagara peninsula.
Lectures, programmed and supervised study, 3 hours per week.

## EDUC 2F00

Curriculum theory and design Curriculum both as a conceptual scheme based on theories of learning and as a system of complex human interactions in the school and community. Various designs for curriculum planning and associated instructional modes are also examined. Students are expected to design, implement, and evaluate a curriculum plan.
Prerequisite: a course in educational or developmental psychology; or two years of classroom teaching; or permission of the instructor. Lectures, seminar, 3 hours per week, and field work.

## EDUC 2F01

## School learning

(also offered as CHST 2F01)
'The psychological processes involved in learning in a school setting. Current cognitive theories of learning will be applied to examples in each of the major school subject areas with emphasis on the specific nature of the learning associated with each subject. Other topics may include individual differences and problems in evaluating school learning.
Prerequisite: CHST 2 F10 or EDUC 2 F 00 or PSYC 2F90.
Lectures, seminar, 3 hours per week.

## EDUC 3F01

The process of teaching
An introduction to the study of teacher behavior through a systematic exploration of the assumptions, educational purposes, teaching strategies, curricular designs and materials, and the social and psychological theory underlying selected models of teaching. A critical examination of the alternate patterns upon which teachers may model their behavior. Students will be required to familiarize themselves with current
educational concepts and recent literature in the field.
Lectures, seminar, 3 hours per week. (EDUC 3F01(301) is a recommended prerequisite for EDUC(CHST) 3F50.)

## EDUC 3P50

Focus on early childhood education part I
(also offered as CHST 3P50) (formerly part of EDUC (CHST) 3F50) Early childhood education programs for children from birth to age eight. Topics include the historical and societal influences on early childhood education, an examination of program models derived from theories of learning and child development, and research on the effectiveness of these programs.
Enrolment limited to 65 students. If necessary, further sections may be opened.
Prerequisite: CHST 2F10.
Not open to students with credit in EDUC(CHST) 3F50 or 3P51.
Lectures, seminar, 3 hours per week.

## EDUC 3P51

## Focus on early childhood education

 part I(also offered as CHST 3P51)
(formerly part of EDUC(CHST) 3F50)
Early childhood education programs
for children from birth to age eight. Topics include the historical and societal influences on early childhood education, an examination of program models derived from theories of learning and child development, and research on the effectiveness of these programs.
Open only to $\mathrm{BA} / \mathrm{BEd}$ students.
Enrolment limited to 65 students. If necessary, futher sections may be opened.
Prerequisite: CHST 2F10.
Not open to students with credit in EDUC(CHST) 3F50 or 3P50.
Lectures, seminar, 3 hours per week.

## EDUC 3P52

Focus on early childhood education part II
(also offered as CHST 3P52)
(formerly part of EDUC(CHST) 3F50)
Methods in early childhood education
programs for children from birth to age
eight. Topics include a detailed examination of curricula, instructional strategies, and evaluative techniques. Students will be involved in a field placement working with young children in a community setting. Enrolment limited to 25 students, to be determined by academic standing. Prerequisite: EDUC(CHST) 3P51. Not open to students with credit in EDUC(CHST) 3F50.
Lectures, lab/seminar, 4 hours per week.

## (not for undergraduate credit)

## EDUC 3F99 <br> Advanced project in educational studies

Reading, writing and research skills relative to education. A qualifying research paper will be produced in one of several areas such as curriculum theory or design, teacher behavior or educational administration. The paper will be based on a critical examination of educational research accomplished through reviews of educational literature. Some emphasis will be placed upon presentation and discussion of the educational theory presented in the paper.
Prerequisite: approval of the department of Graduate and Undergraduate Studies in Education.
Not available for credit in arts and science programs.
(Not open to students with credit in EDUC 495.)

## (TESL Courses)

## EDUC 4F01

Advanced English grammar (also offered as TESL 4F01) Application of syntactic principles outlined in TESL 2F60. Advanced grammatical analysis techniques applied to the teaching of short essays and research papers.
Prerequisite: TESL 1F91(191), 2F60(260) or permission of the chairperson.
Co-requisite: TESL $4 \mathrm{~F} 02,4 \mathrm{~F} 03,4 \mathrm{~F} 04$, 4F05 or permission of the chairperson. (Does not lead to Ministry of Education qualification to teach in the province of Ontario.)
Lectures, seminar, 3 hours per week.

## EDUC 4F02

## Individual project

(also offered as TESL 4F02)
An individually designed project, carried out through regular class meetings, with the help of a faculty adviser.
Prerequisite: TESL 1F91(191) or permission of the chairperson. Co-requisite: TESL 4F01, 4F03, 4F04, 4 F 05 or permission of the chairperson. (Does not lead to Ministry of Education qualification to teach in the province of Ontario.)
Lectures, seminar, 3 hours per week.
EDUC 4F03

## Audio-lingual skills

(also offered as TESL 4F03)
Theories and methods related to the teaching of English pronunciation and listening comprehension skills. To be considered are the role of contrastive analysis, error analysis and interlanguage, as well as techniques derived from generative phonology. The comprehension-based approach to second-language teaching and the advantages and limits of the language lab will be discussed.
Prerequisite: TESL 1F91(191), 2F50(250) or permission of the chairperson.
Co-requisite: TESL $4 \mathrm{~F} 01,4 \mathrm{~F} 02,4 \mathrm{~F} 04$, 4 F 05 or permission of the chairperson.
(Does not lead to Ministry of Education qualification to teach in the province of Ontario.)
Lectures, seminar, 3 hours per week.

## EDUC 4F04

Curriculum design, methodology and practicum
(also offered as TESL 4F04) An extension of introductory work in TESL 1F91. Examination of the theoretical and historical factors influential in the development of second language curricula since 1960. A project in second language course design during the first term. Practical application of second language teaching methods and approaches. Micro-peer teaching sessions, observation and teaching practice in Brock's Intensive English Language program. Prerequisite: TESL 1F91(191) or permission of the chairperson.

Co-requisite: TESL 4F01, 4F02, 4F03, 4 F 05 or permission of the chairperson. (Does not lead to Ministry of Education qualification to teach in the province of Ontario.)
Lectures, seminar, practice teaching, 3 hours per week.

## EDUC 4F05

Reading in a second language
(also offered as TESL 4F05)
(formerly TESL 3F93)
Various methodologies for reading instruction Fundamental principles and strategies for teaching and studying second-language reading. Opportunities will be provided for students to develop skills in reading assessment, instruction and evaluation. Attention will be devoted to techniques for the analysis and implementation of secondlanguage reading programs.
Prerequisite: TESL 1F91(191) or permission of the chairperson.
Co-requisite: TESL 4F01, 4F02, 4F03, 4 F 04 or permission of the chairperson. Not open to students with credit in TESL 3F93.
(Does not lead to Ministry of Education qualification to teach in the province of Ontario).
Lectures, seminar, 3 hours per week.

## (Pre-service courses)

Courses designated EDUC 8 (alpha) 00 or above are for students enrolled in the BEd Route I program. In addition to the required courses, students must select a minimum number of methods courses according to the level at which they seek certification.

## EDUC 8D09

Field studies, individualized instruction, and practicum
Practical experiences in observing and teaching in schools integrated within college courses, counselling groups, and teaching centre activities. Students will be guided in practice teaching for ten weeks distributed throughout the college year. An essential component of this course is visits to the schools. Required.
Lectures, seminar, practicum.

## EDUC 8F08

Teaching techniques for the classroom
The components of the teaching act are identified and presented in a modular format. The student is guided through a series of specified tasks to practise and gain mastery in each of the required teaching skills.
Required.
Lectures, seminar, practicum.

## EDUC 8P06

Classroom dynamics - teaching and learning
Basic principles of child development and learning which guide the teacher in making decisions about classroom performance. Among the topics explored are perception of self, motivation, conditioning, cognition, intelligence and creativity, and general principles of human development and behavior modification. Modular approach with lecture, independent study, seminar simulations, and guided classroom observations.

## Required.

Lectures, seminar, practicum.

## EDUC 8P30

Primary/junior language arts and reading
The developmental sequence of the four components of communication: listening, speaking, reading and writing; and of the objectives, structure and current approaches to the teaching of language and reading at the elementary level.
Two hours per week.

## EDUC 8P70

## Intermediate basics

Specific teaching and evaluation strategies appropriate to selected units of the grades 7 and 8 core curriculum. The principles and perspectives that underlie the curriculum guidelines of the intermediate division (grades 7-10). Required.
Two hours per week.

## EDUC 8P71

Business education - intermediate/ senior
Teaching methods and curriculum materials for business education courses--accounting, data processing,
marketing and merchandising, secretarial sciences--in the high schools of Ontario.
Two hours per week.

## EDUC 8P72

Computer science - intermediate/ senior
Implementing computer science skills and methods of instruction in a secondary classroom; integrating use of the computer into any department; detailed look at computer science and technology.
Two hours per week.

## EDUC 8P73

Theatre arts - intermediate/senior The purposes of a theatre program in schools and the practice of skills required for managing a theatre class. Some practical experience in theatre work or some formal training at the post secondary level is required.
Two hours per week.

## EDUC 8P74

English (first language) - intermediate/senior
The development of teaching methodology and a personal philosophy of education through active participation and preparation of course material; may include research on the development of curricular units that deal with poetry, the short story, the novel, use and impact of the media.
Two hours per week.

## EDUC 8P75

Family studies - intermediate/senior The content, methodologies and resources for teaching grades 7-13 in the areas of food and nutrition, clothing and textiles, management, the family and the child, housing.
Two hours per week.

## EDUC 8P76

French as a second language intermediate/senior
The theory of and approaches to teaching and learning a secondlanguage; the methodological approaches involved in teaching French as a second language at the intermediate and senior levels.
Two hours per week.

EDUC 8P77
Geography - intermediate/senior Development of a working knowledge of the skills, procedures and content involved in teaching geography at the secondary school level. Student participation is major expectation. Two hours per week.

## EDUC 8P78

German - intermediate/senior
The techniques of teaching German in grades 9-13; design, curriculum documents, lesson planning, evaluation of a student's work, and the place of the language teacher in the school system. Two hours per week.

## EDUC 8P79

History and political science intermediate/senior
The nature of these subjects of the
secondary school program. Emphasis is on development of history skills, curriculum design, analysis of subject guidelines from grade 7 to the O.A.C. Two hours per week.

## EDUC 8P80

Italian/Spanish - intermediate/senior
The secondary school curriculum in Italian and Spanish with emphasis on methodological approaches, examination of available teaching resources and development of new materials.
Two hours per week.

## EDUC 8P81

Mathematics - intermediate/senior Teaching techniques and curriculum materials in mathematics with some focus on teaching mathematics to general level students.
Two hours per week.

## EDUC 8P82

Physical and health education intermediate/senior
The philosophy of physical and health education in grades 7-13; limitations on the physical education program, management in the different learning areas, curriculum and teaching methods, and use of audio-visual aids in health education.
Two hours per week.

EDUC 8P83
Science - intermediate/senior
Teaching science in secondary schools; Ministry, Board and school curriculum documents and other resources in each science area (biology, chemistry, physics, general science) and grade level (9-13) are examined.
Two hours per week.

## EDUC 8P84

Visual arts - intermediate/senior
Studio activity, skills and art forms
appropriate for students in grades 7-13; course planning and teaching methods for group and individual activities in the classroom.
Experience or course work in studio art is a helpful background.
Two hours per week.

## EDUC 8Y04

Current trends and issues in special education
Current legislation and recent developments related to the education of exceptional students.
Required.
Lectures, seminar, practicum.

## EDUC 8 Y05

The education enterprise
An analysis of contemporary theories, issues, and innovations in education. Investigation of the relationship between philosophical principles and the aims of education evidenced in selected educational systems. Study of the acts and regulations regarding education.
Required.
Lectures, seminar, practicum.
EDUC 8 Y20
Junior/intermediate language arts
An integrative approach to spoken and written language in the classroom. Various methodologies are examined in relation to current Ministry guidelines and changing views of language development.
Two hours alternate weeks.
EDUC 8 Y21
Junior/intermediate mathematics
Teaching mathematics at the junior and intermediate levels; looking at materials, games, individualized programs
and workshop methods of teaching mathematics.
Two hours alternate weeks.

## EDUC 8 Y 22

Junior/intermediate social studies Objectives, format, structure, strategies and evaluation of social studies in the junior and intermediate divisions stressing teaching techniques for social studies courses.
Two hours alternate weeks.

## EDUC 8 Y23

## Junior/intermediate science

A practical approach to recent theories in science education, to instruction procedures and handling of science materials in the classroom, laboratory and the field. Interpretation of the Ontario science curriculum.
Two hours alternate weeks.

## EDUC 8Y24

## Junior/intermediate art

The theoretical base for planning and instructing in grades 4-10 with emphasis on art as a discipline with studio, art history, criticism and aesthetics. Two hours alternate weeks.

## EDUC 8 Y25

## Junior/intermediate music

Basic musicology for grades 4-10. No academic background in music is required.
Two hours alternate weeks.

## EDUC 8Y26

Junior/intermediate physical education
Physical education for grades 4-10; setting up programs, planning and organizing lessons, gymnasium procedures, encouraging participation, evaluation procedures.
Two hours alternate weeks.

## EDUC 8 Y27

Junior/intermediate reading
The development of reading in middle childhood and its relationship to language. Teaching techniques, curriculum guidelines, comprehension and diagnosis and remediation of reading difficulties.
Two hours alternate weeks.

## Education

EDUC 8 Y31
Primary/junior mathematics
The ways in which a child learns mathematics and the uses of mathematics for today's child, grades 1-6.
Two hours alternate weeks.
EDUC 8 Y32
Primary/junior social and environmental studies
The how, why and what to teach in environmental studies programs in grades K-6 as directed in the Ministry's curriculum guidelines.
Two hours alternate weeks.

## EDUC 8Y34

## Primary/junior art

The theoretical base for planning and instructing at the primary/junior level; studio skills and art forms appropriate for school use; the teacher's role in meeting the needs and capabilities of the young child as artist.
Two hours alternate weeks.

## EDUC 8Y35

Primary/junior music
The music program at the primary/ junior levels; designed primarily for students with no academic background in music to prepare them to teach music in their own classrooms (K-6). Two hours alternate weeks.

## EDUC 8 Y36

Primary/junior physical education Ways of teaching and organizing physical education activities for grades 1-6 pupils in accordance with Ministry and Board curriculum guides.
Two hours alternate weeks.

## (In-service courses)

Courses numbered 9(alpha)00 or above are for students in the BEd Route II program. Five credits are required, three of which must be in a specialized series.

## EDUC 9F01

Adult education
The needs and characteristics of adult learners and the social systems established to assist them. Preparing
learning materials, planning, imple-
menting, and evaluating programs;
consulting and communicating effec-
tively with adult learners.
Prerequisite: Ontario Teacher's
Certificate.
Not open to students with credit in EDUC 494.
Lectures, seminar, practicum.

## EDUC 9F02

Assessment of teaching performance
Counselling, supervision and evaluation of student teacher performance. The practicum component allows associate teachers to work with student teachers enrolled in the pre-service program at the College of Education. Not open to students with credit in EDUC 470.
Open to certified teachers.
Lectures, seminar, practicum.

## EDUC 9F03

## Childhood education

Evaluation of the child aged four to six, six to eight, or four to eight. Topics include: characteristics of developmental stages, appropriate learning environments, curriculum and evaluation techniques; additional topics include multicultural education, sex role stereotyping, early identification of special learning problems, child abuse and community school relations.

- Open to certified teachers as well as other interested qualified individuals. Not open to students with credit in EDUC 432.
Lectures, seminar, practicum.


## EDUC 9F04

## Integrated arts

The contribution of the arts towards a balanced school program in the primary and junior grades. The development of curriculum and teaching strategies that foster awareness and appreciation of the arts (drama, music, physical education and visual arts) individually and collectively.
Open to certified teachers as well as other interested qualified individuals. Not open to students with credit in EDUC 457.
Lectures, seminar, practicum.

## EDUC 9F05

## Law education

Designed to assist teachers who are either currently teaching or who plan to teach the subjects: law intermedidate/ senior division, business law or Canadian and world concerns courses. An examination of the content, organization and teaching methodology for the study of law at the secondary school level.
Prerequisite: open to teachers and administrators.
Lectures, seminar, practicum.

## EDUC 9F06

## Entrepreneurial studies

Designed for teachers who are presently teaching or who plan to teach Entrepreneurial studies. An examination of the content, organization and teaching methodology for the study of entrepreneurship at the secondary level. Prerequisite: open to teachers and school administrators.
Lectures, seminar, practicum.
EDUC 9F07
Teaching Mohawk/Cayuga
Teaching Mohawk and/or Cayuga as an ancestral language for the purposes of retention and maintenance; the collection of language samples and preparation of teaching aids.
Open to certified teachers with proficiency in either language adequate for teaching at a beginning level. Lectures, seminar, practicum.

## EDUC 9F11

Teaching French as a second language part I
Teaching French as a second language as outlined in the Ministry's curriculum guidelines for the primary, junior, and intermediate divisions; the aims of the French program in Ontario schools; methodology; an introduction to linguistics; audio-visual devices; demonstration classes and practice teaching. Open to certified teachers as well as other interested qualified individuals who qualify by successful completion of an oral and written test. Lectures, seminar, practicum.

## EDUC 9F12

## Teaching French as a second language part II

Teaching French as a second language in core and immersion programs at the primary, junior, and intermediate levels. Classes and assignments will include studies of Ministry guidelines, language development, curriculum and unit development, language materials, and visits to immersion classes. Prerequisite: EDUC 9F11(411) or equivalent (e.g., TFSL part I). Lectures, seminar, practicum.

## EDUC 9F13

Teaching French as a second language part III
Advanced techniques for programs at the primary, junior, and intermediate divisions in teaching French as a second language. Studies will be made of leadership skills and styles, program organization, professional development and sequencing of programs.
Prerequisite: EDUC 9F12(412) or equivalent (e.g., TFSL part II) and a transcript showing at least five credits in French at the university level (or the equivalent).
Lectures, seminar, practicum.
EDUC 9F14
Music--vocal primary/junior part I Concepts of music including: singing, listening, reading, playing, creating, moving, and dramatizing; the tonic solfa method. Concentration will be at the primary level.
Open to certified teachers as well as other interested qualified individuals who qualify by successful completion of an oral and written test.
Lectures, seminar, practicum.

## EDUC 9F15

Music--vocal primary/junior part II Teaching strategies and materials required for a well-balanced classroom music program. Planning a one year curriculum that provides for continuity in the development of musical skills and the understanding of concepts. Concentration will be at the junior level.
Prerequisite: EDUC 9F14(414) or equivalent (e.g., Music--vocal (primary/junior) part I).
Lectures, seminar, practicum.

EDUC 9F16
Music--vocal primary/junior part III
The organization and administration of music programs in a variety of school settings in the primary and junior divisions; curriculum building, the selection of materials and resources, choral repertoire and vocal techniques for performance. Contemporary approaches to music education will be examined and compared.
Prerequisite: EDUC 9F15(415) or equivalent (e.g., Music--vocal (primary/junior) part II).
Lectures, seminar, practicum.

## EDUC 9F17

Science education primary/junior part 1
An introduction to the teaching of science in the primary and junior divisions based on Ministry of Education curriculum guidelines. The development of teaching models, programs, materials and their evaluation.
Open to certified teachers as well as other interested qualified individuals. Lectures, seminar, practicum.

## EDUC 9F18

## Science education primary/junior part II

A continuation of EDUC 9F17. Planning programs in primary/junior science with emphasis on implementing learning strategies; evaluating the science component of a balanced and integrated program at the primary/junior division level. Prerequisite: EDUC 9F17 or equivalent, e.g. Science education primary/ junior part 1
Lectures, seminar, practicum.
EDUC 9F19
Science education primary/junior part III
The study of leadership skills in the organization, administration and supervision of science education program for the primary/junior division.
Prerequisite: EDUC 9F18 or equivalent, e.g. Science education primary/ junior part II.
Lectures, seminar, practicum.

## EDUC 9F21

## Reading part I

An introduction to the language processes of reading and writing. Basic assessment procedures and the improvement of reading skills.
Open to certified teachers as well as other interested qualified individuals. Lectures, seminar, practicum.

## EDUC 9F22

## Reading part II

A more detailed study of the components involved in the reading act and the techniques used in the diagnosis and remediation of reading problems. Prerequisite: EDUC 9F21(421) or equivalent (e.g., Reading part I). Lectures, seminar, practicum.

## EDUC 9F23

## Reading part III

Advanced instruction in the theor and practice of reading instruction; the design and implementation of reading programs.
Prerequisite: EDUC 9F22(422) or equivalent (e.g., Reading part II). Lectures, seminar, independent study, practicum.

## EDUC 9F24

## Industrial arts part I

Laboratory-centered activity on material and processes; an analysis of curriculum theory as it applies to industrial arts programs. Topics include safety, drafting and sketching, wood and plaster fabrication, metal fabrication, and applied design.
Open to certified teachers as well as other interested qualified individuals. Candidates will be required to pass the Manufacturing Area, Trade Test B. Lectures, seminar, practicum.

## EDUC 9F25

## Industrial arts part II

Laboratory-centered activity focusing on the processes of project design and curriculum development in order to produce units of study for various types of courses in industrial arts. Prerequisite: EDUC 9F24(424) or equivalent (e.g., Industrial arts part I). Lectures, seminar, practicum.

## Education

## EDUC 9F26

## Industrial arts part III

Organization and curriculum development as they apply to the industrial arts program, to the school, and to the local and provincial system.
Prerequisite: EDUC 9F25(425) or equivalent (e.g., Industrial arts part II). Lectures, seminar, practicum.

## EDUC 9F27

Teacher-librarianship part I
The role of school librarian in the teaching program of the school; organizing resource materials, operating a/v equipment, selecting suitable reference and resource materials; providing instruction and guidance to students on the selection of appropriate materials for research, recreational, and informational needs.
Open to certified teachers as well as other interested qualified individuals. Lectures, seminar, practicum.

## EDUC 9F28

## Teacher-librarianship part II

A continuation of EDUC 4F27(427). Foundations for management of library programs; instruction and guidance in interpreting and utilizing aural and visual media. The selection, organization, circulation, and utilization of picture books, government publications, newspapers, and pamphlets as well as film and text.
Prerequisite: EDUC 9F27(427) or equivalent (e.g. Teacher-librarianship part I).
Lectures, seminar, practicum.

## EDUC 9F29

Teacher-librarianship part III
The development of strategies, organizations, and programs using community and other resources beyond the school. Curriculum design principles and selection policies for a school library. Design and evaluation of library programs and facilities. Prerequisite: EDUC 9F28(428) or equivalent (e.g., Teacher-librarianship part II).
Lectures, seminar, practicum.

## EDUC 9F31

Environmental science part I
The development and implementation
of courses of study and learning experiences in environmental science within the community, neighborhood and outdoor areas to which a school has access.
Open to certified teachers as well as other interested individuals.
Not open to students with credit in EDUC 471.
Lectures, seminar, practicum.

## EDUC 9F32

Environmental science part II
A continuation of EDUC 9F31(471).
Planning programs of environmental science (outdoor education) in a K to 13 continuum with emphasis on implementation at the three divisional levels.
Prerequisite: EDUC 9F31(471) or the equivalent (e.g. Environmental science, Part I).
Lectures, seminar, practicum.

## EDUC 9F33

## Environmental science part III

The organization, administration and supervision of environmental science programs; their design, development and implementation in elementary and secondary schools.
Prerequisite: EDUC 9F32 or the equivalent (e.g. Environmental science part II).
Lectures, seminar, practicum.

## EDUC 9F34

## Family studies part I

An introduction to family studies based on Ministry of Education curriculum guidelines. Topics will include: social trends affecting individuals and families, curriculum trends and concept development, examining and organizing programs in family studies at the elementary/secondary levels, and the place of family studies in the total school curriculum.
Open to certified teachers as well as other interested qualified individuals. Lectures, seminar, practicum.

## EDUC 9F35

## Family studies part II

A continuation of EDUC 9F34(434).
The foundations and development of family studies programs; the selection and utilization of suitable reference and
resource materials from the community for the preparation and teaching of units of study in family studies. Prerequisite: EDUC 9F34(434) or equivalent (e.g. Family studies part I) and at least three university credits in any of the related areas (child and family development, management and consumer economics, housing and interior design, clothing and textiles, foods and nutrition).
Lectures, seminar, practicum.

## EDUC 9F36

Family studies part III
Strategies, organization and programs in family studies using school and community resources with attention to designing, implementing and evaluating family studies programs.
Prerequisite: EDUC 9F35(435) or equivalent (e.g. Family studies part II) and a minimum of five university credits from the five areas outlined in EDUC 4F35.
Lectures, seminar, practicum.
EDUC 9F37
Primary education part I
Basic teaching strategies in the various subject areas; a consideration of curriculum matters of concern to primary teachers, and the development of skills associated with a recognized system of interpersonal relationships. Open to certified primary grade teachers.
Lectures, seminar, practicum.

## EDUC 9F38

Primary education part II
An extension of EDUC 9F37(437); an overview of current principles of child development and learning; a more detailed examination of curricula; and a finer analysis of the techniques of instruction and evaluation. An opportunity will be provided to concentrate on one specific area of the curriculum (communications, environmental studies, or arts).
Prerequisite: EDUC 9F37(437) or equivalent (e.g., Primary education part I).
Lectures, seminar, practicum.

## EDUC 9F39

## Primary education part III

A more intensive consideration of the teaching strategies, evaluation techniques, and curriculum concerns examined in EDUC 9F37(437) and EDUC 9F38(438); the leadership skills involved in the professional development of teachers; principles of curriculum construction; the diagnosis and remediation of learning difficulties; the examination of relevant case studies and the pursuit of individual interests. Prerequisite: EDUC 4F38(438) or equivalent (e.g., Primary education part II).

Lectures, seminar, practicum.

## EDUC 9F41 <br> Physical and health education primary/junior part I

Activities and practices for teachers of the primary/junior grades, with attention to current theory and philosophy. The primary program and motor skills development; creative movement in dance and gymnastics; folk dance; health education and organizational procedures. Intramural activities, planned by students and faculty. Open to certified teachers as well as other interested qualified individuals. Lectures, seminar, practicum.

## EDUC 9F42

Physical and health education primary/junior part II
Fitness and activity sessions for children at the junior level including: movement education in dance and gymnastics, folk dance, orienteering and health. Intramural activities. Prerequisite: EDUC 9F41(441) or equivalent (e.g., Physical and health education part I).
Lectures, seminar, practicum.

## EDUC 9F43

Physical and health education primary/junior part III
Program content and development; current problems, both personal and programmatic, and the development of leadership skills.
Prerequisite: EDUC 9F42(442) or equivalent (e.g., Physical and health education part II).
Lectures, seminar, practicum.

## EDUC 9F44

Physical and health education intermediate/senior part I
Activities and philosophies related to current practices at the intermediate level; program development in dance, gymnastics, games; anatomy and athletic injuries; individual games activities suitable for these age levels. Intramural activities.
Open to certified teachers as well as other interested qualified individuals. Lectures, seminar, practicum.

## EDUC 9F45

Physical and health education intermediate/senior part II
Activities and philosophies related to the senior division; program development; teaching strategies in dance, gymnastics and games, appropriate health topics and the organization of suitable programs for the involvement of students at this level. Intramural sessions.
Prerequisite: EDUC 9F44(444) or the equivalent (e.g., Physical and health education INT/SR part I).
Lectures, seminar, practicum.

## EDUC 9F46

## Physical and health education

 intermediate/senior part IIIAdvanced instruction in the organization and administration of physical and health education programs at the intermediate and senior levels. Curriculum development, teaching strategies, evaluation techniques, leadership and supervision.
Prerequisite: EDUC 9F45(445) or equivalent (e.g., Physical and health education INT/SR part II).
Lectures, seminar, practicum.

## EDUC 9F47

Attendance counsellor
Important aspects of the attendance counsellor training program as defined by the Ministry of Education guidelines including: philosophy of attendance counsellor training; change agent theory and practice; counselling theory and practicum; developmental psychology; law and education.
Open to potential attendance counsellor candidates, practising attendance counsellors, certified teachers, social
workers, BEd candidates (limited enrolment). The program requirements may be met through the successful completion of a combination of compulsory and elective courses. The following patterns reflect the combination of courses necessary to meet Ministry certification requirements. Not open to students with credit in EDUC 482.
Lectures, seminar, practicum.

## EDUC 9F51

Visual arts part I
The scope of visual arts in general education at the elementary and secondary school levels; methodologies related to development in personal expression, awareness, appreciation, knowledge, perception, and skills in art, craft and design. The relationship of these methodologies to the total school experience of the student. Open to certified teachers as well as other interested qualified individuals. Lectures, seminar, practicum.

## EDUC 9F52

## Visual arts part II

Planning art programs for a divisional level. Topics will include studio workshops in media processes and design, methods of exhibition and art appreciation.
Prerequisites: EDUC 9F51(451) or the equivalent (e.g., Visual arts part I).
Lectures, seminar, practicum.

## EDUC 9F53

## Visual arts part III

Curriculum design and implementation; leadership skills in managing a visual arts department, planning and conducting advanced level workshops in visual arts, and evaluating visual arts programs.
Prerequisite: EDUC 9F52(452) or the equivalent (e.g., Visual arts part II). Lectures, seminar, practicum.

## EDUC 9F54

## Religious education part I

An introductory course designed by
OECTA/OSSTA, leading to an elementary certificate in religious education. Under the guidance of leaders who are both teachers and theologians, participants are invited to
explore the many aspects of Catholic Christianity. Open to certified teachers as well as other interested qualified individuals.
Lectures, seminar, practicum. Note: Names of candidates who successfully complete EDUC 9F54 will be recommended to OECTA for credit towards an additional qualification in Religious education part I.

## EDUC 9F55

## Religious education part II

A continuation of EDUC 9F54. Detailed and specific studies leading to an intermediate certificate in religious education. A concentration on the experience and communication of sacred revelation as celebrated in the tradition of faith and behavior of the Roman Catholic church.
Prerequisite: EDUC 9F54(454) or equivalent (e.g. Religious education part I).
Lectures, seminar, practicum.
Note: Names of candidates who successfully complete EDUC 9F55 will be recommended to OECTA for credit towards an additional qualification in Religious education part II.

## EDUC 9F56

## Religious education part III

The development of leadership in teaching strategies, curriculum, and organization of religious education programs using school and community resources. Designing, implementing and evaluating religious education programs and workshops in the Roman Catholic school system.
Prerequisite: EDUC 9F55(455) or the equivalent (e.g. Religious education part II).
Lectures, seminar, practicum. Note: Names of candidates who successfully complete EDUC 9F56 will be recommended to OECTA for credit towards an additional qualification in Religious education part III.

## EDUC 9F57

Junior education part I
Curriculum matters of concern to junior teachers; an examination of basic teaching strategies in the various subject areas, and the development of skills associated with a recognized
system of interpersonal relationships.
Open to certified junior grade teachers. Not open to students with credit in EDUC 458.
Lectures, seminar, practicum.
EDUC 9F58
Junior education part II
An overview of current principles of child development and learning; a more detailed examination of curricula, and a finer analysis of techniques of instruction and evaluation in one specific area of the curriculum (communications, environmental studies, or arts).
Prerequisite: EDUC 9F57(458) or equivalent (e.g., Junior education part I).

Not open to students with credit in EDUC 459.
Lectures, seminar, practicum.

## EDUC 9F59

## Junior education part III

A more intensive consideration of the teaching strategies, evaluation techniques, and curricular concerns examined in EDUC 9F57(458) and 9F58(459) with a focus on the leadership skills involved in the professional development of teachers, the principles of curriculum construction, and the diagnosis and remediation of learning difficulties.
Prerequisite: EDUC 9F58(459) or equivalent (e.g., Junior education part II).

Not open to students with credit in EDUC 460.
Lectures, seminar, practicum.

## EDUC 9F61

Computers in the classroom part I
An introduction to the micro-computer and its educational application for the classroom teacher; the architectural, historical and pedagogical aspects of micro-computers; basic computer literacy; elementary program development; students will select, review, modify, and field test educational computer courseware.
Not open to students with credit in EDUC 473hc/474hc.
Open to certified teachers as well as other interested qualified individuals. Lectures, seminar, practicum.

## EDUC 9F62

Computers in the classroom part II A continuation of EDUC 9F61(461). Further development of computer literacy and programming skills; instruction and practice in designing and evaluating courseware and networking. The major project will involve self-designed courseware. Prerequisite: EDUC 9F61(461) or equivalent (e.g. Computers in the classroom part l).
24 3-hour lab sessions

## EDUC 9F63

Computers in the classroom part III
More advanced techniques in the evaluation, design and production of computer-aided learning materials. Instruction and practice in advanced programming, troubleshooting, and systems design. The major project will involve a systems design.
Prerequisite: EDUC 9F62(462) or equivalent (e.g. Computers in the classroom part II).
24 3-hour lab sessions

## EDUC 9F64

Guidance part I
An introduction to guidance based on Ministry of Education curriculum guidelines; guidance for human development; interpersonal skills and human relations; counselling theories and approaches; group techniques and the information process.
Open to certified teachers as well as other interested qualified individuals.
Lectures, seminar, practicum.

## EDUC 9F65

## Guidance part II

A continuation of EDUC 9F64(464). Effective utilization of group processes; the importance of career and educational planning; counselling techniques.
Prerequisite: EDUC 9F64(464) or equivalent (e.g., Guidance part I). Lectures, seminar, practicum.

## EDUC 9F66

## Guidance part III

Development of strategies, organization, and programs in guidance using school and community resources. Curriculum development and planning;
marketing, co-ordinating, and evaluating guidance services; advanced counselling practicum and business-industry-education practicum. Prerequisite: EDUC 9F65(465) or equivalent (e.g., Guidance part II). Lectures, seminar, practicum.

## EDUC 9F67

English as a second language part 1 An introduction to the study of English as a second language. Concerns and implications faced by students adapting to Canadian society; techniques and theories of teaching and learning as applied to second language acquisition, and a study of available teaching/ learning materials.
Open to certified teachers as well as other interested individuals. Applicants must be able to communicate well in both written and spoken English. Lectures, seminar, practicum.

EDUC 9F68
English as a second language part II A continuation of EDUC 9F67(467). Further development of instructional units in ESL; the evaluation of ESL programs and learning materials. Prerequisite: EDUC 9F67(467) or the equivalent (e.g. ESL part I).
Lectures, seminar, practicum.
EDUC 9F69
English as a second language part III Development of strategies, organization and programs in ESL using school and community resources; the design, implementation and evaluation of effective ESL programs.
Prerequisite: EDUC 9F68(468) or equivalent (e.g., ESL Part II).
Lectures, seminar, practicum.

## EDUC 9F71

Cooperative education part I
An analysis of a variety of Cooperative education programs currently being used in the schools of Ontario. Students will plan, implement, supervise and evaluate a Cooperative education course at the classroom level with reference to Ministry of Education documents (OSIS--Ontario Schools Intermediate and Senior division programs).
Open to certified teachers and other
interested qualified individuals. Not open to students with credit in EDUC 472.
Lectures, seminar, practicum.

## EDUC 9F72

Cooperative education part II
The development, implementation and evaluation of Cooperative education programs at the department and schoolwide level; social and vocational needs, values and programs; community and work-site reactions to the concept of Cooperative education.
Prerequisite: EDUC 9F71(472).
Not open to students with credit in EDUC 475.
Lectures, seminar, practicum.

## EDUC 9F73

Cooperative education part III
Organizing and leading workshops in
Cooperative education; planning, coordinating and implementing Cooperative education programs (including inschool and out-of-school components) at the school and Board level. Prerequisite: EDUC 9F72(475).
Not open to students with credit in EDUC 476.
Lectures, seminar, practicum.

## EDUC 9F74

## Dramatic arts part I

Basic methodologies in teaching dramatic arts in Ontario schools. Consideration will be given to the preparation of an introductory course in dramatic arts and appropriate methods of student evaluation.
Open to all teachers and other interested qualified individuals.
Lectures, seminar, practicum.

## EDUC 9F75

Dramatic arts part II
A continuation of the study of the components introduced in part I. More advanced consideration of the preparation and evaluation of courses in dramatic arts.
Prerequisite: EDUC 9F74 or equivalent, e.g. Dramatic arts part I.
Lectures, seminar, practicum.
EDUC 9F76
Dramatic arts part III
Organizing and teaching workshops in
dramatic arts: planning, implementing and evaluating dramatic arts programs. Prerequisite: EDUC 9F75 or equivalent, e.g. Dramatic arts part II. Lectures, seminar, practicum.

EDUC 9F77
Curriculum and instruction in the junior division
For teachers who are seeking qualification in an additional area of concentration in the junior division (Ontario teacher's qualifications reg. 407/78 Section 26 and 27). Basic teaching strategies in all subject areas taught at the junior level. Current principles of child development and learning, and curriculum at the junior level. Prerequisite: an undergraduate degree and an Ontario Teacher's Certificate. Not open to students with credit in EDUC 9F56(458), 9F58(459), 9F59(460).
Lectures, seminar, practicum.

## EDUC 9F78

## Primary basic curriculum and instruction

For teachers who are seeking qualification in an additional area of concentration in the primary division (Ontario teacher's qualifications reg. 407/78
Section 26, 27). Basic teaching strategies in all subject areas taught at the primary level. Current principles of child development and learning, and curriculum at the primary level. Prerequisite: an undergraduate degree and an Ontario Teacher's Certificate. Lectures, seminar, practicum.

## EDUC 9M00-9M09

Intermediate basic curriculum and instruction
Basic strategies for teaching at the intermediate level. An overview of current principles of student development and learning, curriculum development and implementation for the intermediate division.
Prerequisite: an acceptable undergraduate degree that includes two credits in the teachable subject area.
Lectures, seminar, practicum.
Note: additional prerequisite for certification purposes: an Ontario Teacher's Certificate endorsed with
primary, junior or senior additional basic qualification on the Ontario Teacher's Record Card.
(9M00) Language arts (English)
(9M01) Mathematics
(9M02) Science
(9M03) History
(9M04) Geography
Consult the department of Continuing
Studies regarding teachable subject areas to be offered.

EDUC 9M20-9M29
Senior basic curriculum and instruction (major)
Basic strategies for teaching at the , senior level. An overview of current principles of student development and learning, curriculum development and implementation for the senior division. Prerequisite: an acceptable undergraduate degree with a major of at least five credits in the teachable subject area and an Ontario Teacher's Certificate endorsed at the primary, junior or intermediate level. Candidates may be asked to successfully complete three weeks of practice teaching as assigned by the College of Education during a scheduled block in winter or spring term.
Lectures, seminar, practicum.
(9M20) English
(9M21) Mathematics
(9M22) Science
(9M23) History
(9M24) Geography
(9M25) Computer science
(9M26) Society challenge and change (Man in society)
(9M27) Physical education
Consult the department of Continuing Studies regarding teachable subject areas to be offered.

## EDUC 9M30-9M39

Senior basic curriculum and instruction (minor)
Basic strategies for teaching at the senior level. An overview of current principles of student development and learning, curriculum development and implementation for the senior division. Prerequisite: an acceptable undergraduate degree with at least three credits in the teachable subject area and an

Ontario Teacher's Certificate endorsed at the senior level. Candidates may be asked to successfully complete three weeks of practice teaching as assigned by the College of Education during a scheduled block in winter or spring term.
Lectures, seminar, practicum.
(9M30) English
(9M31) Mathematics
(9M32) Science
(9M33) History
(9M34) Geography
(9M35) Computer science
(9M36) Society challenge and change (Man in society)
(9M37) Physical education
Consult the department of Continuing
Studies regarding teachable subject areas to be offered.

## (Special Education)

Note:
In order to be recommended to the Ministry of Education for special education, part I, candidates must complete EDUC 9P01 plus one basic elective half course; for part II, EDUC 9P02 and a second elective (either part II or another part I); for part III, EDUC 9P03 and a third elective (see EDUC 9P04-9P13). Students with previous credits in Special Education should consult the department regarding their further studies.

## EDUC 9P01

## Special education, foundations I

The identification of students with special educational needs; characteristics of the five main exceptionalities: behavioral, communicative, intellectual, physical and multiple. Consideration will be given to models, theories and approaches of educational exceptionalities, their classroom implications, available community resources, and effective school/student/parent communication.
Open to certified teachers and other interested qualified individuals. Not open to students with credit in EDUC 417.
Lectures, seminar, practicum.

## EDUC 9P02

Special education, foundations II
Further studies of the educational implications of multiple exceptionalities; formal and informal assessment of exceptional students and their particular needs; the design and implementation of appropriate educational programs for students at a more advanced level; reporting techniques, the
Identification Placement and Review Committee (IPRC) process and the teacher's role in it.
Prerequisite: EDUC 9P01(417) or equivalent (e.g. Special Education, Core I).
Not open to students with credit in EDUC 418.
Lectures, seminar, practicum.

## EDUC 9P03

Special education, foundations III Leadership and consultation in special education at the school and Board level. The design of workshops or training sessions and their evaluation; preparation for a referral to an Identification Placement and Review Committee (IPRC) and for case conferences. This course includes a specialist special studies component.
Prerequisite: EDUC 9P02 or equivalent (e.g. Special Education, Core II).

Not open to students with credit in EDUC 419.
Lectures, seminar, practicum.

## EDUC 9P04

Special education, learning disabilities I (basic)
The identification of speech, language and learning disabilities; the development and implementation of appropriate teaching intervention strategies.
Prerequisite: EDUC 9P01(417).
Lectures, seminar, practicum.

## EDUC 9P05

Special education, learning disabilities II (advanced)
A continuation of EDUC 9P04 with emphasis on theories and strategies of teaching students with speech and language disabilities; identification of this exceptionality, its subclassifications and its relationship to other exceptionalities.
Prerequisite: EDUC 9P02 and 9P04. Lectures, seminar, practicum.

EDUC 9P06
Special education, teaching the
trainable retarded pupil (T.R.P.) (basic)
The development of programs in teaching the trainable retarded; the history and causes of retardation; the response of the family and society to the special child. The planning of effective learning environments, instructional approaches, behavioral management and evaluative processes will also be discussed.
Prerequisite: EDUC 9P01(417).
Not open to students with credit in EDUC 496hc.
Lectures, seminar, practicum.

## EDUC 9P07

Special education, teaching the trainable retarded pupil (T.R.P.) (advanced)
Issues surrounding screening, identification and education of trainable retarded students; studies of curriculum development, gross motor and physical development, language and communication skills. Living skills.
Prerequisite: EDUC 9P01(417) and 9P06.
Not open to students with credit in EDUC 497hc.
Lectures, seminar, practicum.

## EDUC 9P08

Special education, gifted I (basic)
The nature of educational giftedness; basic screening and identification procedures; the design and implementation of appropriate educational programs.
Prerequisite: EDUC 9P01(417). Lectures, seminar, practicum.

EDUC 9P09
Special education, gifted II (advanced)
A continuation of EDUC 9P08 with emphasis on theories and strategies of teaching gifted students; the identification of this exceptionality and its subclassifications and its relationship to other exceptionalities.
Prerequisite: EDUC 9P02 and 9P08. Lectures, seminar, practicum.

EDUC 9P10
Special education, behavior I (basic)
Current issues in the education of the behaviorally exceptional student; basic screening and identification procedures; the design and implementation of appropriate educational programs. Prerequisite: EDUC 9P01(417). Lectures, seminar, practicum.

## EDUC 9P11

Special education, behavior II (advanced)
A continuation of EDUC 9P10 with emphasis on theories and strategies of teaching the behaviorally exceptional student; the identification of this exceptionality and its subclassifications and its relationship to other exceptionalities.
Prerequisite: EDUC 9P02 and 9P10.
Lectures, seminar, practicum.
EDUC 9P12
Special education, combined electives I (basic)
The identification of students with learning disabilities, behavioral exceptionalities and giftedness and providing appropriate programming for them. This elective course will be offered whenever specific Special Education basic courses are not available.
Prerequisite: EDUC 9P01(417).
Lectures, seminar, practicum.

## EDUC 9P13

Special education, combined electives II (advanced)
A continuation of EDUC 9P12 with emphasis on theories and strategies of teaching students with learning disabilities, behavioral exceptionalities and giftedness. This elective course will be offered whenever specific Special Education advanced courses are not available.
Prerequisite: EDUC 9P02 and 9P12. Lectures, seminar, practicum.

## EDUC 9P14

Physical exceptionalities (basic)
Basic methodologies in teaching
children with physical and healthrelated disabilities.
Prerequisite: EDUC 9P01.
Lectures, seminar, practicum.

## EDUC 9P15

Physical exceptionalities (advanced)
Planning, implementing and evaluating programs for children with physical and health-related disabilities.
Prerequisite: EDUC 9P14.
Lectures, seminar, practicum.

## EDUC 9P90

Special topics in education
Topics selected from year to year on the basis of specific areas of instructional expertise and candidate interest. Prerequisite: permission of the chairperson, department of Continuing Studies.
Not open to students with credit in EDUC 498hc.
Lectures and seminars, twelve 3 hour sessions.

## EDUC 9P99

Program measurement and evaluation
Measurement and evaluation of program and student achievement with a focus on methods of data collecting, formulating measurement instruments, and techniques for analyzing and communicating results. Content for the course will be based on the Ministry of Education Ontario Assessment Instrument Pool (OAIP).
Open to teachers and administrators. Lectures, seminars, practicum, twelve 3 hour sessions.
Note: this course carries BEd credit only.

## English Language and Literature

Officers of instruction

## Chairperson

Angus A. Somerville

## Professors

Cecil A. Abrahams
Michael S. Hornyansky
Associate professors
Gordon H. Coggins
Brian Crick
John A. Lye
R. Douglas MacDonald

Kenneth M. McKay
George C. Reecer
Ian C. Shaw
Stella Slade
Angus A. Somerville
Assistant professor
Marilyn J. Rose
Part-time instructor
Patricia A. Green

## General information

## Mackenzie Chown complex A310

The department of English Language and Literature aims at fostering a critical intelligence. To this end our required core of historical period courses (2F21, 2F30, 2F40, 3F21, $3 \mathrm{~F} 30,3 \mathrm{~F} 45,4 \mathrm{~F} 10$ ) provides a comprehensive grasp of the whole. Seminars (small discussion groups) are the rule in all English courses, for they encourage the student to become an active participant in the study of literature. With essay assignments and our close criticism of these assignments, the student should learn to write in a literate, subtle and disciplined way.

The department of English Language and Literature offers credit for those drama courses included among the list of English courses offered, subject to
the conditions noted below under pass program and honors program.

English majors are free to take any elective which their timetable will allow, but the following are recommended as most useful: classical civilization, drama, film, history, liberal studies, other languages (particularly Latin), philosophy.

Students are reminded that year 3 courses are restricted to those who have at least three year 2 university credits or the permission of the instructor, and are cautioned against taking a year 3 English course without having passed at least one year 2 English course.

Students in other disciplines who have not taken ENGL 1F91 may take a senior English course as an elective with permission of the instructor.

Courses at the year 4 level are normally for year 4 students; other students may be admitted by permission of the department.

Students who intend to take a three year or four year degree in English should discuss their program with a member of the department.

Historical core courses:
List A: 2F21 or 3F21, 2F40, 4F10
List B: 2F30, 3F30, 3F45

## Note:

Students who registered before April 1988 may in completing their degree requirements add 2 F 20 and 3 F 35 to the above lists, and are not required to conform to the distribution between the lists noted in the current requirements. Students registered before April 1987 may also add 2F97.

## Pass program

Students reading for a pass degree with a major in English are required to complete seven credits in English, including ENGL 1F91.

Of the seven, three credits must be chosen from the historical core list $A$ and $B$ above, two from one list and one from the other list. Three credits must be chosen from courses numbered $2(a l p h a) 90$ or above.

## Note:

The department recommends that students take one credit in dramatic literature from ENGL 2F97, DRAM 1F93 (or 2F95 or 2F98), DRAM 2F97, 3F10, 3F93. A maximum of two DRAM credits may be taken for English credit.

Normal pattern:
Year 1
ENGL 1F91; one science and one social science context credit; two elective credits. (See Language requirement.)

## Year 2

Three English credits; two elective credits. (See Language requirement.)

## Year 3

Three English credits; two elective credits.

## Honors program

Eleven English credits are required, including:
(i) ENGL 1F91;
(ii) four historical core courses, two from list A and two from list B ;
(iii) one of ENGL 3F91 or 3F92;
(iv) one credit in dramatic literature (ENGL 2F97 or DRAM 3F10 recommended);
(v) at least two of ENGL 3F70, 4F10, 4F30, 4F70, 4F99, 4M40-4M49
(ENGL 3F70 recommended);
Note: a maximum of three DRAM credits may be taken for English credit.

Normal pattern:
Years 1, 2 and 3
As in pass program.

## Year 4

Four English credits, including at least two at the year 4 level (see (v) above); one elective credit.

Combined major programs

Pass program
Students wishing to study English as part of a combined major pass program are required to complete: ENGL 1F91; two historical core courses, one from list $A$ and one from list $B$; two other English credits. It is expected that a student will take two credits in English at the year 2 level and two at the year 3 level. (See Language requirement.)

## Honors program

Students who wish to study English as part of a combined major honors program are required to complete: ENGL 1F91; three from the historical core list $A$ and $B$ above, two from one list and one from the other; three other English credits. It is expected that an honors student will take two English credits at the year 2 level, two at the year 3 level and two at the year 4 level. (See Language requirement.)

## Special combined program in English and drama

A student reading for a combined pass degree in English and drama must (i) meet the requirements of each department for a combined major; (ii) take at least ten credits in English and drama for a pass degree, fourteen credits for an honors degree; (iii) take at least five credits from each department for a pass degree, seven from each department for an honors degree.

## Language requirement for humanities majors

English majors must complete one course in a language other than English or, in special cases, ENGL 3F92 (Old English).

Students are expected to complete the language requirement by the end of year 2 except in the case of ENGL 3F92.

## Description of courses

## Abbreviations:

*ENGL English courses that may be taken for credit in drama.
*DRAM Drama courses that may be taken for credit in English.

Please see Note under the English pass and honors program descriptions above.

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

## *ENGL 1F91

Introduction to literature
The critical study of works by major authors in English literature from the 14th century to the 20th, including Chaucer, Shakespeare, Milton, Swift, Austen, Dickens, Eliot. Special attention will be given to students' writing.
Lectures, seminar, 3 hours per week.
ENGL 1F92
Logic, rhetoric and practical criticism
(also offered as LBST 1F92)
Methods of developing, organizing and expressing ideas, directed to improving skills of thought, reading and persuasion. Classical logic and rhetoric will be examined in the works of Aristotle and Cicero. Students will analyze the logic and rhetoric of writing on a range of subjects in a variety of modes.

Not open to students with credit in ENGL 1F99(199) or LBST 195hc. Lectures, seminar, 3 hours per week.

ENGL 1F99
Language and thought
The critical study of selected writings in literature, natural science and social science. Special attention will be given to students' writing.
Not open to students with credit in ENGL(LBST) 192; ENGL 1P97 or 1 P98.
Lectures, seminar, 3 hours per week.

## ENGL 1P97

Language and thought for Bachelor of Accounting students I
The critical study of selected writings in literature, natural science and social science, designed to improve thinking, reading and writing through a study of some of the most significant uses of language in the nineteenth and twentieth centuries.
Prerequisite: admission to the Bachelor of Accounting program.
Not open to students with credit in ENGL 1F99(199).

## ENGL 1P98

## Language and thought for Bachelor

 of Accounting students IIA continuation of the course of study of ENGL 1 P97.
Prerequisite: ENGL 1P97.
Not open to students with credit in ENGL 1F99(199).

## ENGL 2F10

Young people's literature
The critical study of children's fiction and poetry from the past to the present. Fairy tales, fantasy, adventure, realistic and problem novels, animal stories and fables are explored as works of art in relation to the themes and concerns of literature for young people.
Not open to students with credit in EXST 195 or 211.
Lectures, seminar, 3 hours per week.

## ENGL 2F21

Sixteenth century literature
Prose and poetry of Tudor England with emphasis on Sidney, Spenser and Shakespeare.
Lectures, seminar, 3 hours per week.

## English Language and Literature

## ENGL 2F30

## Romantic literature

Poetry, together with imaginative, critical, and philosophical prose, from the 1780 s (Blake) to the 1830 s (Carlyle).
Lectures, seminar, 4 hours per week.

## ENGL 2F40

## Restoration and eighteenth century

 literatureLiterature of the age of wit and satire (Dryden, Pope, Swift) and of the age of sensibility (Gray, Collins, Cowper, Burns); includes drama, poetry, prose. Lectures, seminar, 3 hours per week.

ENGL 2F50
Comonwealth literature
(formerly ENGL 3F15)
Literature written in countries of the Commonwealth other than Canada. Close analyses are made of the books to demonstrate the literary merit of the writing. Where appropriate, emphasis will be placed on the Colonial and post-Colonial political struggles and the changing nature of the political, economic and social processes of societies in the Commonwealth. Not open to students with credit in ENGL 3F15.
Lectures, seminar, 3 hours per week.

## ENGL 2F60

## Modern American literature

Established 20th century authors in fiction, poetry and drama, including James, Eliot, Hemingway, Faulkner, West, Steinbeck, Jarrell, Nabokov, Bellow.
Lectures, seminar, 3 hours per week.

## ENGL 2F91

Canadian literature in English
Emphasis on the critical reading of poetry and fiction drawn from the preConfederation period to the present day. Representative works by such writers as Haliburton, Lampman, Roberts, Leacock, Pratt, Callaghan, Birney, Laurence, Atwood and Findley. Lectures, seminar, 3 hours per week.

ENGL 2F97

## Shakespeare

The poetry and plays.
Not open to students with credit in

ENGL(DRAM) 397 or 296 or DRAM
3F10(310). Students may take DRAM
3F10(310) in place of ENGL 2 F97.
Lectures, seminar, 3 hours per week.
ENGL 2M90-2M99

## English area studies

Studies in a specialized area of English literature.

## ENGL 3F00

## The novel

Major English novelists and the development of the form from its origins (Bunyan) to the close of the 19th century (Hardy and/or James). Lectures, seminar, 3 hours per week.

ENGL 3F05
Creative writing
A seminar course in the craft of creative writing, for selected students in any discipline; years 3 and 4 preferred. Apply in writing, with portfolio, well before classes begin. Details from department.
Seminar, 3 hours per week.
ENGL 3F21
Milton and the seventeenth century
The literature of the late Renaissance in England, from Donne and Jonson to Marvell and Browne, including all of Milton's major works. Lectures, seminar, 3 hours per week.

## ENGL 3F30

Victorian literature
Poetry, novels, and non-fictional prose from 1825 to 1914; from the high Victorian period (Carlyle, Mill, Tennyson, Browning), through the PreRaphaelite (Rossetti, Morris), to developments in the last half of the century (in Meredith, Swinburne, Hopkins, Hardy, Wilde, Kipling). Lectures, seminar, 3 hours per week.

## ENGL 3F42

Modern poetry
Modernism and its alternatives in poetry of the 20th century, including contemporary poetry. Major poets include Yeats, Eliot, Auden, Stevens. Lectures, seminar, 3 hours per week.

ENGL 3F45
20th century literature
Major developments in the poetry and prose of Britain and America in the 20th century.
Lectures, seminar, 3 hours per week.
ENGL 3F50
The modern novel
English and American novelists from James and Hardy to the present.
Lectures, seminar, 3 hours per week.

## ENGL 3F60

American literature to World War I American writing from the Puritan period to the major authors of the Romantic period (Irving, Cooper) and of the mid-19th century (Emerson, Thoreau, Hawthorne, Melville, Poe, Whitman, Dickinson); precursors of the modern period (Crane, Clemens, James) are also studied.
Lectures, seminar, 3 hours per week.

## ENGL 3F70

Literary criticism
(formerly ENGL 4F00)
History of the principles and practice of literary criticism. An examination of major critics from Aristotle to Eliot, Leavis and Brooks.
May be used as a year 3 or year 4 credit for 1989/90 only.
Not open to students with credit in ENGL 4F00(400).
Seminar, 3 hours per week.

## ENGL 3F91

History of the language
The development of the English language from its origins to the present state of English in North America. The nature and cause of major internal changes in the language will be examined, together with the influence of external cultural and linguistic forces in the shaping of modern English. Selected literary models will be used to illustrate the stylistic development of English.
Lectures, seminar, 3 hours per week.
ENGL 3F92
Old English
Literature and language; a close reading of prose and several major poems in Old English, including
passages from The Parker Chronicle, Wanderer, Seafarer, Deor, The Battle of Maldon, The Dream of the Rood. Seminar, 4 hours per week.

## ENGL 4F10

Middle English
A critical examination of the English literature of the late Middle Ages; studies in the work of Chaucer and Langland, and in the Northern alliterative revival.
Seminar, 4 hours per week.

## ENGL 4F30

19th century thought
Writings in social criticism, aesthetics, education, science, and philosophy, from Burke to Wilde.
*Seminar, 3 hours per week.

## ENGL 4F70

Contemporary literary theory Contemporary theoretical approaches to literature, including phenomenology, reader-response criticism, psychoanalytic theory, structuralism, poststructuralism, marxism and feminism. Prerequisite: ENGL 3F70 or permission of the instructor.
Lectures, seminar, 3 hours per week.
ENGL 4F99
Senior research tutorial or thesis Either tutorial combined with individual research or a thesis on a specialized topic or major author, of mutual interest to the student and instructor. Students are urged to make arrangements with an instructor and to plan their projects in the spring, for the following year. A written proposal must be submitted for department approval before September 1. Time to be arranged.

ENGL 4M40-4M49
Major writers
1989-90: (4M41)
Three Romantic poets: Wordsworth, Keats, Wallace Stevens.
Seminar, 3 hours per week.

Drama courses available for English credit
*DRAM 1F93
Introduction to drama
*DRAM 2F95
The comic spirit
*DRAM 2F97
Canadian drama
DRAM 2F98
The tragic vision
*DRAM 3F10
Shakespeare
*DRAM 3F93
Twentieth century drama
Only one credit from DRAM 1F93, 2F95 or DRAM 2F98 may be taken for English credit.

For course descriptions, see Film Studies, Dramatic and Visual Arts.

# Environmental Science 

Director<br>Bruce W. Krushelnicki

General information

Mackenzie Chown complex F202
The environmental science program at Brock is administered by the Institute of Urban and Environmental Studies (UEST). See also that section of the calendar. The program, which offers a pass or an honors BSc degree in environmental science, combines the disciplinary skills of biology and chemistry, a suitable complement of courses in mathematics and computer science and the interdisciplinary perspective and systems-oriented approach of environmental studies.

Students may elect to take the cooperative studies option which provides opportunity for on-the-job training and practical experience for degree credit. Full time students who have completed year 2 are eligible for the program; enrolment will be limited. See details under the UEST calendar entry.

Combined major programs leading to a BSc degree are also available with biological sciences/urban and environmental studies, chemistry/urban and environmental studies, geography/ urban and environmental studies, geological sciences/urban and environmental studies.

The recommended course selection for an environmental science program is outlined below.

## Pass program

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

## Year 1

UEST 1F90; BIOL 1F90; CHEM 1F93 or 1F85; COSC 1P90; MATH 1P98; one social science or humanities context credit.

Year 2
BIOL 2 F 03 ; one credit from BIOL 2F01, 2P90, 2P93, 2P98; CHEM 2P40/2P41; COSC 1P91; MATH 1P97; the context credit not taken in year 1.

## Year 3

UEST 2F97; one of UEST 3V20-3V25 or $3 \mathrm{~V} 30-3 \mathrm{~V} 35$; one of UEST $3 P 41$, 3P42, 3P53, 3P55 or 3V10-3V15; one credit in biology numbered 2 (alpha) 90 or above; one credit in chemistry chosen in discussion with that department; one elective credit (GEOL 1F95 or PHYS 1F20 or GEOG 1F91 recommended).

## Honors program

Years 1, 2 and 3
As in the pass program.
Year 4
UEST 4F95; one of UEST 3P41, 3P42, 3P53, 3P55 or 3V10-3V15; one of UEST $3 \mathrm{~V} 20-3 \mathrm{~V} 25$ or $3 \mathrm{~V} 30-3 \mathrm{~V} 35$; one of CHEM 4F90/4F91 or BIOL 4F92 and one year 3 or year 4 biology credit; one elective credit. A minimum of three credits numbered 3(alpha) 90 must be included in an honors degree.

## Extradepartmental Studies

## Director

Cecil A. Abrahams, Dean Division of Humanities

General information

Schmon tower 401D
Students' programs can be enriched by the inclusion of certain degree credit courses which do not fall under the auspices of existing academic departments. Such courses may be taken for credit as electives in any degree program.

## Description of courses

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

## EXST 1F92

Women's studies
An analysis of the role of women in societies as manifested in customs, literature, and historic roles. An attempt will be made to develop a theoretical framework to evaluate critically the existing situation. Lectures, seminar, 3 hours per week.

## EXST 2F20

Comparative religion
Studies in the world's major religions, their founders, teachings, scriptures and development, with readings from primary sources.
Not open to students with credit in REST 190 or 220.
Lectures, seminar, 3 hours per week.

EXST 2F50
Aspects of human sexuality
(formerly offered as EXST 1F50)
Studies in the biological, psychological and cultural aspects of human sexuality.
Not open to students with credit in EXST 1F50(150) or 290.
Lectures, seminar, 3 hours per week.
EXST 2F95
Introduction to speech-language pathology and audiology
The development and disorders of human communication: normal speech, language and hearing development, and clinical disorders from the newborn to the aged. Approaches to assessment and remediation. Topics include articulation, language, voice, adult language disorders, fluency and stuttering, neurological and auditory disorders. This course is of interest to students in education, behavioral and social sciences, health professionals, and students intending to pursue subsequent professional training in speech pathology or audiology. Enrolment may have to be limited (by grade standing) due to space limitations.
Prerequisite: PSYC 1F90(190) or permission of the instructor. Lectures, seminar, 3 hours per week.

# Film Studies, Dramatic and Visual Arts 

## Officers of instruction

## Chairperson

Mary Jane Miller

## Professors

James C.M. Leach, (film studies, dramatic literature)
Mary Jane Miller (dramatic literature) Maurice Yacowar (film studies)

Associate professors
Peter Feldman (theatre)
Barry K. Grant (film studies)
Merijean Morrissey-Clayton (studio art)
Robert C. Nunn (dramatic literature)
Assistant professors
Margaret Burke (drama in education)
Warren Hartman (theatre)
Murray Kropf (studio art)
Glenys McQueen-Fuentes (theatre)
Joan Nicks (film studies)
Lecturer
Derek Knight (art history)

Visiting Artist
Yvonne Singer (studio art)
Part time instructors
Guy Ducornet (studio art)
Alan Titley (technical theatre)
Resident company, Theatre Beyond
Words
P. Hallich

Terry Judd
Harrow Maskow
Robin Patterson
C. Schott

Technical director
Adrian Palmieri

Wardrobe co-ordinator
Ivy Verhoeckx

## General information

Thistle west 135

At Brock the study of fine arts is concerned with the nature, function, and history of the arts as a means of human expression, from the classics to popular culture, from primitive drawings and rituals to the avant garde Through critical analysis of classic works and personal creative development, the student will gain an awareness of the ways in which the artistic media function. Our aim is to contribute to the vitality of the arts by developing sensitive, creative and articulate artists, teachers and audiences.

The department of Film Studies, Drama and Visual Arts offers pass, honors, single and combined major programs in four fields of study: dramatic literature, film, theatre, and visual arts. These four majors represent the student's choice of concentration within the department. Single pass and honors programs are also offered in fine arts studies.

CANA 1F91: Introduction to Canadian studies, and CANA 2F91: Canadian culture and society: interdisciplinary studies, are recommended electives for fine arts students.

## Courses marked with ${ }^{* *}$ are cycled

 every two years.
## Facilities

The film program uses The Studio, Brock Centre for the Arts, which is a fully equipped film screening space. Senior students have access to a film and video study room.

The theatre program uses the many facilities of the Brock Centre for the Arts, including the 543 seat Theatre and its experimental stage, The Studio, The Playhouse and The Space. Scenery, properties and construction workrooms are part of the Centre for the Arts complex. A sound booth fully
equipped for recording and playback is also available for student use.

Visual arts facilities include an extensive slide collection and a fully equipped art studio.

## Extracurricular activities

The department presents and sponsors theatre productions, film series, exhibitions, public lectures, and an annual spring festival. The university regularly hosts mime performances and workshops by its resident company, the internationally acclaimed Theatre Beyond Words.

In addition, Brock's Fine Arts Committee arranges for a variety of visiting artists and events, and a program of art exhibitions.

## Context electives

The following departmental offerings may be taken for core and context credit by science and social science majors:

DRAM 1F93
Introduction to drama

FILM 1F94 Introduction to film criticism

VISA 1F90
Introduction to the history of art

## Drama in education

The department offers the following courses for teachers or those planning to become teachers:

FILM 2F04 Screen education
THEA 2F10 Drama in education I

THEA 3F09 Drama in education II

THEA 3F11 Theatre in education

THEA 3F12 Theatre in education: the school play

## Fine arts studies

## Pass program

These programs are designed for students who wish to gain a broad exposure to the fine arts rather than to major in one of the department's streams (see separate listings below). Students are required to discuss their program with the department chairperson.

Eight credits are required: two of DRAM 1F93, FILM 1F94, VISA 1F90, six other credits from at least two of DRAM, FILM, THEA, VISA.

## Honors program

Twelve credits are required: two of DRAM 1F93, FILM 1F94, VISA 1F90; one of DRAM 4F90, FILM 4F90, VISA 3F95; nine other credits from at least two of DRAM, FILM, THEA, VISA.

Note: combined pass and honors programs are not available with FINA as one area of concentration.

Year 3 courses are normally restricted to students with at least three second year credits or special permission of the instructor.

Language requirement for humanities majors

Fine Arts majors are required to complete one credit in a language other than English. It is recommended that students fulfill this requirement by year 2 .

## Description of courses

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

Abbreviation:
** FINA
Fine arts course which is cycled every two years.

## **FINA 2F16

Introduction to theatre administration
Practical problems in the operation of a professional theatre, dance or music company in Canada. Topics will include basic administration and bookkeeping, the role of boards of directors, complexities of provincial and national grant systems, publicity and promotion techniques, principles of staffing, tax and copyright regulations, and the mechanics of touring in Canada and abroad.
Lectures, seminar, 3 hours per week.
FINA 2F98

## Approaches to dance

Dance as an art form. The course aims to develop a vocabulary of movement specific to dance, examine dance choreography and its principles, explore various theoretical issues such as historical survey, dance in society, dance analysis, and dance criticism; dance as it relates to other art forms and the role of dance in education. Limited practical component.
Lectures, lab (studio), seminar, 3 hours per week.
Not offered in 1989/90.

## FINA 2M90-2M99

## Special studies in fine arts

Studies in a selected area involving a number of artistic media. Topics to be announced by the department.
Lectures, seminar, 3 hours per week. Not offered in 1989/90.

FINA 3F90
Fine arts studies abroad
Faculty-conducted tour of theatre, film and art activities in a major
centre abroad. The course will comprise one month of preparatory classes at Brock and four weeks abroad. A fee will be charged to cover expenses. Not offered in 1989/90.

## FINA 3P82

Psychology of the arts
(also offered as PSYC 3P82) Psychological responses to art. Topics include: color, form, motion, rhythm, space and their relationships; proportion and balance; empathy and aesthetic distance; abstraction and symbols. The relation of aesthetic behavior to other aspects of psychological functioning will also be considered.
Prerequisite: PSYC 1F90 and third year standing, or permission of the instructor.
Lectures, seminar, 3 hours per week.

## FINA 4F99

## Honors thesis

A critical, historical or creative project in fine arts of mutual interest to the student and the instructor. Students are urged to arrange and plan their projects in the spring for the following year. (A written proposal must be approved by the chairperson before registration.)

## Dramatic literature

The dramatic literature program is an interlocking series of courses, with the objective of helping the student to develop a critical awareness of drama both as text and as performance; and to recreate the play imaginatively from a study of the text itself and from the context of its conventions, traditions and current stage history.

## Pass program

Eight credits are required: ENGL 1F91, DRAM 1F93, three of DRAM 2F95, 2F97, 2F98, 3F10, 3F93; three additional fine arts credits.

## Honors program

Twelve credits are required: ENGL 1F91, DRAM 1F93, 2F95, 2F97, 2F98,
$3 \mathrm{~F} 10,3 \mathrm{~F} 93,4 \mathrm{~F} 90$; four more fine arts credits.

## Combined pass and honors programs

A pass program must include DRAM 1F93 and four of DRAM 2F95, 2F97, 2F98, 3F10, 3F93. An honors program must include all of the above and DRAM 4F90.

## Dramatic literature and English

The student must (i) meet the requirements of each department for a combined major, (ii) take at least ten credits in English and dramatic literature for a pass degree, fourteen for an honors degree, and (iii) take at least five credits from each department for a pass degree and seven for an honors degree.

CLAS 3P02 and 3P03 are recommended electives.

Year 3 courses are normally restricted to students with at least three second year credits or special permission of the instructor.

Language requirement for humanities majors

Students in the dramatic literature stream are required to complete one credit in a language other than English. It is recommended that students fulfill this requirement by year 2 .

Description of courses

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

Abbreviations:
*DRAM Dramatic literature course that may be taken for credit in English.
**DRAM

## *DRAM 1F93

## Introduction to drama

A study of dramatic works ranging from ritual drama to contemporary plays, with emphasis on plays illustrating the major dramatic genres and conventions operative in the theatre in each phase of its development. Lectures, seminar, 3 hours per week.

## *DRAM 2F95

The comic spirit
Comedy and related dramatic forms
(e.g. farce). Major comedies will be analyzed in their theatrical and social contexts and in relation to the development of ideas about comedy. Some attention may be paid to parallel forms in the drama of the orient.
Prerequisite: DRAM 1F93(193) or permission of the instructor.
Lectures, seminar, 4 hours per week.
Not offered in 1989/90.

## **DRAM 2F97

## Canadian drama

The Canadian experience as expressed by Canada's playwrights on stage, in radio and on television, using both English plays and French plays in translation.
Not open to students with credit in DRAM 291hc.
Lectures, seminar, 4 hours per week. Not offered in 1989/90.
*DRAM 2F98
The tragic vision
Tragedy and related dramatic forms (e.g. melodrama and tragicomedy). Major tragedies will be analyzed in their theatrical and social contexts and in relation to the development of the idea of tragedy.
Prerequisite: DRAM 1F93(193) or permission of the instructor.
Not open to students with credit in DRAM 315.
Lectures, seminar, 4 hours per week.
DRAM 2M90-2M99
Special studies in drama
Studies in a specialized area of drama.

Topics to be announced by the department.
Prerequisite: DRAM 1F93(193) or permission of the instructor.
Lectures, seminar, 3 hours per week.
Not offered in 1989/90.
**DRAM 2P91
Canadian radio and television drama Canadian radio and television drama. The emphasis will be on the changing aesthetics of radio and television drama in Canada and its distinctive qualities. Not open to students with credit in DRAM 2F97(297).
Lectures, seminar, 4 hours per week. Not offered in 1989/90.
*DRAM 3F10

## Shakespeare

A critical study of Shakespeare's works in their literary and theatrical context. Available for credit as ENGL 2F97. Not open to students with credit in DRAM 296, DRAM 397, ENGL 296, ENGL 2F97(297).
Lectures, seminar, 4 hours per week; additional workshop time as required.

## *DRAM 3F93

## Twentieth century drama

Major dramatic and theatrical movements of the period, with special attention to expressionism and theatricalism, the drama and theories of Brecht and Artaud, the absurdists and contemporary dramatists.
Prerequisite: DRAM 1F93(193) or permission of the instructor. Lectures, seminar, 4 hours per week.

## DRAM 3F99

## Special honors tutorial

Advanced study in an area of mutual interest to the student and the instructor.
A written proposal must be approved by the chairperson before registration.

[^1]research.
Prerequisite: year 4 honors standing or permission of the instructor.
Not open to students with credit in DRAM/FILM 402.
Seminar, 3 hours per week.
DRAM 4F99
Honors thesis
A critical or historical project in dramatic literature of mutual interest to the student and the instructor. Students are urged to arrange and plan their projects in the spring for the following year.
A written proposal must be approved by the chairperson before registration.

## Film studies

The film program is a sequence of critical and historical courses which examines a variety of critical approaches to film. The courses explore the nature of film language and develop a critical perspective on film as both an art and a medium. Courses are also offered which explore issues and theories in mass media.

## Pass program

Eight credits are required: FILM 1F94, 2F54, 2F93, 2F94, 3F24; FILM 3F95 or 3F96; two of DRAM 1F93, FILM 2F04, 2F24, 2M90-2M99, 3F05, 3F25, 3F27, VISA 1F90, 1F95, 2F20.

## Honors program

Twelve credits are required: FILM 1F94, 2F24, 2F54, 2F93, 2F94, 3F24, 3F95, 3F96, 4F90; three of DRAM 1F93, 2F97, FILM 2F04, 2M90-2M99, 3F05, 3F25, 3F27, 3F92, 3F93, VISA 1F90, 1F95, 2F20, 2F50.

## Combined pass program

Five credits are required: FILM 1F94; FILM 2F93 or 2F94; three of FILM 2F04, 2F24, 2F54, 2F93, 2F94, 2M902M99, 3F05, 3F24, 3F25, 3F27, 3F95, 3F96.

## Combined honors program

Eight credits are required: FILM 1F94;
FILM 2F93 or 2F94; FILM 3F24, 4F90; four of FILM 2F04, 2F24, 2F54, 2F93, 2F94, 2M90-2M99, 3F05, 3F25, 3F27, 3F92, 3F93, 3F95, 3F96.

## Notes:

1. Students should consult with the department for recommended electives.
2. Year 3 courses are normally restricted to students with at least three second year credits or special permission of the instructor.

Language requirement for humanities majors

Students in the film stream are required to complete FREN 1F80 or 1F90. It is recommended that students fulfill this requirement by year 2 .

## Description of courses

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

Abbreviation:
**FILM Film course which is cycled every two years.

## FILM 1F94

## Introduction to film criticism

The history of film and principles of criticism from the early silents to the modern experimental.
Not open to students with credit in DRAM 194.
Lectures, seminar, 3 hours per week plus weekly film lab.

## FILM 2F04

## Screen education

Principles of critical analysis in the study of film and television. Introduction to media theory and screen studies for the secondary school level. The use of film and television analysis in the
context of various subjects of study (e.g. English, history, art, social studies).
Not open to students with credit in DRAM 204.
Lectures and films, 3 hours per week. Offered spring evening.

## FILM 2F24

Canadian popular culture
(also offered as COMM 2F24)
A critical survey of the mass media in Canada. Studies in the popular arts, with special reference to the ways in which institutions (e.g. CBC, NFB) and selected artists identify and express a Canadian cultural imagination. Prerequisite: FILM 1F94(194) or COMM 1F90(190) or CANA 1F91 or permission of the instructor.
Not open to students with credit in DRAM 224.
Lectures, seminar, 4 hours per week.
**FILM 2F54
The documentary film
(also offered as COMM 2F54 and SOCI 2F54)
The documentary film from its beginnings in photography and the actualites of the Lumières through traditions and developments in documentary practice. The history, theory and aesthetics of documentary film and its cultural implications.
Prerequisite: FILM 1F94(194) or SOCI 1F90(190) or COMM 1F90(190) or permission of the instructor. Lectures, seminar, 3 hours per week; plus weekly film lab.
Not offered in 1989/90.
**FILM 2F93
National cinema
Intensive study of a major national cinema with emphasis on its relationship to national cultural traditions. Prerequisite: FILM 1F94(194) or permission of the instructor.
Lectures, seminar, 3 hours per week; plus weekly film lab.
Not offered in 1989/90.
FILM 2F94
The director's cinema
Study of the technique, thought, and development of selected directors. Prerequisite: FILM 1F94(194) or

## Film Studies, Dramatic <br> and Visual Arts

permission of the instructor.
Not open to students with credit in DRAM 284/294.
Lectures, seminar, 3 hours per week; plus weekly film lab.

FILM 2M90-2M99
Special studies in film
Studies in a specialized area of film.
Topics to be announced by the department.
Prerequisite: FILM 1F94(194) or permission of the instructor.
Lectures, seminar, 3 hours per week.
Not offered in 1989/90.
**FILM 3F05
Theory and criticism of television (also offered as COMM 3F05)
A critical study of the aesthetics of television. Historical and international perspectives and alternative practices will be considered.
Prerequisite: COMM 1F90(190) or FILM 1F94(194) or permission of the instructor.
Lectures, seminar, 3 hours per week, plus weekly lab.
Not offered in 1989/90.

## FILM 3F24

## Canadian cinema

(also offered as COMM 3F24)
A critical history of the Canadian
cinema and a study of the work of major directors.
Prerequisite: FILM 1F94(194) or
DRAM 2F97(297) or permission of the instructor.
Not open to students with credit in DRAM 324.
Lectures, seminar, 3 hours per week plus weekly film lab.

## **FILM 3F25

Advanced studies in popular culture Specialized studies in popular culture. Analysis of a selected genre as developed in different media or of the role of different media in a specific social or historical context.
Prerequisite: FILM 1F94(194) or 2 F24(224) or permission of the instructor.
Lectures, seminar, 4 hours per week.

## FLLM 3F27

## Basic production

Introduction to the theory and practice of film and/or video techniques: specific assignments, viewing of films and/or video works, and production work.
Prerequisite: 2 film courses or permission of the instructor.
Students seeking permission of the instructor should contact the department prior to registration. Enrolment will be limited to 15 .
Not open to students with credit in FILM(COMM) 394 or COMM 327. Workshops, seminar, 3 hours per week; additional production time as required. Not offered in 1989/90.
**FILM 3F92
The director's cinema II
Further study of the technique, thought and development of selected directors. Students will be expected to produce a major piece of research.
Prerequisite: FILM 2F94(294).
Lectures, seminar, 3 hours per week;
plus weekly film lab.
Not offered in 1989/90.
**FILM 3F93
National cinema II
Further study of a major national cinema. Students will be expected to produce a major piece of research. Prerequisite: FILM 2F93(293). Lectures, seminar, 3 hours per week; plus weekly film lab.
Not offered in 1989/90.
**FILM 3F95
Film theory and the avant-garde
Major issues of film theory as developed in the work of theorists (e.g., Eisenstein, Bazin, Metz) and as practised in the work of avant garde filmmakers.
Prerequisite: FILM 1F94(194) and one of FILM 2F54(254), 2F93(293), 2F94(294) or 3F24(324).
Not open to students with credit in FILM 396 taken prior to 1985. Lectures, seminar, 3 hours per week plus film lab.
Not offered in 1989/90.

FILM 3F96

## The silent cinema

A critical study of major films and filmmakers of the silent period in their historical and theoretical contexts. Prerequisite: FILM 1F94(194) and one of FILM 2F54(254), 2F93(293), 2F94(294) or 3F24(324).
Lectures, seminar, 3 hours per week; plus weekly film lab.

## FILM 3F99

## Special honors tutorial

Advanced study in an area of mutual interest to the student and the instructor.
A written proposal must be approved by the chairperson before registration.

## FILM 4F90

Critical theory and practice
(also offered as DRAM 4F90 and THEA 4F90)
An advanced study of critical theory and its application to theatre, dramatic literature, film, radio, television and popular culture. Students will be expected to produce a major piece of research.
Not open to students with credit in DRAM/FILM 402.
Prerequisite: year 4 honors standing or permission of the instructor.
Seminar, 3 hours per week.

## FILM 4F99

Honors thesis
A critical, historical or creative project in film of mutual interest to the student and the instructor. Students are urged to arrange and plan their projects in the spring for the following year.
A written proposal must be approved by the chairperson before registration.

## Theatre

The premise of the theatre program is that the study and practice of theatre is a significant discipline adding to the resources of a liberally-educated person. The program offers a comprehensive introduction to all aspects of theatre. Each year's work includes study of dramatic and theatre theory, and opportunities to explore this theory
in practice and to develop the skills and awareness necessary to apply it.

Production is to the theatre student what laboratories are to the science student; therefore the program includes a major production in each term as well as various minor productions and projects such as participation in the spring arts festival.

The THEA 1F99 class will work on a small-scale production in each term. Students in upper year courses will work as a company on the two major productions in capacities determined by their particular course choices.

Students of all years participate in the spring festival according to the demands of their particular courses and their own need for varied experience.

Apart from THEA 2P98 and 3P00, theatre courses are not normally available to auditors.

## Pass program

## Eight credits are required:

DRAM 1F93; THEA 1F99, 2F40, 2F50, 2P98/3P00; one of FINA 2F16, THEA 3F11, 3F40, 3F41, 3F50, 3F52; two of DRAM 2F95, 2F97, 2F98, 3F10, 3F93. DRAM 1F93 must be taken in year 1 or 2 .

## Notes:

1. Students must satisfy the core and context requirement before year 3 .
2. In year 2 or 3 , students will take five and one half credits since both THEA 2 P 98 and 3P00 are required and are corequisites of other THEA courses.

## Honors program

Twelve credits are required:
DRAM 1F93; THEA 1F99, 2F40, 2F50, 2P98/3P00, 4F90; two of THEA 3F11, 3F40, 3F41, 3F50, 3F52; one of FINA 2F16, THEA 4F40, 4F41, 4F56; three of DRAM 2F95, 2F97, 2F98, 3F10, 3F93. DRAM 1F93 must be taken in year 1 or 2 .

## Combined pass and honors programs

Five credits are required for a pass program: DRAM 1F93; THEA 1F99, $2 \mathrm{~F} 40,2 \mathrm{~F} 50$; and at least one other credit from the following: THEA 2P98/ 3P00, 3F11, 3F40, 3F41, 3F50, 3 F52. CLAS 1P91/1P92, CLAS 3P02/3P03, FILM 1F94, or other fine arts courses are recommended as elective credits.

Note: three credits numbered 2(alpha) 90 or above must be included in all pass programs.

Seven credits are required for an honors program: DRAM 1F93; THEA 1F99, 2F40, 2F50, 4F90; and at least two other credits from the following: FINA 2F16, THEA 2P98/3P00, 3F11, 3F40, 3F41, 3F50, 3F52.

## Notes:

3. At least three credits numbered 3 (alpha) 90 or above must be included in all honors programs.
4. Students must satisfy the core and context requirement before year 3 .
5. Year 3 courses are normally restricted to students with at least three second year credits or special permission of the instructor.

Language requirement for humanities majors

Students in the theatre stream are required to complete one credit in a language other than English. It is recommended that students fulfill this requirement by year 2 .

## Description of courses

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

## THEA 1F99

Introductory theatre practice
Basic theories of practical theatre and
their application. Fundamentals of acting and theatre production. Students will also have the opportunity to develop their potential in production situations.
Prerequisite: interview/audition before registration. Phone Fine Arts office for details. Prospective technical theatre students will be interviewed only. Not open to students with credit in DRAM 199.
Lectures, seminar, workshops, voice, 5 hours per week; additional production and rehearsal time as required.

## THEA 2F02

Introduction to mime for teachers
History and theories of non-verbal theatre; critical analysis; practical work on mime techniques, expressive masks and improvisation in silent situations for both a practical and theoretical understanding of this theatre form. Prerequisite: THEA 2F10(210) or permission of the instructor.
Not open to students with credit in THEA 2F01(201) or 2 F03. Lectures, workshops, 4 hours per week; additional rehearsal time as required. Offered summer day 1989.

## THEA 2F03

## Introduction to mime for theatre

 studentsA practical study of mime techniques, physical comedy and slapstick, expressive masks and improvisation in silent situations. The course aims to give a practical exploration of nonverbal theatre forms. Theoretical work will focus on developing the student actors' "visual vocabulary" to enable them to articulate their perceptions. Prerequisite: THEA 1F99(199) or permission of the instructor.
Not open to students with credit in THEA 2F01(201) or THEA 2F02. Lectures, seminar, workshops, 4 hours per week; additional rehearsal time as required.
Offered spring evening 1989.

## THEA 2F10

Drama in education I
Drama in education is a means of selfdiscovery and expression, and a method for integrating and enhancing learning in the classroom. Each student

## Film Studies, Dramatic and Visual Arts

will be required to undertake field studies.
Enrolment is limited to 30 students per section
Preference will be given to students with year 2 standing; others will be considered if numbers permit. Prefer-
ence will be given to classroom
teachers for the evening class.
Not open to students with credit in
DRAM 210.
Lectures, workshops, 3 hours per week.

## THEA 2F40

## Stage production I

The theory and practical application of the various elements which comprise theatrical productions: lighting, sound and scenic techniques, ground plans, light plots, costumes, working drawings; the application of these skills to a variety of theatres and production situations. A deposit of $\$ 20.00$ will be charged.
Prerequisite: THEA 1F99(199) or permission of the instructor.
Co-requisites for theatre majors:
i) THEA 2P98 or THEA 3P00;
ii) THEA 2F50.

Not open to students with credit in DRAM 240.
Lectures, workshops, 5 hours per week; additional production time as required.

## THEA 2F50

## Acting I

Introduction to acting and the principles of dramatic action. Emphasis is on developing a strong individual technique through exercises, situational improvisations, monologues and scene study.
Prerequisite: THEA 1F99(199) or permission of the instructor. Co-requisites for theatre majors:
i) THEA 2 P 98 or 3 P 00 ;
ii) THEA 2 F40.

Not open to students with credit in DRAM 250.
Lectures, workshops, voice, movement, 5 hours per week.

## THEA 2M90-2M99

## Special studies in theatre

Studies in a specialized area of theatre. Topics to be announced by the department.
Prerequisite: THEA 1F99(199) or
permission of the instructor.
Lectures, seminar, 4 hours per week; additional lab and performance time as required.
Not offered in 1989/90.

## THEA 2P98

## Social development of the theatre

The interchange between audience and actor throughout history, including theatrical conventions, performance spaces and machinery, in relationship to the changing intellectual and social milieu. Links between theatre studio courses and dramatic literature. Research projects, and performance projects investigating historical staging problems and essays.
Prerequisite: THEA 1F99(199) or permission of the instructor. Lectures, seminar, 3 hours per week.

THEA 3F01

## Advanced mime

A study of the creation of material for non-verbal theatre. Includes practical exploration of how visually defined characters are developed through improvisation; the process of finding plot and story; methods of writing and recording visual theatre. Study of the neutral-mask is also included.
Prerequisite: THEA 2F01(201) or 2F02 or 2 F 03 and permission of the instructor.
Lectures, workshops, 4 hours per week; additional production time as required. Not offered in 1989/90.

## THEA 3F09

## Drama in education II

An advanced course specializing in drama as both a teaching method for all subjects in the school curriculum and as a subject in its own right. Students will take part in workshops, research, and write a paper in an area of special interest.
Prerequisite: THEA 2F10(210) or equivalent (e.g. summer school drama specialist course offered by the Ministry of Education).
Enrolment limited to sixteen students per section, to be determined by academic standing.

Not open to students with credit in DRAM 309.
Lectures and workshops, 3 hours per week.

## THEA 3F11

## Theatre in education

The role of theatre in education as a form created and presented for children and young people and as a medium for educational communication. Students will participate in practical projects.
Prerequisite: THEA 2F10(210) or permission of the instructor. Admission limited to twenty-four students, to be determined by academic standing.
Not open to students with credit in DRAM 311.
Lectures and workshops, 3 hours per week; additional rehearsal time as required.
Not offered 1989/90.

## THEA 3F12

## Theatre in education

The school play and alternative forms of presentation. How to solve the problems of theatrical presentation within the course of a school year; finding and choosing suitable plays for children and young people to perform; play-building from a theme or idea; the art of presentation; planning the production and sharing the responsibilities; successful alternatives to "the school play', e.g. story theatre, readers' theatre, anthology, docudrama, choral speaking and choral dramatization. A practical research project will be required. Enrolment limited to 24 students, to be determined by academic standing. Lectures/workshops 6 hours per week (two sections in spring evening).

## THEA 3F40

## Stage production II

Advanced studies in stage production and theatre management which may take the form of internships.
Prerequisite: THEA 2F40(240) or permission of the instructor. Co-requisite for theatre majors: THEA 2 P 98 or 3 P 00 , as available and if not
taken previously.
Not open to students with credit in DRAM 340 and 350 (Production), or THEA 342.
Lectures, seminar, workshops, 5 hours per week; additional production time as required.

THEA 3F41
Design I
Specialist studies in design.
Prerequisite: THEA 2F40(240) or permission of the instructor.
Co-requisite for theatre majors: THEA 2 P 98 or 3 P 00 , as available and if not taken previously.
Not open to students with credit in DRAM 340 and 350 (Design).
Lectures, seminar, workshops, 5 hours per week; additional production time as required.
Not offered in 1989/90.

## THEA 3F50

## Acting II

Further studies in acting technique. Emphasis is on the creation of character in dramatic situations.
Prerequisite: THEA 2F50(250) or permission of the instructor. Co-requisite for theatre majors: THEA 2 P98 or 3P00, as available and if not taken previously.
Not open to students with credit in DRAM 340 and 350 (Acting), or THEA 351.
Lectures, seminar, workshops, 5 hours per week.

## THEA 3F52

## Directing I

Specialist studies in directing.
Prerequisite: THEA 2F50(250), DRAM 1F93(193) and one other DRAM course, or permission of the instructor. Co-requisite for theatre majors: THEA 2 P 98 or 3 P 00 , as available and if not taken previously.
Not open to students with credit in DRAM 340 and 350 (Directing). Lectures, seminar, workshops, 5 hours per week; additional production time as required.

## THEA 3F91

Writing for stage, screen and radio Theory and practice. Workshops on scripts in progress. Selected scripts
may be produced in the department's annual spring festival.
Prerequisite: permission of the instructor. Admission will be based on
samples of written work.
Not open to students with credit in DRAM 4F91.
Seminar, workshops, 3 hours per week.

## THEA 3F99

## Special honors tutorial

Advanced study of an independent nature in an area of mutual interest to the student and the instructor.
A written proposal must be approved by the chairperson before registration.

## THEA 3P00

## Trends in modern theatre

The impact of innovative theorists on contemporary performance and the place of the modern actor in society. Group creations, documentary drama, street theatre, guerilla theatre and other experimental forms as well as modern approaches to traditionally scripted material and the influences of other theorists. Research projects, performance projects, essays.
Prerequisite: THEA 1F99(199) or permission of the instructor. Lectures, seminar, 3 hours per week. Not offered in 1989/90.

## THEA 4F40

## Stage production III

Further studies in stage production and theatre administration. Such study may take the form of tutorials and will include working closely with instructors on special projects.
Prerequisite: THEA 3F40(340) and permission of the instructor.
Not open to students with credit in
DRAM 440 and 450 (Production), or THEA 442.
Lectures, seminar, workshops, 5 hours per week; additional production time as required.

## THEA 4F41

## Design II

Further studies in design. Such study may take the form of tutorials and will include working closely with the instructor on special projects. Prerequisite: THEA 3F41(341) and permission of the instructor.

Not open to students with credit in DRAM 440 and 450 (Design).
Lectures, seminar, workshops, 5 hours
per week; additional production time as required.

## THEA 4F56

Advanced study in acting and directing
Students will work together as a small theatre company, collaborating on one or more productions. Acting and directing are taught in tandem as facets of the same analytical technique, and then extended into production work. Prerequisite: THEA 3F50(350) or 3F52(352) and permission of the instructor.
Not open to students with credit in THEA 4F40(450), 451, 4F42 (450), DRAM 440 or 450 (Acting or Directing).
Lectures, seminar, 3 hours per week; workshops, additional production time as required.

## THEA 4F90

Critical theory and practice (also offered as DRAM 4F90 and FILM 4F90)
An advanced study of critical theory and its application to theatre, dramatic literature, film, radio, television and popular culture. Students will be expected to produce a major piece of research.
Prerequisite: year 4 honors standing or permission of the instructor.
Not open to students with credit in DRAM (FILM) 402.
Seminars, 3 hours per week.

## THEA 4F99

Honors thesis
A critical, historical or creative project in theatre of mutual interest to the honors student and the instructor. Students are urged to arrange and plan their projects in the spring for the following year.
A written proposal must be approved by the chairperson before registration.

## Visual arts

The program consists of studio and art history courses which provide a practical and critical understanding of the visual arts so that the student will develop a personal vision as well as theoretical awareness. Historical, theoretical, critical and cultural documents are investigated, and students are encouraged to extend their experience through exposure to courses in the other fine arts programs and to departmental events.

Studio activities include several intuitive, analytical, and experimental approaches. Students are assisted by artist-teachers who have professional experience and standing in the disciplines they teach.

The art history courses examine the historical development of artistic styles as well as the critical and aesthetic issues that these styles bring into play. Major artists and movements are related to their cultural contexts, and artistic traditions from the ancient to the modern are explored to develop an awareness of the possibilities open both to the visual artist and to the wellinformed critic.

## Pass program

Eight credits are required: VISA 1F90, 1F92, 1F95, 2F92; one of VISA 2F03, 2F04, 2F05; two of VISA 2F94, 2F96, 2M95-2M99, 3F03, 3F04; one of VISA 2F20, 2F40, 2F50, 2F90, 3F05, 3F20, 3F21, 3F95, or FINA 3P82 and VISA 2P97.

## Notes:

1. VISA 1F90 must be taken in year 1. Visual arts majors should also take VISA 1F92 or 1F95 in year 1.
2. FILM 1F94 is a recommended elective for VISA students.

## Honors program

Twelve credits are required: VISA 1F90, 1F92, 1F95, 2F92, 3F92, 4F06; one of VISA 2F03, 2F04, 2F05; two of VISA 2F94, 2F96, 2M95-2M99, 3F03, 3F04; two of VISA 2F20, 2F40, 2F50, $2 \mathrm{~F} 90,3 \mathrm{~F} 05,3 \mathrm{~F} 20,3 \mathrm{~F} 21,3 \mathrm{~F} 95$, or one of these courses and two of FINA 3P82, VISA 2P97, 4P10 and 4P11; one other VISA studio credit.
3. VISA 3F95 is especially recommended for honors VISA majors.

## Combined pass program

Five credits are required: VISA 1F90, and any four VISA credits.
4. Three credits numbered 2(alpha)90 or above must be included in all pass programs.

## Combined honors program

Seven credits are required: VISA 1F90, 1F92, 1F95, and any other four VISA credits .

## Notes:

5. Three credits numbered 3 (alpha) 90 or above must be included in all honors programs.
6. From the following list no more than two VISA credits may be counted toward a pass degree, single or combined major, and no more than three for an honors degree: VISA 2P97, 3F20,
3F21, 4M00-4M09, 4P10, 4P11, 4P12, 4 P 13 and 4P14.
7. Students who do not have the necessary prerequisites for studio courses (VISA 1F92, 1F95, 2F03, 2F04, 2F05, 2F92, 2F96, 3 F03, 3 F04, 3F92, 4F06) may be admitted by portfolio. Details are available from the departmental secretary. Enrolment in these courses will be limited to fifteen students; participation as an auditor is not permitted.
8. Year 3 courses are normally restricted to students with at least three second year credits or special permission of the instructor.

Language requirement for humanities majors

Students in the visual arts stream are required to complete one credit in a language other than English. It is recommended that students fulfill this requirement by year 2 .

## Description of courses

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

## Abbreviation:

**VISA
Visual arts course which is cycled every two years.
VISA 1F90
Introduction to the history of art A critical survey of major styles in architecture, sculpture, and painting from antiquity to the twentieth century. No studio work.
Not open to students with credit in FINA(VISA) 191.
Lectures, seminar, 3 hours per week.

## VISA 1F92

## Drawing I

Exploration of the fundamental principles of drawing. Creative expression, graphic notation, and the study of the figure will be included, with emphasis on observation and analysis. Students must supply their own materials.
Prerequisite: a portfolio must be submitted before registration, unless the student already has credit for VISA(FINA) 195 or VISA 1F95. Not open to students with credit in VISA(FINA) 202.
Lectures, studio work, 5 hours per week.

VISA 1F95
Foundation studio
A studio course in the principles of composition and design which form the basis of all visual art. Form, structure,
space, line, color, proportion, rhythm, etc. will be explored, using a variety of drawing and modelling materials. Students must supply their own materials.
Prerequisite: a portfolio must be submitted before registration unless the student already has credit for VISA 1F92(192) or 202.
Not open to students with credit in FINA 201.
Lectures, studio work, 5 hours per week.

VISA 2F03
Painting I
Developing painting skills; introduction to color theory; explorations of technique. Students must supply their own materials.
Prerequisite: VISA(FINA) 191 or VISA 1F90(190); VISA 1F92(192) or 202 or 1F95(195) and/or permission of the instructor.
Not open to students with credit in FINA 203.
Lectures, studio work, 5 hours per week.

## VISA 2F04

## Printmaking I

Introduction to techniques of etching, silkscreen and relief printmaking, with an emphasis on exploring the technical aspects of each technique. Students must supply their own materials.
Prerequisite: VISA(FINA) 191 or VISA 1F90(190); VISA 1F92(192) or 202 or 1F95(195) and/or permission of the instructor.
Lectures, studio work, 5 hours per week.
Not offered in 1989/90.

VISA 2F05
Sculpture
Fundamentals of sculpture, exploring form, structure, space, weight, plane, tension, rhythm, etc. Instruction in the handling and care of basic modelling materials (clay, plaster, cement), the building of armatures, the rudiments of plaster casting from waste molds. Models, maquettes and drawings will be made; subject matter will include first-hand studies from life. Students must supply their own materials.
Prerequisite: VISA(FINA) 191 or

VISA 1F90(190); VISA 1F92(192) or 202 or 1F95(195) and/or permission of the instructor.
Lectures, studio work, 5 hours per week.
Offered every summer.

## VISA 2F20

## The aesthetics of photography

The history of photography from its beginnings to current technological innovations; the principles of critical analysis and the theory of photography Prerequisite: VISA(FINA) 191 or VISA 1F90(190) or permission of the instructor.
Lectures, seminar, lab, 3 hours per week.
Not offered in 1989/90.

## VISA 2F40

Renaissance art and architecture The classical resurgence of 1400-1600; individual works and artists in the social and intellectual context of the time, including Alberti, Brunelleschi, Donatello, Michelangelo, Raphael, Leonardo, etc.
Prerequisite: VISA(FINA) 191 or VISA 1F90(190) or permission of the instructor.
Lectures, seminars, 3 hours per week.
**VISA 2F50
Canadian art
The history of Canadian art and architecture from Confederation to the present day, including folk art, native art, and the avant garde.
Prerequisite: VISA(FINA) 191 or VISA 1F90(190) or permission of the instructor.
Not open to students with credit in FINA 250.
Lectures, seminars, 3 hours per week. Not offered in 1989/90.
**VISA 2 F90
Art and architecture, 1789-1914
Thematic examination of individuality, contemporaneity, and progress in the context of the period's cultural, political, and technological changes. Prerequisite: VISA(FINA) 191 or VISA 1F90(190) or permission of the instructor.
Not open to students with credit in VISA(FINA) 291

Lectures, seminars, 3 hours per week, museum visits.
Not offered in 1898/90.
VISA 2F92
Drawing II
Further exploration of the various media and modes of drawing, with an emphasis on the development of the student's personal imagery and techniques. Students must supply their own materials.
Prerequisite: VISA 1F90(190); VISA 1F92(192), VISA 1F95(195) and permission of the instructor.
Not open to students with credit in VISA 302.
Lectures, studio work, 5 hours per week.

## VISA 2F94

## Art studies abroad

Studies in the artistic heritage of France at two bases: the mediaeval city of Angers in the Loire Valley, and Paris. Brock visiting instructor, Guy Ducornet, a French artist, will conduct the visits, lectures and seminars and guide the students through their French experience. A command of French is useful but not necessary as the course will be conducted in English. Students must apply by March 15,1989 to Guy Ducornet, department of Fine Arts. To be offered in summer day session, 1989.

Prerequisite: a visual arts course or permission of the instructor.

## **VISA 2F96

## Interdisciplinary workshop

An exploration of the concepts and processes of non-traditional media, including the relation of sound, language, movement and time to visual space. Work will proceed individually and collectively.
Prerequisite: one course in the Fine Arts department and permission of the instructor.
Lectures, studio work, 5 hours per week.
Not offered in 1989/90.
VISA 2M95-2M99
Special studies in studio
Studies in a specialized area of the visual arts.

Spring evening 1989: (2M99) Expressions in clay
Further studies in the art of clay with a focus on contemporary ideas and practice. The design and construction of a Raku kiln will precipitate studies in glazing and firing.
Prerequisite: VISA 2F05(205) or permission of the instructor.
Lectures, studio work.
VISA 2P97
Classical archaeology
(also offered as CLAS 2P97)
A survey of classical archaeology, and a detailed study of selected Greek and Roman sites.
Prerequisite: VISA 1F90(190) or
VISA(FINA) 191 or two of CLAS
1F91(191hc), 1P92(192hc),
1P95(195hc), 1P97(197hc).
3 hours per week.

## VISA 3F03

Painting II
Further studies in techniques of painting. Students must provide their own materials.
Prerequisite: VISA(FINA) 2F03(203)
and permission of the instructor. Lectures, studio work, 5 hours per week.

## VISA 3F04

## Printmaking II

Further exploration of printmaking techniques, including inking, multiplate and multi-media printing. There will be an emphasis on personal imagery. Students must provide their own materials.
Prerequisite: VISA 2F04(204) and permission of the instructor.
Lectures, studio work, 5 hours per week.
Not offered in 1989/90.
**VISA 3F05
Modern art: 1914-1970
A detailed study of twentieth-century art: the role and function of the artist in relation to the European and North American avant-garde movements. Prerequisite: VISA 1F90(190) and/or permission of the instuctor.
Not open to students with credit in VISA 390 or 391.
Lectures, seminar, 3 hours per week and museum visits.

VISA 3F20
Greek art and architecture
(also offered as CLAS 3F20)
A survey of Greek art and architecture from the Bronze Age through the Hellenistic period within the framework of historical and cultural change. Prerequisite: VISA 1F90(190) or VISA(FINA) 191 or two of CLAS 1P91(191hc), 1P92(192hc), 1P95(195hc), 1P97(197hc).
Not open to students with credit in VISA(CLAS) 298.
3 hours per week.

## VISA 3F21

## Roman art and architecture

(also offered as CLAS 3F21)
A survey of Roman art and architecture from the early Iron Age through the late Empire within the framework of historical and cultural change with attention to the influence of the Classical heritage on early Christian/ Byzantine art.
Prerequisite: VISA 1F90(190) or VISA(FINA) 191 or two of CLAS 1P91(191hc), 1P92(192hc), 1P95(195hc), 1P97(197hc).
Not open to students with credit in VISA(CLAS) 299.
3 hours per week.

## VISA 3F92

## Expressive drawing

Advanced drawing as a means of expression. Students must supply their own materials.
Prerequisite: VISA 1F90(190), 2F92(292) and permission of the instructor.
Lectures, studio work, 5 hours per week.
**VISA 3F95
Contemporary art and ideas
A critical evaluation of the major trends in contemporary art, with an emphasis on the interrelationship between art and ideas about art. Prerequisite: VISA 1F90(190) and one other art history credit and permission of the instructor.
Not open to students with credit in VISA 310
Lectures, seminar, 3 hours per week. Not offered in 1989/90.

VISA 3 F99
Special honors tutorial
Advanced study in an area of mutual interest to the student and the instructor.
A written proposal must be approved by the chairperson before registration.

VISA 3M00-3M04
Special studies in art history
Studies in a selected area of art history. Prerequisite: VISA 1F90(190) and permission of the instructor. Lectures, seminar.

VISA 4F06
Honors studio
An advanced course in studio concepts and practices. Students will realize personal studio projects, under supervision in a group context. Each student must submit a written project proposal to the instructor before registration. Students should contact the chairperson for further information. A lab fee of $\$ 45.00$ is charged. Students must supply their own materials. Prerequisite: honors standing in visual arts, or permission of the instructor. Studio work, 5 hours per week.

## VISA 4F99

## Honors thesis

A critical, historical or creative project in the visual arts of mutual interest to the student and the instructor. Students are urged to arrange and plan their projects in the spring for the following year.
A written proposal must be approved by the chairperson before registration.

## VISA 4M00-4M09

## Study in Mediterranean lands

(also offered as CLAS 4M00-4M09)
First hand topographical investigations of ancient sites and monuments. Study tours of the great cities and museums of the Mediterranean world with emphasis on the art and architecture of the prehistoric, Classical and later periods. Offered in the summer day session for approximately three or four weeks of intensive study abroad.
Prerequisite: permission of the instructor.

VISA 4P10
The city in the ancient world (also offered as CLAS 4P10)
The origins and evolution of the city in the Near East; the development of the city and of city planning in Greece, Italy, and the Roman Empire from the end of the Late Bronze Age through the early Byzantine period. The forms and uses of public and private buildings, religious and secular.
Prerequisite: VISA 1F90(190) or VISA(FINA) 191 or a classics credit numbered 2(alpha)90 or above or permission of the instructor.
Not open to students with credit in VISA(CLAS) 388 hc or CLAS 396. 3 hours per week.

VISA 4P11
The art and architecture of the ancient Near East
(also offered as CLAS 4P11)
A study of the art and architecture of Egypt, the Levant, Mesopotamia, Iran and eastern Anatolia from the Neolithic period through the Early Iron Age. Prerequisite: VISA 1F90(190) or VISA(FINA) 191 or a classics credit numbered 2 (alpha) 90 or above or permission of the instructor. Not open to students with credit in VISA(CLAS) 389 hc . Lectures, seminar, 3 hours per week.

VISA 4P12
Greek sanctuaries
(also offered as CLAS 4P12)
A study of the great Panhellenic shrines
(Delphi, Olympia, Epidaurus, and others): topography, architecture, art, with emphasis on the interplay between tradition and changing needs and values.
Prerequisite: VISA 1F90(190) or VISA(FINA) 191 or a classics credit numbered 2 (alpha) 90 or above or permission of the instructor. Not open to students with credit in VISA(CLAS) 397hc.
3 hours per week.
VISA 4P13
The art and archaeology of Cyprus (also offered as CLAS 4P13) A survey of the cultural history of Cyprus from the Neolithic period through the early Byzantine period,
based on the archaeological record; and of the role of Cyprus in the civilization of the eastern Mediterranean. Prerequisite: VISA 1F90(190) or VISA(FINA) 191 or a classics credit numbered 2(alpha)90 or above or permission of the instructor.
Not open to students with credit in VISA(CLAS) 398hc. 3 hours per week.

VISA 4P14
The Aegean Bronze Age
(also offered as CLAS 4P14)
The development of the Bronze Age cultures of the Aegean Basin from 3000 to 1100 B.C. The art and architecture of the Minoans on Crete and the Mycenaeans on the Greek mainland will be stressed.
Prerequisite: VISA 1F90(190) or VISA(FINA) 191 or a classics credit numbered 2 (alpha) 90 or above or permission of the instructor. Not open to students with credit in VISA (CLAS) 395 or 402 hc . 3 hours per week.

## French, Italian and Spanish

Officers of instructicn

## Chairperson

Ernesto J. Virgulti

## French section

## Professors

Alexandre L.A. Amprimoz
Michael J. Cardy
Leonard A. Rosmarin
Associate professors
Leslie A. Boldt-Irons
Barbara J. Bucknall
Dennis F. Essar, co-ordinator
Barbara A.R. McEwen
Italian section
Associate professor
Corrado J.A. Federici, co-ordinator
Assistant professor
Emesto J. Virgulti
Spanish section
Associate professor
Juan A. Fernández, co-ordinator
Assistant professor
Carlos J. Garcia-Gil

## General information

## Schmon tower 1132

The department of French, Italian and Spanish aims to provide students with a thorough and comprehensive coverage of language (spoken and written), literature, and culture. Students are given encouragement and help to visit the language environment in which they are interested. Through a program offered by the department in collaboration with Dalhousie University, third year students in French have the opportunity of spending one academic
year at the University of Provence in Aix-en-Provence, France. In addition, the department favors and facilitates participation by French students at all levels in French immersion programs offered in France (Tours and Angers) and Québec. For students of Italian, the department collaborates with the University of Toronto and York University which offer programs in Italy. Brock University credit can often be obtained for work completed in many of these programs.

## Notes:

## 1. Language requirement for humanities majors

Majors in French, Italian or Spanish are required to complete a credit in another language, preferably French, Italian, Spanish or Latin.
2. Students who have Ontario grade 13 standing or its equivalent in the language take the course numbered 1F90; others take courses numbered $1 \mathrm{~F} 00,1 \mathrm{~F} 10$ or 1 F 80 (see individual course descriptions). FREN 1F80 is taken by students who have completed between two and four years of Ontario high school French (i.e. grade 10, 11 or 12). FREN $1 F 00$ is taken by students who have little or no background in the language (i.e. Ontario grade 9 or less).
3. Courses numbered 1 F 00 are taught partly in English; those numbered 1F80 or 1F90 are taught in the language whenever possible; all courses numbered 2F00 and up are taught in the language.
4. Language courses numbered 1 F 00 , 1F10 and 1F80 may not be taken by those who have Ontario grade 13 standing or its equivalent in the language unless special authorization is obtained from the department. Such authorization is granted only in the most exceptional cases.
5. Prerequisites for French, Italian, and Spanish 1F90: Ontario grade 13 standing or its equivalent in the language, or a $1 \mathrm{~F} 00,1 \mathrm{~F} 10$ or 1 F 80 course in the language, or permission of the department. Prerequisites for courses numbered 2F00 and above are
specified in the individual course descriptions.
6. French-speaking students who have Ontario grade 13 in Français are excluded from French courses in the 1 (alpha) 00 series. They normally take FREN 2F00 in their first year. Similarly, French immersion graduates normally proceed directly to FREN 2 F 00 .
7. FREN $1 F 00$ is a degree credit; however, it may not be used to meet the departmental requirements for a single or combined program in French. Similarly ITAL 1F00 and SPAN 1F00 may be counted towards a degree, but may not be used to meet requirements for single or combined programs in the respective languages.
8. Only one of FREN $1 F 80$ or FREN 1F90 may be used to meet the departmental requirements for a French major.
9. It is to be noted that courses numbered 1F00, 1F10, 1F80, 1F90 and 2F00 constitute a sequence. Once credit has been obtained in one of these courses, students are not allowed to take for credit a course in the sequence with a lower number. French students may not take two courses at different levels of the above sequence during the same session. Students admitted to any French course numbered 2 (alpha) 00 or higher may not concurrently or subsequently take a French course at the 1 (alpha) 00 level.

Pass program in a single major

## French

## Year 1

FREN 1 F90 one science and one social science context credit; two elective credits.

## Year 2

FREN 2F00; FREN 2F01 or 2F05; one further course from among FREN $2 \mathrm{~F} 01,2 \mathrm{~F} 05,2 \mathrm{~F} 42,2 \mathrm{~F} 50$ or courses numbered 2 F 90 or higher with permis-
sion of the department; two elective credits.

Year 3
Three French credits numbered 2(alpha) 90 and above, two elective credits.

## Italian

Year 1
ITAL 1F90; one science and one social science context credit; two elective credits.

## Year 2

ITAL 2F00; 2F90, 2P40, 2P92; two elective credits.

## Year 3

Three Italian credits numbered 2 ( al pha)90 and above; two elective credits.

## Spanish

Year 1
SPAN 1F90; one science and one social science context credit; two elective credits.

Year 2
SPAN 2F00; two of SPAN 1F95, 1F96,
2F10, 2F90; two elective credits.
Year 3
Three of SPAN 3F92 to 4F10; two elective credits.

Honors program in a single major

## French

Years 1, 2 and 3
As in pass program.
Year 4
Five of FREN 2F90 to 4F99. Honors students must take FREN 3F90 in either year 3 or 4 . Three credits numbered 3(alpha) 90 or above must be included in all honors degrees.

## Italian

In combination with any other language as part of a combined major, see
below; other combinations of programs are possible subject to departmental approval.

## Spanish

Years 1, 2 and 3
As in pass program.
Year 4
Five of Spanish 2F10 to 4F25. It should be noted that three credits numbered 3 (alpha) 90 or above must be included in all honors degrees.

## Pass program in two languages

(applicable to all languages)
Year 1
One credit in language $A$; one credit in language B ; one science and one social science context credit; one elective credit.

## Year 2

Two credits in language $A$; two credits in language B ; one elective credit.

## Year 3

Two credits in language A numbered 2(alpha) 90 or above; two credits in language B numbered 2(alpha) 90 or above; one elective credit.

Honors program in two languages
(applicable to all languages)
Years 1, 2 and 3
As in pass program.

## Year 4

Three credits in language A; two credits in language B . Three credits numbered 3(alpha) 90 or above must be included in each honors program.

## Combined major programs

Pass
Year 1
One credit in the chosen language.

## Year 2

Two credits in the chosen language.
Year 3
Two credits in the chosen language numbered 2(alpha) 90 or above.

## Honors

Years 1, 2 and 3
As in pass program.

## Year 4

Three credits in the chosen language numbered 3(alpha) 90 or above. Three credits numbered 3 (alpha) 90 or above must be included in each honors program.

## Description of courses

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

## French section

## FREN 1F00

Language (introductory)
Essentials of grammar, emphasis on idiomatic expression. Extensive practice in reading, writing and speaking.
This course may be taken only by students who have limited or no background in the language (i.e. Ontario grade 9 French or equivalent or less).
Lectures, 3 hours per week; plus language lab.

## FREN 1F80

## Practical language

Basic skills of written and oral expression. Emphasis on communication for general purposes. Selected texts. Prerequisite: FREN 1F00 or, at the

## French, Italian and Spanish

high school level, a minimum of two years but no more than four years of French (i.e. Ontario grade 10,11 or 12 or equivalent).
Lectures, 3 hours per week; plus language lab.

## FREN 1F90

Language and literature
Practice in speaking, reading, and writing; self-expression through discussion. Selected literary texts. Prerequisite: FREN 1F00 or FREN 1F80 or Ontario grade 13 French (not in Français or immersion programs) or equivalent.
Lectures, 3 hours per week; plus language lab.

## FREN 2F00

Language (intermediate)
Literary and idiomatic expression.
Composition, critical written and oral expression through discussion of general and literary topics. Transposition into French.
Prerequisite: FREN 1F90(190) or grade 13 Français or grade 13 French Immersion.
Lectures, 3 hours per week.
FREN 2F01
Literary and cultural movements of France
Introduction to the literature of France: analysis of significant works in their historical and cultural context. Introduction to dissertation and explication de texte.
Recommended preparation for all further courses in French literature.
Prerequisite: FREN 1F90(190) or grade 13 Français or grade 13 French immersion.
Lectures, 3 hours per week.
FREN 2F05
Literary and cultural movements of French Canada
Introduction to the literature of French Canada: analysis of significant works in their historical and cultural context. Introduction to dissertation and explication de texte.
Recommended preparation for all further courses in French-Canadian literature.
Prerequisite: FREN 1F90(190) or grade

13 Français or grade 13 French immersion.
Not open to students with credit in FREN 216.
Lectures, 3 hours per week.
FREN 2F31
Culture and civilization in France
A day by day field exploration in France, of French culture, past and present, concentrating on the culture and the people. The course takes place in July in Angers and Paris and immerses students in the life of the country as well as in the French language.
Prerequisite: FREN 1F90(190).

## FREN 2F42

## Children's literature

A selection of texts for children from the seventeenth century to the present day. Authors studied include: La Fontaine, Perrault, Verne, Daudet, Maurois, Aginé, Prévert, Jacob, Ionesco and Tournier.
Prerequisite: FREN 1F90(190).
Lectures, 3 hours per week.
FREN 2F50
Introduction to the comparative phonetics of English and French (given in English)
(also offered as TESL 2F50 and APLI 2F50)
A comparative analysis of distinctive phonological features of the English and French languages.
Prerequisite: FREN 1F90(190).
Lectures, seminar, 3 hours per week.

## FREN 2F90

19th century novel
Its evolution from the Romantic era to the Catholic revival. Naturalism and realism. Authors studied include: Constant, Stendhal, Balzac, Flaubert, Maupassant, Zola and Huysmans. Prerequisite: any French course numbered 2F00(200) or higher. Lectures, 3 hours per week.

FREN 2F91
Contemporary literature of Africa and the Caribbean ${ }^{3}$
(formerly FREN 2F41)
Contemporary poetry, theatre and novels of the French-speaking coun-
tries of Africa and the Caribbean in the context of their historical, social, and ideological background. Authors studied include: Césaire, Kateb, Dadié, Kourouma, Ouloguem, Senghor and Glissant.
Prerequisite: any French course numbered 2F00(200) or higher.
Not open to students with credit in FREN 291 or 2F41.
Lectures, 3 hours per week.
FREN 2F92
Literature, 18 th century
Enlightenment, sensibility and the philosophes. Analysis of significant works in their cultural and ideological context. Authors studied include: Montesquieu, Prévost, Marivaux, Voltaire, Diderot, Rousseau, Beaumarchais and Laclos.
Prerequisite: Any French course numbered 2F00(200) or higher. Not open to students with credit in FREN 211.
Lectures, 3 hours per week.
FREN 2F93
20th century French literature to 1945
Analysis of tendencies and major works in several genres. Authors studied include: Claudel, Gide, AlainFournier, Proust, Romains, Giraudoux, Saint-Exupéry, Malraux, Bernanos and Montherlant.
Prerequisite: any French course numbered $2 \mathrm{~F} 00(200)$ or higher.
Not open to students with credit in FREN 391.
Lectures, 3 hours per week.

## FREN 2F95

## French-Canadian novel and short

 storyEvolution and tendencies from the nineteenth century to the present day. Authors studied include: Aubert de Gaspé, Ringuet, Langevin, Roy, Blais, Hébert, Aquin and Ducharme. Prerequisite: any French course numbered 2F00(200) or higher. FREN 2 F 05 is recommended.
Not open to students with credit in FREN 396.
Lectures, 3 hours per week.

## FREN 2F99

## Translation 1

An introduction to comparative stylistics and a preparation for FREN 4F01 (Translation II). Questions presented and studied include fundamental linguistic terminology, basic principles of translation, structural and semantic contrasts between French and English as well as cultural implications in language studies; pragmatic exercises stressing stylistic analysis of texts and their translations, lexical exactitude and problem-solving in terminology. Prerequisite: FREN 2F00(200)
Not open to students with credit in FREN 2 F49.
Lectures, 3 hours per week.

## FREN 3F90

## Stylistics

Fundamental principles of stylistics and the related disciplines of rhetoric and poetics; the study of semantics with particular emphasis on French idiomatic expressions; advanced composition.
Prerequisite: FREN 2F00(200). Lectures, 3 hours per week.

FREN 3F91
Francophone feminists of the 20th century
(formerly FREN 3F81)
Women writers in France and Quebec who are rethinking traditional women's roles and who have some very different solutions to this basic issue.
Prerequisite: any French course numbered 2F00(200) or higher.
Not open to student with credit in FREN 3F81(381).
Lectures: 3 hours per week.

## FREN 3F97

Literature, 17th century
The ideal of French classicism. Assessment of conflicting religious, philosophical, artistic, and moral currents. Authors studied include: Comeille, Molière, Racine, Pascal, Mme de Lafayette, Saint-Simon, La Fontaine.
Prerequisite: any French credit numbered 2F00(200) or higher.
Lectures, 3 hours per week.

FREN 3F98
19th century poetry and theatre Romanticism, symbolism, and decadence. Authors studied include: Lamartine, Vigny, Hugo, Nerval, Baudelaire, Rimbaud, Mallarmé, Becque.
Prerequisite: any French course numbered 2F00(200) or higher. Lectures, 3 hours per week.

## FREN 3P95

French-Canadian theatre
(formerly FREN 3F95)
Contemporary French-Canadian theatre: background and traditions, analysis of selected plays, international influences, and current directions.
Authors may include: Gélinas, Dubé, Hébert, Loranger, Tremblay, Barbeau, Germain, Maillet, Laberge, Chaurette, Dubois, Bouchard.
Prerequisite: any French course numbered 2F00(200) or higher. FREN 2 F 05 is recommended.
Not open to students with credit in FREN 3F85, 3F95 or 426.
Lectures, 3 hours per week.
FREN 3P96
French-Canadian poetry
(formerly FREN 4F85)
Evolution and tendencies from the late nineteenth century to the present day.
Authors may include: Nelligan, Saint-
Denys Garneau, Grandbois, Miron, Brossard, Brault.
Prerequisite: any French course
numbered 2F00(200) or higher. FREN
2 F 05 is recommended.
Not open to students with credit in FREN 4F85 or 426.
Lectures, 3 hours per week.

## FREN 4F00

History of the language
The origins of French, dialectal and provincial variations since the Middle Ages, social influences upon language, lexicology and idiomatology, the impact of other languages on French, assessment of French as a vehicle of thought through the ages.
Lectures, 3 hours per week.
FREN 4F01
Translation II
Building on the basis of FREN 2F99,
this course will stress both the cultural and technical implications of problem solving in translation. The theory and history of the discipline will be presented in order to demonstrate the constant terminological retraining necessary for professional translators. Prerequisite: FREN 2F99(2F49). Lectures, 3 hours per week.

## FREN 4F10

## Language and literature of the Middle Ages

From the chansons de geste to the 15th century. Romans courtois, satire, history and theatre. Grammar and syntax of old French. Authors studied include: Béroul, Bodel, Villon. Lectures, 3 hours per week.

FREN 4F20
Literature, 16 th century
Humanism within the French Renaissance. Pléiade poetry. Authors studied include: Rabelais, DuBellay, Ronsard, D'Aubigné, Montaigne.
Lectures, 3 hours per week.

## FREN 4F93

20th century literature from 1945 to the present day
Analysis of tendencies and major
works in several genres, including those of the theatre of the absurd and the nouveau roman. Authors studied include: Sartre, Camus, Duras, Genet, Ionesco, Beckett, Robbe-Grillet, Sarraute, Butor, Le Clézio.
Not open to students with credit in FREN 391.
Lectures, 3 hours per week.

## FREN 4F98

Critical theory and methodology Contemporary critical theories and advanced bibliographical research in the various areas of French literature. Assignments will consist of two major projects to be completed in second term.
Prerequisite: two French credits numbered 2F90 or higher.
Lectures, 3 hours per week.

## FREN 4F99

Research project
A research project carried out with a faculty adviser. Students will establish
the topic in consultation with members of the department.
Prerequisite: honors standing and permission of the department.

## FREN 4V60-4V65

Special research topics in French literature
These courses are intended to bridge the specific research interests of the members of the department with their teaching at our present most advanced level. From year to year the instructor, as well as the content of the course, will vary.
Lectures, 3 hours per week.

## Italian section

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

## ITAL 1F00

Language (introductory)
A beginner's course for students with no background in Italian. Acquisition of reading and oral skills, elementary grammar. Conversation and composition.
Lectures, 3 hours per week; plus
language lab.
ITAL 1F10
Language (introductory, for dialect speakers)
(formerly ITAL 1F80)
A beginner's course for students with limited background in the Italian language or one of its dialects. Acquisition of reading and oral skills, basic grammar, composition and conversation.
Not pen to students with credit in ITAL 1 F00 or ITAL 1F80.
Lectures, 3 hours per week; plus language lab.

## ITAL 1F90

Language (intermediate)
Grammar review; emphasis on more complex structures; composition and oral practice. Discussions based on selected literary texts. Lectures, 3 hours per week; plus language lab.

ITAL 1F95
Cultureand civilization
(given in English)
The artistic heritage of Italy and the forces--intellectual, political, and social--that have shaped the mentality and way of life of the Italians from the Middle Ages to the present day. Selected texts, slides, records, and films.
Not open to students with credit in ITAL 230.
Lectures, 3 hours per week.
ITAL 2 F00
Language and literature Advanced grammar, oral and written practice. Introduction to the analysis of literary texts and principles of criticism.
Prerequisite: ITAL 1F90 or permission of the department.
Lectures, 3 hours per week.
ITAL 2F90
Translation and advanced grammar The first part of this course is dedicated to the translation of selected material from business correspondence, magazine articles, essays and literary texts. The second part deals with principles of syntax andstyle and includes compositions on literary topics.
Not open to students with credit in ITAL 290, 299 or 390.
Prerequisite: ITAL 1F90(190). Lectures, 3 hours per week.

ITAL 2P40
Literary and cultural movements in Italy
An overview of the primary theoretical and artistic works that pertain to the following movements: stilnovismo, umanesimo, rinascimento, barocco, illuminismo, romanticismo and decadentismo.
Prerequisite: ITAL 1F90(190).
Lectures, 3 hours per week.
ITAL 2P92
Italian theatre
Italy's major playwrights and their more significant works. Authors
include Machiavelli, Goldoni, and
Pirandello.
Prerequisite: ITAL 1 F90.
Lectures, 3 hours per week.

ITAL 3F93
Literature of the Middle Ages
Intensive study of the works of the major writers. Prescribed texts: Dante, La Divina Commedia; Petrarch, $1 /$
Canzoniere; Boccaccio, Il Decameron. Lectures, 3 hours per week.

ITAL 3P90
Italian Romanticism: prose and poetry
Major texts of the Italian Romanticism, including Manzoni, I Promessi Sposi; and selections from Leopardi's Canti and the works of Foscolo.
Not open to students with credit in ITAL 210.
Lectures, 3 hours per week.

## ITAL 3P91

Literature of the 19th and 20th centuries
A study of post-Romantic literature
with particular emphasis on Verismo and Decadentismo. Authors include:
Verga, Pirandello and Svevo.
Not open to students with credit in ITAL 210.
Lectures, 3 hours per week.

## ITAL 3P94

## The modern novel

Representative novels from leading modern and contemporary writers such as Moravia, Pavese, Buzzati, Silone, Vittorini, Calvino, Sciascia. Lectures, 3 hours per week.

## ITAL 3P95

## Modern Italian poetry

Major poets and currents of the twentieth century. Selections from D'Annunzio, Pascoli, the Crepuscolari, the Vociani, the Futurists, Saba,
Ungaretti, Montale, Quasimodo, the Hermetics, Post-Hermeticism. Lectures, 3 hours per week.

ITAL 4F10
Prose and poetry of the Italian Renaissance
Major thinkers, epic poets, and currents of the Renaissance. Prescribed texts: Machiavelli, Il Principe; Castiglione, Il Cortegiano; Ariosto, Orlando Furioso; Tasso, Gerusalemme Liberata.
Lectures, 3 hours per week.

Spanish section
Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

## SPAN 1F00

Language (introductory)
Essentials of grammar, emphasis on idiomatic expression. Conversation and elementary composition.
Lectures, 3 hours per week; plus language lab.

## SPAN 1F90

## Language and literature

Practice in speaking, reading and writing, composition, self-expression. General background of Spanish literature.
Lectures, 3 hours per week; plus language lab.

## SPAN 1 F95

Spanish culture and civilization (given in English)
Historical, social, and artistic factors fundamental to an understanding of modern Spain. Selected texts, slides, and tapes.
Not open to students with credit in SPAN 230.
Lectures, 3 hours per week.
SPAN 1F96
Spanish-American culture and civilization
(given in English)
Historical, social and political developments from pre-Columbian times to the present day. Selected texts, tapes and slides.
Not open to students with credit in SPAN 240.
Lectures, 3 hours per week.

## SPAN 2F00

Language (intermediate)
Oral and written language practice. Discussion of general literary and linguistic topics. Composition and translation. Selected texts.
Lectures, 3 hours per week.

SPAN 2F10
Spanish-American literature
Chronological coverage from early times to the present day. Anthology readings.
Lectures, 3 hours per week.

## SPAN 2F90

Translation and advanced grammar The translation of a wide range of material including articles, literature, essays and business correspondence followed by advanced grammar and stylistics, including compositions on literary topics.
Prerequisite: SPAN 1F90 or permission of the instructor.
Not open to students with credit in SPAN 2F99 or 3 F96.
Lectures, seminar, 3 hours per week.

## SPAN 3F92

## Literature, 16th century

First century of the Golden Age. Humanism and the Renaissance in Spain. Lyric poetry; origins of the picaresque novel; mysticism; the birth of the modern novel; prescribed authors and texts: Garcilaso; Fr. Luis de Léon; Santa Teresa; San Juan de la Cruz; anonymous, Lazarillo de Tormes; Cervantes, Don Quijote. Lectures, 3 hours per week.

## SPAN 3F93

Literature, 17th century Second century of the Golden Age. Continuing development of lyric poetry and the picaresque novel; evolution of the national theatre. Prescribed texts: Góngora, Polifemo; Quevedo, El
Buscón; Lope deVega, Fuenteovejuna;
Tirso de Molina, El burlador de Sevilla; Calderón, La vida es sueño.
Lectures, 3 hours per week.

## SPAN 3F97

The generation of '98
Spanish thinkers, poets, novelists, and dramatists of the beginning of the 20th century. Prescribed texts: Unamuno, $S$. Manuel Bueno, mártir; Baroja, El árbol de la ciencia; Azorín, Castilla; A.
Machado, Antologia; Valle Inclán,
Martes de carnaval; J.R. Jimenez, Platero y yo.
Lectures, 3 hours per week.

## SPAN 3F98

Literature, 18 th and 19 th centuries A general survey of Spanish literature of the period with emphasis on artistic movements and the social, historical, and cultural background of the time. Prescribed texts: Feijoo, Teatro crítico universal; Moratín, El sí de las niñas; Larra, Articulos de costumbres; Zorrilla, Don Juan Tenorio; Bécquer, Rimas, Leyendas; Pérez Galdós, Torquemada; Clarín, ; Adiós, Cordera! Lectures, 3 hours per week.

## SPAN 3P94

20th century Spanish novel (formerly SPAN 4F25)
Representative novels from major contemporary writers of Spain such as Cela, Delibes, Cunqueiro, Sanchez Ferlosio, Martin Santos, Benet.
Not open to students with credit in SPAN 4F25.
Lectures, 3 hours per week.
SPAN 3P95
20th century Spanish-American novel
(formerly SPAN 3F95)
Major contemporary Spanish-American
novelists such as Carpentier, Rulfo,
Fuentes, Cortázar, Garcia Márquez,
Borges and their main works.
Not open to students with credit in SPAN 3F95.
Lectures, 3 hours per week.
SPAN 4F00
History of the language
Origins, approach to phonology, morphology and syntax, dialectal and social influence, evolution in provincial Spanish and Latin America, idiomatology.
Lectures, 3 hours per week.
SPAN 4F10
Language and literature of the Middle Ages
Grammar and syntax of mediaeval Spanish. Intensive study of major works. Prescribed texts: Mío Cid; Don Juan Manuel, El Conde Lucanor; Arcipreste de Hita, Libro de buen amor; F. Rojas, La Celestina. Lectures, 3 hours per week.

## General Studies and Integrated Studies

Students wishing to pursue a pattern of studies which does not coincide with either a single major or a combined major program may choose a general studies program or an integrated studies program.

A general studies program is offered at both the pass and honors degree levels and must be approved by the dean in whose division most of the courses are to be taken. In addition to the normal University requirements, a student must include at least five credits in one subject and three in another as part of the 15 credits required for a pass degree. Of the 20 credits required for an honors degree, at least seven credits must be chosen in one subject and five in another. It should be noted that a maximum of five credits from any combination of administrative studies, education, physical education, recreation and leisure studies, and teaching English as a second language can be included in a pass BA or BSc; within an honors BA or BSc a maximum of seven may be taken. Education may only be used for a minor concentration (i.e. the three course component) and only in a pass degree. An honors degree with education as a component is not possible.

A full credit in a language is required of students who choose a concentration of courses in humanities. All others must include a full credit in mathematics or computer science or approved equivalent. If students choose courses from the humanities and any of the other divisions, they should consult the appropriate dean to determine whether one or both of these requirements must be satisfied.

Students electing to pursue a general studies program should consult with the appropriate dean or the assistant registrar, students programs when choosing courses.

An integrated studies program is offered at both pass and honors degree levels for students whose special interests cannot be accommodated by a major, combined major or general studies program. A student choosing an integrated studies program must receive prior approval for such a program or any subsequent changes to an approved program from the appropriate dean. An integrated studies program which involves only two subject areas for which a combined major is available may not be taken, nor is it possible to pursue an integrated studies program in education. A student electing to pursue an integrated studies program must maintain second class honors standing in order to continue in the program and to graduate. Additionally, an integrated studies program must include an appropriate credit in mathematics or computer science if the pattern of studies includes an emphasis in science or social science, or a credit in a language (in accordance with the language requirement of the division of humanities) if the pattern of studies includes an emphasis in the humanities. Both may be required where circumstances warrant. When choosing a program, students should take care that prerequisites for advanced courses are met and that the schedule for cycled courses is considered.

Students graduating in combined major, general or integrated studies programs will receive a BA if the majority of their courses is in the arts, or a BSc if the majority of their courses is in the sciences.

## Geography

## Officers of instruction

Chairperson
Alun O. Hughes
Professors
John N. Jackson
Keith J. Tinkler
Associate professors
Hugh J. Gayler
Alun O. Hughes
John McNeil
Josephine P. Meeker
John Menzies
Clarke W. Thomson
Assistant professor
Anthony B. Shaw

General information

## Mackenzie Chown complex C322

The department of Geography offers programs leading to BA and BSc degrees at the pass and honors levels and participates in a number of combined major programs.

Geographers study the distribution of phenomena, physical and human, over the earth's surface and the interrelationships of man and the natural environment. Their work ranges from description and mapping, through scientific analysis and explanation, to forecasting and planning for the future.

The discipline of geography has a broad scope and combines elements of both the social and natural sciences. Two principal divisions of the subject exist--human geography and physical geography--linked by a common background, a mutual concern for the environment and mankind, and a body of related theory and methodology.

At Brock three degree programs are available: human geography, leading to a BA; physical geography, leading to a BSc ; and geography, which combines the human and physical sides of the discipline and leads to either a BA or BSc. These programs are described in detail in subsequent sections.

The courses offered by the department of Geography fall into two groups:

Group A: courses which may be taken for BA credit:

1 F 90 | 2P02 | 3F90 | 3P57 | 4F60 |  |
| :--- | :--- | :--- | :--- | :--- |
|  | 2P03 | 3P01 | 3P72 | 4F62 |
| 2P06 | 3P03 | 3P73 | 4F63 |  |
|  | 2P07 | 3P07 | 3P82 | 4F67 |
|  | 2P08 | 3P40 | 3P83 | 4F69 |
|  | 2P90 | 3P41 | 3P84 | 4F90 |
|  | 2P91 | 3P42 | 3P85 | 4F99 |
|  | 2P92 | 3P43 |  | 4P01 |
|  | 2P94 | 3P44 |  | 4P02 |

Group B: courses which may be taken for BSc credit:

| 1 F 91 | 2P04 | 3F90 | 3P23 | 4F11 |
| :--- | :--- | :--- | :--- | :--- |
|  | 2P05 | 3P01 | 3P24 | 4F60 |
|  | 2P07 | 3P03 | 3P25 | 4F90 |
|  | 2P08 | 3P07 | 3P30 | 4F99 |
|  | 2P09 | 3P10 | 3P31 | 4P01 |
|  | 2P94 | 3P15 | 3P56 | 4P02 |
|  |  | 3P22 | 3P83 | 4P26 |
|  |  |  |  | 4P27 |
|  |  |  |  | 4P28 |
|  |  |  |  | 4P29 |

## Notes:

1. Certain courses fall into both group A and group B, and can be taken for either BA or BSc credit.
2. Providing $B A / B S c$ program requirements and course prerequisites are met, a student may take elective credits from both group A and group B.
3. Students may gain credit for only one of GEOG 3P56(356hc) or GEOG 3P57(357hc).

In most courses there is emphasis on practical work. This entails structured labs and seminars in early years, but involves progressively more independ-
ent work in later years, culminating in an optional honors thesis in year four. Field work features prominently in many courses. Two field courses, GEOG 3P56(356hc) and 3P57(357hc), are held during registration week in early September, with follow-up seminars during term; one of these courses is mandatory for students entering year three. An internship program is available as part of GEOG 4F99 in year 4, enabling students to obtain real-world work experience while still at the University.

Laboratories and equipment are available for work in biogeography, geomorphology, climatology, cartography, surveying, remote sensing, urban, economic and cultural geography. The University map library, containing an extensive collection of maps, atlases and airphotos, is housed within the Geography department.

## Bachelor of Arts in Human Geography

## Pass program

Seven and one half credits in geography are required, plus MATH 1F92 and two social science credits other than geography

The normal program sequence is as follows:

## Year 1

GEOG 1F90; GEOG 1F91 (may be taken in year 2); MATH 1F92; one humanities and one social science context credit.

Year 2
GEOG 2P02, 2P03, 2P06, 2P07, 2P08; one social science credit; one and one half elective credits (to include GEOG 1F91 if not completed in year 1).

## Year 3

GEOG 3P57; two and one half year 3 credits in geography from group A; two elective credits.

## Geography

## Honors program

Eleven and one half credits in geography are required.

Years 1, 2 and 3
As in pass BA program.
Year 4
GEOG 4F99; two year 4 credits in geography from group A ; one credit in geography at year 2 level or above; one elective credit.

## Bachelor of Science in Physical Geography

## Pass program

Seven and one half credits in geography are required, plus MATH 1P97, 1P98, and three science credits from biological sciences, chemistry, computer science, geological sciences, mathematics and physics (excluding ASTR 1F00, BIOL 1F25, GEOL 1F90, GEOL 2 P 90 and SCIE 1F20). It is recommended that at least one of these be at year 2 level or above.

For majors with specific interest in geomorphology/soils, the following geology courses are recommended as elective credits: GEOL 2P31, 3P52, 3P61, 4P41, 4P42 and 4P61. Note also that GEOL 3P25 may be taken for geography credit as GEOG 3P25.

## Year 1

GEOG 1F91; GEOG 1F90 (may be taken in year 2); MATH 1P97, 1P98; one humanities and one science context credit.

Year 2
GEOG $2 \mathrm{P} 04,2 \mathrm{P} 05,2 \mathrm{P} 07,2 \mathrm{P} 08,2 \mathrm{P} 09$; one science credit; one and one half elective credits (to include GEOG 1F90 if not completed in year 1 ).

## Year 3

GEOG 3P56; two and one half year 3 credits in geography from group B; one science elective credit; one elective credit.

## Honors program

Eleven and one half credits in geography are required.

Years 1, 2 and 3
As in pass BSc program.

## Year 4

GEOG 4F99; two year 4 credits in geography from group B; one credit in geography at year 2 level or above; one elective credit.

## Bachelor of Arts in Geography

## Pass program

Eight credits in geography are required, plus MATH 1F92 and two social science credits other than geography.

The normal program sequence is as follows:

Year 1
GEOG 1F90, 1F91; MATH 1F92; one humanities and one social science context credit.

## Year 2

GEOG 2 P07, 2 P08; one year 2 credit in geography from group $A$; one year 2 credit in geography from group $B$; one social science credit; one elective credit.

## Year 3

GEOG 3P57; one and one half year 3 credits in geography from group A; one year 3 credit in geography from group $B$; two elective credits.

## Honors program

Twelve credits in geography are required.

Years 1, 2 and 3
As in pass BA program.

## Year 4

GEOG 4F99; two year 4 credits in geography; one credit in geography at year 2 level or above; one elective credit.

## Bachelor of Science in Geography

## Pass Program

Eight credits in geography are required, plus MATH 1P97, 1P98, and three science credits from biological sciences, chemistry, computer science, geological sciences, mathematics and physics (excluding ASTR 1F00, BIOL 1F25, GEOL 1F90, GEOL 2P90 and SCIE 1F20). It is recommended that at least one of these be at year 2 level or above.

The normal program sequence is as follows:

Year 1
GEOG 1F90, 1F91; MATH 1P97, 1P98; one humanities and one science context credit.

## Year 2

GEOG 2P07, 2P08; one year 2 credit in geography from group $A$; one year 2 credit in geography from group $B$; one science credit; one elective credit.

## Year 3

GEOG 3P56; one year 3 credit in geography from group $A$; one and one half year 3 credits in geography from group B; one science credit; one elective credit.

## Honors program

Twelve credits in geography are required.

Years 1, 2 and 3
As in pass BSc program.

## Year 4

GEOG 4F99; two year 4 credits in geography; one credit in geography at year 2 level or above; one elective credit.

## Combined major programs

The department of Geography participates in the following formal combined major programs:
BSc Geography and Biological Sciences*
BA Geography and Economics*
BSc Geography and Geological Sciences
BA Geography and Urban and Environmental Studies
BSc Geography and Urban and Environmental Studies

The requirements for the two programs marked with an asterisk (*) are listed in the Biological Sciences and Economics sections of the calendar. The other programs are described below.

Combined major programs involving other disciplines are also possible; students interested in pursuing one of these should consult the chairpersons of Geography and the other department involved.

The minimum geography course requirements for a combined major program are as follows.

## BA pass degree

GEOG 1F90; GEOG 2P07, 2P08 (or equivalent); one year 2 credit from group A; GEOG 3P57; one and one half year 3 credits from group $A$.

## $B A$ honors degree

As for pass degree, plus:
GEOG 4F99; one year 4 credit from group A .

## BSc pass degree

GEOG 1F91; GEOG 2P07, 2P08 (or equivalent); one year 2 credit from group B ; GEOG 3P56; one and one half year 3 credits from group $B$; MATH 1P97, 1P98.

## BSc honors degree

As for pass degree, plus:
GEOG 4F99; one year 4 credit from group $B$.

## Notes:

1. MATH 1P97, 1P98 are mandatory in all BSc combined major programs.
2. Both the BA and BSc programs require a field course (either GEOG 3 356 or 3P57), held during registration week in early September, with followup seminars during term.

## BSc Geography and Geology

Pass program
Year 1
GEOG 1F91; GEOL 1F95; MATH
1P97, 1P98; one social science and one humanities context credit.

Note: GEOG 1 F90 is strongly recommended as a social science context credit.

Year 2
GEOG 2P07, 2 P08 (or equivalent); one credit from GEOG 2P04, 2P05, 2P09; GEOL 2P01, 2P21, 2P42; one half credit in geology; COSC 1P91; one elective half credit.

## Year 3

GEOG 3P56; one and one half year 3 credits in geography from group B; GEOL 2 P 31 ; one and one half credits in geology at year 2 or year 3 level; one science credit from chemistry, computer science, mathematics or physics.

Honors program
Years 1, 2 and 3
As in pass program.
Year 4
GEOG 4F99; one year 4 credit in geography from group B; two credits in geology at year 3 or year 4 level; one elective credit. The courses selected must include either GEOG 4F90 or GEOL 4F90 and at least three credits at the year 4 level.

BA Geography and Urban and Environmental Studies

Pass program

## Year 1

GEOG 1F90; UEST 1F90; MATH
1F92 or equivalent; one humanities and one science context credit.

Note: GEOG 1F91 is strongly recomended as a science context credit.

## Year 2

GEOG 2P07, 2P08 (or equivalent); one credit from GEOG 2P02, 2P03, 2P06; UEST 2F96, 2F97; one elective credit.

## Year 3

GEOG 3P57; one and one half year 3 credits in geography from group A (excluding GEOG $2 \mathrm{P} 90,2 \mathrm{P} 91,2 \mathrm{P} 92$ ); one credit from UEST $3 \mathrm{~V} 10-3 \mathrm{~V} 15$, $3 \mathrm{~V} 20-3 \mathrm{~V} 25$ and $3 \mathrm{~V} 30-3 \mathrm{~V} 35$; one year 3 credit in urban and envrionmental studies (excluding UEST 3V80-3V81); one elective credit.

Honors program
Years 1, 2 and 3
As in pass program.
Year 4
GEOG 4F99; one year 4 credit in geography from group A; UEST 4F90/ 4 F 91 or 4F95; COSC 1P90 or 1P91 or equivalent; one and one half or one half elective credit depending on UEST choice. The courses selected cannot include both GEOG 4F90 and UEST 4F90.

## BSc Geography and Urban and Environmental Studies

## Pass Program

## Year 1

GEOG 1F91; UEST 1F90; MATH
1P97, 1P98; one humanities context credit; one elective credit.

Year 2
GEOG 2P07, 2P08 (or equivalent); one credit from GEOG $2 \mathrm{P} 04,2 \mathrm{P} 05,2 \mathrm{P} 09$; UEST 2F96, 2F97; one elective credit.

Year 3
GEOG 3P56; one and one half year 3 credits in geography from group B ; one credit from UEST $3 \mathrm{~V} 10-3 \mathrm{~V} 15,3 \mathrm{~V} 20-$ 3 V 25 and $3 \mathrm{~V} 30-3 \mathrm{~V} 35$; one year 3 credit in urban and environmental studies (excluding UEST 3V80-3V81); one elective credit.

Honors program
Years 1, 2 and 3
As in pass program.

## Year 4

GEOG 4F99; one year 4 credit in geography from group B; UEST 4F90/ 4 F 91 or 4 F 95 ; COSC 1 P 90 or 1P91 or equivalent: one and one half elective or one half elective credit depending on UEST choice. The courses selected cannot include both GEOG 4F90 and UEST 4F90/4F91.

## Description of courses

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

## GEOG 1F90

## Introduction to human

## geography

A practical and problem-oriented approach to current issues in economic, urban and cultural geography, including resources, industry and commerce, population and food supplies, and urban and rural landscapes. Lectures, lab/seminar, 3 hours per week.

## GEOG 1F91

Principles of physical geography The interactions of atmosphere, soils, vegetation and landforms occurring at the surface of the earth. The development of natural environments and their impact upon people and their activities. Lectures, lab/seminar, 4 hours per week.

GEOG 2P02
Principles of economic geography
An introduction to the principles and processes underlying the patterns of the
agricultural, mineral resource, manufacturing and transportation systems and of regional economic disparity. Prerequisite: GEOG 1F90(190) or 192 or another year 1 social science credit, or permission of the instructor. Lectures, seminar, 4 hours per week.

## GEOG 2P03

Principles of urban geography An introduction to the basic concepts and problems underlying the growth of cities, the urban system, land-use patterns in the city and urban policymaking.
Prerequisite: GEOG 1F90(190) or 192 or another year 1 social science credit, or permission of the instructor. Lectures, seminar, 3 hours per week.

## GEOG 2P04

An introduction to meteorology
The principles, structure, composition and processes of the atmosphere; its energy budget, moisture balance and motion. Weather forecasting in middle and low latitudes, forecasting techniques and special problems in applied meteorology. Prerequisite: GEOG 1F91(191) or 192, or permission of the instructor.
Lectures, lab, 3 hours per week.

## GEOG 2P05

The earth's natural landscape An introduction to geomorphology with an emphasis on basic principles and their application, and on local landforms.
Prerequisite: GEOG 1F91(191) or 192, or permission of the instructor. Lectures, lab, field work, 5 hours per week.

## GEOG 2P06

## Cultural geography

Interactions of culture and technology. Cultural problems in the modern world. Prerequisite: GEOG 1F90(190) or 192, or another year 1 social science credit, or permission of the instructor.
Not open to students with credit in GEOG 358 hc .
Lectures, lab, 3 hours per week.
GEOG 2P07
Maps andairphotos
Properties and uses of maps and
airphotos. Map-making. Introduction to surveying and remote sensing.
Prerequisite: GEOG 1F90(190) or 1F91 (191) or 192, or GEOL
1F95(195), or permission of the instructor.
Lectures, lab, field work, 4 hours per week.

## GEOG 2P08

Quantitative methods
An introduction to the basic mathematical structures underlying geographical problems. Coordinate systems for space. Linear equations in up to two independent variables. Nonlinear equations: polynomials, power functions, exponential functions. Linearization of non-linear systems for statistical fitting. Weekly exercises emphasize applications to typical problems.
Prerequisite: GEOG 1F90(190) or 1F91(191) or 192, or permission of the instructor.
Lectures, seminar, 4 hours per week.

## GEOG 2P09

Principles of biogeography
Introduction to the principles of biogeography. Autoecological aspects of soils and plants including the impact of mankind at all scales. Study of the patterns of soils and plants and their explanation. Soil and vegetation systems.
Prerequisite: GEOG 1F91(191) or 192, or permission of the instructor.
Lectures, lab, 3 hours per week.

## GEOG 2P90

Geography of western Europe An introduction to the range and character of European urban and rural landscapes, regional problems and issues.
Prerequisite: none.
Lectures, seminar, 4 hours per week.

## GEOG 2P91

## Geography of Canada

The analysis of factors underlying the development of Canada's distinctive regions, with emphasis on its major metropolitan areas, resource regions, and areas of decline.
Prerequisite: none.
Lectures, seminar, 4 hours per week.

GEOG 2P92
Geography of the United States
Selected aspects of the regional geography of the United States. Prerequisite: none.
Lectures, seminar, 4 hours per week.

## GEOG 2P93

Geography of Africa
Selected aspects of the regional geography of Africa.
Prerequisite: none
Lectures, seminar, 4 hours per week.

## GEOG 2P94

Environmental problems in the Third World
Interrelationships between physical and human factors and development; natural resource exploitation and sustainable development; mankind as an agent of change in desertification, deforestation, soil erosion and environmental pollution, and their impacts on climate, the hydrologic cycle and nutrient cycling processes. Selected studies of regions that are marginal in terms of carrying capacity and ecological fragility.
Prerequisite: GEOG 1F90(190) or GEOG 1F91(191), or permission of the instructor.
Lectures, lab, seminar, 4 hours per week.

GEOG 3F90

## Selected field studies

The application of geographical principles and techniques to the analysis of field data and problems; background preparation on a selected area, a two week visit to that area and the compilation of reports on the topics studied.
Prerequisite: completion of all year 1 and 2 requirements in geography, or permission of the instructor.

## GEOG 3P01

## Surveying

Introduction to the principles and techniques of topographic surveying, emphasizing applications in the earth sciences.
Prerequisite: GEOG 2P07(207hc), or permission of the instructor.
Lectures, lab, field work, 5 hours per week.

GEOG 3P03
Computer cartography
Introduction to the theory and practice of map making by computer, with emphasis on thematic maps. Use of packaged programs on the mainframe and microcomputer. Geographical information systems. Prerequisite: GEOG 2P07(207hc), or permission of the instructor.
Not open to students with credit in GEOG 302hc.
Lectures, lab, 4 hours per week
GEOG 3P07
Remote sensing and photogrammetry
Theory of remote sensing. Interpretation of remote sensing imagery, including photographic, thermal, radar and satellite imagery, emphasizing applications in the earth sciences. Photogrammetric mapping.
Prerequisite: GEOG 2P07(207hc), or permission of the instructor.
Lectures, lab, 4 hours per week.

## GEOG 3P10

## Applied climatology

Studies in selected topics from the fields of bioclimatology, climatic change, hydrometeorology, synoptic climatology. Mankind's impact on the climate will be an important theme. Prerequisite: GEOG 2P04(204hc), or permission of the instructor. Lectures, lab, 3 hours per week.

## GEOG 3P22

Principles of geomorphology
Principles of geomorphology as exemplified by field examples in the Niagara peninsula. The course is organized around a series of field trips undertaken in laboratory periods. Lectures deal with the historical development of the subject, and fluvial, slope and glacial processes. Prerequisite: GEOG 2P05(205hc) and 2 P 08 (208hc), or permission of the instructor.
Lectures, lab, field work, 4 hours per week.

GEOG 3P23
Advanced and applied geomorphology
Selected topics in geomorphology
using maps, aerial photographs and the modern journal literature. The application of geomorphological principles to environmental management is developed wherever possible.
Prerequisite: GEOG 2P05(205hc), or permission of the instructor. Lectures, lab, 4 hours per week.

## GEOG 3P24

Glacial geomorphology/geology (also offered as GEOL 3P24)
Introduction to glaciology; glacial processes, glacial deposits: their genesis and sedimentology. Relationship of glacial processes to landforms and surface topography. Glacial systems and facies associations. Applied aspects of glacial geology, e.g., drift exploration.

Prerequisite: GEOG 2P05(205hc), or GEOL 2P42(242hc), or permission of the instructor.
Lectures, lab, field work, 5 hours per week.

## GEOG 3P25

## Pleistocene geology

(also offered as GEOL 3P25)
Glaciations in the geological record; causes of glaciations; sea level and climate changes; isostatic crustal movements; Quaternary stratigraphy and correlation of glacial and nonglacial events; economic and environmental relationships.
Prerequisite: GEOG(GEOL)
3P24(324hc), or permission of the instructor.
Not open to students with credit in GEOL 342 hc .
Lectures, lab, 5 hours per week.

## GEOG 3P31

## Soil science

Pedogenesis; processes of profile development. Weathering and soil evolution. Major world soil types, soil taxonomy. Soils of Canada.
Prerequisite: GEOG 2P09(209hc), or permission of the instructor.
Lectures, lab, 5 hours per week.

## GEOG 3P40

## The urban system

The city in space, the Canadian urban system, the determinants of growth and change. City size, central and non-
central functions. The urban hierarchy
and spatial relationships between cities.
Urban-regional policies.
Prerequisite: GEOG 2P03(203hc), or
permission of the instructor.
Lectures, seminar, 4 hours per week.

## GEOG 3P41

Urban form and structure
The city as space. The range and pattern of urban land uses, and the form and quality of urban environments. The central business district, commercial and industrial land uses, residential areas, and the rural-urban fringe.
Prerequisite: GEOG 2P03(203hc), or permission of the instructor.
Lectures, seminar, 4 hours per week.

## GEOG 3P42

The evolution of urban space: the European city
The foundations of urbanization. The changing expression of form, function, and townscape, up to and including the industrial city, based on case studies of selected urban environments.
Prerequisite: GEOG 2P03(203hc), or HIST 1P92/1P93(192hc/193hc), or HIST 1F95(195), or permission of the instructor.
Lectures, seminar, 4 hours per week.

## GEOG 3P43

The evolution of urban space: the Canadian city
The process, form and achievement of urban development in Canada, including an appreciation of urbanization in the Niagara Peninsula.
Prerequisite: GEOG 2P03(203hc), or HIST 1P92/1P93(192hc/193hc), or HIST 1F95(195), or permission of the instructor.
Lectures, seminar, 4 hours per week.

## GEOG 3P44

Urban social geography
Spatial patterns and social processes involved in the behavior of individuals and public and private institutions in the city.
Prerequisite: GEOG 2P03(203hc), or permission of the instructor.
Lectures, seminar, 4 hours per week.

GEOG 3P56
Physical geography field course The application of geographical principles and field techniques to problems in physical geography. The course involves field work during registration week in early September, with follow-up readings, seminars and report writing during term. Prospective students should contact the chairperson by April of the preceding academic year.
Prerequisite: three credits in geography from group $B$, or permission of the department.
Not open to students with credit in GEOG 359hc.

## GEOG 3P57

Human geography field course
The application of geographical principles and field techniques to problems in human geography. The course involves field work during registration week in early September, with follow-up readings, seminars and report writing during term. Prospective students should contact the chairperson by April of the preceding academic year.
Prerequisite: three credits in geography from group A , or permission of the department.
Not open to students with credit in GEOG 359 hc .

## GEOG 3P72

Industrial geography
The spatial patterns of manufacturing industry and the processes which generate those patterns. The study of the locational and structural components of industrial geography.
Prerequisite: GEOG 2P02(202hc), or permission of the instructor.
Not open to students with credit in GEOG 370he or 371 hc . Lectures, seminar, 4 hours per week.

## GEOG 3P73

The geography of regional disparity Spatial aspects of regional disparity in manufacturing and resource industries at the world and national scales: their role in the development of regions, in regional problems and problem regions; evaluation of selected policies to reduce regional disparity.
Prerequisite: GEOG 2P02(202hc), or
permission of the instructor.
Not open to students with credit in GEOG 370 hc or 371 hc . Lectures, seminar, 4 hours per week.

## GEOG 3P82

Geography of recreational resources The geographical aspects of recreation, including the pattern of recreational activities and the spatial implications of factors affecting the use and development of resources for recreation.
Prerequisite: GEOG 2P02(202hc), or 2 P 03 (203hc), or permission of the instructor.
Lectures, seminar, 4 hours per week.

## GEOG 3P83

## Geography of water resources

Physical and human factors affecting patterns of use and development of water resources. Emphasis will be on patterns of supply and demand, approaches to development and management of the resource, problems and alternative strategies.
Prerequisite: GEOG 2P02/2P03
(202hc/203hc), or 2P04/2P05 (204hc/
205 hc ), or permission of the instructor. Lectures, seminar, 4 hours per week.

## GEOG 3P84

Political geography
Development of politico-geographic thought. Political organization of space at the local, national, and international levels. Regional blocs and supranational blocs. Strategic areas. Disputed zones and resources. Conflicts of ownership and control.
Prerequisite: GEOG 2P06(206hc), or POLI 1F90(190), or permission of the instructor.
Lectures, seminar, 4 hours per week.

## GEOG 3P85

## Population geography

Data sources and methodology in population geography and demography. Spatial variations in the distribution, composition, migrations and growth of populations and their relations with physical, cultural and economic phenomena. Population theories and processes in the spatial context.
Prerequisite: GEOG 2P06(206hc), or permission of the instructor.
Lectures, lab, 4 hours per week.

## GEOG 4F11

Advanced climatology
Micro-climatological investigations in the field and guided reading and discussion of important climatological issues and problems.
Prerequisite: GEOG 3P10 and second class honors standing in geography; or permission of the instructor Seminars, lab, field work, 3 hours per week.

## GEOG 4F60

## Resource analysis

The application of analytical techniques to spatial problems in resource evaluation and development. Topical emphasis will be in the fields of water and outdoor recreation resources.
Prerequisite: GEOG 3P82(382hc) or 3P83(383hc), and second class honors standing in geography; or permission of the instructor.
Seminars, lab, 3 hours per week.

## GEOG 4F62

Advanced population geography and

## demography

Research themes in population geography and demography with practical applications using Canadian problems. Prerequisite: GEOG 3P85(385hc), and second class honors standing in geography; or permission of the instructor.
Seminars, 3 hours per week.

## GEOG 4F63

Applied urban geography
Individual or collective examination of a selected spatial example of urbanization, emphasizing either the process of evolution and/or details of modern character. Background reading and field investigation are required. Prerequisite: one year 3 half credit in urban geography, and second class honors standing in geography; or permission of the instructor.
Seminars, 3 hours per week.

## GEOG 4F67

Research themes in industrial geography
Selected topics and research themes in industrial geography.
Prerequisite: GEOG 3P70(370hc) or 3P71(371hc), and second class honors
standing in geography; or permission of the instructor.
Seminars, 3 hours per week.

## GEOG 4F69

Research themes in urban social geography
Examination, by means of individual student projects, of aspects of urban social geography and of the spatial behavior of urban residents. Prerequisite: one year 3 half credit in urban geography, and second class honors standing in geography; or permission of the instructor. Seminars, 3 hours per week.

## GEOG 4F90

Honors thesis
An individual research project carried out at the discretion of the department and under the direction of a faculty adviser.
Open only to students in year 4 with second class honors standing. Students contemplating a thesis should consult with the department at the end of year 3 and must submit a detailed proposal in writing before May 15, prior to entering year 4.
Prerequisite: second class honors standing in geography, and permission of the department.

## GEOG 4F99

Honors seminar with internship option
Part I: Seminar in methodology and theory in geography. Research design and techniques.
3 hours per week.
Part II: Either (a) a research problem under the direction of a faculty member, or, (b) internship in a government or private agency working under the supervision of that agency on a specific problem.
Prerequisite: completion of year 3
geography requirements with second class honors standing.
Seminars, lab, 8 hours per week for 15 weeks.

## GEOG 4P01

Cartographic production and design The map as a medium of communication. Advanced aspects of map design. The preparation of maps for four-color
reproduction. Compilation, scribing, typesetting, reprographic operations, proofing, printing.
Prerequisite: GEOG 2 P 07 (207hc), and second class honors standing in geography; or permission of the instructor.
Not open to students with credit in GEOG 302 hc or 468.
Lectures, lab, 4 hours per week.

## GEOG 4P02

Topographic science
The independent study of selected topics in surveying, remote sensing, photogrammetry and cartography. Prerequisite: GEOG 3P01 (301hc) or 3P07(307hc), and second class honors standing in geography; or permission of the instructor.
Not open to students with credit in GEOG 468.
Labs, field work, 3 hours per week.

## GEOG 4P26

## Research themes in fluvial geomorphology I

A survey of modern literature in fluvial geomorphology will be complemented by local field work and the analysis of published river records.
Prerequisite: GEOG 3P22(322hc), and either GEOG 3P23(323hc) or
3P24(324hc), and second class honors standing in geography; or permission of the instructor.
Not open to students with credit in GEOG 423.
Seminars, lab, field work, 3 hours per week.

## GEOG 4P27

Research themes in fluvial geomorphology II
A continuation of GEOG 4P26(426hc) which will emphasize the morphometric analysis of areas from published maps, computer simulation of river systems, and a continued survey of relevant literature.
Prerequisite: GEOG 4P26(426hc), and second class honors standing in geography; or permission of the instructor.
Not open to students with credit in GEOG 423.
Seminars, lab, 3 hours per week.

## Geography

GEOG 4P28
Advanced glacial sedimentology
(Also offered as GEOL 4P28)
The sedimentology of present day glacial environments and of Quaternary sediments. Thermo-mechanical principles of glacier physics as applied to past and present glacier ice conditions. Glacial lithofacies associations. Glacio-tectonics and diagenesis. Principles of glacial erosion, entrainment and deposition.
Prerequisite: GEOG(GEOL) 3P24
( 324 hc ), and second class honors standing in geography or geology; or permission of the instructor.
Not open to students with credit in GEOG 421 or GEOL 425.
Lectures, lab, field work, 5 hours per week.

# Geological Sciences 

Officers of instruction

Chairperson
Jean-Jacques Flint
Professors
Uwe Brand
Wayne T. Jolly
Jaan Terasmae
Associate professors
Jean-Jacques Flint
Simon J. Haynes
John Menzies
Assistant professors
Richard J. Cheel
Stephen Westrop
Lecturer
Gregory C. Finn
Sessional lecturer
E. Bruce Grant

Honorary research associate
Anna-Stina Edhorn

## General information

## Mackenzie Chown complex D410

The department of Geological Sciences offers a BSc in geology designed to provide students with a broad background leading to specialization for career opportunities in geology or for admission to advanced degree studies. Combined programs with other departments are also available. The field of geology is central in solving current problems such as waste disposal, pollution, groundwater management, volcanic and earthquake hazards. It is also vital in the exploration and utilization of natural resources such as oil and gas, minerals and aggregates.

To achieve this objective the undergraduate program consists of a set of core courses in year 1, year 2 and part of year 3 . Students progressively move into more advanced studies culminating in independent research in year 4, where they can specialize in a curriculum reflecting their personal interests. Most courses include local field trips during laboratory periods while extended field trips are conducted for students in each year of the program. These trips allow students to gain first hand field experience.

Students considering concentrations in quaternary geology, environmental geology, paleoecology, sedimentology, hydrology, or groundwater are advised to select from the following courses as part of the year 3 and 4 electives:
GEOL 3P24, 3P25, 3P61, 3P82, 4P10, 4P28, 4P41, 4P42, and 4P61.

Those wishing to pursue a career in petrology, economic geology, volcanology, structure or tectonics are advised to select from the following courses: GEOL 3P94, 3P98, 4P22, 4P26, 4P52.

Specializations are also available in carbonate geochemistry, petroleum geology, Precambrian geology, geophysics, paleontology or stratigraphy. Those interested should consult the department for suggested course programs in these disciplines.

The department has teaching and research laboratories in the above mentioned fields, including facilities such as radiocarbon dating, $x$-ray diffraction and fluorescence, cathode luminescence microscopic analysis, atomic absorption spectrometry, halogen analysis, image analysis, digitizer and fluorometric analysis. These are supported by rock specimen preparation and drafting facilities, dark rooms and cold rooms. The department shares the facilities of electronic, woodworking and glassblowing shops with other departments. In addition to departmental minicomputers, the department has access to the University and library computers through remote terminals.

## Pass program

## Year 1

GEOL 1F95; MATH 1P97/1P98; one
humanities and one social science context credit; one science credit (see Note 1.).

Year 2
GEOL 2P01, 2P21, 2P22, 2P31, 2P32,
2P42; CHEM 1F93 or 1F85; COSC
1P91; one half credit elective (see Notes 2. and 3.).

## Year 3

GEOL 3P21, 3P31, 3P71; two and one half credits from GEOL 3P24, 3P25, 3P52, 3P61, 3P82, 3P94, 3P95, 3P98, 3P99; one elective credit (see Notes 2. and 3.).

## Notes:

1. The unspecified science elective credit is to be taken from mathematics, biology, chemistry, physics or computer science (except MATH 1F60, BIOL 1F25, SCIE 1F20 or ASTR 1F00).
2. Students interested in pursuing a concentration in geochemistry are strongly advised to take additional chemistry courses.
3. The following courses are given in alternate years only: GEOL 3P61, 4 P61.

Students should plan their programs accordingly and are advised to refer to the applicable term timetable for details.

## Honors program

## Years 1, 2 and 3

As in pass program. GEOL 3P99, normally taken at the end of year 3 , is required for entry into year 4.

## Year 4

Admission to the year 4 program.

## Geological Sciences

GEOL 4F90 and 4P02; two and one half credits from year 4 geology or from the remaining elective geology credits offered in year 3 ; one elective credit.

To qualify for an honors degree, students must complete a minimum of three credits numbered 3(alpha) 90 or above.

Combined major pass programs

The department of Geological Sciences, in co-operation with other departments, offers combined major programs in geology with biology, chemistry, geography, physics, and urban and environmental studies. Prospective students should have their programs approved by the two departments concerned and are advised to follow one of the following patterns:

## Geology and Biology

Pass program

## Year 1

BIOL 1F90; GEOL 1F95; MATH 1P97/1P98; CHEM 1F93 or CHEM 1F85 or PHYS 1F20; one humanities or social science context credit.

## Year 2

Two credits from BIOL 2F01, 2F03, 2P90, 2P91, 2P93, 2P98; GEOL 2P31/ 2 P 32 ; one credit from year 2 geology; the context credit not taken in Year 1.

## Year 3

Two year 3 biology credits; two year 2 or 3 geology credits; one elective credit in biology or geology.

University requirements for a pass degree stipulate that a minimum of three credits must be numbered 2 (alpha) 90 or above.

Honors program
Years 1, 2 and 3
As in pass program. GEOL 3P99 or
BIOL 3P71 is required for entry to year 4.

Year 4
One and one half credits in biology at year 3 or year 4 level; one and one half credits in geology at year 3 or year 4 level; either BIOL 4F90/4F91, or 4F92 plus one elective credit, or GEOL 4F90 plus one elective credit.

To qualify for an honors degree, students must complete a minimum of three credits numbered 3(alpha) 90 or above.

## Geology and Chemistry

Pass program
Year 1
CHEM 1F93 or 1F85; PHYS 1F90; GEOL 1F95; MATH 1P93/1P94; one humanities or social science context credit.

## Year 2

CHEM 2F10; CHEM 2P30/2P40; GEOL 2P21/2P22; one year 2 geology credit; the context credit not taken in year 1 .

## Year 3

CHEM 2P20; CHEM 3P40; one credit from CHEM 2P21, 2P41, 3P30, 3P31, 3P60; GEOL 3P31; one and one half credits in geology at year 2 or 3 level; one chemistry or geology elective credit.

To qualify for a pass degree, students must complete a minimum of three credits numbered 2 (alpha) 90 or above.

## Honors program

Years 1, 2 and 3
As in pass program. GEOL 3 P99 is normally required at the end of year 3 but may be taken at the end of year 2 with permission of the department.

## Year 4

One credit in chemistry at year 3 or 4
level; one credit in geology at year 3 or 4 level; either CHEM 4F90 and CHEM 4F91 or GEOL 4F90 and one credit in geology at year 3 or 4 level; one elective credit.

To qualify for an honors degree, students must complete a minimum of three credits numbered 3(alpha) 90 or above.

## Geology and Physics

Pass program
Year 1
GEOL 1F95; MATH 1P93/1P94;
PHYS 1F90 (preferred) or PHYS 1F20; one humanities and one social science context credit.

## Year 2

GEOL 2P01; one and one half credits in geology at year 2 level; MATH
2F95; two credits from PHYS 2P20/ $2 \mathrm{P} 21,2 \mathrm{P} 30 / 2 \mathrm{P} 31$ or $2 \mathrm{P} 41 / 2 \mathrm{P} 42$.

## Year 3

Two geology credits at year 2 or 3 level; one year 2 physics credit and one year 3 physics credit; one elective credit in geology or physics.

University regulations for a pass degree require a minimum of three credits numbered 2(alpha) 90 or above.

## Honors program

## Years 1, 2 and 3

As in pass program. GEOL 3P99 is normally required at the end of year 3 but may be taken at the end of year 2 with permission of the department.

## Year 4

GEOL 4F90 or PHYS 4F90; one year 3 or 4 geology credit; one year 3 physics credit or one credit from PHYS 3P20, $4 \mathrm{P} 41,4 \mathrm{P} 70,4 \mathrm{P} 71$; one year 3 or 4 geology or physics credit; one elective credit.

To qualify for an honors degree, students must complete a minimum of three credits numbered 3 (alpha) 90 or above.

Master of Science (MSc) program
Candidates with either an honors or pass BSc degree in geological sciences may apply for entry into this program.

Candidates holding a pass degree will be required to take a qualifying year similar to year 4 of the honors program before formally enrolling for the MSc degree. Candidates are encouraged to write the Graduate Record Examination in geology.

Candidates with an honors degree, or who have completed a qualifying year, require a minimum of one year.

The following are possible foci of this program: quaternary geology, sedimentology, surface hydrology, geomorphology, geochemistry, limnogeology, sedimentary processes, fluvial geology, palynology, geochronology, paleoecology, volcanology, structural geology, ore genesis, and tectonics.

The following courses are available:
GEOL 5F90
MSc thesis
GEOL 5P30
Structural geology
GEOL 5P31
Tectonics
GEOL 5P32
Applied geophysics
GEOL 5P35
Quaternary palynology
GEOL 5P40
Quaternary geochronology
GEOL 5P41
Glaciology
GEOL 5P45
Advanced paleoecology
GEOL 5P46
Evolutionary paleobiology

GEOL 5P50
Sedimentary environments
GEOL 5P51
Planetology
GEOL 5P54
Physics and chemistry of magmas
GEOL 5P55
Volcanology
GEOL 5P56
Ore genesis
GEOL 5P58
Chemical sedimentology
GEOL 5P59
Carbonate geochemistry
GEOL 5P60
Advanced surface hydrology
GEOL 5P61
Quantitative methods in geology
GEOL 5P70
Fluvial geology
GEOL 5P71
Advanced paleolimnology
GEOL 5P75
Limnogeology
GEOL 5P85
Pleistocene geology
GEOL 5V90-5V99
Selected topics in contemporary geology

For details, see graduate calendar or consult the chairperson of the department.

## Description of courses

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

GEOL 1 F90
Geology and the environment A course intended primarily for the non-science major. The relationships between geologic processes, the environment and evolution. Topics include origin of the planet earth, development of the atmosphere, oceans and continents, origin of life, volcanic activity, earthquake prediction, shoreline erosion, disposal of toxic and nuclear wastes and human evolution. Students demonstrating exceptional performance in GEOL 1F90 may, at the discretion of the department, register in year 2 courses.
High school sciences not a prerequisite. Lectures, 2 hours; labs or local field trips, 2 hours per week.

## GEOL 1F95

Introduction to earth science The chemical and physical nature of the earth as a member of the solar system; the particular chemical and physical properties of the features of the earth and originating processes; paleontology and evolution, concepts of geologic time, elements of stratigraphy.
Prerequisite: any two of biology, chemistry, geology, mathematics or physics beyond grade 11, or equivalent. Lectures, lab and local field trips, 5 hours per week.

## GEOL 2P01

## Structural geology

The measurement and effects of stress and strain. Genesis of brittle and ductile structural features and their classification. Methods of structural analysis and examination of hand specimens.
Prerequisite: GEOL 1F95(195). Lectures, lab, 5 hours per week.

## GEOL 2P21

## Mineralogy

Crystal systems, symmetry operations, introduction to the 32 crystal classes; x-ray diffraction; mineral composition and structure; physics and chemistry of minerals; mineral identification.
Prerequisite: GEOL 1F95(195).
Not open to students with credit in
GEOL 210, $211 \mathrm{hc}, 212 \mathrm{hc}$.
Lectures, lab, 5 hours per week.

GEOL 2P22
Optical mineralogy
Internal structure of crystals. The petrographic microscope and its usefulness in the identification of and familiarization with major rock forming minerals, as discrete grains and in thin section.
Prerequisite: GEOL 2P21(221hc). Lectures, lab, 5 hours per week.

## GEOL 2P31

## Clastic sedimentology

Weathering and its products, sedimentary textures, sediment transport, sedimentary structures, paleocurrent analysis, sediment gravity flows, biogenic structures, sandstone classification and the sedimentology of shales. Laboratories illustrating common techniques in studying sediments and sedimentary rocks. Prerequisite: GEOL 1F95(195). Lectures, lab and local field trips, 5 hours per week.

## GEOL 2P32

Paleontology
Fossil preservation and bias in the fossil record; ontogeny and growth of invertebrates; functional morphology of selected invertebrate groups; an introduction to population ecology; speciation; paleoecology; mass extinctions in the fossil record. Labs deal with the classification and morphology of the major invertebrate groups. Principles of taxonomy will also be discussed and will involve a lab project.
Prerequisites: GEOL 1F95(195).
Lectures, lab and local field trips, 5
hours per week.

## GEOL 2P42

Physical geology
Temporal evolution and denudation of land masses in relation to tectonic, sedimentologic and climatic changes; origin and identification of specific landforms, their mathematical and topological evolution; labs will include instruction in surveying techniques. Prerequisite: GEOL 2P01(201hc). Lectures, lab and local field trips, 5 hours per week.

GEOL 2P90
Geology and society
Relationship of mankind's activities to their physical environment. Pollution, energy, hazards and catastrophes. Prerequisite: GEOL 1F90(190) or 1F95(195) and permission of the instructor.
This course cannot be used as a geology elective credit towards a degree in geological sciences. It is primarily designed for students who do not intend to major in geology. Lectures, seminar, field trips to be announced.

## GEOL 2P91

Planetary geology
Origin and evolution of the solar system; geologic, tectonic, atmospheric and morphologic comparison of earth, the planets, and satellites of the solar system.
Prerequisite: GEOL 1F90(190) or 1F95(195) or permission of the instructor.
Not open to students with credit in GEOL 431hc.
May not be used as a science elective. Lectures, lab, 5 hours per week.

GEOL 3P21
Petrography and petrology
Igneous, metamorphic and sedimentary rocks in thin section; their composition, texture, structures, origin and classification.
Prerequisite: GEOL 2P22(222hc); CHEM 1F93(193) or 1F85(185). Lectures, lab, 5 hours per week.

GEOL 3P24
Glacial geomorphology/geology
(also offered as GEOG 3P24)
Introduction to glaciology; glacial processes, glacial deposits: their genesis and sedimentology. Relationship of glacial processes to landforms and surface topography. Glacial systems and facies associations. Applied aspects of glacial geology, e.g., drift exploration.

Prerequisite: GEOL 2P42(242hc) (for students in the Geology program).
Not open to students with credit in GEOL 341 hc .
Lectures, lab, field work, 5 hours per week.

GEOL 3P25
Pleistocene geology
(also offered as GEOG 3P25)
Glaciations in the geological record; causes of glaciations; sea level and climatic changes; isostatic crustal movements; Quaternary stratigraphy and correlation of glacial and nonglacial events; economic and environmental relationships.
Prerequisite: GEOL(GEOG)
3P24(324hc).
Not open to students with credit in GEOL 342hc.
Lectures, lab, 5 hours per week.

## GEOL 3P31

## Geochemistry

Abundance of elements in crustal rocks; general geochemistry of the lithosphere, hydrosphere, atmosphere, biosphere. Geologic applications of thermodynamic principles and phase equilibria. Geochemical techniques. Prerequisite: CHEM 1F93(193) or 1F85(185).
Not open to students with credit in GEOL 312hc.
Students must supply their own safety equipment.
Lectures, lab, 5 hours per week.

## GEOL 3P52

Carbonate sedimentology
Petrography of carbonate grains; skeletal structures and chemistry; recent carbonate environments; evolution of carbonate mounds; chemical theory of carbonate grains; textural, structural and chemical limestone diagenesis; dolomitisation, silification and pyritisation of carbonate grains.
Prerequisite: GEOL 3P21(321hc) or permission of the instructor.
Lectures, lab, 5 hours per week.
GEOL 3P61

## Groundwater geology

Occurrence, movement, exploration and exploitation of groundwater including the study of groundwater flow and principles of well hydraulics. Prerequisites: GEOL 1F95(195), MATH 1P97(197hc) or equivalent. Lectures, lab, 5 hours per week.

## GEOL 3P71

## Stratigraphy

Principles of stratigraphy. Subdisciplines and types of units - lithostratigraphy, biostratigraphy, chronostratigraphy; contemporay ideas on the completeness of the stratigraphic record; an introduction to facies models; eustatic sea level changes and
"event stratigraphy"; sedimentary cycles; sedimentation and plate tectonics.
Prerequisites: GEOL 2P01(201hc), 2P31(231hc), 2P32(232hc).
Lectures, labs and local field trips, 5 hours per week.

## GEOL 3P82

Photogeology
Principles of analysis and geologic interpretation of aerial photography, including remote sensing data from airbome and satellite imagery. Prerequisite: third year standing. Lectures, labs, 5 hours per week.

## GEOL 3P94

Igneous petrology
Igneous petrogenesis, with emphasis on
the physical chemistry of igneous processes; igneous rock complexes; studies of a number of petrologically important areas.
Prerequisite: GEOL 3P21(321hc)). Not open to students with credit in GEOL 421 hc or 326 hc .
Lectures, labs, 5 hours per week.
GEOL 3P95

## Special topics in geology

A lecture/seminar course in which a student may explore areas not represented by existing courses. Under certain circumstances, a student may carry out, under faculty supervision, a detailed research project, the results of which will be presented in a major essay and a formal seminar.
Prerequisite: a minimum overall average of B (75) in geology; permission of the chairperson. This course can be taken only once.

## GEOL 3P98

Economic geology
Principles and processes of the formation of metallic ore deposits, ore microscopy and ore petrology, metallo-
geny and theories of metallogenesis. Prerequisite: GEOL 3P21(321hc); 312 hc or 3P31(331hc) recommended. Not open to students with credit in GEOL 362hc.
Lectures, labs, seminars, 5 hours per week.

## GEOL 3P99

## Field geology

A two week immersion course offered after final examinations in year 3 introducing students to collecting, recording and synthesizing field data, airphoto mapping, measuring stratigraphic sections, preparing geologic maps and reports. The field area, situated in northern Ontario, consists of Archaean, Proterozoic and Paleozoic lithologies. Registrants are expected to defray the cost of travel, accommodation and other expenses.
Prerequisites: completion of all year 2 requirements in geology and permission of the department.

## GEOL 4F90

## Research and thesis

Directed research on geological problems. A thesis incorporating the results of an approved investigation is required and will be critically examined. Three copies of the thesis must be submitted and approved in final typed form by March 15th. This course is required of all honors students in geology.
Prerequisite: admission to the year 4 honors program.

GEOL 4P02
Geology of Canada
Characteristics of the major geologic subdivisions of Canada. Provinces of the Canadian Shield; Innuitian, Appalachian and Cordilleran orogenic belts; Hudson, Interior, Arctic and St. Lawrence platforms; Pleistocene history. Particular emphasis will be placed on the nature of crustal processes and of the record through time. Prerequisite: open only to year 4 honors students in geological sciences. Lectures, 2 hours per week, seminar, 2 hours per week.

## GEOL 4P03

## Applied geophysics

Principles of magnetic, electrical, radioactive, gravity and seismic geophysical methods and their application.
Prerequisite: GEOL 2P01(201hc).
Lectures, 2 hours per week plus lab/ seminar, 3 hours per week.

## GEOL 4P10

## Sedimentary facies models

Introduction to the concepts of facies and facies models as tools for the interpretation of clastic sedimentary depositional environments. The characteristics of major non-marine and marine environments of deposition with examples from the modern and ancient record.
Prerequisite: GEOL 2P31(231hc). Lectures, seminar, 5 hours per week.

## GEOL 4P12

## Sedimentary geochemistry

Thermodynamic principles of trace metal and stable isotope distributions in sedimentary rocks. Changes in rock chemistry with weathering and diagenesis. Chemical history of the oceans; evidence for and against chemical constancy. Application of elemental geochemistry to a practical project.
Prerequisite: GEOL 3P31(331hc or 312 hc ) and permission of the instructor.
Not open to students with credit in GEOL 411hc.
Lectures, lab, 5 hours per week.
GEOL 4P22
Metamorphic petrology
Synthesis of metamorphic textures, compositional variations and field characters with emphasis on the temperature-pressure relations of the metamorphic rocks and the role of fluids in metamorphism.
Prerequisite: GEOL 3P21(321hc).
Lectures, lab, 5 hours per week.

## GEOL 4P23

Advanced paleontology
An advanced course in evolutionary paleobiology. Ecology of modern and ancient marine benthic communities; taphonomic models; macroevolution-

## Geological Sciences

ary patterns in the fossil record;
hierarchical approaches to evolutionary
theory and the units of selection
problem; heterochrony and evolution.
Prerequisite: GEOL 2P32(232hc).
Not open to students with credit in GEOL 301hc.
Lectures, lab, 5 hours per week.
GEOL 4P26
Tectonics
Presentation of the hypothesis of plate tectonics and its application to all aspects of geology. Description of some major orogenic belts in terms of plate tectonics.
Prerequisites: GEOL 2P01(201hc), 2P31(231hc), 3P21(321hc).
Not open to students with credit in GEOL 372hc.
Lectures, seminar, lab, 5 hours per week.

GEOL 4P28
Advanced glacial geology
(Also offered as GEOG 4P28)
The sedimentology of present day glacial environments and of quaternary sediments. Thermo-mechanical principles of glacier physics as applied to past and present glacier ice conditions. Glacial lithofacies associations. Glacio-tectonics and diagenesis. Principles of glacial erosion, entrainment and deposition.
Prerequisite: GEOL(GEOG)
3P24(324hc) and GEOL 2P31(231hc).
Not open to students with credit in GEOG 421 or GEOL 425.
Lectures, lab, local field trips, 5 hours per week.

## GEOL 4P41

## Paleoecology

Physical and biological environments; principles of ecosystems; reconstruction of past environments; climatic changes.
Prerequisite: GEOL 2P32(232hc). Lectures, seminar, lab, 5 hours per week.

GEOL 4P42
Geochronology
Theory and techniques for dating of geological materials, with emphasis on quaternary geology; radiocarbon dating, palynology, dendrochronology,
varve chronology, fission tracks, thermoluminescence, paleomagnetic methods, and principles of commonly used other radiometric methods (potassium-argon, uranium-lead, etc.). Prerequisite: GEOL 3P25(325hc). Lectures, lab, local field trips, 5 hours per week.

GEOL 4P52
Advanced economic geology
Non-metallic mineral deposits, industrial minerals; structural control, exploitation of ore deposits, grade and tonnage calculation. Prerequisite: GEOL 3P98(362hc). Lectures, lab, seminar, field trips, 5 hours per week.

GEOL 4P61
Surface hydrology
Distribution and variation of run-off, recurrence of floods and droughts; fluvial processes and sediment transport; hydrologic and water management techniques; computer models for hydrologic and sediment analysis. Prerequisites: GEOL 2P31(231hc), 2P42(242hc), or permission of the instructor.
Lectures, lab, local field trips, 5 hours per week.

# Germanic and Slavic Studies 

## Officers of instruction

Chairperson
Donald C. MacRae

## German section

Professors
Claude R. Owen
Herbert Schutz
Associate professors
Donald C. MacRae
John A. Michielsen
Visiting assistant professor
Barry W.K. Joe
Russian section
Associate professors
Julia A. Frankel
Clara Hollosi

## General information

## Schmon tower 1119

For students who have no background in either language, study towards a degree in German or Russian may be started in year 1.

German or Russian can be taken in combination with any other subject in combined major programs.

The department of Germanic and Slavic Studies offers degree programs in German, Russian, German area studies and Russian area studies.

The department devotes its efforts to literature and language instruction. The language of technology, industry, politics, economics and philosophy is taught utilizing the modern technologies of the language learning centre's audio, video and computer facilities. Computer assisted learning is an
integral part of language instruction in Germanic and Slavic Studies. Students are encouraged to use the computer facilities of the language learning centre for independent study and review. Software is supplied.

The study of German and Russian is also explored in degree programs in German area studies and Russian area studies. In these programs the study of language, literature and culture is complemented by courses in German or Russian history, politics, philosophy, etc., given in English. We believe the German program to be unique in Canada.

Culture and civilization courses which make use of the department's resources in films, slides and tapes are popular options. These courses deal with the major European cultural trends by examining such topics as art and architecture, mythology, cultural and intellectual history.

The department makes arrangements for students' summer travel/study/work in Germany. A German major may obtain course credit for a three month stay in Germany under approved conditions.

Notes:

1. Courses offered in English:

GERM 1F96
GERM 1P93
GERM 1P94
RUSS 1F95
RUSS 2F10
RUSS 3P94
RUSS 3P95
2. Language courses numbered 1 F 00 may not normally be taken by students who have grade 13 standing or its equivalent in the language.
3. Students registering for German or Russian 1F90 will normally have high school standing in the language or equivalent (GERM 1F00 or RUSS 1F00) or permission of the department.
4. German courses numbered 3(alpha) 00 and up are open to students in years 3 and 4 German and to others by
special permission of the department. Russian courses numbered 2(alpha) 90 and up are open to students in year 3 Russian and to others by special permission of the department.
5. The following are primarily language courses: DUTC 1F00, 1F90; GERM 1F00, 1F90, 2F00, 3F99, 4F10; RUSS 1F00, 1F90, 2F97, 3 F97.
6. It is to be noted that German or Russian courses numbered 1F00, 1F90 and 2F00 constitute a sequence. Once credit has been obtained in one of these courses, students are not normally allowed to take for credit or upgrading a course with a lower number in either language. Students admitted to any course numbered 2 (alpha) 00 or higher in German or Russian may not either concurrently or subsequently take a course at the 1 (alpha) 00 level.
7. GERM 1F00 may be taken for university credit but only credits numbered 1F90 or above may be counted as German credits for a major in German.

## Year 2 in Germany

In co-operation with Trent University, the German section of the department offers to those of its students who have GERM 1F90 or its equivalent the opportunity to spend a year of study in Germany at the University of Freiburg, in the Black Forest.

In addition to an immersion program in the German language and courses in German literature, the student is encouraged to select courses in study areas of his or her choice. The program in Freiburg is supervised by a resident director from Trent or Brock familiar with the situation.

1989-90 course offerings:
Offered only in Freiburg Wintersemester:

GERM 2F00 Language and literature (intermediate II)

| GERM 2P11 | German literature of <br> the 19th century from <br> Goethe to Hauptman |
| :--- | :--- |
| GERM 2P12 | German literature of <br> the 20th century from <br> Mann to Böll |
| Offered only in Freiburg Sommerse- |  |
| mester: |  | | GERM 3P83 | Baroque to Sturm <br> und Drang |
| :--- | :--- |
| GERM 3P84 | Sturm und Drang to <br> early classicism |

Pass program in one language

## German

Seven German credits number 1 (alpha) 90 or above are required. Students who intend to pursue courses in German literature are strongly urged to consider one or more of: Classics 1P91 (Greek civilization), Classics 1P92 (Roman civilization), Classics 1P95 (Greek myths and religions), Classics 1P97 (Roman religions and myths) as a supplement to their studies in German literature.

## Year 1

GERM 1F00 or 1F90 (see Notes 2. and 3. above); GERM 1P93/1P94 or 1F96; one science and one social science context credit; one elective credit.

Language requirement for humanities majors
Majors in Germanic and Slavic studies are required to complete ENGL 1F91.

## Year 2

(i) Students from GERM 1F00: GERM

1F90, 2F00; three elective credits.
(ii) Students from GERM 1F90:

GERM 2F00, GERM 2P14, 2P95; three elective credits.
iii) Students in Freiburg: GERM 2F00, $2 \mathrm{P} 11 / 2 \mathrm{P} 12$; three elective credits.

## Year 3

Year 3 or year 4 German credits to total 7 credits at 1F90(190) or above;
elective credits (see German area
studies below for possible choices). Students are strongly urged to enrol in GERM 3F99 or GERM 4F10 when available.

## Russian

Seven Russian credits are required.

## Year 1

RUSS 1F00 or 1F90 (see Notes 2. and 3. above); RUSS 1F95; one science and one social science context credit; one elective credit.

Language requirement for humanities majors
Majors in Germanic and Slavic studies are required to complete ENGL 1F91.

## Year 2

(i) Students from RUSS 1F00: RUSS 1F90, 2F10; three elective credits.
(ii) Students from RUSS 1F90: RUSS

2F97; 2F10; two elective credits.

## Year 3

Three year 3 or year 4 Russian credits; two full elective credits (see Russian area studies below for possible choices). Students are strongly urged to enrol in RUSS 3F97.

Pass program in two languages or combined major

Applicable to all languages. At least five German credits numbered 1 (alpha) 90 or above must be included.

Students who intend to pursue courses in German literature are strongly urged to consider one or more of Classics 1P91 (Greek civilization), Classics 1P92 (Roman civilization), Classics 1P95 (Greek myths and religions), Classics 1P97 (Roman religions and myths ) as a supplement to their studies in German literature.

## Year 1

One credit in language $A$; one credit in language $B$; one science and one social science context credit; one elective credit (GERM 1P93/1P94 or RUSS 1F95 recommended).

## Language requirement for humani-

 ties majorsMajors in Germanic and Slavic studies are required to complete ENGL 1F91.

## Year 2

Two credits in language $A$; two credits in language B ; one elective credit (GERM 1P93/1P94 or RUSS 1F95 recommended if not taken previously).

## Year 3

Two credits in language $A$; two credits in language B ; one elective credit. All pass programs must contain a minimum of five German credits numbered 1 (alpha) 90 or above. Of these, three credits must be numbered 2(alpha)90 or above.

## Honors program in German

At least ten German credits numbered 1 F 90 or above are required.

## Years 1, 2 and 3

As in pass program.

## Year 4

Year 3 or year 4 level German credits not taken in year 3 to total 10 German course numbered 1 (alpha) 90 or above; elective credits (see German area studies below for possible choices). All honors programs must contain a minimum of three credits numbered 3(alpha) 80 or above.

Honors program in two languages or combined major

Applicable to all languages. Seven credits numbered 1 (alpha) 90 or above must be taken in each area.

Years 1, 2 and 3
As in pass program.

## Year 4

Two credits in language $A$; two credits in language B ; one elective credit. All honors programs must contain a minimum of three credits numbered 3(alpha) 80 or above.

## German area studies

For students who wish to pursue German studies beyond the language and literature orientation as contained in the single and combined major description, the department has coordinated a system of courses leading to a bachelor's degree in German area studies. German area studies is a coordinated program consisting of the course offerings within the various departments in the University which are pertinent to the study of German, Germany and Europe.

Participating departments: Classics, English, Fine Arts, Geography, German, History, Philosophy, Politics, Psychology.

Responsibility for the program rests with the chairperson of the department of Germanic and Slavic studies, to whom all enquiries should be directed.

There are various approaches to this program:
(a) a humanities orientation, consisting of courses in classics, English, fine arts, and philosophy chosen to complement the study of German language and literature;
(b) a social science orientation, consisting of a selection of courses in history, politics and geography complemented by courses in German language and literature;
(c) a combination of (a) and (b).

## Pass Program

Seven credits in German language and literature; seven credits in relevant areas, normally chosen from at least three of history, philosophy, politics, classics, English, music, psychology and linguistics; one science context credit. All pass programs must contain at least three credits from courses numbered 2 (alpha) 90 or above.

Language requirement for humanities majors
Majors in Germanic and Slavic studies are required to complete ENGL1F91.

Optional opportunity: three months in Germany, studying, working, and travelling. A half credit, GERM 3P98, will be awarded upon receipt of a satisfactory report from the employer involved.

## Honors program

Ten credits numbered 1F90 or above in German language and literature; nine credits normally chosen from at least three of history, philosophy, politics, classics, English, fine arts, geography, psychology, and linguistics; one science context credit. All honors programs must contain a minimum of three credits numbered 3(alpha) 80 or above.

Optional opportunity: three months in Germany, studying, working, and travelling. One half credit, GERM 3P98, will be awarded upon receipt of a satisfactory report from the employer involved.

This may be repeated for a further half credit, GERM 4P98.

## Russian area studies

In order to provide students with a wider range of studies, the department offers specialized courses of study in Russian language and literature and suggests courses in the following areas: classics, economics, English, fine arts, history, philosophy, politics, psychology, sociology.

There are various approaches to this program:
(a) a humanities orientation, consisting of courses in classics, English, fine arts, and philosophy chosen to complement the study of Russian language and literature;
(b) a social science orientation, consisting of a selection of courses in history and politics complemented by courses in Russian language and literature;
(c) a combination of (a) and (b).

## Pass program

Seven credits in Russian language and literature; seven credits in the related areas; one science context credit. All pass programs must contain the equivalent of at least three credits numbered 2(alpha) 90 or above.

## Language requirement for humani-

 ties majorsMajors in Germanic and Slavic studies are required to complete ENGL 1F91.

## Description of courses

Abbreviations:

| DUTC | Dutch |
| :--- | :--- |
| GERM | German |
| LING | Linguistics |
| RUSS | Russian |

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

## DUTC 1F00

## Introductory Dutch

Learning "of basic skills, conversational pattems, reading and writing ability. Language lab, 3 hours per week.

## DUTC 1F90

## Intermediate Dutch

Conversational and written language skills. Introduction to Dutch culture and 20 th century literature.
Prerequisite: DUTC 1F00(100) or permission of the department.

GERM 1F00
Language (introductory)
Learning of basic skills, conversational patterns, reading ability. Emphasis is
on the spoken language, language/ computer laboratory, films, records, tapes.
Language/computer laboratory, 4 hours per week.

GERM 1F90
Language and literature (intermediate I)
Intermediate level. Conversational and written language skills. Introduction to 20th century German literature. Language/computer laboratory, films, tapes, recordings.
Lectures and language/laboratory, 4 hours per week.

## GERM 1F96

Culture and civilization of Central Europe: from the Reformation to the post WWII period
(given in English)
The evolution of modern Europe. An illustrated cross-section of ethnic, social and cultural peculiarities; development of sovereign states and national cultural centres; a survey of literary, philosophical, political and sociological theses and their implementation or failure.
Lectures, 3 hours per week.

## GERM 1P93

Culture and civilization of Central Europe: from the prehistoric to the Carolingian period
(given in English)
(also offered as CLAS 1P93)
The cultural development of central Europe deals with the earliest stone and pottery cultures, the Bronze and Iron Ages, the Celts and Romans and the first Germanic kingdoms. The emphasis is placed on beliefs and practices, artistic style and architecture. Slides are used to illustrate the cultural evidence. Not open to students with credit in GERM 195.
Lectures, 3 hours per week.

## GERM 1P94

Culture and civilization of Central Europe: the Holy Roman Empire (given in English)
Forms of cultural expression in central
Europe from the foundation of the Ottonian Empire to the
Counter-reformation. An illustrated
survey of the arts, architecture and literature.
Not open to students with credit in GERM 195
Lectures, 3 hours per week.
GERM 2 F00
Language and literature (intermediate II)
Intensive study of the present-day German language and cultural background with the aim of increasing the level of the skills of communicating. Lectures with extensive use of the language/computer laboratory, 3 hours per week.

## GERM 2P11

German literature of the 19th century from Goethe to Hauptmann Short prose works by such authors as Kleist, Hoffmann, Eichendorff, Storm and Hauptmann will be examined as examples of romanticism, poetic realism and naturalism.
Not open to students with credit in GERM 210.
Lectures, 3 hours per week.

## GERM 2P12

German literature of the 20th century from Mann to Böll
Authors to be studied include Kafka, Dürrenmatt, Kaschnitz and Lenz. The course touches on the political and literary issues of the 20th century. Prerequisite: GERM 2P11(211hc). Not open to students with credit in GERM 210.
Lectures, 3 hours per week.
GERM 2P14
Modern German theatre and radio plays
Major trends in modern German theatre; the groundbreaking dramaturgy of Brecht in the '40s; the compelling Sprechstücke of Handke in the '60s; the renascent Volksstück form of Sperr, Kroetz, and Fassbinder in the '70s. Special attention will be given to the Hörspiele of Borchert, Lenz, Eich, Dürrenmatt, among others. Prerequisite: GERM 1F90 or permission of the department.
Lectures, seminar, 3 hours per week.

## GERM 2P95

Goethe's Faust I
Introduction to the Faust saga, Faust treatments in European literature, the "Faustian" temperment and a detailed study of Goethe's Faust I.
Prerequisite: permission of the department.
Lectures, seminar, 3 hours per week.
Note: To take any courses offered at the year 3 or 4 levels a student must have at least two credits from among GERM 1F90(190), 2F00(200) or 2P11/ 2P12(211hc/212hc), or their equivalent, or obtain permission of the department.

## GERM 3F99

Advanced language study I
The aim of this course is to achieve fluency at an advanced level in speaking, writing and comprehension. Course work includes tapes, films, written and oral projects, discussions and advanced interpreting and translating. It may be taken in either year 3 or 4.

Prerequisite: departmental permission.
Lectures, language lab, 3 hours per week.

## GERM 3P81

## Mediaeval German literature I

The principles of Middle High German grammar and an introduction to the lyric poets of Mediaeval Germany from 1050.

Prerequisite: at least three credits from among GERM 1F90(1F90), 1P93/1P94
(193hc/194hc), 2F00(200), 2P11/2P12
( $211 \mathrm{hc} / 212 \mathrm{hc}$ ) or departmental permission.
May be taken as a third or fourth year credit.
Not open to students with credit in GERM 391.
Lectures, 3 hours per week.

## GERM 3P82

Mediaeval German literature II
An introduction to the history of the German language and the Mediaeval epic from 1050.
Prerequisite: GERM 3P81(381hc) or departmental permission.
May be taken as a third or fourth year credit.

Not open to students with credit in GERM 391.
Lectures, 3 hours per week.

## GERM 3P83

Baroque to Sturm und Drang
Literature and literary theory from the Baroque period to Storm and Stress. This course deals with the dramatic literature and criticism of the 17 th and 18th centuries from Opitz to Goethe. Prerequisite: GERM 2F00(200) or equivalent or departmental permission.
May be taken as a third or fourth year

## credit.

Not open to students with credit in GERM 393.
Lectures, 3 hours per week.
GERM 3P84
Sturm und Drang to early Classicism Literature of the 18 th century from the period of Storm and Stress to early classicism: drama, prose and essays of Goethe and Schiller, especially

## Goethe's Faust I.

Prerequisite: GERM 2FOO(200) or equivalent or departmental permission. May be taken as a third or fourth year credit.
Not open to students with credit in GERM 393.
Lectures, 3 hours per week.

## GERM 3P85

19th century Romantic literature
Early Romantic prose, poetry and drama with special emphasis on the works of Novalis, Wackenroder, Tieck and Kleist. Critical theory of the Romantic movement.
Prerequisite: departmental permission.
May be taken as a third or fourth year credit.
Not open to students with credit in GERM 395.
Lectures, 3 hours per week.
GERM 3P86
Biedermeier, Junges Deutschland and Vormärz
Representative works from the late Romantic period and works by Büchner, Heine, Mörike, Grillparzer and Stifter.
Prerequisite: departmental permission. May be taken as a third or fourth year credit.

Not open to students with credit in GERM 395.
Lectures, 3 hours per week.
GERM 3P87
The prose of Realism
Narrative fiction from Realism to Naturalism. Works by Fontane, Keller, Storm, Ludwig, Meyer and
Hauptmann.
Prerequisite: departmental permission.
May be taken as a third or fourth year credit.
Not open to students with credit in GERM 392.
Lectures, 3 hours per week.

## GERM 3P88

19th century drama and poetry
Representative dramas by Hebbel,
Hauptmann, Schnitzler and Wedekind.
Poctry from the Epigonen to the Impressionists.
Prerequisite: departmental permission.
May be taken as a third or fourth year credit.
Not open to students with credit in GERM 392.
Lectures, 3 hours per week.

## GERM 3P98

Practicum in Germany
A program designed to give students of German and German area studies of all years an opportunity to work for three months in a German firm to acquire practical skills as well as language proficiency. The program may be repeated by students in the honors program only.
Prerequisite: working knowledge of German.

## GERM 4F10

Advanced language study II
The development of greater proficiency in German at a very advanced level of speaking, writing, and comprehension. Course work includes simultaneous translation, written translations, discussions and essays on contemporary issues.
Prerequisite: GERM 2F00(200) or equivalent or departmental permission. Not open to students with credit in GERM 499.
Open to year 3 and 4 students only. Language/computer laboratory, 3 hours per week.

## GERM 4P00

German classicism I
Classical texts and philosophical essays: Schiller.
Prerequisite: GERM 2F00 and normally GERM 3P83/3P84(383hc/384hc) or equivalent or departmental permission.
Not open to students with credit in GERM 402.
Lectures, 3 hours per week.

## GERM 4P01

## German classicism II

The classical plays of Goethe, especially Faust II.
Prerequisite: GERM 4P00(401hc) or departmental permission.
Not open to students with credit in GERM 402.
Lectures, 3 hours per week.

## GERM 4P05

German literature of the early 20th century
Experiments in form and content in the early 20 th century. Works by such writers as T. Mann, Hesse, Remarque and Kafka.
Prerequisite: departmental permission.
Not open to students with credit in GERM 404.
Lectures, 3 hours per week.
GERM 4P06
German literature from the 1920s to 1945
The literatures of totalitarianism and of the exile.
Prerequisite: departmental permission.
Not open to students with credit in GERM 404.
Lectures, 3 hours per week.
GERM 4P07
German literature from 1945 to 1965
New forms of poetry, drama and prose:
the radio play, the "docudrama" and
"reportage".
Prerequisite: departmental permission.
Not open to students with credit in GERM 403.
Lectures, 3 hours per week.
GERM 4P08
German literature from 1965 to the present
Poetry, drama and prose of the contem-

## Germanic and Slavic Studies

porary literary scene in Germany.
Works by such writers such as Lenz, Kaschnitz, Weib, Graß.
Prerequisite: departmental permission.
Not open to students with credit in GERM 403.
Lectures, 3 hours per week.
GERM 4P16
Tutorial I
Advanced study in an area of language or literature of mutual interest to the student and the instructor. A written proposal must be approved by the department chairperson.
Prerequisite: derpartmental approval. Tutorial, 3 hours per week.

## GERM 4P17

Tutorial II
Advanced study in an area of language or literature of mutual interest to the student and the instructor. A written proposal must be approved by the department chairperson.
Prerequisite: departmental approval.
Tutorials, 3 hours per week.
GERM 4P98
Practicum in Germany
See GERM 3 P98.
LING 1F94
Introduction to linguistics (also offered as COMM 1F94)
Language and language use. Concepts related to disciplines in the humanities, social sciences and education will be discussed. The course is not limited to any specific language; it deals with questions common to all tongues.
Not open to students with credit in LING 190.
Open to students in any year of study.

## RUSS 1F00

Introductory Russian
Development of the four basic skills in language proficiency (reading, writing, speaking and comprehension).
Lectures, language lab, 4 hours per week.

## RUSS 1F90

Intermediate Russian
Conversational and written language skills. Reading of selected texts. Lectures, language lab, 4 hours per week.

RUSS 1F95
Russian culture and civilization (given in English)
Analysis of the influence of religion, fine arts, philosophy and social conditions on the Russian character and culture. Open also to non-majors. Lectures, 3 hours per week.

RUSS 2F10
19th century Russian literature (given in English)
(formerly RUSS 2P12/2P13)
The development of literary traditions vital to Russian cultural and spiritual existence, including the writings of Pushkin, Lermontov, Gogol, Turgenev, Dostoevsky, Tolstoy, and Chekhov. Not open to students with credit in RUSS 211, 2P12 (212hc) or 2P13 (213hc).
Lectures, 3 hours per week.

## RUSS 2F97

## Advanced Russian I

Intensive study of present-day Russian through selected texts to increase the level of comprehension and expression. Prerequisite: RUSS 1F90(190) or equivalent or departmental permission. Lectures, 3 hours per week.

## RUSS 2V90-2V94

Special topics in Russian studies I (given in English)
An exploration of the main movements in literature, art, music, theatre and film in Russia from the 1880s through the 1920s.
Winter evening 1989-90: (2V91)
Recent cultural scenes in the USSR
Latest developments in literature, art, theatre, cinema and critcism. Prerequisite: at least year 2 standing. Lectures, 3 hours per week.

RUSS 2V95-2V99
Special topics in Russian studies II
(given in English)
Problems and tendencies in the 60s and
70s in prose, poetry and drama:
Trifonov, Aitmatov, Rasputin,
Yevtushenko, Sokolov and others.
Winter evening 1989-90: (2V96)
Russian science fiction
Russian science fiction: Odoyevsky, Chernyshevsky, Zamiatin, A. Tolstoy
and the Strugatsky brothers.
Prerequisite: at least year 2 standing. Lectures, 3 hours per week.

RUSS 3F97
Advanced Russian II
Systematic coverage of Russian morphology; creative writing and expression; analysis and translation of prescribed texts.
Open to year 3 and 4 students only. Lectures, 3 hours per week.

RUSS 3F98
20th century Russian literature (given in English)
Major Russian writers of our century from the Revolution to the present (Gorky, Bulgakov, Shohoklov, Pasternak, and Solzhenitsyn).
Not open to students with credit in RUSS 3F96, 3P94 or 3P95. Lectures, 3 hours per week.

## RUSS 3F99

## Tutorial

Advanced study in an area of language or literature of mutual interest to the student and the instructor. A written proposal must be approved by the department chairperson. Lectures and seminars, 3 hours per week.

# Health Studies 

Director<br>John G. Benjafield<br>Institute for Applied Human Development<br>Department of Psychology

This new program in health studies is offered in response to a growing interest in health-related issues. The curriculum is oriented to the integration of knowledge from several traditional disciplines, focusing on the studies of health maintenance and the change process in the development of good health from a behavioral and biological sciences perspective. The program is one which is both socially oriented and has a strong commitment to basic science.

Health studies consists of a core of courses supplemented by a broad choice of specific electives which include appropriate selections from within established departments.

Students should be careful to select those electives which will prepare them for the career or post-graduate program of their choice. Electives in year 2 and year 3 must be approved by the director of the program.

## Pass program

Year 1
HLST 1P90; BIOL 1F90; CHEM
1F85; MATH 1P98; PSYC 1F90;
SOCI 1F90.
Year 2
HLST 2F10; three full credits from
ACTG 2P11, 2P12, BIOL 1F25, 2F95, 2P97, 2P98, CHST 2F10, COSC 1P01, 1P04, ECON 1P91, 1P92, EXST 2F50, PHED 1P92, 1P94, 2P41, PSYC 2F12, 2F30, 2F35, 2F36, RECL 2P02, UEST 1F90; humanities context credit.

## Year 3

HLST 3P20, 3P21; three full credits
from BIOL 2P97, 3P51, PHED 2P97,

3P41, 3P90, PSYC 2F36, 3F17, 3F46,
3P16, 3P18, 3P81, 3P83, 3P94, SOCI
3F21, 3P26, 3P28, 3P57, UEST 3P51, 3P57; one elective credit.

## Honors program

Years 1, 2 and 3
As in pass program.

## Year 4

HLST 4P50, 4P51; one full credit from HLST 4F52, PSYC 3P81, 3P95, 4F50; two full credits from BIOL 2P97, PHED 3P90, PSYC 3F46, 3F91, 3P90, 3P92, 3P94, 3P98, 3P99, 4P20; one elective credit.

## Description of courses

## Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

## HLST 1P90

## Introduction to health studies

Current issues and controversies in the promotion of optimal health. Emphasis will be on behavioral factors as they interact with biological processes. Topics will include: neurological and psychological bases of health related behavior such as stress and addiction; community health.
Prerequisite: admission to the health studies program.
Lectures, seminar, 3 hours per week.

## HLST 2F10

Research methods for health studies Descriptive and inferential statistics and the interpretation of data. A major consideration will be the use of statistics in the range of situations confronting health studies workers.
Prerequisite: HLST 1P90.
Lectures, seminar, 3 hours per week.

## HLST 3P20

## Program evaluation

A comprehensive introduction to the key concepts, methodologies and issues related to program evaluation in health studies. Topics include: administrative
and policy implications and technical/ methodological evaluation issues facing individuals involved in administering, planning, implementing and evaluating health programs.
Prerequisite: HLST 2F10.
Lectures, seminar, 3 hours per week.

## HLST 3P21

## Nutrition

An elementary introduction to nutrition with emphasis on diet for health maintenance.
Prerequisite: HLST 2F10.
Lectures, seminar, 3 hours per week.

## HLST 4F52

Thesis tutorial
A research project carried out with a faculty adviser. Students must consult the program director regarding both their program and an adviser before being admitted to year 4. Prerequisite: HLST 3P20, 3P21.

## HLST 4P50

## Epidemiology

An investigation of epidemiology of selected diseases with an emphasis on understanding epidemiological methods and identification of risk factors. Prerequisite: HLST 3P20, 3P21. Lectures, seminar, 3 hours per week.

## HLST 4P51

## Disease processes

An analysis of various behavioral strategies for the prevention of such diseases as hypertension and lung cancer. The role of behavior in the pathogenesis of disease and the feasibility of behavioral change for the prevention of disease.
Prerequisite: HLST 3P20, 3P21.
Lectures, seminar, 3 hours per week.

## History

## Officers of instruction

## Chairperson

Joseph L. Sanders
Professors
Frederick C. Drake
John M. McEwen
Associate professors
Alan G. Arthur
Craig R. Hanyan
Roderick G. Phillips
Joseph L. Sanders
Robert R. Taylor
Wesley B. Turner
Carl M. Wolff

## Assistant professor

Patricia G. Dirks
Professor emeritus
Donald J. Goodspeed

## General information

## Mackenzie Chown complex C421

Historians explore changes in past societies, cultures and peoples. They examine cultural, artistic, political, economic, intellectual, as well as military and national behavior. Their interests range from the history of individuals and local communities to studies of nations and international relations. They analyze the causes and consequences of significant change over time. They seek to illuminate the past.

The study of history involves surveying and gathering evidence and evaluating, interpreting and refining it by constructing clear and logical arguments on the basis of that evidence.

The range of courses offered by the department permits students to plan pass and honors programs in the
following fields of history:

1. political and diplomatic
2. social and cultural
3. North American
4. European
5. British and imperial.

To provide a focus for their studies, the department encourages history majors in a pass program to select three of the six history courses they will take over years 2 and 3 from within one of the designated fields. Their three other history courses may be selected from outside their chosen field. In year 4, honors majors take four history courses within or related to their chosen fields. Students should consult with the chairperson of the department in arranging acceptable programs.

The department normally offers about 12-15 full and 20 half courses, both lecture and seminar courses, in any one year. Courses not offered in one year are normally offered the following year, so that a two year rotation pattern is in operation.

To assist students in refining their analytical and critical skills, seminars (small discussion groups) are a crucial part of every history course. Faculty members participate in all seminars. In many courses individual students are given the responsibility of organizing and leading discussions on particular topics.

## Notes

1. For the purpose of fulfilling core and context requirements, HIST 1P92/1P93 and HIST 1F95 are equally acceptable courses.
2. History majors must take a full course equivalent outside of history to satisfy their social science core and context requirement.

The History department recommends combining history with other disciplines in humanities and social science, such as classics, English, languages, philosophy, economics, geography, politics, psychology and sociology.

The department also recommends to students intending to proceed beyond an honors degree in history an advanced course (1F90) in a second language and POLI 2P81 (205hc) or MATH 1F92(192)

## Pass program

Seven credits in history are required for a pass degree.

## Year 1

HIST 1P92/1P93 or 1F95; one social science and one science context credit; two elective credits.

## Years 2 and 3

Six credits in history from those numbered 1P92 to 3(alpha) 99; four elective credits. Normally, three credits in history are taken in each year.

Each year, a student's program must be approved by the department.

Second year students may take year 3 courses with permission of the instructor, apart from courses numbered 3(alpha) 90 or above which are restricted to students with at least three year 2 credits or special permission of the instructor.

## Language requirement for humanities majors

History majors are required to complete one credit in a language other than English. The History department recommends a 1 F00 level credit (or its equivalent) in French, German, Italian, Latin, Russian or Spanish; see page 25 for details of the language requirement for humanities majors.

## Honors program

Eleven credits in history are required for an honors degree.

Years 1, 2 and 3
As in pass program.

Students who have obtained honors standing in second year may be permitted to take a year 4 course in year 3 , especially if it is not expected that the course will be offered the following year. A tentative list of year 4 level courses to be offered in 1990/91 is available in the department.

## Year 4

Four credits in history and one elective credit. History courses should include two credits numbered 4(alpha) 004(alpha) 99; one course numbered 3 (alpha) 90 or above; one other credit in history. The courses chosen must be approved by the department chairperson, or designate, as comprising an acceptable program. Students may substitute a lower level course for one of those required in year 4 , if they have taken a course numbered 3(alpha) 90 or above in year 3.

Year 4 seminars will be organized to meet the needs and desires of students, within the constraints of faculty availability and expertise. Students should consult with the department in the spring prior to their registration in year 4 in order to ensure the offering of seminars which meet their needs. Where numbers do not warrant a seminar format, individualized programs will be developed.

## Combined major programs

The department of History participates in combined major programs. In such programs, the candidate for a pass degree shall take a minimum of five credits in history, and the candidate for an honors degree a minimum of seven credits in history. Normally a pass student will take three history credits numbered 1 (alpha) 90 and above, and two credits numbered 2(alpha) 90 and above; an honors student will normally take two additional credits numbered 3(alpha) 90 and above.

## Description of courses

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

## HIST 1F95

## World history since 1914

The major political, social, economic and cultural trends of the 20th century, with prime focus on developments in Europe and the way they have affected the rest of the world, although stress will also be placed on the decline of Europe in global political and economic terms. Specific topics include the world wars, the Russian Revolution, fascism, the Holocaust, the Cold War, decolonization, and conflict and its resolution in the international, political and social spheres.
Not open to students with credit in HIST 191. Lectures, seminar, 3 hours per week.

## HIST 1P92

Early medieval Europe
The societies and culture of Western Europe from the late Roman Empire until the Crusades and the Twelfth Century Renaissance. The agricultural base of society, its cultural context, the nature and roles of early Christianity and the ultimate survival and expansion of Christendom in the face of both pagan and Muslim challenges will be analyzed.
Not open to students with credit in HIST 190.
Lectures, seminar, 3 hours per week.

## HIST 1P93

The high middle ages
The economy, society, culture and politics of Western Europe, 1050-1350. Ecclesiastical problems, religious beliefs, scholasticism; material culture and family structures will all be assessed in the context of urban and mercantile expansion.
Not open to students with credit in HIST 190.
Lectures, seminar, 3 hours per week.

HIST 2F09
Canada: colonization to Confederation
(formerly HIST 2F74)
A study of Canada's development from the time of French colonization to the period of Confederation, which
examines political, social, religious and economic growth.
Not open to students with credit in HIST 2F74.
Lectures, seminar, 3 hours per week.
HIST 2F10
Canada since 1867--discovering the
"Canadian" way
(formerly HIST 2F94)
The evolution of Canada's political, economic and social structures in the century after Confederation.
Not open to students with credit in HIST 2 F94.
Lectures, seminar, 3 hours per week.

## HIST 2F80

## The Thirteen Colonies

A comparative survey of the Thirteen Colonies from their founding to the American Revolution, with emphasis on the problem of the imperial connection, the social and theological bases of Puritanism, Quakerism and witchcraft, political developments and commerce, slavery and warfare. Lectures, seminar, 3 hours per week.

## HIST 2F97

## From colonies to colossus

The United States in the years from the Revolution to the war with Spain. The turmoil of nineteenth century American politics and the foundations of the economic strength of the United States. Elements of American social life probed include the relations between the sexes, the burden of slavery, the surge of interest in sports, the transformation of education, changes in the treatment of the poor and the emergence of the leamed professions.
Lectures, seminar, 3 hours per week.

## HIST 2F98

The promises of the "American Century"
Beginning with the depression of the 1890 s, the effort of Americans to establish social and economic justice in
an advanced industrial economy.
Topics covered include Progressivism, the development and the deterioration . of the New Deal, the American presidency in the Vietnam years, the changing culture of suburbia, the feminist revolt, the transformation of race relations and the attempt to make the United States a nonalcoholic country.
Lectures, seminar, 3 hours per week.

## HIST 2P21

## Early modern Britain

The British Isles in the fifteenth and sixteenth centuries, emphasizing the emergence of the centralized state, the impact of religious reformation and the achievements of the Elizabethan age. This course is the normal prerequisite for HIST 2 P22.
Not open to students with credit in HIST 220.
Lectures, seminar, 3 hours per week.

## HIST 2P22

## Century of revolution

The origins and effects of revolution and civil war in seventeenth century Britain.
Prerequisite: HIST 2P21(221hc) or permission of the instructor.
Not open to students with credit in HIST 220.
Lectures, seminar, 3 hours per week.

## HIST 2P30

Renaissance Europe, 1300-1500
An examination of some of the more problematic shifts and continuities in Western European society in an age of demographic crisis and economic dislocation. Family structures, technological innovation, elite and popular culture will be emphasized.
Not open to students with credit in HIST 232hc.
Lectures, seminar, 3 hours per week.

## HIST 2P31

Europe during the Reformation, 1480-1600
The economic, demographic and political environment within which Luther, Calvin and other innovators attempted to reform Europe's religious life. Political and mercantile change and overseas expansion will also be
discussed.
Not open to students with credit in HIST 233hc.
Lectures, seminar, 3 hours per week.

## HIST 2P34

Europe during the Iron Century, 1600-1715
A survey of European culture and society during the 'Little Ice Age' in which economic and political readjustments are considered in the context of philosophical speculation, the development of scientific thought and the concurrent maintenance of antecedent religious and intellectual traditions. Lectures, seminar, 3 hours per week.

## HIST 2P41

18th century Europe, 1715-1799
Demographic, economic and structural changes as they affected the nobility, bourgeoisie and popular classes; changes in patterns of criminality, riot and popular mentality; war as a stimulus of social reform; and the Enlightenment in its social and cultural context and the origins and course of the French Revolution.
Not open to students with credit in HIST 2 P 42 .
Lectures, seminar, 3 hours per week.
HIST 2P51
Europe's greatest century: 1815-1914 Political, social and cultural changes in the sub-continent when liberal, imperialist and industrializing Europe was still master of the world. The 1848 revolutions; the effects of nationalism, such as the unification of the German and Italian states and the problems of the eastern Empires, Austria-Hungary and Russia, are some of the topics covered.
Lectures, seminar, 3 hours per week.

## HIST 2P52

Europe from ruin to recovery: 19141972
The fall and division of Europe
stressing the effect of competing ideologies, two great wars and economic turmoil on political, social and cultural affairs. Some of the problems discussed include: Stalin's Russia, the Nazi movement, the Holocaust, the Gaullist phenomenon and the Prague

Spring of 1968.
Lectures, seminar, 3 hours per week.

## HIST 2P93

Foundations of modern Japan Japanese history from the fall of the Tokugawa shogunate to 1953 . Some attention will be given to Tokugawa Japan, but the main emphasis will be on the major post- 1867 socio-economic, political and intellectual developments which help explain Japan's emergence as a major power. Lectures, seminar, 3 hours per week.

## HIST 2P94

Canada's evolving social fabric (formerly HIST 3P76)
The changing nature of the social institutions fashioned for and by the men, women and children who peopled Canada during the nation's first century.
Not open to students with credit in HIST 3P76.
Lectures, seminar, 3 hours per week.

## HIST 2P96

Piety, religious dissent and reform in the Reformation
The personal, collective, institutional and cultural religious forces which underlay the various efforts to revitalize and reform the Christian church between 1400 and 1650 . Differing movements will be compared and contrasted, in part through an examination of primary texts. Related topics like later humanist philosophy, esoteric beliefs and the witch-craze will also be examined.
Not open to students with credit in HIST 233hc.
Lectures, seminar, 3 hours per week.

## HIST 2P99

Ideas and culture,1700-1850
Intellectual and cultural developments in Europe and North America during the 18 th and early 19th centuries, with particular attention to the exchange of ideas across the Atlantic. Developments in literature and the arts will be considered, as well as the relationships between high and low culture. Lectures, seminar, 3 hours per week.

## HIST 3F24

Britain in the 20th century
From liberal democracy to welfare state: the coming of total war and its impact upon the political, social, economic and cultural life of Britain. Lectures, seminar, 3 hours per week.

## HIST 3F50

The Germans
German history since the late 18 th century, with emphasis on social, economic and political problems. Lectures, seminar, 3 hours per week.

## HIST 3F70

Russia, 1462-1801
Muscovite and early imperial Russian history with emphasis on the social, economic and political problems which accompanied Russia's emergence as a modern state.
Lectures, seminar, 3 hours per week.

## HIST 3F85

## Power in America

Aspects of the political development of the United States from the American Revolution to the present. Attention will be given to the development of the American party systems, the political interaction of the federal, state and local levels of government and to the changing behavior of the American voter.
Seminars, 3 hours per week.
HIST 3F90
Russia, 1801-1917: the road to revolution
The last period of imperial Russian history with emphasis on the political, socio-economic, and intellectual contexts out of which came the revolutions of 1917.
Lectures, seminar, 3 hours per week.

## HIST 3F91

The experience of Empire
Imperialism, power and nationalism in the British Empire during the 19th and 20th centuries, with emphasis on African territories, Australia, Canada and New Zealand.
Lectures, seminar, 3 hours per week.

## HIST 3F92

Russia in the 20th century: the Soviet Union
(formerly HIST 3P72)
The USSR from 1917. Attention will
be given to internal developments: the
consolidation of the Soviet regime, the
Stalin revolution, the post-Stalin era and changes in Soviet or Russian society since 1917, also to certain aspects of Soviet foreign policy. Not open to students with credit in HIST 3P72.
Lectures, seminar, 3 hours per week.

## HIST 3F95

The development of United States foreign policy
United States foreign policy from the American Revolution to the present, concentrating on the interaction of domestic and foreign affairs and on the development of territorial, economic and commercial expansion.
Lectures, seminar, 3 hours per week.

## HIST 3F96

European cultural history, 13001600
The shift from script to print, the gap between high and low cultures, the development of new artistic standards and goals and the cosmology of the early modern period. The context and framework within which speculation and literary and artistic expression or elaboration occurred. Seminars, 3 hours per week.
To be offered for the last time in Winter Evening 1989/90.

## HIST 3F97

## The family in Europe

A comparative study of the family in Early Modern and Modern Europe. Topics examined include family and household forms; family economy and government; demography; law; marriage formation, stability and breakdown; gender and family relationships; sexuality. The family will be considered both in its own right and in terms of broader social, economic and political developments.
Lectures, seminar, 3 hours per week.

## HIST 3P00

Ideas and culture since 1850
The concerns of this course will be similar to those of HIST 2P99 (299hc), but with reference to the later 19 th and 20th centuries.
Lectures, seminar, 3 hours per week.

## HIST 3P21

The first industrial nation: 18th century Britain
British politics, society and culture in the early stages of the industrial era. Not open to students with credit in HIST 322.
Lectures, seminar, 3 hours per week.

## HIST 3P23

The first industrial nation: 19th century Britain
British politics, society and culture during the climactic period of the first industrial revolution.
Not open to students with credit in HIST 322.
Lectures, seminar, 3 hours per week.

## HIST 3P74

Canada, a land of immigrants Immigrants, immigration movements, problems of adjustment and government policies, concentrating on the period up to the second world war. Prerequisite: a previous university level Canadian history course or permission of the instructor.
Lectures, seminar, 3 hours per week.

## HIST 3P81

The northeast in the old republic
The political, social and economic development of northeastern states of the United States, such as Massachusetts, Pennsylvania and New York, up to the 1840 s .
Seminars, 3 hours per week.
HIST 3P82
Canadian-American relations
Major problems in the relationship between the United States and Canada in a selected time period.
Lectures, seminar, 3 hours per week.
HIST 3P92
Selected aspects of Upper Canada/
Ontario history, 1784-1914
Specific themes in the social, cultural,

## History

political and economic history of Upper Canada/Ontario. Topics may include native peoples, immigration and settlement, urban development, political development, warfare, the rise of industry, crime and punishment, health and medicine, social problems, the writing of provincial and local history.
Prerequisite: a previous university level Canadian history course or permission of the instructor.
Lectures, seminar, 3 hours per week.

## HIST 3P98

## French Canada

A study of the cultural, economic and political institutions of French Canada as a means of analyzing the sources of French-English conflict with emphasis upon such questions as education, cultural values, imperial defense and conscription.
Lectures, seminar, 3 hours per week.

## HIST 4F90

## Honors research paper

A major research paper, undertaken in consultation with members of the department. Projects should be proposed in the spring, if possible. Prerequisite: permission of the department.
To be offered for the last time in Winter Day 1989/90.

## HIST 4F99

## Honors tutorial

Directed reading and discussion in the student's selected field in preparation for a comprehensive examination. Honors students who are interested in this course may begin their reading for History 4F99 in their third year. Prerequisite: fourth year standing and permission of the department. Students must make arrangements before the end of April for tutorials to begin the following school term.
Hours to be arranged.
HIST 4V10-4V19
Problems in Canadian history
Studies of selected problems in different eras of Canadian history. Topics studied in any given year will focus on a particular theme.

Winter evening 1989-90: (4V10) The emergence of modern Canada, 19301980
An examination of political, economic and social developments in Canada from 1930 through the 1970s.
Prerequisite: year 4 honors standing or permission of the instructor.
Seminars, 3 hours per week.
HIST 4V20-4V29
Problems in United States history
Studies of selected problems and topics in United States history.
Winter day 1989-90: (4V20) The Republic forms: the political life of the early national years of the United States
The development of the political institutions of the United States from the Revolution to the 1840s. Topics include the development of American Republican ideology, the movement for the Constitution of 1787 , the emergence of parties and the development of the "second party system".
Prerequisite: year 4 honors standing or permission of the instructor.
Not open to students with credit in HIST 4P17.
Seminars, 3 hours per week.

## HIST 4V30-4V39

Problems in European social and political history
Studies of selected problems, topics and periods in European social and political history from the seventeenth to the twentieth centuries, with particular attention to developments pertaining to France, Germany, Great Britain and Russia. Countries covered will vary from year to year.
Winter day 1989-90: (4V30) French society in the 19th century The major social developments in France between the Revolution and World War I, with emphasis on changing class composition, urbanization, industrialization and the association of these developments with political and ideological change. Specific topics include revolutionary and reactionary movements, population stagnation and the development of social policies.
Prerequisite: year 4 honors standing or
permission of the instructor. Seminars, 3 hours per week. Winter day 1989-90: (4V31) The rise of National Socialism in Weimar Germany
An analysis of the causes of Nazism's growth, 1919-1933.
Prerequisite: year 4 honors standing or permission of the instructor.
Seminars, 3 hours per week.

## HIST 4V40-4V49 Problems in European intellectual and cultural history

Studies in selected problems, topics, and periods in European cultural and intellectual history.
Winter evening 1989-90: (4V40)
From Romaniticism to Neo-romanticism
Problems in the thought and culture of Europe from the late 18 th to the early 20th centuries, including special consideration of the role of literature and music in the culture of the period. Prerequisite: year 4 honors standing or permission of the instructor.
Not open to students with credit in HIST 4P45.
Seminars, 3 hours per week.

## Labor Studies

Director<br>Daniel G. Glenday<br>Participating faculty<br>Ann D. Duffy, Sociology<br>Daniel G. Glenday, Sociology<br>Roberta E. Robb, Economics<br>Nicolas Baxter-Moore, Politics<br>Ester Reiter, Sociology

## General information

## Schmon tower 1005A

Labor studies is offered as a combined major program leading to a pass BA degree. The program offers a social science perspective to undergraduate students interested in labor studies. The three participating disciplines are economics, politics and sociology.

As part of the program, three special seminar style lectures are planned during the academic year. The first, to be scheduled early in September, will introduce students to each other and to participating faculty. The second and third, scheduled for December and April, will introduce the students to social science academics/practitioners in the field.

Each incoming student will be assigned an academic adviser from the labor studies program who will act as an "animator" to assist in planning the student's program and to help solve any individual academic or program related difficulties.
BA Pass Program

Year 1
ECON 1P91/1P92; POLI 1F90; SOCI
1F90, one science and one humanities
context elective.
Economics and Labor Studies
Year 2
ECON 2P15, 2P21/2P22, 2P31/2P32, 2P90; MATH 1P98; SOCI 3P32; one elective credit.

## Year 3

ECON 3P24/3P25; LABR 3F00; two credits from the labor studies course list (see Note below); one elective.

Politics and Labor Studies
Year 2
POLI 2P01, 2P80 (or 2P81); ECON
2 P 15 ; SOCI 3P32; one credit in politics at the year 2 level; one credit from labor studies course list (see Note below); one elective.

## Year 3

LABR 3F00, POLI 3P33; one and one half credits in politics at the year 3 level; one credit from the labor studies course list (see Note below); one elective.

## Sociology and Labor Studies

 Year 2SOCI 2F01, 2F10; ECON 2P15; SOCI
3 P 32 ; one credit from the labor studies course list (see Note below); one elective.

## Year 3

LABR 3F00; SOCI 3F01; one credit in sociology at the year 3 level; one credit from the labor studies course list (see Note below); one elective.

## Note:

At least one of the two credits required from the labor studies course list must be from outside the student's disciplinary major.

Labor studies course list

ECON 2F95 Canadian economic policy
ECON 2P09 Canadian economic history
ECON 2P15 The economics of unions
ECON 3P24 Labor economics
ECON 3P25 Topics in labor economics
POLI 3P33 The state and economic life
POLI 3P65 Introduction to public policy
SOCI 2P32 The sociology of work
SOCI 2P34 The labor process and trade unions
SOCI 3P30 Sociology of women and work
SOCI 3P34 Information technology and work
SOCI 3P66 Social movements
SOCI 3P76 Technology and change

## Description of Courses

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

## LABR 3F00

Labor studies workshop
A social science and internationally comparative perspective on the labor movement. Faculty from Economics, Politics and Sociology will participate in this course.

## Liberal Studies

(for Latin see page 79)

# Liberal Studies 

Director<br>A.Victoria Soady<br>Associated faculty<br>Alan Arthur, History<br>Howard E. Bell, Mathematics<br>Roderick Church, Politics<br>Gordon H. Coggins, English Language<br>and Literature<br>Martin S. Gibson, Chemistry<br>Richard R. Hiatt, Chemistry<br>Michael S. Hornyansky, English<br>Language and Literature<br>Monica C. Homyansky, Philosophy<br>John Luik, Philosophy<br>William Mathie, Politics<br>A.Victoria Soady, Classics<br>Donald J. Ursino, Biological Sciences<br>Carl M. Wolff, History

## General information

## Schmon tower 1231

Liberal studies provides an opportunity for the exploration and discussion of those questions which arise when education is directed towards the freedom of the fully examined life.

Questions of human nature and purpose and of our relationship to the natural order, for example, are examined primarily through reading and discussion of the great works of human reason and imagination that constitute our cultural tradition.

The progiam seeks to develop the skills and habits of inquiry, analysis, argument and expression needed for a rigorous treatment of these questions.

The program is made up of a set of closely related core courses. Because the core courses are intended to provide an integrated liberal education, to be cumulative, and to furnish the basis for an intellectual community of students and faculty, students in the program are normally required to complete most of
these courses to qualify for a degree in liberal studies. The liberal studies program can, and in most cases should, be combined with a major in another discipline or department. Students combining liberal studies with a major concentration in mathematics or science will usually be exempted from the mathematics or computer science and science context credits, and may petition for exemption from the second language requirement. Students who complete the program are deemed to have completed all context requirements.

The focus of the liberal studies program is the great books seminar which meets, under the guidance of two faculty leaders, twice weekly, throughout the entire program. Leaders for this seminar are drawn from a variety of disciplines and divisions of the University.

The other courses in the liberal studies program are intended both to provide for a kind of learning not possible in the seminar itself and also to enhance the quality and rigor of the inquiry and discussion which the seminar is intended to engender.

Students in the senior year are required to prepare a major essay on some aspect of the liberal studies under the guidance of a faculty member. Students who have combined liberal studies with a particular discipline are encouraged to prepare an essay integrating these two aspects of their work at Brock.

A non-credit series of lectures supplements the liberal studies program. The lectures will illuminate the works and issues addressed in the program from a variety of perspectives. Students also attend concerts, art exhibitions and dramatic productions. Students attend as many of the lectures and cultural events as possible, since these constitute an integral part of the liberal studies program.

Each student in the program is assigned a faculty adviser for regular and incidental consultation.

## Great Books Seminars

The Great Books Seminars (LBST
$1 \mathrm{~F} 90,2 \mathrm{~F} 90,3 \mathrm{~F} 90,4 \mathrm{~F} 50$ ) can be taken by other students where enrolments permit. Admission into the upper year courses is dependent upon the completion of the credits in sequence, or special permission of the instructor. The humanities contextual requirement may be met by successful completion of LBST 1F90. The social science contextual requirement may be met by successful completion of the full fourcourse sequence.

## Bachelor of Arts in Liberal Studies

## Honors Program, single major

LBST 1F90, 1F92, 2F90, 2F95, 3F90, 4F50, 4P99; two of LBST 2P96, 3P92, 3V95-3V99; SCIE 1F20 (on petition, another science context credit may be substituted); a coherent sequence of three credits in another discipline related to a particular dimension of the student's liberal studies program. At least one credit must be at the year 3 or year 4 level.

## Combined major programs

Pass program
LBST 1F90, 1F92; 2F90; LBST 3F90 or 4F50; LBST 2F95, or two of 2P96, 3P92, 3V95-3V99; SCIE 1F20 (on petition, another science context credit may be substituted); five full credits from the second discipline.

## Honors program

LBST 1F90, 1F92, 2F90, 2F95, 3F90, 4F50 and 4P99; two of LBST 2P96, 3P92, 3V95-3V99; SCIE 1F20 (on petition, another science context credit may be substituted); seven credits from the second discipline.

Language requirement for humanities majors
Liberal studies BA majors are required
to complete one 1F90 level course in a language other than English or both of GREE 1F00 and LATI 1F00.

Bachelor of Science in Liberal
Studies

Liberal studies can be combined with a concentration in mathematics or science. Students interested in this combination should consult the coordinator concerning their program and course selection.

For a Bachelor of Science degree a majority of the credits must be chosen from courses in mathematics and sciences.

Contextual requirements for liberal studies majors are deemed satisfied by successful completion of the program.

## Description of courses

Please note that not all courses are offered in every session. Refer to applicable term timetable for details.

## LBST 1F90

Great books seminar, I
Important works of Western literature, philosophy, science, and theology from the Greco-Roman world to be read and discussed include Homer, Sophocles, Thucydides, Plato, Aristotle, Lucretius and The Old Testament. Seminars, 4 hours per week.

## LBST 1F92

Logic, rhetoric and practical criticism
(also offered as ENGL 1F92)
Methods of developing, organizing and expressing ideas, directed to improving skills of thought, reading and persuasion. Classical logic and rhetoric will be examined in the works of Aristotle and Cicero. Students will analyze the logic and rhetoric of writings on a range of subjects in a variety of modes. Not open to students with credit in ENGL 199 or LBST 195hc. Lectures, seminar, 3 hours per week.

LBST 2F90

## Great books seminar, II

Important works of Western literature, philosophy, science, and theology from Vergil to Bacon, including Aquinas, Dante, Machiavelli, Luther, Calvin, Rabelais, and relevant material from Aristotle and The New Testament. Prerequisite: LBST 1F90(190) or permission of the director.
Seminars, 4 hours per week.

## LBST 2F95

Poetics: words and music
(formerly LBST 3P95)
A comparative study of literary and musical forms and techniques, exploring the similarities and differences between verbal and musical expression and communication. No previous study of music is required.
Prerequisite: LBST 1F92 or permission of the director.
Not open to students with credit in LBST 3P95.
Lectures, seminar, 3 hours per week.

## LBST 2P96

Euclidean and non-Euclidean geometry
Geometry from Euclid to the nineteenth century. Results and techniques
from Euclidean and Lobachevskian geometry, with discussion of relevant logical and philosophical issues. Co-requisite: enrolment in the liberal studies program.
Not open to students with credit in LBST 196hc.
Seminars, 3 hours per week.

## LBST 3F90

Great books seminar, III
Important works of modern Western literature, philosophy, science, and theology. Authors to be read and discussed include Descartes, Spinoza, Corneille, Molière, Hobbes, Goethe, Hegel, Marx, Dostoievsky and Freud. Prerequisite: LBST 2F90(290) or permission of the director.
Seminars, 4 hours per week.
LBST 3P92
Language and thought (formerly LBST 2P92)
An examination of the connections between spoken and written languages
and the nature and structures of things thought and transmitted. Theories of language and some of the basic issues of contemporary linguistic analysis.
Prerequisite: LBST 1F90(190) or permission of the director.
Co-requisite: enrolment in the liberal studies program.
Not open to students with credit in LBST 2 P92.
Lectures, seminar, 3 hours per week.

## LBST 3V95-3V99

## Senior science seminar

Exploration of a topic or theoretical concept in the physical or life sciences. Co-requisite: enrolment in the liberal studies program or permission of director.
Lectures, seminar, 3 hours per week.

## LBST 4F50

## Great books seminar, IV

Important works of modern Western literature, philosophy, science, and theology to be read and discussed include: Milton, Racine, Locke, Hume, Burke, de Tocqueville, Dickens, Flaubert, Tolstoy, Durkheim, Weber and Nietzsche.
Prerequisite: LBST 2F90(290) or permission of the director. Seminars, 4 hours per week.

LBST 4P99
Essay workshop
Workshop for development of the required senior liberal studies essays and discussion of issues the essays will explore.
Seminars, 2 hours per week for two terms.

## Mathematics

| Orficers of instruction |
| :--- |
| Chairperson |
| John W. Auer |
| Professors |
| Howard E. Bell |
| Shao-Chien Chang |
| Velmer B. Headley |
| Ronald A. Kerman |
| John P. Mayberry |
| Eric R. Muller |
| Associate professors |
| John W. Auer |
| Thomas A. Jenkyns |
| Charles F. Laywine |
| Kris J.Srivastava |
| Jan Vrbik |
| Assistant professors |
| Hichem Ben-l-MMechaiekh |
| Anne E. Lordahl |
| William J. Ralph |
| Instructor |
| Brian Calvert |
| General information |

Schmon tower 1112
Scanning through the mathematics courses you will notice a balance between pure mathematics (mathematics for its own sake) and applied mathematics (mathematics for attacking real-world problems). The interests and experience of the Mathematics department's faculty in both areas are varied and extensive. The total faculty teaching commitment of the department is to undergraduate teaching. Faculty are available to an extraordinary degree for consultation and help with problems.

An asterisk (*) indicates a service course which has been developed to serve students majoring in areas other than mathematics. Students should select these courses after consultation
with both their major departments and the Mathematics department.

A degree in mathematics must include MATH 1P12/1P90, MATH 1P93/1P94 or 1P93/1P95, 2F00, and either 2 F10 or 3F10. Students in mathematics programs should choose their electives in consultation with the department. A mathematics major needs both facility in dealing with mathematical theories, and experience in the application of mathematics to real-world problems. Accordingly, all majors should choose at least a third of their upper year mathematics courses from each of the following groups:
(a) More theoretical courses: MATH 2F00, 2F10, $2 \mathrm{~F} 94,3 \mathrm{~F} 00,3 \mathrm{~F} 10,3 \mathrm{~F} 94$, 3P97, 3P98, 4F02, 4F10, 4F16, 4F21, 4F51, 4F52, 4P19, 4P20.
(b) Courses emphasizing applications: 2F95, 2F96, 2P20, 2P60, 3F95, 3P20, 3P57, 3P58, 3P59, 4P58, 4P59.

Note that Service courses, designated by an asterisk (*), may not be counted among the mathematics courses required for a mathematics degree.

## Pass program

A pass degree program in mathematics requires 8 mathematics credits, which must include MATH 1P12/1P90, MATH 1P93/1P94 or 1P93/1P95, MATH 2F00 and either MATH 2F10 or MATH 3F10.

## A typical program will be as follows:

## Year 1

MATH 1P12/1P90; MATH 1P93/1P94 or 1P93/1P95; three elective credits, at least two of which should be chosen to fulfill context requirements (PHYS 1 P 90 is recommended as the science context credit for students interested in physical applications of mathematics).

## Year 2

MATH 2 FO 0 ; two credits from MATH 2F10, 2F94, 2F96, 2P20, 2P60, 3F10, 3P20; one context credit (if all three are not taken in year 1); one elective credit.

Year 3
Three mathematics credits from those mentioned above or MATH 3F00, 3F94, 3P57, 3P58, 3P59, 3P97, 3P98, 4F21, 4P19, 4P20, 4P58, 4P59; two elective credits.

To qualify for a pass degree, students must complete a minimum of three credits numbered 2 (alpha) 90 or above.

## Honors program

An honors degree in mathematics requires 12 mathematics credits, which must include MATH 1P12/1P90; 1P93/ 1 P94 or 1P93/1P95; $2 \mathrm{~F} 00,2 \mathrm{~F} 10,3 \mathrm{~F} 00$, 3 F10 and at least three mathematics credits numbered 3 (alpha) 90 or above. Students intending graduate work in mathematics will find it essential to have at least one of MATH 4 F 02 or 4 F 10 , and preferably both.

A typical program will be as follows:

## Year 1

As in pass program.

## Year 2

MATH 2F00, 2F10; one credit from
MATH 2F94, 2F96, 2P20, 3P20; two electives.

## Year 3

MATH 3F00, 3F10; one credit from those mentioned above or MATH 3F94, 3P57, 3P58, 3P59, 3P97, 3P98, 4F21, 4P19, 4P20, 4P58, 4P59; two electives.

## Year 4

Four credits in mathematics; one elective.

Honors degrees must contain a minimum of three credits numbered 3 (alpha) 90 or above.

## Combined major programs

Combined major programs, pass and honors, have been developed with the departments of Biological Sciences, Chemistry, Computer Science, Economics, and Physics.

Students wishing to do combined programs in mathematics and a discipline not listed above may arrange individual programs with the two departments. The mathematics component of such a program must include five approved credits for a pass degree, and seven approved credits for an honors degree.

A typical combined major program is indicated below (for others see the calendar entry of the various other departments).

## Mathematics and Computer Science

Honors program

## Year 1

MATH 1F65; MATH 1P93/1P95;
COSC 1P01/1P04; one science and one social science context credit.

## Year 2

MATH 1P12/2P60, MATH 2F95;
COSC $2 \mathrm{~F} 00,2 \mathrm{P} 03,2 \mathrm{P} 07$; one humanities context credit (see Note 1.).

## Year 3

MATH 2F96, 2P20, 3F65; COSC 3 F 00 ; COSC $3 \mathrm{P} 02,3 \mathrm{P} 04$; one half credit elective.

Year 4
MATH 2F10 or 3F10; MATH 4P19/
4P20; two COSC credits at the 3(alpha) 90 level or above; one elective credit.

Honors degrees must contain a minimum of three credits numbered 3(alpha) 90 or above.

Note 1. ENGL 1F99 strongly recommended; it is a preferred prerequisite for COSC 3F00.

## Description of courses

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

MATH 1F65
Mathematics for computer science
Designed for students in computer
science. This course primarily concerns the development, analysis and application of algorithms in basic discrete mathematics, elementary mathematical logic, mathematical induction, combinatorial analysis, discrete probability models, graphs and trees, recursion, limiting procedures and summation, and difference equations. It concludes with an introduction to the theory of automata.
Prerequisite: one grade 13 mathematics credit with a minimum grade of 65 per cent.
Lectures, 3 hours per week; tutorial, 1 hour per week.
*MATH 1F92
Introductory statistics
Designed for students of geography, physical education, psychology, sociology, and urban and environmental studies. Types of scales; frequency distribution, mean, mode, median, and measures of dispersion; elements of probability theory, probability distributions, non-parametric tests; Normal, $\mathrm{t}, \mathrm{F}$, and $\mathrm{x}^{2}$ distributions; means and variance tests; analysis of variance, correlation and regression, applications and use of a computer package.
Prerequisite: grade 11 mathematics credit and permission of the department.
Not open to students with credit in any university mathematics course or ECON 2P90(290hc), PSYC 2F23(223) or SOCI 2F10(230).
Lectures, 3 hours per week; tutorial, 1 hour per week.

## MATH 1P12 <br> Introductory linear algebra

Vector algebra; systems of linear equations; basic matrix operations; matrix inversion; determinants, characteristic equations, eigenvalues and eigenvectors; diagonalization.
Prerequisite: two grade 13 mathematics credits (a third grade 13 credit is strongly recommended).
Lectures, 4 hours per week; tutorial, 1 hour per week.

## *MATH 1P60 Mathematics for administrative studies <br> Elementary probability with finite

sample spaces, counting theorems, notation and operations of set theory, applications of probability (independent events, binomial experiments, elements of decision theory, Bayes theorem); properties of the real number line, absolute values, solution sets of equalities and inequalities, elements of linear programming; arithmetic and geometric series, interest, annuities, bonds, mortgages, sinking funds; relations, functions, and graphing; polynomial, logarithmic, and exponential functions; introduction to linear algebra-systems of linear equations, vector and matrix notation, solution by elimination, determinants.
Prerequisite: permission of the department.
Not open to students with any university mathematics credit other than an elementary statistics course unless it is a requirement of their program. Lectures, 4 hours per week; tutorial, 1 hour per week.

## MATH 1P90

## Introduction to combinatorics

The pigeonhole principle; combinations, permutations and binomial coefficients; the inclusion-exclusion principle; recurrence relations; generating functions; introduction to graph theory.
Prerequisites: two grade 13 mathematics credits (a third grade 13 credit is strongly recommended). Lectures, 4 hours per week.

## MATH 1P93

Differential calculus for science students
Limits, continuity, differentiation; elementary functions; implicit differentiation, parametric differentiation, repeated differentiation, tangents and normals, maxima and minima, curvetracing; differentials and simple theory of approximation and error.
Prerequisite: two grade 13 mathematics credits (a third grade 13 credit is strongly recommended).
Not open to students with credit in MATH 100.
Lectures, 4 hours per week; tutorial, 1 hour per week.

## Mathematics

MATH 1P94
Integral calculus for science students Systematic integration and definite integrals, with applications. Partial differentiation, simple extremal problems, Lagrange multipliers, simple first-order differential equations; series and Taylor series; introduction to determinants and matrices; complex numbers and DeMoivre's theorem; simple vector algebra; double and triple integrals, including applications and transformation of coordinates. Prerequisite: MATH 1P93(193hc). Not open to students with credit in MATH 100 or 195 hc . Lectures, 4 hours per week; tutorial, 1 hour per week.

## MATH 1P95

## Integral calculus

Mathematically rigorous treatment of the Riemann integral, substantial practice in methods of integration, applications to areas, volumes, probability distributions and first-order differential equations. Approximate integration methods, including a careful look at estimates of the truncation errors involved.
Prerequisite: MATH 1P93(193hc). Not open to students with credit in MATH 100 or MATH 1P94(194hc). Lectures, 4 hours per week; tutorial, 1 hour per week.

## *MATH 1P97

Differential and integral methods
Designed for students of administrative studies, biological sciences, economics, geological sciences, and urban and environmental studies. Elementary functions, particularly the power function, the logarithm, and the exponential; approximation to the area under a curve; the definite integral; the derivative, techniques of differentiation, maxima and minima; integration by substitution and by parts; use of integral tables; partial differentiation; simple differential equations; numerical methods.
Prerequisite: grade 12 mathematics or permission of the department.
Not open to students with credit in any university calculus course; i.e., MATH 100, MATH 1P93(193hc), MATH

1P94(194hc), MATH 1P95(195hc). Lectures, 4 hours per week; lab, 1 hour per week.

## *MATH 1P98

Basic statistical methods
Designed for students of administrative studies, biological sciences, economics, geological sciences, physical education and urban and environmental studies. Descriptive statistics; probability; estimation; hypothesis testing; nonparametric tests; Normal, $x^{2}, t$ and $F$ distributions, means and variance tests; regression and correlation.
Prerequisite: grade 12 mathematics or permission of the department.
Not open to students with credit in any university statistics course i.e., MATH 1F92(192), MATH 2F96(296), ECON 2P90(290hc), PSYC 2F23(223), SOCI 2P10(230).
Lectures, 3 hours per week, lab, 1 hour per week.

## MATH 2F00

Intermediate calculus
Numerical sequences and series, including the standard convergence tests; series of functions; continuous functions on $\mathrm{R}^{\mathrm{n}}$; theory of partial differentiation; transformations; integration theory: multiple integrals, arc length, surface area, line and surface integrals; Green's theorem, Gauss's theorem; vectors applied to the study of curves and surfaces in $\mathrm{R}^{3}$; convergence of the Fourier series of piecewise-smooth functions.
Prerequisite: MATH 1P93/1P95
(193hc/195hc) or 1P93/1P94(193hc/ 194hc).
Not open to students with credit in MATH 2 F95.
Lectures, 4 hours per week.
MATH 2F10

## Linear algebra

Theory of finite-dimensional vector spaces; algebra of linear transformations; matrices and determinants; canonical forms, eigenvalues, change of basis; applications.
Prerequisite: MATH 1P12(112hc) or permission of the department. A calculus credit is recommended. Lectures, 4 hours per week, tutorial, 1 hour per week.

## MATH 2 F94

Topics in geometry
Foundations of Euclidean and nonEuclidean geometry; projective and affine geometry, including co-ordinatization theorems; discussion of specific geometries, including finite planes.
Prerequisite: permission of the department.
Lectures, 4 hours per week.

## *MATH 2F95

## Advanced calculus for science students

Limits and continuity, series, elementary complex functions, partial differentiation, ordinary differential equations, multiple, line, and surface integrals, vector field theory, linear transformations and basic theory of matrices, with applications, method of separation of variables, gamma and beta functions, elements of Fourier series; introduction to special functions of Legendre, Laguerre, Hermite. Prerequisite: MATH 1P93/1P95
(193hc/195hc) or 1P93/1P94 (193hc/ 194hc).
Not open to students with credit in MATH 2 F00(200).
Lectures, 4 hours per week.

## MATH 2 F96

Mathematical probability and statistics
Basic probability theory, simple stochastic processes, probability distributions, expectation, moments, generating functions, sums of random variables and limit theorems, sampling distributions, statistical models, point estimation, interval estimation and hypothesis testing with applications to samples from Normal, binomial and Poisson distributions, chi-square tests, non-parametric methods, bivariate Normal distribution and correlation analysis, simple linear, curvilinear, and multiple regression; experimental design and analysis of variance, sampling methods, decision theory and Bayesian estimation.
Prerequisite: MATH 1P93/
1P95(193hc/195hc) or 1P93/
1P94(193hc/194hc).
Lectures, 4 hours per week.

## MATH 2P20

Numerical analysis I
Elementary techniques for solving: algebraic equations, systems of linear equations, differential equations, eigenvalues and eigenvectors of matrices; numerical integration and interpolation; and linear programming. Some theory of efficiency and precision of algorithms; some computer applications.
Prerequisite: MATH 1P93/
1P95(193hc/195hc) or 1P93/ 1P94(193hc/194hc). A first year computer science course is recommended.
Lectures, 4 hours per week.

## MATH 2P60

Introductory operations research Designed for students in administrative studies. Project management: CPM, PERT. Linear programming: formulation, graphical solution, simplex method, duality, examples. Special LP problems: transportation, assignment.
The two-player zero-sum game, and the minimax theorem. Elements of decision theory: utility, Bayesian models. Multiple regression. Inventory models: EOQ and generalizations. Queuing theory.
Prerequisites: MATH 1P97/ 1P98(197hc/198hc) or equivalents. Lectures, 4 hours per week; lab, 1 hour per week.

## MATH 3F00

Real and complex analysis I
Functions of bounded variation, the Riemann-Stieltjes integral, metric spaces (in particular, C $[a, b]$ ), approximation theorems
(Stone-Weierstrass, Bernstein), fixedpoint theorems and applications, inequalities, functional equations. Complex differentiation, the CauchyRiemann equations, convergence of complex series, integrals of analytic functions, Cauchy's integral theorem, Taylor series, Laurent series, singularities, the residue theorem and contour integration.
Prerequisite: MATH 2FOO(200) or (with permission of the department) MATH 2F95(295).
Lectures, 4 hours per week.

## MATH 3F10

## Basic structures of algebra

Introduction to fundamental algebraic structures; groups, rings, and fields. Topics will include fundamental theorems on subgroups and subrings, homomorphisms, and quotient structures, as well as detailed discussion of important examples.
Prerequisite: MATH 1P12(112hc) or permission of the department.
Lectures, 4 hours per week.

## MATH 3F65

Mathematical methods for computer science
Applied probability, markov chains, Poisson and exponential processes, renewal theory, queuing theory, applied differential equations. Networks, graph theory, reliability theory, NP - completeness.
Prerequisite: MATH 1F65, MATH 1P12, MATH 1P97, COSC 2P03. Not open to students with credit in MATH 2 F96.
Lectures, 4 hours per week.

## MATH 3F94

## Differential equations

Linear equations, series solutions, Laplace transforms and operator methods, systems of equations, basic existence theorem, Sturm-Liouville theory, Bessel and Legendre functions, orthogonal polynomials, eigenvalue problems. Fourier series, simple partial differential equations and boundaryvalue problems.
Prerequisite: MATH 2F00(200); or permission of the department. Lectures, 4 hours per week.

## *MATH 3F95

Methods of mathematical physics
(also offered as PHYS 3F95)
See description under Physics.

## MATH 3P20

Numerical analysis II
Topics in matrix analysis, approximation theory (including least-squares and minimax); Legendre, Chebyschev, and trigonometric functions; Gaussian quadrature.
Prerequisites: MATH 2P20(220hc) and either MATH 2F00(200) or 2F95(295) (the latter may be taken concurrently). Lectures, 4 hours per week.

## *MATH 3P57

## Discrete event simulation

(also offered as COSC 4P77)
Classification of simulation problems; discrete, continuous, Monte Carlo; general discrete modeling concepts; discrete system models; basic analysis techniques (sampling, estimation, inductive inference, random number generators, queuing theory, time series analysis); simulation experiments (variance reduction techniques, optimization procedures, sample size and stopping rules); modeling techniques for system inputs; verification and validation procedures; a critique of the simulation approach. Prerequisite: MATH 1P97/1P98 (197hc/198hc); COSC 1P04(104hc). Lectures, 3 hours per week.

## MATH 3P58

## Operations research methods A

 (also offered as ECON and MGMT 3P58)Principles of operations research; Lagrange multipliers, with applications to LP; network models and generalized network models; elements of dynamic programming; scheduling (criteria and algorithms); integer programming (theory and practice); elements of quadratic programming; optimization and quasi-Newton methods; discussion and analysis of selected cases. Prerequisite: MATH 2P60(260hc). Lectures, 4 hours per week.

## Note:

MATH 3P58/4P58 and 3P59/4P59 are offered in alternate years.

## MATH 3P59

## Operations research methods B

 (also offered as ECON and MGMT 3P59)Principles of modeling; decision theory, subjective probability, and Bayesian statistics; simulation, sampling theory, design and analysis of experiments, discussion and analysis of selected cases.
Prerequisite: MATH 2P60(260hc) or permission of the department.
Lectures, 4 hours per week.

## MATH 3P97

Introductory topology
Introduction to metric and topological

## Mathematics

spaces; connectedness, completeness, countability axioms, separation properties, covering properties, metrization of topological spaces Prerequisite: MATH 2F00(200); and MATH 2F10(210) or 3F10(310). Lectures, 4 hours per week.

## MATH 3P98

## Functional analysis

Introduction to the theory of normed linear spaces, fixed point theorem, Stone-Weierstrass approximation on metric spaces and preliminary applications on sequence spaces.
Prerequisite: MATH $2 \mathrm{~F} 10(210)$ and 3P97.
Lectures, 4 hours per week.

## MATH 4F02

## Real and complex analysis II

Lebesque integration on $\mathrm{R}^{\mathrm{n}}$, differentiation and absolute continuity, Fubini's theorem, $L^{p}$ spaces, elementary Banach space theory, Fourier series, proof of Cauchy's integral theorem. The maximum-modulus principle, the Phragmen-Lindelof method, the Hausdorff-Young theorem, conformal mapping (linear fractional transforma-
tions, Riemann's mapping theorem, Bieberbach's conjecture); topics selected from: zeros of holomorphic functions, analytic continuation, asymptotic expansions.
Prerequisite: MATH 3F00(300).
Not open to students with credit in MATH 400 or 405.
Lectures, 4 hours per week.

## MATH 4F10

Topics in algebra
A treatment of several advanced topics drawn from group theory, theory of rings and modules. Galois theory, lattice theory, homological algebra, and applications of algebra in geometry. Prerequisite: MATH 3F10(310). Lectures, 4 hours per week.

## MATH 4F16

## Advanced topics

Topics will normally vary from year to year.
Topics include: number theory, problems in real or complex analysis, summability theory, differential geometry, differential manifolds,
algebraic topology, approximation
theory, dynamical systems, foundations of mathematics.
Prerequisite: permission of the department.
Lectures, 4 hours per week.

## MATH 4F21

Topics in advanced statistics
Topics chosen from the following areas: stochastic processes, game theory, decision theory, sampling theory, experimental design and analysis, time series, multivariate analysis.
Prerequisite: MATH 2F96(296). Lectures, 4 hours per week.

## MATH 4F51 <br> Calculus of variations and integral transforms

Calculus of variations and applications. Integral transforms (Fourier, Laplace and Mellin). Linear integral equations. Prerequisite: MATH 3F94(394). Lectures, 4 hours per week.

## MATH 4F52

Partial differential equations
Existence theory: Cauchy-Kowalewski theorem, distributions (generalized functions), separation of variables, equations of parabolic type, the heat equation, elliptic equations (Laplace's equation, the biharmonic equation) and applications, general theory of eigenvalues and eigenfunction expansions, Green's functions, hyperbolic equations (the wave equation, etc.), boundary-value problems. Prerequisite: MATH 3F94(394). Lectures, 4 hours per week.

## MATH 4P19

Theory of computation
Turing machines, universal machines, halting problems and related unsolvable problems; recursive functions and their relations to Turing machines; some non-computable functions. Formal languages and their relation to automata; regular, context-free and context-sensitive grammars.
Prerequisite: permission of the department.
Lectures, 4 hours per week.

MATH 4P20

## Combinatorics

Enumeration problems involving generating functions, recurrence relations, permutations with forbidden positions, Polya's counting theorem, Moebius inversion theorem. Graph theory: matching theory, path problems, and coloring problems. Prerequisite: permission of the department. While no specific course is an essential prerequisite, students should have competence in abstraction equivalent to that obtained by a successful completion of MATH 2F10(210).
Lectures, 4 hours per week.

## MATH 4P58

Operations research applications A (also offered as ECON and MGMT 4P58)
Practice of operations research; investment, and applications of LP to project selection, capital growth, further dynamic programming, location problems, inventory problems, cash flow as an inventory problem, personnel planning, actuarial problems; discussions and analysis of selected cases.
Prerequisite: MATH 3P58(358hc) or permission of the department. Lectures, 4 hours per week.

## MATH 4P59

Operations research applications B (also offered as ECON and MGMT 4P59)
Applications of modeling, game theory (Nash equilibrium, two player NZS games, Nash co-operative solution and others), Shapley value, voting power, values of non-atomic games; advertising and sales forecasting in heterogeneous markets, information-theory, encoding, cryptography, security and reliability, classification and clustering, models of biological competition and military combat, discussion and analysis of selected cases. Prerequisite: MATH 3P59(359hc) or permission of the department. Lectures, 4 hours per week.

## Music

## Officers of instruction

Professor
Ronald Tremain (music theory and composition)

## Assistant professors

John Glofcheskie (music history and literature)
Harris Loewen (choral performance, pedagogy and literature)
Marc Widner (piano performance, pedagogy and literature)

## Part-time instructors

Patrick Beard (percussion)
Elise Bedard (voice)
Lucas Chorosinski (organ)
Terrance Cox (music in popular culture)
Ted Dawson (music education)
Jonathan Earp (guitar)
Janice Fralick (horn)
Tak-Ng Lai (violin)
Karen-J. Shakespeare (flute)
Drew Smith (trumpet)

## General information

## Thistle West 139

The primary aim of the music program is to train literate, perceptive, skilled and versatile musicians capable of contributing in a valuable way to music in society. The program is broadly based and covers the whole spectrum of musical achievement, from earliest times to the contemporary.

Historical, theoretical and practical studies form the core of the program; their close relationship finds direct expression in solo and ensemble performance. Options in the program allow the student to develop special areas of interest including pedagogy (classroom, choral, vocal and piano), composition, and musicology.

In the combined majors programs, students also have the opportunity to
combine their studies in music with an area outside of music, such as drama, theatre, film, visual arts, child studies, languages, and other university programs.

## Facilities

Facilities in the music department include a choral studio and library, a Boesendorfer concert grand piano, Steinway and Heintzman grand pianos, a two-manual Dowd harpsichord, a Casavant chamber organ, a set of percussion instruments, and a set of Renaissance wind and brass instruments.

Practice rooms are available for students studying performance and keyboard skills.

## Public events

The music program aims to create a stimulating musical environment for both the student body and the larger community through regular series of events open to the public. These include weekly lunch-hour music presentations, as well as a special series of concerts, master classes, lectures and workshops, featuring guest performers and scholars, faculty and students.

## Context electives

MUSI 1FO0 Music in popular culture
MUSI 1F10 Introduction to music
MUSI 1F50 History and literature of music from medieval to modern times

## Music in education

As many graduates of the music program go on to teaching careers, electives in music pedagogy are offered on a regular basis. These include:

MUSI 2F95 Choral technique and literature: children's and youth choirs

MUSI 2F96

MUSI 2M70 -
MUSI 3F20
MUSI 3F30
MUSI 4F20

## 2M74

Choral technique and literature: adult choirs

## Entrance requirements for music majors

Prospective majors should possess a level of musical literacy equivalent to Royal Conservatory Grade II rudiments or MUSI 1F10. Students lacking this basic level must take MUSI 1F10 in their first year of study. (MUSI 1F10 is a degree credit; however it may not be used to meet the departmental requirements for a single or combined major in music.)

It is recommended that all prospective majors arrange an interview with a member of the music faculty upon application to Brock University in order to discuss their goals and interests in relation to the Brock music program.

A placement test in music theory and a choral audition are required of all applicants. An audition on a solo instrument or voice is necessary only for applicants who wish to study solo performance. Details concerning interviews and auditions can be obtained from the department secretary.

Solo performance (MUSI 1F92/2F92/ $3 \mathrm{~F} 92 / 4 \mathrm{~F} 92$ ) is an elective in the music program. An audition is required of all prospective performance students not currently registered in a solo performance course at Brock, regardless of level of entry. Auditions are held in May and June of each academic year. The minimum standard for admittance into MUSI 1F92 is Royal Conservatory Grade VIII or its equivalent for piano, organ, voice or classical guitar, and Royal Conservatory Grade VI for concert band or orchestral instruments.

Performance students who request an approved non-resident instructor should be prepared to cover additional travel and instruction fees. Part-time students studying solo performance are required to enrol concurrently in at least one other full course in music as well as in choral ensemble.

Choral ensemble (MUSI 1P83, 2P83, $3 \mathrm{P} 83,4 \mathrm{P} 83$ ) is required of all majors and combined majors in music as well as of part-time students enrolled in solo performance courses. Music majors who have completed MUSI 1P83 and MUSI 2P83 may fulfill the third and fourth year choral ensemble requirement on a credit or audit basis. Choral ensemble is open to any member of the University or the general public who may wish to participate on a credit or non-credit basis and who successfully completes an audition.

## Pass program

Eight music credits are required:

## Year 1

MUSI 1F50, 1F90, 1P83; one social science and one science context credit; one course in a language other than English. It is recommended that students fulfill the language requirement by the end of year 2 .

Music majors may take five and one half credits in year 1 without further approval from the dean.

Year 2
MUSI 2F50, 2F90, 2P83; two elective credits.

## Year 3

MUSI 3F50, MUSI 3F91; one music credit; two elective credits. Participation in choral ensemble (see above).

## Honors program

Twelve music credits are required:
Years 1, 2 and 3
As in pass program.
Year 4
Two of MUSI 4F20, 4F50, 4F85, $4 \mathrm{~F} 90,4 \mathrm{~F} 92$ or 4F99; two music
credits; one elective credit. Participation in choral ensemble (see above).
Note: at least three credits numbered 3 (alpha) 90 or above must be included in all honors programs.

## Combined major programs

## Pass

Students wishing to take music as one of two majors must take: MUSI 1F50, 1F90, 1P83, 2F90, 2P83; MUSI 2F50 or 3F50; one music elective credit.

Honors
Years 1, 2 and 3
As in pass program.
Year 4
Two of MUSI 3F91, 4F20, 4F50, 4F85, 4F90, 4F92 or 4F99. Participation in choral ensemble (see above). Note: at least three credits numbered 3 (alpha) 90 or above must be included in all honors programs.

Year 3 courses are normally restricted to students with at least three second year credits or special permission of the instructor.

Language requirement for humanities majors

Students in the music program are required to complete one course in a language other than English. It is recommended that students fulfill this requirement by year 2 .

## Description of courses

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

## MUSI 1F00

Music in popular culture
Survey of developments in blues, jazz, rock, and related genres of popular music.
Not open to music majors for music credit.
Lectures, seminar, 3 hours per week; listening assignments.

MUSI 1F10
Introduction to music
Basic musical literacy. An introduction to the theoretical and historical aspects of art music with emphasis on the development of written skills and musical forms and styles.
Not open to music majors for music credit or to those who have credit in MUSI 1F90(190).
Not open to students who have Royal Conservatory Grade II rudiments or equivalent.
Lectures, seminar, 3 hours per week.

## MUSI 1F50

## History and literature of music from

 medieval to modern timesAn historical survey of styles in
western art music; analysis of representative works from all periods.
Prerequisite: a level of musical literacy equivalent to MUSI 1F10(110) or Royal Conservatory Grade II rudiments, or permission of the instructor. Lectures, 3 hours per week.

## MUSI 1F90

## Materials of music I

An integrated theoretical and practical study of tonal melody, harmony, rhythm, and basic forms. Development of sight-singing, keyboard, aural and written skills.
Prerequisite: successful completion of a placement test demonstrating a level of musical literacy equivalent to MUSI 1F10(110) or Royal Conservatory Grade II rudiments or permission of the instructor.
Lectures, sight-singing seminar,
keyboard tutorial, 5 hours per week.

## MUSI 1F92

## Solo performance I

Individual instruction in one of the following: piano, harpsichord, organ, voice, classical guitar, or any approved concert band and orchestral instrument. Lesson fee: $\$ 125.00$
Prerequisite: a solo audition held in May or June of the preceding academic year.
The minimum entrance standard is Royal Conservatory Grade VIII or equivalent for piano, organ, voice and classical guitar, and Royal Conservatory Grade VI for concert band and orchestral instruments. Details of
interviews and auditions can be obtained from the department secretary.
One hour private instruction per week, performance classes, and compulsory participation in student recitals and an approved small or large ensemble.

## MUSI 1P83

## Choral ensemble I

Selected choral literature in rehearsal and performance; development of sight-singing and ensemble skills. Participation in one of the following three groups, determined by audition: 1) university chorus; 2) chorale; 3) chamber choir. Non-credit participants will be required to pay a $\$ 15.00$ user's fee for scores.
Prerequisite: entrance by audition: basic sight-singing skills strongly recommended.
Rehearsals, concerts, 3 hours per week for 2 terms. Extra rehearsal time as required.

## MUSI 2F50

History and literature of music: Baroque and Classical periods Intensive study of styles, forms and genres from c. 1600 to c. 1800 through analysis of selected works.
Prerequisite: MUSI 1F50(150) and 1F90(190) or permission of the instructor.
Not open to students with credit in MUSI $251 \mathrm{hc} / 252 \mathrm{hc}$.
Lectures, seminar, 3 hours per week.

## MUSI 2F90

## Materials of music II

An integrated theoretical and practical study of tonal and chromatic melody, harmony and counterpoint, rhythm, texture, and larger forms. Further development of sight-singing, keyboard, aural and written skills. Analysis and writing in period styles. Project in composition.
Prerequisite: MUSI 1F90(190) or permission of the instructor.
Lectures, sight-singing seminar, keyboard tutorial, 5 hours per week.

MUSI 2F92
Solo performance II
A continuation of individual instrumental or vocal study.

Lesson fee: $\$ 125.00$
Prerequisite: MUSI 1F92(192) or its equivalent by audition.
One hour private instruction per week, performance classes, compulsory participation in student recitals and an approved small or large ensemble.

## MUSI 2F95

Choral technique and literature: children's and youth choirs The study and practice of conducting, vocal ensemble skills and repertoire for children's and youth choirs. Topics include: conducting patterns and techniques, vocal development and the changing voice, unison and partsinging, repertoire selection and score analysis.
Prerequisite: successful completion of a placement test demonstrating a level of musical literacy equivalent to MUSI 1F10(110) or Royal Conservatory Grade II rudiments, and permission of the instructor.
Lectures, seminar, 4 hours per week; field assignments as required.

## MUSI 2F96

Choral technique and literature: adult choirs
The study and practice of conducting, vocal ensemble techniques and repertoire for adult choirs. Topics include: conducting techniques and score reading, vocal production and classification, audition and rehearsal procedures, style and interpretation, repertoire (sources, selection and analysis). Prerequisite: successful completion of a placement test demonstrating a level of musical literacy equivalent to MUSI 1F10(110) or Royal Conservatory Grade II rudiments, and permission of the instructor.
Lectures, seminar, 4 hours per week; field assignments as required. Not offered in 1989/90.

MUSI 2M70-2M74
Selected topics in music education The philosophical and pedagogical bases of selected approaches to music education, which may include creative, Dalcroze, Orff, and Kodaly approaches, and their respective practical application to the classroom situation in Canadian schools.

Spring evening 1989-90: (2M70)
Creative approaches
Exploration of techniques and activities to develop creative musicianship in the classroom for students of all grades and levels of ability. Topics include examination of the curriculum; music composition in relation to other art forms; material resources; and a variety of performance contexts. Listening repertoire includes traditional musics, jazz, medieval, twentieth-century, and Canadian works.
Prerequisite: permission of the instructor.
Lectures, seminar, 3 hours per week; field assignments as required.

## MUSI 2M90-2M99

## Special topics

A selected topic in music literature involving an historical, musicological, and analytic investigation.
Summer day 1989: (2M91) Piano pedagogy: the graded approach Examination of the pedagogical basis of the graded approach to piano study; comparative study of selected graded piano curricula used for examinations and competition in Canada, the United States, and Great Britain; emphasis on repertoire, grading criteria, and parallel theory and musicianship courses.
Prerequisite: minimum Royal Conservatory Grade VIII piano, and Grade II rudiments, or equivalents, and permission of the instructor.
Lectures, seminar, 3 hours per week.

## MUSI 2P83

## Choral ensemble II

Selected choral literature in rehearsal and performance; further development of sight-singing and ensemble skills. Participation in one of the following three groups, determined by audition: 1) university chorus; 2) chorale; 3) chamber choir. Non-credit participants will be required to pay a $\$ 15.00$ user's fee for scores.
Prerequisite: MUSI 1P83(183hc), or equivalent, and sight-singing skills. Entrance by audition.
Not open to students with credit in MUSI 282.
Rehearsals, concerts, 3 hours per week for 2 terms. Extra rehearsal time as required.

MUSI 3F20
Piano pedagogy and literature I
This course is divided into two concurrent parts: 1.) an examination of piano teaching techniques used in the beginning and elementary levels of instruction, including discussion of method books, elementary repertoire, and technique; 2.) selected topics in classical and romantic keyboard literature involving listening assignments, analysis of scores, and comparison of editions.
Prerequisite: minimum Royal Conservatory Grade VIII practical, MUSI 1F50(150), 1F90(190) or equivalents, and permission of the instructor. Lectures, seminar, 4 hours per week. Practice teaching as required.

## MUSI 3F30

Vocal pedagogy and literature Two concurrent parts: 1) pedagogical methods used in the development of the solo voice, the physiology of the vocal organs, stylistic approaches to vocal repertoire, diction and phonetics;
2) historical survey of literature for the solo voice, including art song, operatic and oratorio repertoire.
Prerequisite: MUSI 1F50 and 1F90, or equivalents, and permission of the instructor.
Lectures, seminar, 4 hours per week. Not offered 1989/90.

MUSI 3F50
History and literature of music: Romantic period and the 20th century
Intensive study of styles, forms and genres from c. 1800 to the present through analysis of selected works. Prerequisite: MUSI 2F50(250) and 2F90(290), or permission of the instructor.
Not open to students with credit in MUSI 351hc/352hc.
Lectures, seminar, 3 hours per week.

## MUSI 3F70

Orchestration and choral arranging Characteristics of orchestral instruments, used both singly and in combination, and of the voice in choral music. Score analysis, and the arranging of music for instrumental and vocal ensembles. Project in composition.

Further development of sightsinging and aural skills.
Prerequisite: MUSI 2F90(290) or permission of the instructor. Not open to students with credit in MUSI 370 taken prior to 1985. Lectures, seminar, 4 hours per week. Not offered in 1989/90.

## MUSI 3F85

## Composition I

An introduction to composition with an emphasis on 20th century techniques of melody, harmony, rhythm and form. Writing for solo voice and small instrumental ensembles; analysis. Prerequisite: MUSI 2F90(290) and permission of the instructor. A portfolio of compositions must be submitted in advance.
Individual tutorial each week.
MUSI 3F91
Materials of music III
Twentieth century techniques of composition, materials, formal procedures, media and textures, based on representative works by major composers from c. 1900 to the present. Analysis and imitative writing. Further work in aural training and sight-singing. Project in composition.
Prerequisite: MUSI 2F90(290)
Lectures, seminar, 4 hours per week.

## MUSI 3F92

## Solo performance III

A continuation of individual instrumental or vocal study.
Lesson fee: $\$ 125.00$.
Prerequisite: MUSI 2F92(292) with a minimum of $B$ standing, or its equivalent by audition.
One hour of private instruction per week; compulsory participation in performance classes, one solo or joint public recital, and an approved small or large ensemble.

## MUSI 3F99

## Special honors tutorial

Advanced study of an independent nature in an area of muiual interest to the student and the instructor.
A written proposal must be approved by the chairperson before registration.

MUSI 3P83
ChoralensembleIII
Selected choral literature in rehearsal and performance; further development of sight-singing and ensemble skills; leading of ensemble warm-ups. Participation in one of the following three groups, determined by audition: 1) university chorus; 2) chorale; 3) chamber choir. Non-credit participants will be required to pay a $\$ 15.00$ user's fee for scores.
Prerequisite: MUSI 2P83(283hc), or equivalent, and sight-singing skills. Previous or concurrent enrolment in MUSIC 2F95 or 2F96 is recommended. Entrance by audition. Rehearsals, concerts, 3 hours per week for 2 terms. Extra rehearsal time as required.

## MUSI 4F20

Piano pedagogy and literature II A continuation of piano pedagogy $I$, including: 1) an examination of piano pedagogy techniques and teaching repertoire, stressing the intermediate to advanced levels of instruction; and 2) selected topics in keyboard music of the Baroque period and the 20th century.
Prerequisite: MUSI 3F20(320) or permission of the instructor.
Lectures, seminar, 4 hours per week. Practice teaching as required.
Not offered in 1989/90.

## MUSI 4F50

History and literature of music: Medieval and Renaissance periods The development of styles, forms and genres in music from the beginnings of polyphony to c. 1600 ; analysis of selected works.
Prerequisite: MUSI 1F50(150) and permission of the instructor.
Not open to students with credit in MUSI 451hc/452hc.
Lectures, seminar, 3 hours per week.
Not offered in 1989/90.

## MUSI 4F85

## Composition II

Development of writing skills in larger forms for instrumental ensembles. Text setting for solo voice and choral mediums; analysis.
Prerequisite: MUSI 3F70, 3F85(385)
and permission of the instructor. Individual tutorial each week.

## MUSIC 4F90

Materials of music IV
An intensive study, through analysis and writing, of contrapuntal procedures and techniques in liturgical and secular music of the late Renaissance and Baroque periods. Detailed examination of the major forms; contrapuntal writing based directly on compositional practice. Further work in aural training and sight-singing.
Prerequisite: MUSI 2F90 and permission of the instructor.
Not open to students with credit in MUSI 390.
Lectures, seminar, 4 hours per week.

## MUSI 4F92

Solo performance IV
A continuation of individual instrumental or vocal study.
Lesson fee: $\$ 125.00$.
Prerequisite: MUSI 3F92(392) with a minimum of $B$ standing or its equivalent by audition.
One hour private instruction per week; compulsory participation in performance classes, one solo public recital, and an approved small or large ensemble.

## MUSI 4F99

## Honors thesis

A critical, historical or creative project of mutual interest to the student and the instructor. Students are urged to arrange and plan their projects in the spring for the following year.
A written proposal must be approved by the chairperson before registration.

## MUSI 4P83

Choral ensemble IV
Selected choral literature in rehearsal and performance; further development of sight-singing and ensemble skills; leading of ensemble warm-ups; research project dealing with performance repertoire. Participation in one of the following three groups, determined by audition: 1) university chorus; 2) chorale; 3) chamber choir. Non-credit participants will be required to pay a $\$ 15.00$ user's fee for scores.
Prerequisite: MUSI 3P83(383hc) or
equivalent, and sight-singing skills. Previous or concurrent enrolment in MUSI 2F95 or 2 F96 is recommended. Entrance by audition.
Rehearsals, concerts, 3 hours per week for 2 terms. Extra rehearsal time as required.

## Philosophy

## Officers of instruction

## Chairperson

Murray L. Miles
Martha Husain (after July 1, 1989)

## 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

Assistant professor
John C. Luik

Professors emeriti
Zygmunt Adamczewski
G. Mervyn C. Sprung

## General information

## Schmon tower 1233

Philosophy, defined as the pursuit of wisdom, encompasses the exploration of the nature of reality, consciousness, values, knowledge, reason, argument and evidence. At Brock the undergraduate studies not only the primary texts of the Western philosophical tradition, but also major texts of Indian and Chinese thought. Students are encouraged to investigate, express and develop their own views and values.

## Pass program

The following courses are required of all philosophy majors: one of PHIL 1F90, 1F91, 1F93, 1F94; 2F01; 2F02 and one half credit in Eastern philosophy (PHIL 2P12, 2P13, 2P16, 2P17 or 2F91). PHIL 2P25 and 2P26 are strongly recommended for all majors.

Please note that third year courses are restricted to students with at least three second year university credits or the permission of the instructor.

Typical course pattern:

## Year 1

One of PHIL 1F90, 1F91, 1F93, 1F94; one social science and one science context credit; two elective credits (see Note 1.).

Year 2
PHIL 2F01, 2F02, one other philosophy credit; two elective credits, of which one must be approved by the department (see Note 1.).

## Year 3

Three philosophy credits; two elective credits, of which one must be approved by the department.

Note 1.
Language requirement for humanities majors
Philosophy majors must complete a credit in a language other than English (classical or modern), within year 1 or year 2.

## Honors program

Years 1, 2 and 3
As in pass program.

## Year 4

Three philosophy credits numbered 3(alpha)90 or above; two elective credits, of which one must be approved by the department.

All year 4 courses will be offered conjointly with a correspondingly numbered year 5 course.

## Combined major program

Students wishing to major in philosophy and in one other discipline are required to complete at least five philosophy credits including PHIL $2 \mathrm{~F} 01,2 \mathrm{~F} 02$, and one half credit in

Eastern philosophy (PHIL 2P12, 2P13, $2 \mathrm{P} 16,2 \mathrm{P} 17$ or 2 F 91 ) for a pass degree, and at least seven philosophy credits (including the required ones) for an honors degree.

## Master of Arts (MA) program

A master's program is offered, focused on two areas: recent and contemporary European thought, and Asian (especially Indian) thought. Candidates should have an honors BA in philosophy or its equivalent; those with a pass BA or a degree in another discipline will be required to take additional courses. Students may choose either to complete two full courses and write a thesis; or to complete four full courses and write a major essay.

Graduate credits are to be obtained by completing courses designated at the 500 level. About half of these are offered in conjunction with year four courses. A graduate student may earn graduate credit in them by doing additional readings, seminars and written work as the instructor deems appropriate. In principle, the additional work will represent 25 per cent of the normal undergraduate course load. A conjoint course previously taken for 400 level credit may not be re-taken for graduate credit.

The graduate offerings and conjoint graduate and honors offerings in any given year will be selected from:

I Studies in nineteenth-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, PostModernism.

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 graduate or conjoint half courses will be offered in the following topics: issues in recent Anglo-American (analytic) philosophy, studies in classical philosophy (preSocratics, Plato and/or Aristotle), early modern philosophy (Descartes, Hume, Kant), process philosophy (Bergson, Whitehead, Hartshorne). While these courses fall outside the focus of specialization in the graduate program, they are useful elements of the honors program, and are the special strengths of individual members of the department.

In addition there are tutorial, research and thesis courses at the graduate level. For details, see graduate calendar or contact the graduate officer or the chairperson of the department.

## Description of courses

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details or consult the departmental Philosophy handbook (available in early April in Room ST 1233) for detailed descriptions of all courses offered in 1989/90.

All courses numbered 1F90 through 1F94 are introductory philosophy courses. Though different in content and emphasis, PHIL 1F93 and 1F94 are no more advanced than 1F90 and 1F91. Normally a student will not be permitted to take more than one introductory
course, though PHIL 1F91 may be taken in addition to 1F90, 1F93 or 1F94 with the permission of the department.

## PHIL 1F90

Introduction to philosophy: philosophical classics and contemporary life
Contemporary problems viewed through a variety of philosophical writings. Students are encouraged to formulate and examine their own beliefs about freedom, knowledge, religion, love, and questions of right and wrong.
Not open to students with credit in two 190-level half courses in philosophy or PHIL 1F93 or 1F94.
Lectures, seminar, 3 hours per week.

## PHIL 1F91

Philosophy and social issues
Philosophical aspects of several widely debated social and public policy issues of current practical interest. Topics will be selected from abortion, animal rights, capital punishment, civil disobedience, discrimination, environmental ethics, euthanasia, nuclear war and violence, the question of personhood, the right to life, suicide, suffering, and world hunger.
Not open to students with credit in PHIL 1F90, 1F93 or 1F94 except with permission of the department.
Lectures, seminar, 3 hours per week.
PHIL 1F93
Introduction to philosophy: the foundations of the present
An attempt to place the philosophical issues which confront the reflective individual today in their historical context by examining the teachings and arguments which shape our views of such matters as body and soul, life after death, truth and knowledge, faith and moral responsibility.
Not open to students with credit in two 190-level half courses in philosophy or PHIL 1F90 or 1F94.
Lectures, seminar, 3 hours per week.
PHIL 1F94
Introduction to philosophy: philosophical problems
The central problems of philosophy as
living questions for reflection, dialogue and debate including: Is the external world really there? Does God exist? Can I really know anything? What is a person? Is everything permissible? Can my life have meaning?
Not open to students with credit in two 190-level half courses in philosophy or PHIL 1F90 or 1F93.
Lectures, seminar, 3 hours per week.

## PHIL 2F01

## Ancient Greek philosophy

The beginnings of Western civilization in the thought of the great sages of ancient Greece. These early philosophers set Western civilization on a new and distinctive course, which has resulted in our contemporary scientifictechnological way of life. We can win an understanding of our present situation only by tracing it back to its roots.
Lectures, seminar, 3 hours per week.

## PHIL 2F02

## Early modern philosophy

The classical philosophers of the 17th and 18 th centuries will be studied primarily in the writings of the Continental rationalists (Descartes, Spinoza, Leibniz) and of the British empiricists (Locke, Berkeley, Hume).
Lectures, 3 hours per week.

## PHIL 2F05

## Introduction to ethics

The central problems of ethics including (1) such problems as egoism, relativism, ethical nihilism, emotivism, and responsibility and (2) selected major thinkers and a variety of normative traditions.
Seminar, 3 hours per week.
PHIL 2F91
Religion and philosophy: comparative studies
A study of how religion and philosophy are related to each other in some major traditions of the East and the West (Hinduism, Buddhism, Judaism, Christianity) by studying some typical approaches to such basic themes as God, man, time, truth, freedom. Prerequisite: university credit in philosophy or a discipline appropriately related to the course content, or

## Philosophy

permission of the instructor.
Not open to students with credit in PHIL 311.
Lectures, 3 hours per week.
PHIL 2F93
Philosophical psychology
The philosophical and historical foundations of Freudian and postFreudian theories concerning the nature of the human psyche. Among the theories and theorists to be dealt with are: exorcism (Gassner), animal magnetism (Mesmer), the school of Nancy (Blenheim), Charcot, Freud, Jung and Adler.
Prerequisite: university credit in philosophy or a discipline appropriately related to the course content, or permission of the instructor.
Not open to students with credit in PHIL 313.
Lectures, seminar, 3 hours per week.

## PHIL 2F94

The philosophy of love
A consideration of the question 'What is love?' in such philosophical texts as those of Plato, Aquinas, Kierkegaard and Scheler and in literary figures of the students' choice, e.g. Byron, Dante, Shakespeare and Goethe.
Prerequisite: university credit in philosophy or permission of the instructor. Not open to students with credit in PHIL 312.
Lectures, seminar, 3 hours per week.
PHIL 2F95
Bioethics, an inquiry into selected issues
(also offered as BIOL 2F95)
An interdisciplinary course that focuses on value conflicts and moral dilemmas in biology and medicine. A major component is the discussion of specific case studies in areas such as reproductive interventions, medical experimentation, concepts of 'health' and 'disease', modification of behavior, lifestyle choices, allocation of scarce or expensive medical resources, and death and dying. May count as an elective, but not as a major course in a biology or biology combined program.
Prerequisite: university credit in biology or philosophy, or permission of the instructor.
Lectures, seminar, 3 hours per week.

PHIL 2F96
Philosophy of man
Major orientations in the concept of man, with relation to the basic issues involved in reaching a philosophical understanding of human nature and its place within reality, focusing on the notion of the person as well as on contemporary philosophical anthropology. Prerequisite: university credit in philosophy or a discipline appropriately related to the course content, or permission of the instructor.
Not open to students with credit in PHIL 315.
Seminar, 3 hours per week.
PHIL 2M90-2M92
Selected topics in philosophy
Topics, chosen to reflect areas of occasional interest, which are not represented in the regular program of studies. Proposals from students are welcome.
Lectures, seminar, 3 hours per week.

## PHIL 2P12

Indian philosophy: an introduction to Hindu thought
Hindu thought beginning with the Vedic myths, through the Upanishads and the Bhagavad Gita to the systems of the Vedanta. Topics include: Karma, reincarnation, altered states of consciousness, maya, the problem of knowledge, the role and nature of God, the theory and practice of yoga.
Not open to students with credit in PHIL 192.
Lectures, seminar, 3 hours per week.

## PHIL 2P13

Indian philosophy: an introduction to Buddhist thought
Buddhist thought from Prince
Siddhartha's enlightenment and subsequent Deer Park Sermon (the basis of Hinayana) through the Perfection of Wisdom to Madhyamika Buddhism (the Mahayana representative) to Zen (the silence of the Buddha). Topics include: Nirvana, non-self, one hand clapping.
Not open to students with credit in PHIL 192.
Lectures, seminar, 3 hours per week.

PHIL 2P14
The beginnings of existential thinking
The sources of both theistic and atheistic lived philosophy in such figures as: Kierkegaard, Nietzsche and Dostoyevski.
Not open to students with credit in Phil 206.

Seminar, 3 hours per week.
PHIL 2P15
The growth of existential thinking A study of the work of such philosophers as: Scheler, Heidegger, Marcel and Sartre.
Not open to students with credit in PHIL 206.
Prerequisite: PHIL 2P14(214hc) or permission of the instructor.
Seminar, 3 hours per week.
PHIL 2P16
Early Chinese philosophy
The development of Chinese philoso-
phy from its humanistic beginnings through the teachings of Confucius, Mencius, Lao-Tzu, Chuang-Tzu and later neo-Confucians and Táoists. Not open to students with credit in PHIL 208.
Lectures, 3 hours per week.
PHIL 2P17
Introduction to Chinese Buddhism The development of Buddhism in China from the seven early schools through the philosophy of Hwa Yen, and the later Ch'an or Zen schools.
Not open to students with credit in PHIL 208.
Lectures, 3 hours per week.

## PHIL 2P18

Introduction to Postmodernism
Some major figures in recent French philosophy, their historical antecedents, and their contemporary relevance to philosophy and literary theory. Thinkers to be dealt with include: Bataille, Deleuze, Foucault and Derrida.
Seminars, 3 hours per week.

## PHIL 2P25

## Introduction to logic

Modern deductive logic. The course objective will be to develop the ability to analyze arguments in order to
determine their worth. Arguments will be symbolized in order to clarify their form and to determine their validity or invalidity.
Lectures, 3 hours per week.

## PHIL 2P26

## Introduction to the philosophy of science

An historical introduction to the fundamental concepts of science; an examination of the nature of hypotheses, laws and theories, and contemporary philosophical approaches to the nature of scientific methodology. Lectures, 3 hours per week.

PHIL 2P31
The philosophy of education: the history of Western educational philosophy
Educational ideals from Plato to the present day. Students will come to appreciate the highly divergent objectives ascribed to education over the centuries.
Not open to students with credit in PHIL 211.
Lectures, 3 hours per week.
PHIL 2P32
The philosophy of education: critiques of present educational philosophy
The assessment of prevailing educational theories and practices by critics
such as Freire, Illich and Buber, with a view to enabling students to enrich their own educational experience. Not open to students with credit in PHIL 211.
Lectures, 3 hours per week.
PHIL 2P82

## Business ethics

(also offered as MGMT 2P82)
This course seeks an understanding of business practices, institutions, and actions in order to evaluate their contribution to the general human good. Topics to be considered may include false or misleading advertising, product safety, monopolistic price schemes, effects of pollution, discriminatory hiring policies, the role of shareholders, management, govern-
ment, and the public in determining corporate policy, and economic justice. Lectures, seminar, 3 hours per week.

PHIL 2P90
Phenomenological psychology
The bearing of phenomeno-logicalexistential philosophy (Husserl, Heidegger, Sartre, Merleau-Ponty) on the basic issues and concepts in psychology. The course deals with the phenomenological orientation within modern philosophical psychology including William James, Sartre, and current cognitive psychology; extensions of current cognitive psychology; extensions of the pheno-menological-existential methods to psychiatry (Binswanger); Eastern meditational traditions (Yoga, Mahayana Buddhism, etc.) relevant to phenomenological psychology. Prerequisite: university credit in philosophy or a discipline appropriately related to the course content, or permission of the instructor.
Seminar, 3 hours per week.

## PHIL 2P91

Philosophy of art
An historical approach to the philosophy of art centred on the concepts of matter and form. Philosophers dealt with range from Plato to Heidegger. Seminar, 3 hours per week.

PHIL 2P94
Theory of knowledge
Some fundamental distinctions in the theory of knowledge, e.g. knowledge and belief; the empirical and the $a$ priori; analytic/synthetic; scientific versus metaphysical knowledge. Prerequisite: university credit in philosophy or a discipline appropriately related to the course content, or permission of the instructor.
Not open to students with credit in PHIL 309hc.
Seminar, 3 hours per week.
PHIL 2P95
Metaphysics
The major problems of metaphysics, considering the question of what there is and covering topics such as the nature of space and time, the mindbody relation, substance and property,
universals and particulars, causation, identity and personal identity. Prerequisite: university credit in philosophy or a discipline appropriately related to the course content, or permission of the instructor.
Not open to students with credit in PHIL 310hc.
Lectures, seminar, 3 hours per week.
PHIL 2 P96
The philosophy of science An historical introduction to the metaphysical foundations of modern physical science. The concepts of space, time and matter as they evolved from the theories of the Pre-Socratics to those of Bohr, Heisenberg and contemporary exponents of quantum mechanics.
Prerequisite: university credit in philosophy or a discipline appropriately related to the course content, or permission of the instructor.
Not open to students with credit in PHIL 325hc.
Seminar, 3 hours per week.

## PHIL 2P97

## The philosophy of religion

Traditional issues such as the proofs for the existence of God, the problem of evil, the relationship of faith to reason, and the nature of religious knowledge will be discussed.
Prerequisite: university credit in philosophy or a discipline appropriately related to the course content, or permission of the instructor.
Not open to students with credit in PHIL 306 or 333 hc.
Seminar, 3 hours per week.

## PHIL 2P98

## Philosophy in literature

Plays and novels often represent a concrete resolution of some philosophical dilemma, such as the nature of human freedom versus externally determining forces; the conflict of values, the encounter of opposing world-views. The concrete setting and resolution is frequently more illuminating and persuasive than more abstract approaches in traditional philosophical language.
Prerequisite: university credit in philosophy or a discipline appropri-
ately related to the course content, or permission of the instructor.
Not open to students with credit in PHIL 317 or 344 hc.
Lectures, seminar, 3 hours per week.

## PHIL 2P99

## Ethics and sexuality

The application of ethics to questions of human sexuality. Topics for analysis will be selected from the following: sexual values, legal enforcement of morality, the semantics of sex, censorship, pornography, sex in advertising, abortion, prostitution, sexual perversion and AIDS.
Prerequisite: university credit in philosophy or EXST 1F50 or permission of the instructor.
Seminar, 3 hours per week.

## PHIL 2V85-2V89

Contemporary social issues
(formerly PHIL 2P85)
A critical and intensive examination of several problems arising in the areas of social ethics and public policy. Topics may include the morality of deceit, overpopulation, obligations to future generations and the environment, nuclear deterrence, animal liberation, moral enforcement and world hunger. Whenever possible, topics will be selected in accordance with student interests.
1989-90: (2V86) Lying and punishment
Lectures, seminar, 3 hours per week.

## PHIL 2V92-2V95

## Selected topics in analytic philosophy

This course helps the student to identify and apply to current controversial issues, basic distinctions and forms of argument typical of contemporary analytic philosophy. Topics to be considered may include personal identity, the differences between men and animals, mental imagery, the mindbrain connection, universals and particulars, and the meaning of life. 1989-90: (2V92) Evil and Wickedness
Prerequisite: university credit in philosophy or permission of the instructor.
Lectures, seminar, 3 hours per week.

PHIL 3M90-3M91
Critical study of a classical philosophy
A year-long study of Plato's thought one year, of Aristotle's the next year, investigating the unity of multiplicity in the thinking of each of the two great Greek philosophers. The emphasis is on joint seminar investigation and independent research. The approach is historical, trying to understand Plato or Aristotle in their historical context from the inside rather than by imposing modern categories. May be taken a second time with the alternative subject.
1989-90: (3M90) Aristotle
Prerequisite: PHIL 2F01(201) or permission of the instructor. Lectures, seminar, 3 hours per week.

PHIL 3P19
The rise of Christian philosophy Philosophy from the patristic period through Erigena and Anselm up to and including the 12 th century Renaissance.
Prerequisite: PHIL 2F01(201) or permission of the instructor.
Not open to students with credit in PHIL 297.
Lectures, 3 hours per week.

## PHIL 3P20

## Scholastic philosophy

The great Islamic, Jewish and Christian philosophers of the 13th century. Prerequisite: PHIL 2F01(201) or permission of the instructor.
Not open to students with credit in PHIL 297.
Lectures, 3 hours per week.
PHIL 3P56
Kant and the 18th century
An historical study of the thought of Immanuel Kant in the context of the 18th century enlightenment, focusing primarily on Kant's Critique of Pure Reason.
Prerequisite: PHIL 2F02(202) or permission of the instructor.
Not open to students with credit in PHIL 293.
Lectures, seminar, 3 hours per week.

PHIL 3P58
Hegel and the 19 th century
The 19th century developed not only the great comprehensive metaphysical systems of German idealism, but also various reactions to them. In addition to Hegel, thinkers studied may include: Fichte, Schelling, Schleiermacher, Schopenhauer, Feuerbach, Marx, Comte, Mill, Kierkegaard, Nietzsche. Prerequisite: PHIL 2F02(202), 3P56(356hc) or permission of the instructor.
Not open to students with credit in PHIL 258hc or 293.
Lectures, seminar, 3 hours per week.
PHIL 3V95-3V99
Issues in 17th and 18th century philosophy
(formerly PHIL 3P96)
A special issue or a particular thinker of central importance in the classical period of modern philosophy. Where the course does not focus upon one individual (e.g. Descartes, Spinoza, Leibniz, Locke, Berkeley, Hume, Kant), it will trace the development of an issue (e.g. causality, mind-body union, the doctrine of substance, personal identity, etc.) through its classical origins.
1989-90: (3V95) Descartes
Prerequisite: PHIL 2F02(202) or permission of the instructor.
Seminar, 3 hours per week.
Note 2.
Although all year 4 level courses are intended for fourth year philosophy honors majors, students at the third year level may take the equivalent of one full fourth year credit if they have obtained second class honors standing, or with the permission of the department.

## PHIL 4F99

## Honors tutorial

Directed intensive and individual study in an area in which a student has developed and displayed a particular interest; to be chosen in consultation with a faculty member able and willing to supervise that study. Proposals for a tutorial course must be approved by the chairperson of the department by the last day for late registration. Prerequisite: see Note 2.

PHII 4P07
Husserl and transcendental phenomenology
Basic issues and the characteristic method of phenomenology will be studied, using some of the major works of Husserl.
Not open to students with credit in PHIL 506hc.
Prerequisite: see Note 2.
Seminar, 3 hours per week.

## PHIL 4P08

Advanced studies in 19th century existential philosophy
An advanced seminar course in the continental European philosophy of the 19th century, e.g. Kierkegaard, Nietzsche.
Prerequisite: see Note 2.
Not open to students with credit in PHIL 400.
Seminar, 3 hours per week.
PHIL 4P09
Advanced studies in 20th century existential philosophy
An advanced seminar course in the continental European philosophy of the
20th century, e.g. Heidegger and Sartre.
Prerequisite: see Note 2.
Not open to students with credit in PHIL 400.
Seminar, 3 hours per week.
PHIL 4P97
Honors tutorial
Directed intensive and individual study
in an area in which a student has developed and displayed a particular interest; to be chosen in consultation with a faculty member able and willing to supervise that study. Proposals for a tutorial course must be approved by the chairperson of the department by the last day for late registration.
Prerequisite: see Note 2.
PHIL 4P98
Honors tutorial
Directed intensive and individual study in an area in which a student has developed and displayed a particular interest; to be chosen in consultation with a faculty member able and willing to supervise that study. Proposals for a
tutorial course must be approved by the chairperson of the department by the last day for late registration. Prerequisite: see Note 2.

## PHIL 4V00-4V04

Advanced studies in political philosophy
A critical examination of either a particular thinker or problem in political philosophy. Political philosophers may include: Plato, Aristotle, Hobbes, Locke, Rousseau, Kant, J. S. Mill, Rawls and Nozick. Problems may include: liberty and political obligation, justice and equality, human nature and the political order, civil disobedience, participation and consent, liberalism, anarchism, socialism and conservatism.
Prerequisite: see Note 2.
Seminar, 3 hours per week.

## PHIL 4V10-4V14

Studies in contemporary European philosophy
The work, usually of one thinker, prominent in recent continental thought. The focus will vary from year to year.
1989-90: (4V14) Derrida
Prerequisite: see Note 2.
Seminar, 3 hours per week.

## PHIL 4V15-4V19

Modern philosophical studies
An advanced course devoted to one or more of the major thinkers of the tradition from Descartes to the present day.
1989-90: (4V16) Hegel
1989-90: (4V19) Hume
Prerequisite: see Note 2.
Seminar, 3 hours per week.
PHIL 4V30-4V34
Advanced studies in Eastern philosophy
Concentrated critical and interpretative study of selected texts in the areas of: Advaita, Vedanta, Yoga, etc.; or Madhyamika and Yogacara schools of Buddhism.
Prerequisite: see Note 2.
Seminar, 3 hours per week.

SANS 1F00
Sanskrit
An introduction to classical Sanskrit, to its grammar and style, and to basic techniques of translating, with special emphasis on religious and philosophical literature.
Lectures, 3 hours per week.

## Physical Education

## Officers of instruction

## Chairperson

Lome J. Adams
V. Jean Wilson (as of July 1, 1989)

Professors
Jane R. Evans
Arnold G. Lowenberger
V. Jean Wilson

Associate professors
Lorne J. Adams
Paulette Coté-Laurence
Robert M. Davis
Assistant professor
Stella Green

## Lecturers

William Montelpare
Timothy Sawicki
Sessional lecturer
Valerie Drake

## General information

## Physical Education and Recreation

 centre 213Physical education students may choose either a three year pass program or a four year honors program, both leading to the degree of Bachelor of Physical Education (BPhEd). The program is unique in that it emphasizes a movement approach to physical education based on the principles of Rudolph Laban. Students may select additional elective courses in the areas of adapted movement studies, coaching, child movement studies, health, recreation and the psychology or sociology of sport.

As a condition of graduation with a Bachelor of Physical Education degree, students must complete a personal water safety requirement as set out by the School of Physical Education and Recreation.

## Pass program

Year 1
PHED 1P91/1P92, 1P93/1P94; one science and one humanities context credit; one elective credit. (See Notes 1. and 2.).

In order to qualify as physical education majors, students must select and successfully complete the activity labs PHED 0N02--Folk dance; PHED 0N03--Educational gymnastics; PHED 0N04--Team games; PHED 0N05-Individual activities.

## Note 1.

Enrolment in year 1 and 2 will be limited. In order to proceed to year 2, students must complete an Application to Major. Admission to year 2 will be based upon grades obtained in year 1. In order to be eligible to major in physical education, students must achieve a minimum grade of 65 in each of PHED 1P91, 1P92, 1P93 and 1P94. Should more than 100 students qualify, in the first instance, students will be admitted on the basis of the average of their marks in PHED 1P91, 1P92, 1P93 and 1P94. In the event of a tie, admission will then be based upon the average of the three remaining full courses or equivalents.

Note 2.
Students who achieve a grade of 75 in each of PHED 1P91/1P92 and 1P93/ 1P94 on their first attempt and who have completed an Application to Major will be guaranteed a position in year 2.

## Year 2

PHED 2P00, 2P02, 2P03, 2P04, 2P05, 2P07; one social science context elective; one elective (see Note 1. above).

## Year 3

PHED 3P00, 3P03, 3P04, 3P07, 3P17, $3 P 41$; two elective credits.

Note:
Students intending to pursue teacher certification upon completion of their
degree should consult the calendar entry for the College of Education for the program admission requirements.

## Honors program

Years 1, 2 and 3
As in pass program.

## Year 4

At least one of PHED 4F90 or 4F91 or 4F93; 2 credits in physical education numbered 3 (alpha) 90 or higher; two elective credits.

## Elective areas of concentration

In addition to the core, students wishing to pursue a particular area of interest may select recommended courses in the following areas:

## Adapted movement studies

The focus of this area will be to understand and meet the needs of special populations such as the physically or mentally handicapped. A combination of courses in physical education, psychology, and child studies will be taken.

Recommended courses:

| PHED 3P04 | Physical education for the exceptional individual |
| :---: | :---: |
| PHED 3P92 | Assessment and activity for special populations |
| PSYC(CHST) | Psychology of the |
| 3F96 | exceptional child |

## Optional courses:

CHST 3F35 Integrating the special child
EDUC(CHST) Focus on early 3P50

EDUC(CHST)

PHED 2P94 childhood education I Focus on early childhood education II Movement for the young child



## Physical Education

## Non-physical education majors

Students in other disciplines who wish to enrol in credit courses in physical education may select from the following approved courses only:
PHED 1P91, 1P92, 1P93, 1P94, 2P00, $2 \mathrm{P} 01,2 \mathrm{P} 02,2 \mathrm{P} 03,2 \mathrm{P} 04,2 \mathrm{P} 05,2 \mathrm{P} 07$, 2P19, 2P41, 2P44, 2P70, 2P94, 2P96, 2P97, 3P00, 3P03, 3P04, 3P07, 3P17, 3P41, 3Р90, 3P92, 3P95.

Students must note that there is a limit of five credits in physical education, recreation and leisure studies, administrative studies, education and teaching English as a second language which can be included for credit in a pass BA or BSc program.

## Other programs

In addition to the academic program, the School of Physical Education and Recreation provides four distinct nonacademic programs: intramural, recreational, sport skills and intercollegiate athletics. For details, see Facilities and Services.

## Description of courses

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

## PHED 1P91

Physical activity and society
The development and current role of physical activity in society with reference to historical influences. Contemporary problems facing sport and physical activity will be discussed. Not open to students with credit in PHED 190.
Lectures, seminar, labs, 5 hours per week.

Note: Physical education majors must select and successfully complete the activity labs outlined below. Students will register for labs at registration.

## PHED 1P92

## Introduction to exercise

An introductory course providing an understanding of how the body responds to and recovers from physical activity; the adaptations of the body to a variety of training programs. Not open to students with credit in PHED 190.
Lectures, labs, 5 hours per week.
Note: Physical education majors must select and successfully complete the activity labs outlined below. Students will register for labs at registration.

## Physical education activity labs

PHED 0N01--Swimming
A six-week activity lab concentrating on personal water safety including stroke instruction, water safety, beginning lifesaving and boating skills. 2 hours per week.

## PHED 0N02--Folk dance

A six-week activity lab that introduces students to a variety of folk dance with some application to the principles of movement of Rudolph Laban. 2 hours per week.

PHED 0N03--Educational gymnastics A six-week activity lab introducing students to functional movement based on the principles of Rudolph Laban. 2 hours per week.

## PHED 0NO4--Team games

A six-week activity lab that will provide students with fundamental skills associated with selected team games.
2 hours per week.
PHED 0N05--Individual activities A six-week activity lab that will provide students with fundamental skills associated with individual and lifetime activities.
2 hours per week.

## PHED 1P93

Introduction to movement education The history, philosophy and principles of movement education. A particular emphasis will be placed on Laban and his contribution to this field. Special attention will be paid to the develop-
ment of movement education in the United Kingdom, Canada and the United States.
Lectures, lab, 3 hours per week.

## PHED 1P94

Introduction to motor development The patterns of changes in motor abilities and skills involved in motor development throughout the lifespan. Phsycial growth, maturation and age related changes in motor behavior will be surveyed as well as factors affecting them.
Lectures, seminar, 3 hours per week.

## PHED 2P00

Movement orientation through developmental games
A theoretical and practical course providing students with a basic understanding of the characteristics and needs of children. The development of an understanding of motor skill development and games activities for individuals of all ages. Students will be introduced to the fundamental principles of movement as developed by Rudolph Laban, and will apply them extensively through fundamental skills, developmental skills and developmental games.
Prerequisite: PHED 1P91/1P92 (191hc/ 192hc), 1P93/1P94, or permission of the instructor.
Lectures, lab, 3 hours per week.
PHED 2P01
Organization and administration of physical education and sport.
Administration theory and practice in physical education and sport settings.
Attention is focused on various aspects of administrative behavior as it occurs in the provision of public and private physical education and sport services. Organizational characteristics of physical education and sport services at a federal, provincial and local level will also be reviewed.
Prerequisite: PHED 1P91/1P92 (191hc/ 192hc), 1P93/1P94 or permission of the instructor.
Lectures, lab, 3 hours per week.

PHED 2P02
Psycho-social growth and development
Sociological and psychological implications of sport and physical education will be discussed as they relate to motor performance. This includes such aspects as personality, motivation, achievement needs, feedback, group conflict, group cohesion, and leadership roles of the individual.
Prerequisite: PHED 1P91/1P92 (191hc/ 192hc), 1P93/1P94 or permission of the instructor.
Lectures, seminar, 3 hours per week.

## PHED 2P03

Movement orientation through educational gymnastics
The theory of movement education will be examined as: a content matter; a means of analyzing movement; a means for the individual to develop progression within his or her own motor performance. Practical application of the theory will be pursued through lab situations which deal with educational gymnastics.
Prerequisite: PHED 1P91/1P92 (191hc/ 192hc) including PHED lab 0N03, PHED 1P93/1P94, or permission of the instructor.
Lectures, lab, 3 hours per week.

## PHED 2P04

## Musculo skeletal anatomy

The anatomical bases of movement-skeletal, nervous, and muscular systems--will be dealt with to develop an understanding of human movement. The anatomy of the skeletal structure, joint actions, and the interrelationship of aggregate muscle groups will be examined. Articular and muscular injuries will be dealt with where they apply. In addition, biomechanics and the growth and development of anatomical systems from birth to late teens will be studied.
Prerequisite: PHED 1P91/1P92 (191hc/ 192hc), 1P93/1P94 or permission of the instructor.
Lectures, lab, 3 hours per week.
PHED 2P05
Motor learning and motor behavior
A theoretical orientation to the acquisi-
tion of motor skills including: aspects of growth and development, the neurophysiological structures involved in learning, learning theories and their application, as well as information processing and factors involved in the acquisition of motor skills.
Prerequisite: PHED 1P91/1P92 (191hc/ 192hc), 1P93/1P94 or permission of the instructor.
Lectures, lab, 3 hours per week.
PHED 2P07
Movement orientation through creative dance
Application of Laban's principles of movement as they give variety and clarity of expression to creative dance. Emphasis will be placed upon the development of movement sequences utilizing various stimuli and the basic components of dance composition. Prerequisite: PHED 1P91/1P92 (191hc/ 192hc) including PHED lab 0N02; PHED 1P93/1P94, PHED 2P00(200hc) or $2 \mathrm{P} 03(203 \mathrm{hc})$, or permission of the instructor.
Lectures, lab, 3 hours per week.

## PHED 2P19

The philosophy and principles of coaching
(formerly PHED 3P91)
The principles of coaching as they relate to the physiological and psychological development of the athlete. The role of the coach and the organization of sport in contemporary society. Prerequisite: PHED 1P91/1P92 (191hc/ 192hc), 1P93/1P94, 2P00(202hc), 2P04(204hc), 2P05(205hc), or permission of the instructor.
Not open to students with credit in PHED 3P91.
Lectures, seminar, 3 hours per week.

## PHED 2P41

Science and health behavior (formerly PHED 3P42)
Problems associated with individuals and their ability to function effectively and efficiently in present day society. Using a synthesis of health related research, the student will examine the decision-making process and formulate a personal philosophy of health. Prerequisite: PHED 1P91/1P92 (191 hc/ 192hc), 1P93/1P94 or permission of
the instructor.
Not open to students with credit in
PHED 340, 2P41 or 3P42.
Lectures, lab, 3 hours per week.
PHED 2P44
Activity programming for the senior

## adult

(formerly PHED 3P44)
The habilitation and rehabilitation of the senior adult in terms of physical activity; activity programming using a growth model. Specific topics in terms of motivation, needs, abilities and disabilities of senior adults will be addressed as well as therapeutic movement in relation to exercise, dance, adaptations of individualized competitive and co-operative games or sport activity. Students will be involved in a practicum situation dealing with senior adults in community or institutionalized settings.
Prerequisite: PHED 1P91/1P92(191hc/ 192hc), 1P93/1P94 or permission of the instructor.
Not open to students with credit in PHED 3P44.
Lectures, lab, 3 hours per week.
PHED 2P70
Care and prevention of injuries in athletes
(formerly PHED 2P91)
The basic treatment, recognition and prevention of injuries in athletes; the interrelationship of anatomy, physiology and kinesiology and the practical application of knowledge of these fields including emergency care and preventative taping.
Prerequisite: PHED 1P91/1P92(191hc/
192hc), 1P93/1P94, 2P04(204hc) or
permission of the instructor.
Not open to students with credit in 2P91.
Lectures, lab, 3 hours per week.

## PHED 2P94

Movement for the young child (also offered as CHST 2P94) Movement education experiences applicable to the child aged 3 to 5 . Practical experience in various play situations through creative games, dance and activities with apparatus will comprise a major part of the course; it will also integrate various art forms

## Physical Education

with movement activities. Bases of movement for pre-school children, motor development, role of play, creativity, and suitable environment for learning will be discussed. Prerequisite: PHED 1P91/1P92(191hc/ 192hc), 1P93/1P94; PSYC 1F90(190) or permission of the instructor. Lectures, lab, 3 hours per week.

## PHED 2P96

## Measurement and evaluation

 (formerly PHED 3P96)The measurement and evaluation process as it relates to human movement including basic descriptive statistics, an introduction to statistical inference, the principles of test construction, the criteria for evaluating tests, test administration and the interpretation of results.
Prerequisite: PHED 1P91/1P92 (191hc/ 192hc), 1P93/1P94 or permission of the instructor.
Not open to students with credit in PHED 3P96.
Lectures, lab, 3 hours per week.
PHED 2P97
Fitness assessment and exercise prescription
The implications for exercise prescription will be examined based on field and lab-like tests of physical fitness.
Age, sex, lifestyle and facilities will be examined as they relate to the parameters of physical fitness.
Prerequisite: PHED 1P91/1P92(191hc/ 192 hc ), 1P93/1P94 or permission of the instructor.
Lectures, lab, 3 hours per week.

## PHED 3P00

Movement orientation through advanced games
A continuation of the study of games.
Emphasis will be upon analysis, motor skill development, and strategies in advanced games. Application will be made of Laban's principles of movement as they apply to advanced games. Prerequisite: PHED 1P91/1P92 (191hc/ 192hc), PHED 2P00(200hc), 2P03(203hc), 2P07(207hc), or permission of the instructor.
Lectures, lab, 3 hours per week.

PHED 3P03
Movement orientation through advanced educational gymnastics Designed to facilitate skill development and understanding in the area of educational gymnastics through advanced practical experience and theoretical application of Laban's movement principles.
Prerequisite: PHED 2P03(203hc) or permission of the instructor. Not open to students with credit in PHED 3P93hc.
Lectures, lab, 3 hours per week.

## PHED 3P04

## Physical education for the excep-

 tional individualEmphasis is placed on understanding major handicapping conditions as well as understanding the gifted individual. Programming procedures and practical work with exceptional individuals will be included.
Prerequisite: PHED 1P91/1P92 (191hc/ 192hc), PHED 2P00(200hc), 2P02(202hc), 2P03(203hc), 2P04(204hc), 2P05(205hc), $2 \mathrm{P} 07(207 \mathrm{hc})$ or permission of the instructor.
Lectures, lab, fieldwork, 3 hours per week.

## PHED 3P07

## Movement orientation through folk

 danceThe analysis and structure of the principles of movement as they apply to folk dance as outlined by Rudolph Laban. Students will be given the opportunity to restructure existing traditional folk and square dance forms to bring them in line with current movement philosophy.
Prerequisite: PHED 1P91/1P92 (191hc/
192hc), PHED 2P00(200hc) or
2 P 03 (203hc) or 2 P 07 (207hc) or permission of the instructor. Lectures, lab, 3 hours per week.

## PHED 3P17

Movement orientation through advanced creative dance
Advanced sequential skill and knowledge development in the area of creative dance. Advanced movement themes will be explored in the study of dance as an art form.

Prerequisite: PHED 2P07(207hc) or permission of the instructor.
Lectures, lab, 3 hours per week.

## PHED 3P22

Movement orientation to physical education
The development and implementation of movement programs. Application of Laban's movement principles will be emphasized in order to give the student an understanding of these principles in practical situations.
Prerequisite: PHED 1P91/1P92 (191hc/ 192hc), PHED 2P00(200hc), 2 P 03 (203hc), 2P07(207hc) or permission of the instructor.
Not open to students with credit in PHED 302.
Lectures, lab, fieldwork, 3 hours per week.

## PHED 3P41

## Health behavior

Selected contemporary problems in health education with a focus on problems that concern individuals in our society. Topics discussed will range from environmental health and drug education to selected aspects of human sexuality.
Prerequisite: PHED 1P91/1P92(191hc/ 192hc) or permission of the instructor. Not open to students with credit in PHED 340.
Lectures, lab, 3 hours per week.

## PHED 3P80

Clinical and field practices in athletic therapy
Clinical and field skills used in athletic therapy. Emphasis is placed on musculo-skeletal assessment, management of spinal injury, therapeutic modalities, advanced taping and wrapping procedures. A clinical internship in the athletic injury clinic is required.
Prerequisite: PHED 2P04(204hc) and 2P91(291hc) with a minimum grade of B , and permission of the instructor. Lectures, 2 hours per week, internship, 3 hours per week.

## PHED 3P81

Advanced clinical assessments in athletic therapy
A review of the functional and surface
anatomy of the major joints and the advanced assessment skills used in the prognosis of sports injuries related to the lower appendage, lower back, and gait assessment analysis.
Prerequisite: PHED 3P80(380hc) and permission of the instructor.
Lectures, 2 hours per week, internship, 3 hours per week.

## PHED 3P90

Aspects of exercise physiology Energy sources for exercise (aerobic and anaerobic) and the factors which influence work capacity, fatigue and the recovery process. Other topics include development of strength and endurance; responses and adaptation of endocrine and cardiorespiratory systems; temperature regulation training and assessment of the factors that influence the training effects. Prerequisite: PHED 1P91/1P92 (191hc/ 192hc) or BIOL 1F90(190) or permission of the instructor.
Restricted to year 3 and year 4 students.
Not open to students with credit in PHED 290hc.
Lectures, lab, 3 hours per week.

## PHED 3P92

## Assessment and activity for special

 populationsAn elective course designed for those students wishing to gain additional expertise in working with special populations. Particular attention will be given to assessment techniques and programming for mentally and physically handicapped persons. Practical work with special populations will be included.
Prerequisite: PHED 3P04 (304hc) or permission of the instructor.
Lectures, lab, 3 hours per week.

## PHED 3P94

Psychomotor learning and motor control (formerly PHED 3P05)
The human performance model is examined in detail, focusing on information processing as it relates to attention and human performance. The perceptual mechanism, decision mechanism, the effector mechanism and associated factors will be studied
as they apply to skill development. Contemporary theories of motor control will be discussed in relation to a variety of physical education settings. Prerequisite: PHED 2P05(205hc) Not open to students with credit in PHED 3P05.
Lectures, lab/seminar, 3 hours per week.

PHED 3P95
Psycho-social aspects of sport An elective course designed to integrate reading and research from selected areas of the sociology, psychology and physiology of sport. Analysis and discussion of research readings, theories, issues and trends as they relate to human movement patterns.
Prerequisite: PHED 2P02(202hc) or permission of the instructor.
Lectures, lab, 3 hours per week.
PHED 3P97
Observation and analysis of movement
Studies and readings in selected areas of movement observation. Observational techniques, analysis of movement patterns, factors influencing movement behavior and the recording of movement patterns.
Prerequisite: PHED 2P03(203hc), 2P07(207hc) and permission of the instructor.
Lectures, lab, 3 hours per week.

## PHED 3P98/3P99

Special studies in physical education A series of lectures, seminars and practical experiences offered in specialized areas of physical education. Sessions will normally be set up in two consecutive parts. Students may elect 3P98 alone or both 3P98 and 3P99. Each half course will require a minimum of 30 hours of instruction. Prerequisite: third year standing in PHED or permission of the dean of the School of Physical Education and Recreation.

## PHED 4F90

Research methods in physical education
Methods of research appropriate for use in physical education. Problem
formation, hypothesis testing, statistical tools, research design and proposal writing will be examined. Critical analysis of research in a variety of areas of physical education will be emphasized.
Restricted to honors candidates. Tutorials, seminar, 4 hours per week.

## PHED 4F91

## Honors tutorial

Intensive, directed, individual study. In consultation with a faculty adviser, the student will select a topic for inquiry from one of the following areas: movement, education, health, motor learning, physical education for exceptional individuals, and psychosociological development.
Restricted to honors candidates.
Tutorials, seminar, 4 hours per week.

## PHED 4F93

Advanced movement seminar
The course is designed to aid students in increasing their personal expertise and knowledge in movement education. Emphasis will be on improvement, refinement, and perfection of personal skills, observational skills, and analytical skills in a wide variety of movement experiences.
Restricted to honors candidates.
Not open to students with credit in PHED 403.
Tutorials, seminar, 4 hours per week.

## Physics

Officers of instruction

| Chairperson |
| :--- |
| Colin A. Plint |
| Professors |
| John E.Black |
| Frans P. Kofyberg |
| John A. Moore |
| Colin A. Plint |
| Ramesh C. Shukla |
| Associate professors |
| Bozidar Mitrovic |
| Fereidoon S. Razavi |
| Assistant professor |
| Shyamal K. Bose |
| Senior laboratory instructor |
| Frank A. Benko |

## General information

## Mackenzie Chown complex B210

The department offers a three year pass and a four year honors program leading to a BSc. Students may take a single major in physics, or a combined major with biological sciences, chemistry, computer science, geological sciences, or mathematics. The core of the program is designed to provide a student with an understanding of the principles and fundamental interactions of classical and quantum physics.

Students are urged to give careful consideration to their choice of program, keeping in mind their areas of interest and capabilities as well as their long-term career goals.

## Pass program

Year 1
PHYS 1F20 or PHYS 1F90 (preferred); MATH 1P93/1P94 or MATH 1P93/ 1P95; COSC 1P91 and MATH 1P12; CHEM 1F85 or CHEM 1F93 (preferred); one humanities or social science context credit.

Year 2
PHYS 2P20/2P21, 2P30/2P31, 2P41/ 2P42; MATH 2F95; one humanities or social science context credit (whichever was not taken in year 1 ).

Year 3
PHYS 3F95, 3P20, 3P31, 3P50, 3P70, 3P91, 3P92; one elective credit.

## Honors program

Years 1 and 2
As in pass program.

## Year 3

As in pass program*.
*PHYS 4P41 or PHYS 4P70 may be taken in year 3 with permission of the instructor.

## Year 4

PHYS 4F50, 4F90; two year 4 physics credits; one elective credit.

## Combined major programs

Typical programs are:

## Physics and Biological Sciences

Pass program
Year 1
PHYS 1F20 or PHYS 1 F90 (preferred); BIOL 1F90; MATH 1P93/1P94; one humanities and one social science context credit.

Year 2
PHYS 2P20/2P21; BIOL 2F01 and one credit from BIOL $2 \mathrm{~F} 03,2 \mathrm{P} 90,2 \mathrm{P} 91$, 2 P93, 2P98; CHEM 1F85 or CHEM 1F93 (preferred); MATH 2 F95.

Year 3
One of PHYS 3P20, 3P50, 3P70; PHYS 2P30, 2P41, 2P42; one biology credit; one year 2 or 3 credit in biology or one year 3 physics credit; one elective credit.

To qualify for a pass degree, students must complete a minimum of three credits numbered $2(a l p h a) 90$ or above.

Honors program
Years 1, 2 and 3
As in pass program.
Year 4
PHYS 4F90/4F91 or BIOL 4F90/4F91 or PHYS 4F90 and one elective credit, or BIOL 4F92 and one elective credit; one year 3 or 4 credit in physics; one year 3 or 4 credit in biology; one year 3 or 4 credit in physics or biology.

To qualify for a honors degree, students must complete a minimum of three credits numbered 3(alpha) 90 or above.

## Physics and Computer Science

Honors program

## Year 1

PHYS 1F20 or PHYS 1F90 (preferred);
COSC 1P01/1P04; MATH 1F65, 1P93/
1P94; one social science context credit.
Year 2
PHYS 2P20/2P21; PHYS 2P30/2P31 (or 2P41/2P42); COSC 2F00; MATH 2F95; one humanities context credit (see Note 1.).

## Year 3

PHYS 3P20; and one and one half credits from PHYS 3F95, 3P50, 3P70; COSC 2P03, 2P07; one COSC credit numbered 2(alpha) 90 or above; MATH 1P12; one half elective credit.

Year 4
Two credits from PHYS 4F50, 4F90, 4P41, 4P70; COSC 3F00, 3P02, 3P04; one COSC credit numbered 3 (alpha) 90 or above.

## Notes:

1. ENGL 1 F99 strongly recommended; it is a preferred prerequisite for COSC 3 F 00 .

## Physics and Mathematics

Pass program

## Year 1

PHYS 1F20 or PHYS 1F90 (preferred); MATH 1P93/1P94 or 1P93/1P95; MATH 1P12/1P90; one humanities and one social science context credit.

Year 2
PHYS 2P20/2P21, 2P30/2P31, 2P41/
2 P 42 ; MATH 2 F 00 or 2 F 95 ; MATH 2F10.

## Year 3

PHYS 3P20, 3P31, 3P50, 3P70;
MATH 3F00; PHYS 3F95 or MATH
3F94; one elective credit.
Honors program
Years 1,2 and 3
As in pass program.
Year 4
PHYS 4F50; two of PHYS 4P41, 4P70,
4P71; two of PHYS 4F90, 4F91, or any
two year 4 mathematics credits; one elective credit.

Please refer to the departmental listings in Chemistry and Geological Sciences for combined major programs with these subjects.

## Master of Science (MSc) program

The department offers an MSc program in molecular and solid state physics. Experimental and theoretical studies are provided. The program must include PHYS 5F90 (MSc thesis) and the equivalent of two full courses, of which at least one must be a graduate course.

Graduate courses
PHYS 5F90
MSc thesis
PHYS 5P50
Advanced quantum mechanics I
PHYS 5P51
Advanced quantum mechanics II

## PHYS 5P70

Advanced solid state physics
PHYS 5P71
Defect solid state
PHYS 5P72
Manybody theory
PHYS 5P73
Light scattering in condensed matter
PHYS 5P74
Anharmonicity in crystals
For details, see the Graduate Calendar or contact the chairperson of the department.

## Description of courses

Abbreviations:

| ASTR | Astronomy |
| :--- | :--- |
| CHEM | Chemistry |
| MATH | Mathematics |
| PHYS | Physics |

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

## ASTR 1F00

Introduction to astronomy
An introductory course in astronomy, designed for both non-science and science students. Topics include: a description of the appearance of the night sky, the properties of the sun and stars, and a discussion of the planets of the solar system, galaxies, history of astronomy, and the properties of some
unusual astronomical objects such as pulsars and black holes.
Lectures, 3 hours per week.
Field trips and seminars: these will average about 1 hour per week, and will consist of a trip to an astronomical observatory, several nights of observing stars, and some seminars.

## PHYS 1F20

Introduction to classical physics Fundamental classical physics phenomena and concepts; mechanics, optics, electromagnetism and thermal physics. This material should be of interest and use to students who plan to major in the physical or life sciences. Lectures, 3 hours per week; lab/ problem sessions, 2 hours per week.

## PHYS 1F90

Principles of physics
A basic treatment of mechanics, electromagnetism, and optics, followed by an introduction to atomic and nuclear physics. This course is designed for students intending to major in physics (either as a single major or as part of a combined major), chemistry, mathematics, or computer science. Calculus is used in the later parts of the course. Credit in PHYS 1F90 is preferred for entry into all Year 2 physics courses.
Prerequisite: grade 13 physics is strongly recommended.
Lectures, 3 hours per week; labs 3 hours per week.

## PHYS 2P20

## Introductory mechanics

A treatment of the mechanics of particles and systems of particles by the Newtonian method; conservation of linear momentum, angular momentum and energy; elementary dynamics of rigid bodies; oscillators; motion under central forces; selected applications. Prerequisite: PHYS 1F20(120) or PHYS 1F90(190) (preferred); MATH 1P93/1P94(193hc/194hc) or 1P93/ 1P95(193hc/195hc).
Lectures and problem sessions, 3 hours per week; lab, 3 hours per week.

## PHYS 2P21

Physical optics and relativity
Wave theory; interference; scattering

## Physics

and diffraction; polarization; special relativity.
Prerequisite: PHYS 1F20(120) or
PHYS 1F90(190) (preferred); MATH 1P93/1P94(193hc/194hc) or 1P93/ 1P95(193hc/195hc).
Lectures and problem sessions, 3 hours per week; lab, 3 hours per week.

## PHYS 2P30

## Electromagnetism

The theories of electricity and magnetism are developed up to the level of Maxwell's equations. Prerequisite: PHYS 1F20(120) or PHYS 1F90(190) (preferred); MATH 1P93/1P94(193hc/194hc) or 1P93/ 1P95(193hc/195hc).
Lectures, 3 hours per week; lab demonstration, tutorial, 2 hours per week.

## PHYS 2P31

## Electronics

Basic studies in conduction in metals and semiconductors; circuit analysis; semiconductor junction, diode and transistor; rectification, switching and amplification; digital and linear integrated circuits; electrical measurement instruments. No previous course in electricity/magnetism/electronics is required. High school algebra and some basic calculus will be used in the quantitative sections.
Prerequisite: PHYS 1F20(120) or 1F90(190) and a mathematics credit, or permission of the instructor. Not open to students with credit in PHYS 232hc.
Lectures, 3 hours per week; lab, 3 hours per week. Laboratory will include student exercises and instructor demonstration.

## PHYS 2P32

## Electronic circuits

dc circuits, ac circuits, rectifiers, power supplies, transistor amplifiers, operational amplifiers, digital circuits. Prerequisite: PHYS 1F20(120) or 1F90(190) and a mathematics credit, or permission of the instructor. No previous course in electricity/magnetism/electronics is required. High school algebra and some basic calculus will be used in the quantitative sections. Not open to students with credit in

PHYS 231hc
Lectures, 3 hours per week; lab, 3 hours per week.

PHYS 2P33

## Electronic devices

Electrical concepts, wave mechanical concepts, conduction, semiconductors, energy bands, electronic devices, fabrication, I-V characteristics, rectifier, Zener, tunnel diodes, BJT, JFET, IGFET, LED, memory elements. Prerequisite: PHYS 1F20(120) or 1F90(190) and a mathematics credit, or permission of the instructor. No previous course in electricity/magnetism/electronics is required. High school algebra and some basic calculus will be used in the quantitative sections.
Lectures, 3 hours per week.

## PHYS 2P41

Thermodynamics
Development of classical thermodynamics, fundamental equations, equations of state, thermodynamic potentials, Maxwell's relations, phase equilibria, stability.
Prerequisite: PHYS 1F20(120) or
PHYS 1F90(190) (preferred); MATH 1P93/1P94(193hc/194hc) or 1P93/ 1P95(193hc/195hc).
Lectures, problem sessions, 3 hours per week.

## PHYS 2P42

## Statistical physics

Introduction to probability distribution functions, accessible states, entropy, temperature, partition functions. Prerequisite: PHYS 2P41(241hc). Lectures, problem sessions, 3 hours per week.

PHYS 3F95
Methods of mathematical physics (also offered as MATH 3F95) Calculus of variations, elements of group theory, eigenvalue problem, theory of small oscillations, special functions, complex variable theory, contour integration, summation of series, introduction to tensors. Prerequisite: PHYS 2P20(220hc), 2P21(221hc), MATH 2F95(295). Lectures, 3 hours per week.

PHYS 3P20

## Classical mechanics

An advanced treatment of the mechan-
ics of particles and rigid bodies; Lagrangian and Hamiltonian methods; small oscillations; Hamilton-Jacobi theory; relativity.
Prerequisite: PHYS 2P20(220hc), MATH 2F95(295).
Lectures, problem sessions, 4 hours per week.

## PHYS 3P31

## Electromagnetism I

Electrostatic fields in vacuum, dielectric material, solution of Laplace's and Poisson's equations; magnetic field, steady currents, non-magnetic matter, induced emf, magnetic energy, magnetic materials; Maxwell's equations; propagation of plane electromagnetic waves in vacuum and dielectric media.
Prerequisite: PHYS 2P30(230hc), MATH 2F00(200) or 2F95(295). Lectures and problem sessions, 3 hours per week.

## PHYS 3P50

Introduction to modern physics Wave-particle aspects of electromagnetic radiation and particles. The structure of hydrogen and of atoms containing many electrons; energy levels, orbital and spin angular momenta, magnetic momenta, optical and $x$ ray spectra, binding energies of nuclei, introduction to nuclear models, characteristics of nuclear decay and reactions.
Prerequisite: PHYS 2P20/2P21 (220hc/ 221hc).
Lectures, 3 hours per week.

## PHYS 3P70

Introduction to wave mechanics Wave particle dualism, Schrodinger equation, solution of simple onedimensional barrier problems and the harmonic oscillator, hydrogen atom, angular momentum theory, introduction to perturbation theory and variational methods.
Prerequisite: PHYS 3P50(350hc), MATH 2F95(295).
Lectures and lab/problem sessions, 4 hours per week.

## PHYS 3P91

## Experimental physics I

Laboratory experiments to be selected from atomic physics, nuclear physics, solid state physics.
Prerequisite: PHYS 2P20(220hc),
2P21(221hc), 2P30(230hc), or permission of the instructor.
Not open to students with credit in PHYS 390.
Labs, 1 day per week.

## PHYS 3P92

Experimental physics (Electronics) II Solid state electronics; transducers, converters, switches, microcomputers, and their application to physical measurements.
Prerequisite: PHYS 2P31(231hc) or 2P32(232hc) or permission of the instructor.
Not open to students with credit in PHYS 390.
Labs, 1 day per week. *

## PHYS 4F50

## Quantum mechanics

Operator formalism, Hilbert space, Dirac's transformation theory, matrix mechanics, creation and annihilation operators, second quantization, variational method, perturbation theory, scattering theory.
Prerequisite: PHYS 3F95(395); 3P20(320hc), 3P70(370hc). Lectures, 3 hours per week.

## PHYS 4F90, 4F91

## Research project

A small experimental, theoretical, or applied physics research project to be carried out under the supervision of a member of the department. Students must consult with the chairperson regarding their proposed program during the first week of lectures.

## PHYS 4P32

## Electromagnetism II

Electromagnetic wave propagation in vacuum, dielectrics, conductors, and ionized gases; reflection, refraction, polarization at the plane boundary between two media; wave guide and transmission line propagation; dipole and quadrupole radiation fields; antenna systems; electromagnetic
radiation pressure; transformation of the electromagnetic fields.
Prerequisite: PHYS 3F95(395), 3P31(331hc).
Lectures, problem sessions, 3 hours per week.

## PHYS 4P41

Statistical physics
Fundamental postulates, equilibrium
statistical mechanics and its relation to thermodynamics. Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac statistics are derived and applied in appropriate physical situations of noninteracting and interacting particles; fluctuations; elementary treatment of transport theory.
Prerequisite: PHYS 2P41(241hc), 2P42(242hc), 3P70(370hc).
Lecture and problem sessions, 4 hours per week.

## PHYS 4P61

Nuclear physics
Intrinsic properties of nuclei, nuclear forces, nuclear levels; structure of deuteron, nuclear binding energy; qualitative treatment of Fermi gas model, liquid drop model, shell model and collective model; alpha, beta, and gamma radioactivities, nuclear fission, characteristics of nuclear reactions. Prerequisite: PHYS 3P50(350hc), PHYS 3P70(370hc).
Lectures, problem sessions, 4 hours per week.

## PHYS 4P70

## Solid state physics 1a

Crystal structures and crystal binding.
The vibration of atoms in solids and the thermodynamics of solids. Introduction to transport properties of solids.
Prerequisite: PHYS 3P70(370hc).
Lectures, 3 hours per week.

## PHYS 4P71

## Solid state physics 1b

Energy bands in metals and semiconductors, lattice vibrations, transport properties of solids, magnetism, defects in solids.
Prerequisite: PHYS 4P70(470hc). Lectures, 3 hours per week.

## PHYS 4P80

Introduction to the theory of general relativity and cosmology
Review of special relativity; Lorentz transformations, Minkowski space, tensor algebra, principle of equivalence, general covariance, curved spacetime, Einstein equations, Schwarzschild metric, solution of Einstein field equations, cosmological models. Prerequisite: PHYS 3F95(395), 3P20(320hc), 3P31(331hc).
Lectures and problem sessions, 4 hours per week.

## Politics

## Officers of instruction

## Chairperson

David T. Siegel

## Professors

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

Garth Stevenson
Associate professors
Terrance G. Carroll
Roderick Church
Gerald E. Dirks
Juris Dreifelds
Daniel Madar
William A. Matheson
William Mathie
David T. Siegel
Assistant professors
Nicolas Baxter-Moore
Leah Bradshaw
Richard Loreto
Professor emeritus
Victor M. Fic

General information

## Mackenzie Chown complex A337

Everyone engages in political activity, but not everyone takes the time to study politics. This is unfortunate because it is through politics that we shape the future of the world in which we live. Aristotle recognized the importance of politics and called it the master science. This was not an immodest claim, only an assertion of the pervasiveness and primacy of political affairs. Of course, the study of politics will not make us master scientists, but it will provide us with many engaging possibilities.

Politics is seldom dry or constraining. Political scientists are interested in things as diverse as conflict in city hall,
the reform of abortion laws, the influence of special interest groups on Canada's environmental policy, the question of when citizens ought to disobey the law, the cultural revolution in China, the control of civil servants, the causes of revolution, and the prospects for international control of the sea. The focus is always on the ideas, institutions and processes by which people govern and misgovern themselves, but there are no narrow intellectual horizons.

The courses offered in year 2 and above fall into a number of fields, and the department advises politics majors (pass and honors students) to select courses from at least three of these fields:
Political philosophy: course numbers ending with $00-09$, plus POLI 2 F 90 ; Canadian politics: course numbers ending with 10-19 (see also the public administration and public policy fields);
International relations: course numbers ending with 20-29;
Comparative politics: course numbers ending with 30-49;
Public administration: course numbers ending with $50-59$;
Public policy: course numbers ending with 60-69;
Unclassified special topics: course numbers ending with $70-79$, plus POLI 4F99;
Scope and methods: course numbers ending with 80-89.

Courses are also offered as part of interdisciplinary programs in administrative studies, Asian studies, Canadian studies, communications studies, labor studies and urban and environmental studies.

Politics 1 F 90 or the permission of the instructor is a prerequisite for all courses in the department. For requirements concerning political philosophy and empirical methods, consult the notes on pass and honors programs.

All students in politics, especially those proceeding to graduate work or to a career in the public service, are encouraged to become proficient in a
language other than English, normally French. Students who develop interests in a particular geographical area are urged to select related courses in history, language and literature. COSC 1 P91 and MATH 1P98 provide a sound background in those skills often employed in modern social science research. Questions about the politics program should be directed to the undergraduate officer.

## Pass program

Students enrolled in the pass program are required to take seven politics courses, normally POLI 1F90, three courses in year 2 and three in year 3 . POLI 2P80 (or 2P81) is required. POLI 2 P 01 (or POLI 2F90) is also required. Note that POLI 2F90 may be counted as a year 3 course.

## Year 1

POLI 1F90; one humanities and one science context credit; two other credits (one of which, with the consent of the instructor, may be a year 2 politics course).

Year 2
Three credits in politics numbered 2(alpha)00-2(alpha)99.
Two elective credits.

## Year 3

Three credits in politics numbered 2(alpha)90-3(alpha)99.
Two elective credits.

## Honors program

Students in the honors program are required to take POLI 2P80 (or 2P81) and 3 P 91 (or 3P81). They are also required to take one credit chosen from either POLI 2F90 (recommended) or POLI 2P01 and any one of POLI 3P04, $3 \mathrm{P} 05,4 \mathrm{P} 01,4 \mathrm{P} 02$, and 4 P 03 .

Years 1, 2 and 3
As in pass program.

Year 4
Three credits in politics numbered 4(alpha) 00 -4(alpha) 99 or two year 4 and one year 3 politics credits; two elective credits. Honors students may consider the preparation of an honors thesis on a subject of special interest (see POLI 4F99). It should be noted that 3 credits numbered 3(alpha) 90 or above must be included in all honors degrees.

## Combined major programs

For a pass degree the student should take a minimum of four credits in politics over years 2 and 3; at least two of these should be numbered at level 2F90 or higher. For an honors degree, the student must take a minimum of six credits in politics over years 2,3 and 4; at least four credits should be numbered at level 2F90 or higher and at least two credits at the 400 level.

Students in combined majors are required to take POLI 2P01 (or POLI 2F90) and POLI 2P80 (or 2P81). With the permission of the undergraduate officer, a required methods course in another department may be considered an equivalent for POLI 2P80.

Students in combined honors programs are required to take one credit chosen from either POLI 2F90 (recommended) or POLI 2P01 and any one of POLI $3 \mathrm{P} 04,3 \mathrm{P} 05,4 \mathrm{P} 01,4 \mathrm{P} 02$ and 4P03. They are also required to take POLI 2P80 (or 2P81) and 3P91 (or 3P81). With the permission of the undergraduate officer, methods courses which are required in other departments may be considered equivalents for POLI 2P80 and 3P91.

## Politics and Administrative Studies

Together with Administrative Studies, the department of Politics offers a special program leading to an honors BA in politics and administrative studies. The general requirements for this program are the same as for other combined honors programs involving politics, but course selection is concentrated in the areas of public administration and law. This program is designed for anyone with an interest in public administration, or administrative careers in governments, courts, and related organizations.

## Year 1

POLI 1F90; MGMT 1P91/1P92;
ECON 1P91/1P92; one science and one humanities context credit (French 1F90 recommended for those with necessary prerequisites).

## Year 2

POLI 2F12; POLI 2P80 (or 2P81) or MGMT 1P95; one additional credit in politics, usually 2F90 (POLI 2P01 and one of POLI 3P04, 3P05, 4P01, 4P02, 4P03 may be taken in place of POLI 2F90); ACTG 2P11/2P12; MGMT 2 P 40 ; MATH 1P98; one half elective credit (ECON 2P21 recommended).

## Year 3

Two credits in politics chosen from POLI 3P11, 3P15, 3P18, 3P26, 3P27, 3P33, 3P52, 3P65, and 3P66; MGMT 3F51 (or MGMT 3P50 and one half MGMT credit); MGMT 3P41/3P42; one elective credit (ECON 3P14/3P15 recommended).

Year 4
POLI 4P50, 3P91; one credit chosen from POLI 4P01, 4P11, 4P14, 4P15, 4P51, 4P53, 4P65, 4V10-4V19; FNCE 3P92/3P93; MGMT 4P54; one of MGMT 4P40, 4P52, 4P61, 4P62, 4P63, 4P66, 4P67, 4P68, 4P69, 4P72; one elective credit.

## Master of Arts (MA) program

The MA program is designed with an emphasis upon comparative political studies. Its focus is upon the relationship between internal politics and external policy with respect to one or more states, and upon the relationship between internal and external influences and the formulation of public policy. The main subject areas covered are those of comparative and international politics, law, administration and studies of political development and modernization. The geographic areas of concentration are Canada, Western Europe, and South and Southeast Asia. The department also offers a special concentration in public administration, including judicial administration and municipal administration streams.

For details about graduate courses and programs, see the Graduate Calendar.

## Certificate program in public administration

The Politics department also offers a program leading to a certificate in public administration. It provides an overview for interested people who do not wish to proceed to a degree, and for those whose degree is in a different field. It is of special interest to people already employed in the public sector environment and wanting to embark on a program of part time studies. The requirements for admission to the certificate program are the same as for admission to the degree program. The equivalent of seven full approved courses are required for the certificate. (For students already holding a degree, see certificate requirements under Academic Programs and Regulations, page 29.)

## Course Program:

Federal/provincial government
POLI 1F90, 2F12, 3F51, 4P52, 4P54; three elective credits.

## Municipal government

UEST 1F90, POLI 1F90, 3F51, 3P11, 4P11, 4P52, 4P54; two elective credits.

Description of courses

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

Note: POLI 1F90, or equivalent, or permission of the instructor, is a prerequisite for admission to all other politics courses.

## POLI 1F90

## Introduction to politics

The basic concepts and institutions of political systems and the various approaches used to study these systems. Topics include: ideologies such as liberalism, conservatism and communism; institutions of government including legislatures, bureaucracies and political parties; public opinion and voting; classes, elites and revolution.
Lectures, seminar, 3 hours per week.

## POLI 2F12

## The government and politics of Canada

Political institutions and processes of Canada. Major topics will include the constitution and federalism, regions and regionalism, the political attitudes and behavior of Canadians, parties and elections, and the policy process. Lectures, seminar, 3 hours per week.

## POLI 2F20

## International politics

An introduction to international politics focusing on the characteristics of the international system, the process of foreign policy formulation in individual states, and the means of acting internationally.
Not open to students with credit in POLI 2P22(222hc) or 2P24(224hc). Lectures, seminar, 3 hours per week.

POLI 2F90
Political philosophy
An examination of major works of political philosophy as these comprise
the theoretical foundations of our own political order and fundamental alternatives to it. Among the writers and writings to be discussed are Plato, Aristotle, The Bible, Machiavelli, Hobbes, Locke, Rousseau, Marx and The Federalist Papers. Not open to students with credit in POLI 200, 291 hc or 292 hc. Lectures, seminar, 3 hours per week.

## POLI 2P01

Introduction to political philosophy Critical examination of classical and contemporary liberal democracy and alternatives to liberal democracy. Lectures, seminar, 3 hours per week.

## POLI 2P41

The government and politics of the U.S.S.R.

Political institutions and processes of the Soviet Union and the historical, ideological, geographic and demographic factors which shape Soviet society. Special attention will be given to nationalism and ethnic tensions, economic debates, evolution of societal values and behavior, leadership composition and replacement, and forces affecting stability and division within the country.
Lectures, seminar, 3 hours per week.

## POLI 2P42

The government and politics of China
Political institutions and processes of the Chinese People's Republic.
Lectures, seminar, 3 hours per week.

## POLI 2P43

The government and politics of India Society, government and political processes in India, with special attention to leadership, party politics, caste and communal relations, regionalism, economic planning and change in the villages.
Not open to students with credit in POLI 260hc.
Lectures, seminar, 3 hours per week.

## POLI 2P45

The government and politics of the United Kingdom
The parliamentary form of government as it has evolved and is practised in the

United Kingdom. Topics include: the development of constitutional principles and their application today; the operation of the executive and legislature; the roles of parties and pressure groups; the significance of extraparliamentary checks; and the impact of the system, especially on Canada and the United States.
Not open to students with credit in POLI 215 hc .
Lectures, seminar, 3 hours per week.

## POLI 2P46 <br> The government and politics of the United States

The American political system and the institutions of the federal government in the context of the constitutional separation of powers and the political party structure. Related topics include federalism, elections and voting behavior, civil rights, and selected public policy issues.
Not open to students with credit in POLI 216hc.
Lectures, seminar, 3 hours per week.

## POLI 2P62

Government and politics
An introduction to government and politics intended for students in the second year of the B.Actg. program. Prerequisite: year 2 standing in B.Actg. program.
Not open to students with credit in POLI 1F90.
Lectures, seminar, 3 hours per week.

## POLI 2P80

## Political analysis

(formerly POLI 2P81)
Research methodologies and skills commonly used by political scientists. Topics include the evolution of political science; the ways in which empirical political research is carried out; advantages and limitations of the scientific approach in political analysis. Research skills include the development of logical arguments; finding and presenting supporting evidence; and understanding common statistical measures.
Not open to students with credit in POLI 2P81, 299, or 205 hc .
Lectures, seminar, 3 hours per week.

## POLI 2P96

## Leadership development

Good leadership and the ways we can lead well in the politics of everyday life. Class activities draw on personal experience and theories of empowerment to help develop abilities to listen effectively, speak in public, oppose oppression, resolve conflicts, survive criticism, support others, and share visions of a better world.
Enrolment limited to thirty students.
Not open to students with credit in POLI 3V70(374hc).
Seminar, workshop, small groups, 4 hours per week.

## POLI 2V40-2V49

## Government and politics of a selected nation state

The political processes and institutions of a nation state not included among regular departmental offerings. Lectures, seminar, 3 hours per week.

## POLI 3F30

Comparative politics: regimes and political life
Do regimes matter? Different forms of government, their origins, and their effects on people's lives. A comparison of different types, including communist, democratic and traditional regimes, while emphasizing more detailed analyses of advanced democratic systems. Our goal will be to draw conclusions about the capabilities of different regimes to manage conflict and change.
This course is a prerequisite for most fourth year courses in comparative politics.
Lectures, seminar, films, 4 hours per week.

## POLI 3F51

Canadian public administration (also offered as MGMT 3F51) Theory and practice of public administration in Canada. Some of the topics covered will be organization of departments, regulatory agencies, and crown corporations; financial and personnel administration; responsibility and accountability.
Prerequisite: POLI 2F12(212) or
permission of the instructor.
Not open to students with credit in POLI 3P50.
Lectures, seminar, 3 hours per week.

## POLI 3P04

Politics and morality
Contrasting accounts of the extent to which justice or other moral principles can be observed in political life or in the conduct of political leaders and states.
Prerequisite: POLI 2P01(201hc) or POLI 2F90(290) or permission of the instructor.
Seminar, 3 hours per week.

## POLI 3P11

Urban politics and administration Local government and politics in Canada with particular reference to Ontario. Topics include municipal organization, metropolitan and regional government, provincial-municipal relations, elections, councils and councillors, citizen participation, property taxation and municipal finance, selected policy areas, and theories of local government. Not open to students with credit in POLI 350 or 359 hc . Lectures, seminar, 3 hours per week.

## POLI 3P15

## Politics in Ontario

Major aspects of political life in Ontario, including province-building, voting behavior, party systems, policymaking and administrative apparatus.
Prerequisite: POLI 2F12(212) or permission of the instructor. Not open to students with credit in POLI 314hc.
Seminars, 3 hours per week.
POLI 3P16
Politics in Quebec
Quebec's political, social and economic evolution since 1945. Topics to be considered include old and new varieties of nationalism, the Quiet Revolution, the changing roles of church and state, the decline of the anglophone minority, and Quebec's impact on Canadian federalism. Prerequisite: POLI 2F12(212), or permission of the instructor. Lectures, seminar, 3 hours per week.

POLI 3P17
Politics and the mass media in

## Canada

(also offered as COMM 3P17)
The Canadian mass media and their relationship to the political process. Lectures, seminar, 3 hours per week.

## POLI 3P18

Law and politics
Canadian constitutional law, including the division of powers and the protection of civil liberties (both before and after the Charter of Rights). An examination of the court system from both a legal and political perspective, including issues and consequences of their actions.
Not open to students with credit in POLI 231hc.
Lectures, seminar, 3 hours per week.

## POLI 3P19

The Canadian judicial process A continuation of POLI 3P18, with particular emphasis on new developments under the Charter of Rights.
Prerequisite: POLI 3P18 or 231hc.
Lectures, seminar, 3 hours per week.

## POLI 3P24

International politics of the Third

## World

International relations in the Third World (Africa, Asia and Latin America) and international relations between Third World polities and others in the international system. Concerns include the political means and consequences of Third World quests for independence, identity, development, and dignity.
Prerequisite: POLI 2F20(220) (or equivalent) or permission of the instructor.
Not open to students with credit in POLI 375hc taken in 1985/86.
Seminars, 3 hours per week.

## POLI 3 P26

## International law

Principles of international law and their application in international politics. Lectures, seminar, 3 hours per week.

POLI 3P27
International organization
Principles and problems of interna-

## Politics

tional and regional organizations and of their application to international politics. Recommended as preparation for POLI 3P26.
Lectures, seminar, 3 hours per week.

## POLI 3P28

## Canadian foreign policy

The foreign policy formulation process
in Canada; significant factors, both domestic and external, which contribute to the shaping of overall and specific policy objectives.
Prerequisite: POLI 2F12(212) or 2F20(220).
Not open to students with credit in POLI 425 hc .
Seminars, 3 hours per week.

## POLI 3P29

Canadian-American relations
Canadian-American relations from the perspective of international politics. Topics include the management of bilateral relations as an intergovernmental process, trade and transborder business activity, environmental issues, and defence.
Prerequisite: POLI 2F20(220) (or . . equivalent) or permission of the instructor.
Not open to students with credit in POLI 375hc taken in 1985/86. Lectures, seminar, 3 hours per week.

## POLI 3P33

## The state and economic life

An introduction to political economy and the role of the state. Topics include: the development of political economy, especially the ideas of Smith, Marx and Keynes; the current debate among radicals, neo-conservatives, Christians and conservationists; and such policy issues as free trade, population, stagflation, militarism, inequality, multinational corporations, government regulation, and environmental protection.
Lectures, seminar, 3 hours per week.

## POLI 3P40

## Communist political systems

A comparison of selected states which define their systems as MarxistCommunist. This course analyzes the impact of geographical, historical demographic, economic, and cultural
differences on the functioning of state institutions, on political behavior and on ideological variations.
Prerequisite: POLI 3F30(330) or POLI
2P41/2P42(241hc/242hc) which may be taken concurrently, or permission of the instructor.
Lectures, seminar, 3 hours per week.

## POLI 3P43

Politics in the Third World
The comparative study of political institutions and processes of selected developing countries. Topics include such issues as: the nature of traditional societies; the impact of colonialism and neo-colonialism; nationalism; the role of elites, political parties and the military; state-building; and the quests for economic development and national integration.
Prerequisite: POLI 3F30(330) or POLI $2 \mathrm{P} 42 / 2 \mathrm{P} 43$ ( $242 \mathrm{hc} / 260 \mathrm{hc}$ ) which may be taken concurrently, or permission of the instructor.
Not open to students with credit in POLI 338hc.
Lectures, seminar, 3 hours per week.
POLI 3P50
Introduction to public administration
(also offered as MGMT 3P50)
The role of the public sector in the marketplace and the internal operation of government organizations. Special emphasis will be given to comparing public and business administration and to government-business relations
Prerequisite: POLI 1F90(190)
Not open to students with credit in
POLI(MGMT) 3F51 or POLI
351(MGMT 320).
Lectures, seminar, 3 hours per week.

## POLI 3P52

Politics, ethics and public policy Issues of responsible and ethical behavior by elected and appointed government officials, with particular emphasis on the behavior of public servants. Among the topics to be examined are conflicts of interest, political rights of public servants, political neutrality, administrative responsibility, confidentiality/freedom of information, privacy, accountability, and the public interest.

Prerequisite: POLI 3F51(351) (MGMT 3F20) or POLI(MGMT) 3P50 or permission of the instructor.
Not open to students with credit in POLI 375 in 1986/87.
Lectures, seminar, 3 hours per week.

## POLI 3P65

## Introduction to public policy

Major theories, approaches and concepts in the study of public policy. Topics may include the nature of public policy studies, contending theories of the state and public policymaking, the growth of the state and the expansion of the scope of public policy activities, and alternative modes of state intervention.
Prerequisite: POLI 2F12(212) or 3F51(351) or 3P50.
Lectures, seminar, 3 hours per week.
POLI 3P66
Environmental policy, law and administration
Public policies, laws and agencies for the protection and management of the Canadian environments, both natural and man-made.
Not open to students with credit in POLI 352hc.
Lectures, seminar, 3 hours per week.

## POLI 3P71

Gender, sex and politics
Theoretical and practical issues in the relationships among gender, sex and politics, such as sexual equality and its nature and implications for public and private life.
Lectures, seminar, 3 hours per week.

## POLI 3P77

Politics and literature
(also offered as COMM 3P77)
Politics in literature, especially in selected novels and plays with emphasis on political issues and insights drawn from literary works. Some attention is given to the differing expectations of authors, literary critics, and students of politics.
Not open to students with credit in 376hc.
Seminars, 3 hours per week.

POLI 3P81
Studying political participation Theories which attempt to explain political participation, and their application to the study of the political activities of the Canadian public. Students will be introduced to multivariate statistical techniques and the use of the computer in political research, and will employ these tools in their own research papers on political participation in Canada.
Prerequisite: POLI 2P81(205hc) or POLI 299.
Not open to students with credit in POLI 309hc.
Lectures, seminar, 3 hours per week.

## POLI 3P91

Empirical research methods
The statistical analysis of quantitative political data and the use of computers in political research. Topics include central tendency and dispersion; association and correlation; regression and analysis of variance; statistical significance; and the SPSSx computer analysis program.
Prerequisite: POLI 2P80 or 2P81. Not open to students with credit in POLI 3P81.
Lectures, seminar, 3 hours per week.

## POLI 3V00-3V09

Politics and philosophy
(formerly POLI 3P05)
Philosophic issues raised by various questions of immediate importance in contemporary moral and political life. Prerequisite: POLI 2P01 (201hc) or $2 \mathrm{F90}$ (290) or 3P04 or permission of the instructor.
Seminars, 3 hours per week.

## POLI 3V70-3V79

## Special topics in politics

Topics selected from year to year on the basis of instructional expertise and student interest.
Lectures, seminar, 3 hours per week. 1989-90: (3V72) Regional government in Niagara
(also offered as UEST 3V62) The creation and development of regional government in Ontario, with special reference to the Niagara Region. Topics include such general
issues as municipal boundaries and electoral systems and more specific policy areas such as transportation, planning, and economic development. Prerequisite: POLI 3P11 or UEST 2F96.

## POLI 4F99

Honors thesis
A thesis based on individual study and research under faculty supervision.
Topics may come from any field in the discipline and may involve library research, field work, and empirical analysis. The course is open only to students completing the honors program. Students must consult the undergraduate officer about topics, regulations, and a faculty adviser before registration.
Prerequisite: year 4 honors standing, or permission of the instructor.

## POLI 4P01

The philosophy of law
Traditional and contemporary accounts of law and of their implications for issues of contemporary concern.
Prerequisite: year 4 honors standing, or permission of the instructor.
Seminars, 3 hours per week.

## POLI 4P02

Principles of classical political philosophy
An examination of the character of premodern political philosophy through 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. Prerequisite: year 4 honors standing, or permission of the instructor.
Seminars, 3, hours per week.
POLI 4P11
Issues in local government and politics
Selected issues in local government and politics. Topics may include regional and metropolitan government, provincial-municipal relations and theories of local government. Prerequisite: year 4 honors standing with credit in POLI 3P11 (359hc) or permission of the instructor.

Not open to students with credit in POLI 459hc.
Seminars, 3 hours per week.

## POLI 4P14

Federalism in Canada
Aspects of the Canadian federal system. Specific topics will vary from year to year, but may include some of: social diversity and federal institutions; federalism and the party system; the role of the courts; federal-provincial financial relations; federalism and the policy process; the evolving role of provincial authorities; and intergovernmental relations.
Prerequisite: Year 4 honors standing or permission of the instructor. Seminars, 3 hours per week.

## POLI 4P15

Canadian political economy 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. Selected issues may include foreign investment, regional development, the labor movement, resources, and Canada's place in the new international economic order.
Prerequisite: year 4 honors standing or permission of the instructor.
Not open to students with credit in POLI 413hc in 1986/87.
Seminars, 3 hours per week.

## POLI 4P20

International political, legal and organizational processes
A study of international phenomena in light of their relationship to theories of international relations. Seminar topics may include 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 co-ordinating international relations; and the difficulties of organizing effective international action.
Prerequisite: year 4 honors standing and one full course in international relations, or permission of the instructor.
Seminars, 3 hours per week.

## POLI 4P22

Foreign policies of the great powers Factors shaping the foreign policies of selected major powers along with the techniques adopted to achieve policy goals.
Prerequisite: year 4 honors standing, or permission of the instructor.
Seminars, 3 hours per week.
POLI 4P26
International politics and national security
Threat and the use of armed forces, 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.
Prerequisite: POLI 2F20(220) (or equivalent) and year 4 honors standing, or permission of the instructor.
Seminars, 3 hours per week.

## POLI 4P27

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.
Prerequisite: year 4 honors standing, or permission of the instructor.
Not open to students with credit in POLI 325hc.
Seminars, 3 hours per week.

## POLI 4P32

Comparative mass media (also offered as COMM 4P32) A critical examination of selected problems concerning the mass media and the political process in Canada and other states.
Prerequisite: POLI 3F30(330) and year
4 honors standing, or permission of the instructor.
Not open to students with credit in
POLI 435hc taken between SE 1979
and WE 1982.
Seminars, 3 hours per week.
POLI 4P33
Comparative federalism
The theory and practice of federalism as a system of government. Though
emphasis will be upon the United

States, Canada, and Australia, other applications of the federal principle may also be considered.
Prerequisite: year 4 honors standing with POLI 2F12 or 2P46 or permission of the instructor.
Seminars, 3 hours per week.

## POLI 4P38

National integration and separatism A comparative examination of national integration and separatism in multinational states of Europe, Africa and Asia. Topics include the sources of group identity, methods of political integration, and the dynamics of separatist movements.
Prerequisite: POLI 3F30(330) and year 4 honors standing or permission of the instructor.
Seminars, 3 hours per week.
POLI 4P39
Elites and power
The basis of power and of the degree of power concentration in government, industry, bureaucracy and the media in Canada, the United States and other selected countries and an analysis of the characteristics, life styles, interrelationships and actions of the individuals in senior positions of power.
Prerequiste: POLI 3F30(330) and year 4 honors standing or permission of the instructor.
Seminars, 3 hours per week.

## POLI 4P40

Problems of communism
Through assigned reading, research design, and research paper, the course explores problems in the field of communist studies.
Prerequisite: POLI 3F30(330) and year 4 honors standing, or permission of the instructor.
Lectures, tutorial, seminar, 3 hours per week.

## POLI 4P43

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.

Prerequisite: POLI 3F30(330) and year 4 honors standing, or permission of the instructor.
Not open to students with credit in POLI 461hc.
Lectures, tutorial, seminar, 3 hours per week.

## POLI 4P45

## Western European politics

A comparative study of political institutions and processes of selected states in Western Europe.
Prerequisite: POLI 3F30(330) and year 4 honors standing, or permission of the instructor.
Not open to students with credit in POLI 417hc.
Seminars, 3 hours per week.

## POLI 4P50

## Machinery of government

An advanced treatment of the struc-
tures 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. Prerequisite: POLI(MGMT)3F51 or POLI 351 or MGMT 320 or POLI(MGMT) 3P50 and year 4 honors standing.
Seminar, 3 hours per week.

## POLI 4P51

Public administration theory
Selected major issues in the theory of public administration.
Prerequisite: year 4 honors standing, or permission of the instructor.
Seminars, 3 hours per week.

## POLI 4P52

Personnel and financial administration in the public sector (also offered as MGMT 4P52)
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. Prerequisite: POLI(MGMT)3F51 or POLI 351 or MGMT 320 or POLI(MGMT) 3P50 and year 4 honors
standing, or permission of the instructor.
Not open to students with credit in POLI 448 hc or 452 or 454 hc . Seminars, 3 hours per week.

POLI 4P53
Comparative public administration
The theory of comparative public administration and a comparative analysis of administrative processes, institutions and problems in selected states.
Prerequisite: year 4 honors standing, or permission of the instructor.
Lectures, seminar, 3 hours per week.

## POLI 4P54

Business-government relations
(also offered as MGMT 4P54)
The management of relations between business organizations and governments in Canada. Special emphasis is placed on current problems in businessgovernment relations, the legislative and regulatory environment of business, government promotion of private enterprise, public enterprise, and the means by which business organizations influence government decision making. Prerequisite: POLI(MGMT) 3F51 or POLI 351 or MGMT 320 or POLI(MGMT) 3P50 and year 4 honors standing, or permission of the instructor.
Not open to students with credit in POLI 449 he or 452.
Seminars, 3 hours per week.

## POLI 4P65

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.
Prerequisite: year 4 honors standing, or permission of the instructor.
Not open to students with credit in POLI 412hc.
Seminars, 3 hours per week.
POLI 4V00-4V09
Selected problems in political philosophy
(formerly POLI 4P03)
A particular writer, work or theoretical problem in political philosophy will be
carefully examined.
Prerequisite: year 4 honors standing, or
permission of the instructor.
Seminars, 3 hours per week.
1989-90: (4V04) Justice in the modern world
A consideration of how contemporary political thinkers view the quest for justice in contemporary Western political communities. Readings from
John Rawls, George Grant, Alisdair MacIntyre and others.

## POLI 4V10-4V19

Issues in Canadian politics
A course structured by a faculty member having specialized interest in an area within the discipline, normally offered on an experimental basis.

1989-90: (4V14) Public policy: advice and processes
(also offered as MGMT 4V94)
Public policy advice and implementation. The central focus will be on a variety of institutions with significant policy-oriented interests, activities and/ or mandates; as well as on key processes of policy making. Prerequisite: restricted to year 4 students.
Seminars, discussion, guest lecturers, 3 hours per week.

1989-90: (4V17)
Public policy: key current issues (also offered as MGMT 4V97)
Key current policy issues, including the development and implementation of the Canada-U.S. Free Trade Agreement, government deficit reduction, tax reform, monetary policy and exchange rate management.
Prerequisite: restricted to year 4 students.
Seminar, discussion, guest lecturers, 3 hours per week.

POLI 4V20-4V29
Selected problems in international relations
Selected problems and issues drawn -from both the system and nation-state levels of international politics.
Prerequisite: year 4 honors standing or permission of the instructor. Seminars, 3 hours per week.

POLI 4V30-4V39
Selected problems in comparative politics
A comparative study of selected political institutions, processes or policies in various states.
Seminar, 3 hours per week.

## POLI 4V70-4V79

## Politics tutorial

Guided readings on a particular topic which is not covered in the department's regular course offerings. Topics must be chosen in consultation with a faculty member willing to supervise the tutorial. Further information is available from the undergraduate officer. Prerequisite: year 4 honors standing, or permission of the instructor.

## Pre-professional Studies for the Health Sciences

Brock University offers a selection of courses which meet the admission requirements for various professional schools in the health sciences. Through the careful choice of electives each student's program can be designed to meet the requirements of a specific professional school or schools, and to provide a thorough education in areas essential to the intended profession. Students successfully completing this program will receive a BSc degree in general studies. The basic recommended courses for all students are:

## Year 1

BIOL 1F90; CHEM 1F85 or 1F93;
PSYC 1F90; MATH 1P97/1P98; one
humanities context credit.
Year 2
BIOL 2F01; one credit from BIOL 2 P 90 , 2P91, or 2 P 98 ; PHYS 1F20 or 1F90; CHEM 2P20/2P21; one elective credit.

## Year 3

Two credits from: BCHM 3P01, 3P02, BIOL 2P90, 2P91, 2P98 (if not taken in year 2), BIOL 3P22, 3P23, 3P28, 3P34, 3P35, 3P42, 3P49, 3P50, 3P51; three elective credits.

Four elective credits are provided. In choosing them students should be familiar with the admission requirements of the intended professional school. A course pattern for years 2 and 3 must be approved by Professor D.J. Ursino, department of Biological Sciences, the designated faculty adviser, prior to registration for year 2. The following are examples of recommended electives for specific professional schools.

## Dentistry and Medicine:

The basic course requirements for entry into medicine and dentistry can be fulfilled in two years and application to most Ontario medical and dental
schools may be made during the second or third year. Students in their third year should consider choosing their electives from the biology courses listed as year 3 options, BIOL 2F03, CHEM 2P98, 3P20 and 3P21. Year 2 and year 3 psychology courses are also recommended.

## Physiotherapy, Occupational Ther-

 apy, Rehabilitation Therapy: The basic course requirements for entry into most physical therapy schools are fulfilled in the first year. Students in their second and third years should consider choosing their electives from PHED 1P92, 1P94 for year 2, and PHED 2P02, 2P03, 2P04, 2P70, 2P97, $3 \mathrm{P} 04,3 \mathrm{P} 90$ and 3P92 for year 3 .
## Canadian Memorial Chiropractic College.

The basic course requirements for entry into CMCC are fulfilled in the first two years of the program. Students completing the three year program should consider choosing their electives from PHED 1P92, 1P94 for year 2, and PHED 2P02, 2P03, 2P04, 2P05, 2P70, $2 \mathrm{P} 97,3 \mathrm{P} 04$ and 3 P 90 for year 3 . Second and third year psychology courses and the biology courses listed as year 3 options are also recommended.

## Psychology

Officers of instruction

Chairperson
Robert D. Ogilvie
Professors
Jack R. Adams-Webber
John G. Benjafield
Harry T. Hunt
John J. Lavery
Daniel S. Lordahl
Robert D. Ogilvie
Edward W.G. Pomeroy
Joan M. Preston
Stanley W. Sadava
Sidney J. Segalowitz
Paul D. Tyson
Associate professors
Kathryn Belicki
David DiBattista
Nancy Johnston
John Mitterer
Linda Rose-Krasnor
Martin S. Smith
Assistant professors
H. Willard Bradley

Jane Dywan
Darla MacLean
Peter Ramm
Dawn E. Witherspoon

General information

## Mackenzie Chown complex B325

## General prerequisites

Psychology 1F90 or permission of the instructors is a prerequisite for all courses in the department of Psychology. For all year 3 courses (PSYC 3(alpha)00-3(alpha)99), three credits in psychology beyond PSYC 1F90, third year standing, or permission of the instructor are required. For all year 4 courses (PSYC 4(alpha)004(alpha)99), admission to year 4 or permission of the instructor and chairperson is required. See also addi-
tional prerequisites with course descriptions. The department believes that a broadly based liberal arts background is particularly appropriate in conjunction with a major in psychology, and accordingly does not encourage students to take more than three psychology courses in year 2 or 3 . It is recommended that honors students acquire some background in philosophy, sociology, biology or mathematics as part of their undergraduate program.

## Pass program

Pass students are required to take PSYC 1 F90, 2F23, and five other credits in psychology, three of which should be at the year 3 level.

Year 1
PSYC 1F90, one humanities and one science context credit; two elective credits.

Year 2
PSYC 2F23; two credits in psychology numbered 2(alpha)00-2(alpha)99; two elective credits.

Year 3
Three credits in psychology numbered 2(alpha)90-3(alpha)99; two elective credits.

Note:
PSYC 3F40 is required in an honors degree in psychology and should be taken in year 3 .

## Honors program

Honors students are required to take PSYC 1F90, 2F23, 3F40, 4P92, 4P93, two additional year 4 credits in psychology.

## Years 1 and 2

As in pass program.
Year 3
PSYC 3F40, two credits in psychology numbered 2 (alpha)90-3(alpha)99; two elective credits.

Year 4
(Note which courses can be taken for year 4 credit.)
PSYC 4P92/4P93; two credits in psychology numbered 3P82 or higher, excluding PSYC 3P88, 3P89; two elective credits.

## Note:

1.) Students may apply to do an intensive individual study in any of the areas described in 4F01, 4F02 and 4F03 if they have already shown particular competence in the area. The subject of study must be chosen in consultation with a faculty member before registering in year 4. Permission of the chairperson and the faculty member is required.
2.) Students planning to undertake graduate studies in psychology are urged strongly to take PSYC 4F91. 3.) PSYC 3P88 and 3P89 cannot be taken for year 4 credit.

## Entrance into honors psychology for students with a pass BA in Child Studies

For the purpose of completing the honors program in psychology, the following courses may be included as psychology credits toward the 7 needed to enter the honors program: CHST 2F10, 3F96, 3P11, 3P23, 3P56, 3P78, 3P84, 3P88, 3P89.

Psychology 1F90 and 2F23 are required.

Year 4
PSYC 3F40, 4P92/4P93; 2 credits at the year 4 level in psychology (see above); one elective credit.

## Combined major programs

Students may take a combined major in psychology and a second discipline. The requirements in psychology for a pass combined major are: PSYC 1F90, 2F23; three other credits in psychology, one in year 2 and two in year 3. The requirements in psychology for an honors combined major are: PSYC 1F90, 2F23, 3F40, 4P92/4P93, three

## Psychology

other credits in psychology, one of which will be a year 3 credit and one a year 4 credit (see above). For requirements in the other discipline, the student should consult the relevant department. It should be noted that not all departments provide a combined major option. All combined major students should consult with the chairperson to avoid duplication of courses.

## Description of courses

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

## PSYC 1F90

Introduction to psychology
Basic concepts and contemporary issues in psychology with special attention to learning, physiological, developmental, clinical and social psychology.
Prerequisite to all courses in psychology.
Lectures, seminar, 3 hours per week.

## PSYC 2F12

## Life-span development

An introduction to the conceptual bases of life-span development, a survey of relevant research, and an overview of methodological issues. Topics illustrating life-span developmental research and theory will be drawn from the following areas: intellectual, moral, personality, physiological, sexual, and social development.
Lectures, seminar, 3 hours per week.

## PSYC 2F23

## Research design

Principles of experimental design, systematic assessment and data analysis will be dealt with in the context of psychological research. Lectures, tutorial, 4 hours per week.

## PSYC 2F25

Dynamics of personality
Basic concepts and contemporary issues in personality theory and research including intrapersonal and interpersonal dynamics of coping,
defence, growth, and self-actualization. Lectures, seminar, 3 hours per week.

## PSYC 2F30

An introduction to social psychology
Theories, research and issues of contemporary social psychology; topics such as person perception, group structure and dynamics, aggression, altruism, social attitudes, conformity, obedience and prejudice.
Lectures, seminar, 3 hours per week.

## PSYC 2F35

Motivation
Focus on principles of change in activity; topics include: achievement, intrinsic motivation, work satisfaction, personal causation, meaning and purpose, curiosity and exploration, social and biological motives. Lectures, seminar 3 hours per week.

## PSYC 2F36

Physiological psychology
(formerly PSYC 2F98)
Biological aspects of behavior; the functional activities of the neuron and the interrelationships among neural systems (brain organization). Special topics will include the psychobiology of sensory and motivational systems, emotion and affect, learning, memory, language and consciousness.
Prerequisite: PSYC 1F90.
Not open to students with credit in PSYC 2F98.
Lectures, labs, 4 hours per week.

## PSYC 2F45

## Learning

A presentation of variables and/or conditions which contribute to the leaming process including a survey of the basic experimental findings and theoretical issues related to learning. An emphasis will be placed on learning in nonhuman animals.
Not open to students with credit in PSYC 335.
Lectures, seminar, 3 hours per week.
PSYC 2F85
Psychology of personal development
Practical applications of areas of psychology which have relevance to personal development. Interpersonal communication, personal change
processes, problem-solving/decisionmaking strategies and life/career planning will each be explored through conceptual and experiential methods. Small group activities are an integral part of the course and successful completion requires active participation.
Enrolment limited to seventy students. Lectures, 1 hour per week; small group lab, 2 hours per week.

## PSYC 2F90

## Cognition

The acquisition and utilization of knowledge; theories of memory, problem solving and creative thinking; language and thought.
Lectures, seminar, 3 hours per week.

## PSYC 2F91

## Perception

After grappling with some of the theoretical problems of seeing and hearing, the actual mechanisms are discussed. Once the basic problems of pattern recognition, memory, and attention have been discussed, the horizon will broaden to include the influence of culture, motivation, personality, and pathology on perception.
Lectures, seminar, 3 hours per week.

## PSYC 2F95

Applied psychology
An introduction to the application of psychology in business and industry. Modern techniques of psychological record processing on computer systems will be stressed. Computer problems will be individually suited to the student's computer knowledge. Prerequisite: admission limited to 20 students, to be determined by academic standing.
Lectures, lab, 4 hours per week.

## PSYC 2F97

Experiential psychology
Subjective experience (altered states of consciousness) and methods as an alternate way of 'doing' psychology. Phenomena of dreams, psychedelic drugs, hypnosis, schizophrenia, religious mysticism, and the eastern meditative traditions serve as the focus of discussion. Orienting conceptual
frameworks come from the introspective and phenomenological traditions of psychology, social science and psychiatry, as well as holistic-constructivist approaches to cognition and symbol formation.
Lectures, seminar, 3 hours per week.

## PSYC 2P94

Introduction to psychological measurement
(formerly PSYC 3P15)
Measurement principles and techniques, with particular emphasis on issues in the construction, administration and evaluation of tests and other assessment tools. Treatment of reliability and validity concepts, and the role of evaluation in experimental, educational and observational contexts. Prerequisite: PSYC 2F23(223) recommended.
Not open to students with credit in PSYC 330 or 3P15.
Lectures, lab, seminar, 3 hours per week.

## PSYC 3F08

## Psychology of language

(also offered as APLI 3F08 and COMM 3F08)
Psychological processes involved in language including the study of meaning, language development in children, language and thought, listening, as well as special interest topics such as bilingualism and written language.
Lectures, seminar, 3 hours per week.

## PSYC 3F10

## Psychology of television

(also offered as COMM 3F10)
Psychological aspects of the visual, auditory and content dimensions of television will be examined. The applicability to television of several psychological theories, such as cognitive and information processing, perceptual and attentional theories, social learning, interpersonal communication, mass communication and developmental perspectives will be evaluated.
Lectures, seminar, 3 hours per week.

## PSYC 3F17

Child development
(formerly PSYC 2F10)
Theories and research on the normal development of children ages 2-12 years; topics include cognitive, language, social, emotional, moral and physical development as well as
Canadian contributions to child psychology.
Prerequisite: PSYC 2F12 or third year standing.
Not open to students with credit in PSYC(CHST) 2F10(210).
Lectures, seminar, 3 hours per week.

## PSYC 3F20

Psychopathology
Major theories which have been developed to explain aberrant behavior are considered and evaluated. Emphasis is upon integration of contemporary research findings with theory in formulating a nosological system and biosocial model of psychopathology. Lectures, seminar, 3 hours per week.

## PSYC 3F40

Psychological research
A laboratory and lecture course in which students are exposed to research methods in several areas of psychology; emphasis is placed on developing the student's capacity to evaluate psychological hypotheses through participation in group and individual research projects.
Prerequisite: PSYC 2F23(223).
Lectures, lab, 5 hours per week.

## PSYC 3F45

## Comparative psychology

A lecture and laboratory course in problems of experimental method and research findings in comparative animal behavior; emphasis will be placed on the mechanisms of behavior pattern in infrahuman species.
Not open to students with credit in PSYC 240.
Lectures, seminar, lab, 3 hours per week.

PSYC 3F46
The psychology of eating (formerly PSYC 2F93)
Biological and environmental factors
influencing food consumption in
animals and in humans, both theoretical and applied issues. Topics discussed will include physiological control of food intake; the nature and importance of taste and smell; biological, social and cultural factors influencing the choice of foods; the effects of food upon behavior; abnormal foodrelated behaviors, such as overeating, anorexia nervosa and bulimia.
Not open to students with credit in PSYC 2F93.
Lectures, seminar, 3 hours per week.

## PSYC 3F49

## Directed readings

A readings course on a topic not included in the regular course offerings of the department. Topic and readings to be chosen in consultation with a faculty member who is willing to supervise the student.
Prerequisite: third year standing and permission of the instructor. Seminars, 3 hours per week.

## PSYC 3F55

Perception and consciousness Language shapes our attention, memory, and self-concept. Western approaches to consciousness, ranging from hemispheric modes to altered states, are also shaped by language and clarify the limits of language. The second half will shift the cultural and linguistic perspective to non-western conceptions of psychology. These more developed traditions include Buddhism, Yoga, Taoism, Sufism, and aspects of North American Indian culture.
Lectures, seminar, 3 hours per week.

## PSYC 3F91

Neuroscience
The central nervous system. First term treats neurophysiology and neurochemistry, and the neurochemical bases of mental illness. Second term topics include visual neurophysiology, and human neuropathology including epilepsy, migraine, infarct and neoplasm. Emphasis is on physiological causes of neuropathology, rather than on functional disabilities of patients. Lab topics include surgery, histology and autoradiography.
Prerequisite: PSYC 2F98(298). Lectures, lab, 3 hours per week.

## PSYC 3F96

Psychology of the exceptional child (also offered as CHST 3F96)
An integration of theoretical, experimental and clinical approaches to the development of the child with special problems, i.e. the child who is mentally retarded, perceptually handicapped, etc. In a survey of current research on cognitive stimulation, attention will be given to the progress of the gifted child. Students will be required to fulfil a prearranged practicum working with an atypical child. Field trips will be arranged.
Enrolment to be limited to 80 students. If restriction becomes necessary, this will be made on the basis of overall average.
Not open to students with credit in PSYC(CHST) 300.
Lectures, seminar, 3 hours per week.

## PSYC 3F97

Personality assessment and research Current issues in the general areas of individual social development, interpersonal communication, person perception, friendship formation, personality change, implicit personality theory, schizophrenia, neurosis, marital, individual and group therapy, perception of the environment, professional training and role playing. Assessment will be on the basis of individual contracts.
Lectures, seminar, 3 hours per week.
PSYC 3P11
Theories in developmental psychology
(also offered as CHST 3P11)
(formerly part of PSYC(CHST)3F11)
Current theories in developmental psychology and recent controversies and evidence concerning them. The student will study human development from an integrated approach.
Prerequisite: PSYC(CHST) 2F10(210)
or PSYC 2F12 or permission of the instructor.
Not open to students with credit in PSYC(CHST) 3F11.
Lectures, seminar, 3 hours per week.
PSYC 3P16

## Infant development

The development of infants from the
pre-natal period through the second year of life. Major topics to be considered will be perception, cognition, attachment and social development. Additional topics of special interest, including at-risk infants and infant intervention programs, will be included.
Prerequisite: PSYC(CHST) 2F10(210)
or PSYC 2F12, or permission of the instructor.
Lectures, seminar, 3 hours per week.

## PSYC 3P18

Adolescent development
Theories and methods of life-span development as they apply to the special issues that emerge during adolescence. Topics include thinking processes, identity formation, physiological change, sexuality and sex roles, family and peer relationships, schooling, vocational choices and moral development.
Prerequisite: PSYC(CHST) 2F10(210) or PSYC 2F12 or permission of the instructor.
Not open to students with credit in PSYC 2F96 or 387 hc . Lectures, seminar, 3 hours per week.

## PSYC 3P19

Special topics in adolescent development
Discussion of those factors that provide special challenges for adolescents, their families and educators during the transition from childhood to adulthood. Topics include abnormal development, special problems of the handicapped adolescent, school, pregnancy and parenting, substance abuse, delinquency, and mental health.
Prerequisite: PSYC 3P18 or permission of the instructor.
Not open to students with credit in PSYC 2F96 or 387 hc .
Lectures, seminar, 3 hours per week.

## PSYC 3P23

Psychology of parenting
(also offered as CHST 3P23)
The determinants, varieties and
consequences of parenting. Motiva-
tions for becoming a parent, individual differences in parenting styles, and the effect of parents on children's development. Focusing primarily on research
and theory, although applied topics such as the effectiveness of different disciplinary techniques will also be considered.
Lectures, seminar, 3 hours per week.

## PSYC 3P39

## Intermediate statistics

Complex analysis of variance designs, including three or more independent
variables. Special tests following ANOVAs are considered in detail. Special case designs and repeated measures, including violations of assumptions. An introduction to multivariate designs. Optional topics allow students to study their particular research designs.
Prerequisite: PSYC 2F23(223) or equivalent
Lectures, seminar/tutorial, 3 hours per week.

## PSYC 3P41

## Computer data analysis

A hands-on introduction to computer packages for analyzing psychological data. The theory of advanced techniques will be explained in lectures and packages such as SPSS will be used in labs.
Prerequisite: PSYC 2F23(223), 3P39 or permission of the instructor.
Lectures, 2 hours per week, lab, 2
hours per week.

## PSYC 3P56

## Biological perspectives in developmental psychology

(also offered as CHST 3P56)
Current research on the role of biological factors in psychological development. Topics include the role of genes and early biological environment in normal and abnormal development, and developmental neuropsychology. Lectures, seminar, 3 hours per week.

## PSYC 3P60

## Conflict and development

(also offered as CHST 3P60)
An overview of the role of conflict in early human development, including the causes, types and phases of conflicts. Particular attention will be focussed on cognitive and social strategies used to resolve conflicts. Students' participation in labs and
research projects will permit a detailed analysis of the positive as well as negative outcome of conflicts. Prerequisite: CHST 2F20 or permission of the instructor.
Lectures, seminar, 3 hours per week.

## PSYC 3P62 <br> Brain laterality, development and implications for learning

 (also offered as CHST 3P62)Research data and theory based on normal, learning disabled and brainaltered subjects will be discussed in the context of the developing child. An exploration of differences in cognitive function between the two hemispheres of the brain, theories of how lateralized functioning develops and the educational implications of these findings. Other topics may include individual differences in brain organization and laterality implications for music, art, math and language. No background in physiology is required.
Lectures, lab/seminar, 3 hours per week.

## PSYC 3P67

## Human psychophysiology

The effects of psychological events upon physiological activity will be examined as a research strategy in psychology. Historical through to current issues and experiments will be studied in lectures and demonstrated in weekly labs. Several autonomic and higher neural systems will be recorded. Experiments encouraged in lieu of essays.
Prerequisite: PSYC 2F36, 2F98 or permission of the instructor.
Not open to students with credit in PSYC 2F98 taken before September, 1988.

Lectures, 2 hours, lab 2 hours per week.

## PSYC 3P68

## Sleep and wakefulness

The functions, mechanisms, rhythms, physiology, and psychology of sleep will be contrasted with counterparts during wakefulness. Current issues in sleep and dream research will be raised in lecture/seminar and labs. Experimentation encouraged
Prerequisite: PSYC 2F36 or permission
of the instructor. PSYC 3P77 recommended.
Not open to students with credit in PSYC 2F98 taken before September, 1988.

Lecture/seminar 2 hours, lab 2 hours per week.

## PSYC 3P77

Evolutionary bases of human behavior
(formerly PSYC 3P22)
How evolution shaped human thought and behavior. Specific topics to be examined include the evolution of altruism, aggression, sexuality, consciousness, the family as an adaptive system, and the interaction of biology and culture.
Prerequisite: PSYC 2F23; may be taken concurrently
Not open to students with credit in
PSYC 3F30 or 3P15 or 3P22.
Lectures, seminar, 3 hours per week.

## PSYC 3P78

## Nature, nurture and human

 development(also offered as CHST 3P78)
The interaction of genetic and environmental influences on human development. Topics to be examined include biosocial determinants of morphology, personality and intelligence; family, twin and adoption studies; the plasticity of human development.
Lectures, seminar, 3 hours per week.

## PSYC 3P80

Psychology of interpersonal behavior The social psychology of interpersonal attraction and relationships, as studied through experimental, correlational and longitudinal designs. Reinforcement, exchange, attributional, equity and balance models. Levels of relationships. Aspects of the maintenance and dissolution of relationships, and of interpersonal psychopathology.
Prerequisite: PSYC 2F30(230) recommended.
Not open to students with credit in PSYC 3F96.
Lectures, seminar, 3 hours per week.
PSYC 3P81
Health psychology
Psychological aspects of health and
illness. The prevention and treatment of illness and the maintenance of wellness. The behavioral and social factors that play a role in the etiology of health and illness. Contributions from scientific investigation and from professionals in the health care system will be reviewed.
Not open to students with credit in PSYC 3F95.
Lectures, seminar, 3 hours per week.

## PSYC 3P82

Psychology of the arts
(also offered as FINA 3P82)
Psychological responses to art. Topics
include: color, form, motion, rhythm, space and their relationships; proportion and balance; empathy and aesthetic distance; abstraction and symbols. The relation of aesthetic behavior to other aspects of psychological functioning will also be considered. May be taken as a third or fourth year course.
Lectures, seminar, 3 hours per week.

## PSYC 3P83

Adult development
(formerly PSYC 3P93)'
Focus will be on theories and methods of life-span development as they apply to the special issues that emerge during the adult years. Topics include physiological, cognitive, sexual, social and moral development as related to the tasks of young adulthood and middle age.
Prerequisite: $\operatorname{PSYC}(\mathrm{CHST}) 2 \mathrm{~F} 10(210)$
or PSYC 2 F 12 or third year standing, or permission of the instructor. Not open to students with credit in PSYC 3F91 or 3P93.
Lectures, seminar, 3 hours per week.

## PSYC 3P84

Advanced topics in social development
(also offered as CHST 3P84)
Social competence, aggression, friendship and other topics in social development will be examined from a variety of developmental perspectives. Methodological and training issues relevant to the study of social development will also be examined.
Prerequisite: PSYC(CHST) 2F10(210) or 2F12.

Not open to students with credit in CHST 392 or PSYC(CHST) 383. Lectures, seminar, 3 hours per week.

## PSYC 3P85 <br> Theories of personality: Freud and Jung

Major clinically derived theories of personality with special attention to their bases in case study/life history methodology. The focus will be on Freud and Jung and their continuing relevance for current personality, developmental, and transpersonal psychology. The possibly unique relation of "depth psychology" to numinous experience (mysticism, creativity, psychosis) will be studied through selected life histories.
May be taken as a third or fourth year credit.
Not open to students with credit in PSYC 390.
Lectures, seminar, 3 hours per week.

## PSYC 3P86

Theories of personality: developments in psychodynamic and transpersonal psychology
Major developments in the psychoanalytic traditions will be considered, along with problems of research operationalization. Topics to be covered will be selected from among: Sullivan and Kelly's interpersonalcognitive perspective; British psychoanalysis from Melanie Klein to Winnicott; Hillman's archetypal psychology; and holistic-organismic approaches.
The possibly unique relation of depth psychologies to numinous experience will also be considered.
May be taken as a year 3 or year 4 credit.
Not open to students with credit in PSYC 390.
Lectures, seminar, 3 hours per week.

## PSYC 3P88

The psychology of reading
(also offered as CHST 3P88)
Psychological processes involved in beginning and skilled reading. Current theories of reading will be presented and evaluated in the light of current research findings. Theories of reading disability and prospects for remediation will also briefly be considered.

Recommended background: PSYC $2 \mathrm{~F} 90(290)$ or $3 \mathrm{~F} 08(308)$ or 3 F 11 (311) or 3P11.
Prerequisite: PSYC 1F90(190), and one of PSYC 2F23(223) or MATH
1F92(192) or SOCI 2F10(230) (may be taken concurrently).
Lectures, seminar, 3 hours per week.

## PSYC 3P89

Psychology of computers in education
(also offered as CHST 3P89)
Current and potential uses of computers in education will be carried out in light of current theories of child development. The emphasis is upon putting the use of computers in education on firm theoretical and empirical footing. Recommended background: PSYC 2F90(290) or 3 F 08 (308) or 3 F 11 (311) or 3P11.
Note: This is not a computer programming course.
Prerequisite: PSYC 2F23(223) or
MATH 1F92(192) or SOCI 2F10(230)
(may be taken concurrently).
Lectures, seminar, 3 hours per week.

## PSYC 3P90

## Psychogerontology

Focus will be on the debilitating conditions that occur in old age and the implications these have for personal coping and for the care of the unwell elderly. Topics may include the dementia and other physiological factors that affect cognitive and personality functioning, personal and community support systems, institutionalization, and palliative care. Prerequisite: PSYC 3P94 or permission of the instructor.
Lectures, seminar, 3 hours per week.

## PSYC 3P92

## Drugs and behavior

(formerly part of PSYC 3F92)
Basic principles of drug action and the effects of psychoactive drugs on behavior and experience. Focus on recreational drugs and the use of drugs in psychiatry.
Not open to students with credit in PSYC 299 or 3F92.
Lectures, 3 hours per week.

## PSYC 3P94

The psychology of aging
Focus will be on theories and methods of life-span development as they apply to the special issues that emerge during late adulthood; how physiological, social and cognitive factors interact as individuals cope with the tasks of later years.
Prerequisite: PSYC(CHST) 2F10(210) or PSYC 2F12 or third year standing, or permission of the the instructor. Lectures, seminar, 3 hours per week.

## PSYC 3P95

## Stress

(formerly part of PSYC 3F95)
Examination of stress in terms of occupations, environments, life events; methods of appraisal, coping strategies and health factors. Emotion is viewed both as part of the stress response and as a separate source of motivation.
Cognitive and behavioral factors in the experience and expression of specific emotions are also explored.
Not open to students with credit in
PSYC 3F95(395) or 350.
Lectures, seminar, 3 hours per week.

## PSYC 3P98

## Neuropsychology I

The principles of brain-behavior relations as they relate to clinical neuropsychological syndromes. Topics include disorders of language, attention, spatial skills, and memory; other selected issues such as closed head injury, epilepsy and developmental disorders.
Lectures, seminar, 3 hours per week.

## PSYC 3P99

Neuropsychology II
The principles of brain-behavior relations as they relate to cognitive neuroscience; empirical issues in the study of higher cortical functions and dysfunctions.
Prerequisite: PSYC 3P98 or permission of the instructor.
Lectures, seminar, 3 hours per week.

## Note:

The topics discussed each year in 4 F 01 , 4 F 02 , and 4F03 will vary.

PSYC 4F01
Issues in personality, social and developmental psychology
Analysis of special problems such as behavior change, social attitudes, social communication, etc.
Prerequisite: admission to year 4 and permission of the instructor.
Directed readings, to be arranged in advance with appropriate faculty.

## PSYC 4F02

Special problems in comparative and physiological psychology
How some brain functions relate to behavior and subjective experience. Prerequisite: admission to year 4 and permission of the instructor. Directed readings; to be arranged in advance with appropriate faculty.

## PSYC 4F03

Advanced seminar in learning, thinking, cognition and consciousness Special topics in these areas will be discussed each year.
Prerequisite: admission to year 4 and permission of the instructor.
Directed readings, to be arranged in advance with appropriate faculty.

## PSYC 4F50

Introduction to clinical psychology Issues in assessment techniques, major theories of psychotherapy, and research findings concerning treatment strategies for specific disorders.
Lectures, seminar, 3 hours per week.

## PSYC 4F70

Introduction to cognitive science (also offered as COSC 4F70)
The use of computers in the creation of models of human information processes. Such computer models are examined from a computational, psychological and philosophical perspective in order to emphasize the interdisciplinary nature of cognitive science. (Knowledge of LISP assumed.)
Prerequisite: permission of the instructor.
Not open to students with credit in COSC 3V90 or 4V90(1987-88). Lectures, 3 hours per week, lab, 1 hour per week.

PSYC 4F91
Thesis tutorial
A research project carried out with a faculty adviser. Students must consult the chairperson regarding both their program and an adviser before registration week.
Prerequisite: PSYC 3F40(340).

## PSYC 4P20

## Emotion

Theories of emotion in psychology. Emphasis on emotions as a source of motivation and adaptation.
Prerequisite: year four standing or permission of the instructor. Lectures, seminar, 3 hours per week.

## PSYC 4P21

Psychology of addictive behavior
Theory and research on substance use. Focus on psychopharmacological cognitive, psychodynamic and social psychological models, and on longitudinal research. Implications for treatment and prevention. Prerequisite: PSYC 3F92(392) or 3P92 and fourth year standing. Lectures, seminar, 3 hours per week.

PSYC 4P22
Advanced seminar in human memory
Historic and current ideas about memory and the implications these have for our approach to memory in research, in medical and in legal contexts. Topics to be covered include hypnosis and memory, eyewitness testimony, varieties of memory disorders and the question of rehabilitation. Students will be introduced to various clinical and experimental tools used in the assessment of memory. Prerequisite: admission to year 4 in psychology.
Lectures, seminar, 3 hours per week.
PSYC 4P31
Treatment alternatives for children and adolescents: dynamic therapies (also offered as CHST 4P31)
The theoretical background, research and evaluation of current therapeutic ${ }^{\circ}$ approaches to emotionally and behaviorally disturbed children and adolescents. All students will participate in a
practicum placement. Major topics: a) play therapies, including non-directive, expressive and Gestalt approaches; b) group methods, including use of modelling, goal setting and evaluation methods.
Prerequisite: PSYC 2F12; admission to year 4 in psychology.
Lectures, seminar, 3 hours per week.

## PSYC 4P32

Treatment alternatives for children and adolescents: cognitive and behavioral approaches
(also offered as CHST 4P32)
Behavioral theory and techniques will be presented. Social skills training, cognitive theories, contingency management and relaxation will be included in this section. All students will participate in a practicum placement. Prereqisite: PSYC 2F12; admission to year 4 in psychology.
Lectures, seminar, 3 hours per week.

## PSYC 4P56 and 4P57

These are human relations laboratory courses which emphasize study of the interpersonal processes which facilitate constructive change in individuals and groups. These courses are intended for persons with a professional interest in facilitating change in individuals and groups and are conducted as training groups which require the active participation of the student.

## Enrolments are strictly limited.

Permission of the instructor must be obtained through separate application before registering for either of these courses.

## PSYC 4P56

The therapeutic relationship
The therapeutic relationship is a skillsoriented laboratory which focuses on the relationship qualities which discriminate between constructive and destructive interactions. Applications to counselling, psychotherapy and teaching are considered.

PSYC 4P57
Group processes
Group processes explores such issues as group climate, group development, member contributions, decision making

## Psychology

and the leader's role in small groups. The major vehicle for learning is the examination of the processes of the class group.

PSYC 4P92
History of psychology
The historical development of different orientations to psychology. Topics include: philosophical and physiological influences in psychology; introspectionism; functionalism; behaviorism; Gestalt theory; psychoanalysis. Prerequisite: admission to year 4 or permission of the chairperson and instructor.
Lectures, seminar, 3 hours per week.
PSYC 4P93

## Honors seminar

A comprehensive look at the fundamental issues in the various areas of psychology, with various faculty members responsible for specific areas. Prerequisite: admission to year 4 and PSYC 4P92(492hc).
Not open to students with credit in PSYC 490.
Lectures, seminar, 3 hours per week.
PSYC 4P94
Thesis seminar
A seminar in which thesis students will undertake a detailed study of current research in various areas of psychology.
Prerequisite: year four standing.
Co-requisite: PSYC 4F91.
Seminar, 3 hours per week
(Intermittent, September-April).

## Recreation and Leisure Studies

## Officers of Instruction

Chairperson
John K. Larsen

Professor
David Ng
Associate professors
Ann Marie Guilmette
John K. Larsen
George S. Nogradi
Assistant professor
Simon Priest

## Lecturers

Stephanie A. Brooks
G. Michael Laurence

John K. Yardley

## General information

## Physical Education and Recreation

 centre 213This course of study is designed to meet the growing need for people to administer and develop programs in recreation and leisure. Students will be required to take introductory courses in community recreation programming, recreation for special populations, outdoor recreation, recreation administration, and leisure studies. All students must complete at least one credit from each of the three groupings of core and context: humanities, social sciences, sciences (see page 26). In addition to required courses students must elect at least three credits in recreation and leisure studies and four credits outside of recreation and leisure studies. Creative individual and group leisure service planning and administration will be emphasized in course work and the required third year field placement.

Upon completion of all requirements, graduating students will be awarded the degree BRLS, Bachelor of Recreation and Leisure Studies.

Challenge for credit
In conjunction with page 30 of the Brock University calendar and in preparation for the approval of a challenge, students shall: a) prepare a written rationale for the challenge request, b) include the background, experience and/or knowledge which warrants the challenge, and c) prepare a resume which identifies the length of time and duties assigned for any work experience.

## Pass program

## New Program

Year 1
One credit in recreation and leisure studies at year 1 level (RECL 1P00, 1P02, 1P06, 1P10), one social science context credit, one science or humanities context credit, two elective credits. (See Note 1.)

Note 1.
Students majoring in recreation and leisure studies are encouraged to take two credits in recreation and leisure studies in their first year. In accordance with page 25 of the Brock University Undergraduate Calendar, a grade of C in each of RECL $1 P 00$, $1 \mathrm{P} 02,1 \mathrm{P} 06,1 \mathrm{P} 10$ is required to continue as a major in recreation and leisure studies. Those students who do not achieve at least a C grade in each of these classes will be restricted to two half course electives (RECL courses at the 3 (alpha) 00 level) in recreation and leisure studies until the course is repeated and the mandatory C grade is achieved.

## Year 2

One credit in recreation and leisure studies at year 1 level (if not taken in the first year), RECL 2P01, 2P07 plus one RECL elective credit, one science or humanities context credit (whichever was not taken in year one), one elective credit. (See Note 2.)

Note 2.
Among the first ten credits, students should have completed all four of the required first year classes in recreation and leisure studies.

## Year 3

RECL 3P01, 3P05, plus one RECL elective credit, three elective credits. (See Note 3.)

Note 3.
RECL courses may be taken as electives but at least four elective course credits must be taken outside of the department of Recreation and Leisure Studies.

## Previous Program

For students who started before 1988
Year 3
RECL 3P01, 3P05, 3P07, 3P94; and one stream core credit from:
a) Commercial--RECL 3P09, 3P99;
or b) Administrative--RECL 3P00, 3P20;
or c) Outdoor--RECL 3P06, 3P16;
or d) Therapeutic--RECL 3P02, 3P12; and two elective credits (chosen in consultation with adviser).

## Honors program

In addition to honors standing and RECL 3P07, the requirements for admission to the year 4 honors BRLS degree include a faculty review. Students are requested to submit a suggested (potential) topic area for the honors project with their application for year 4.

## Years 1, 2 and 3

As in pass program, including RECL 3P07.

Year 4
RECL 4F01, 4F05, 4P07, 4P97; two elective credits (chosen in consultation with adviser).

## Non-recreation and leisure studies majors

Students in other disciplines who wish to enrol in credit courses in recreation and leisure studies may select from the following approved courses:
RECL 1P00, 1P02, 1P06, 1P10, 2P01, $2 \mathrm{P} 07,3 \mathrm{P} 00,3 \mathrm{P} 01,3 \mathrm{P} 02,3 \mathrm{P} 03,3 \mathrm{P} 04$, 3Р06, 3P07, 3P09, 3P11, 3P12, 3P16, 3P20, 3P94 and 3P99.

It should be noted that there is a limit of five credits in administrative studies, teaching English as a second language and designated courses in education, physical education, and recreation and leisure studies which may be included in a pass BA or BSc program.

## Career planning

A BRLS degree makes students eligible for a wide range of positions in the rapidly expanding leisure services field in such areas as: city recreation and parks departments; YM/YWCAs; community activity programs; leisure services for special populations - the aged, mentally, physically, emotionally, socially and culturally disadvantaged; outdoor recreation programs and camps; company/employee recreation programs, and private recreation clubs and resorts in the tourism/hospitality industry.

## Description of courses

## Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

## Course numbering plan

The last digit of the course number of all courses in recreation and leisure studies indicates the subject matter, as follows:
$0=$ administrative
$1=$ conceptual
$2=$ special populations
$3=$ undesignated elective
4 = individualized
$5=$ placements
$6=$ outdoor
7 = research
$8=$ undesignated elective
$9=$ commercial
RECL 1 P00
An introduction to community rec. reation programs
(formerly RECL 2P00)
The principles of recreation program planning and development within a community setting. Emphasis is placed on the factors influencing participation and on planning considerations such as analysis of needs, program construction and design, implementation and evaluation. Field trip fee approximately $\$ 60.00$.
Not open to students with credit in RECL 2P00(200hc).
Lectures, seminar, 3 hours per week, plus field trip.

## RECL 1P02

Introduction to recreation for special populations
(formerly RECL 2P02)
The nature and needs of special populations (e.g. the aged, mentally disadvantaged, physically disadvantaged) in recreational settings. Emphasis will be placed on understanding the normalization process and on the physiological and psychological characteristics of special populations. Not open to students with credit in RECL 2P02(202hc).
Lectures, seminar, 3 hours per week.

## RECL 1P06

Introduction to outdoor
recreation
(formerly RECL 2P06)
The use of the outdoor environment as a recreation setting; an exploration of the broad scope of activities, practices and concepts important to the outdoor recreation practitioner. Field experience fee approximately $\$ 15.00$. Not open to students with credit in RECL 2P06(206hc).
Lectures, seminar, 3 hours per week, plus field experience.

RECL 1P10
Introduction to recreation administration
(formerly RECL 2P10)
The fundamental principles of administration applied to the organization and operation of a recreation agency. The need for developing goals and objectives and the criteria for evaluation in both the public and private sector.
Not open to students with credit in RECL 2P10(210hc).
Lectures, seminar, 3 hours per week.

## RECL 2P01

Introduction to leisure studies
(formerly part of RECL 1F91)
Leisure concepts and the emerging discipline of leisure studies are introduced in theoretical, historical, methodological and socio-cultural contexts.
Prerequisite: one credit in RECL.
Not open to students with credit in RECL 1F91(191).
Lectures, seminar, 3 hours per week.
RECL 2P07
Tests and surveys for recreation Community evaluation and needs assessment to provide research evidence in recreation.
Prerequisite: one credit in RECL. Lectures, lab, 3 hours per week.

## RECL 3P00

Community development processes in recreation administration
Various theoretical perspectives on community organization and development, as well as methods applicable to the recreation practitioner to facilitate communities in the development of recreation services.
Prerequisite: RECL 1P00(2P00), 1P10(2P10).
Lectures, seminar, 3 hours per week.

## RECL 3P01

Principles of play and leisure (formerly RECL 2P91)
Classical, modern, and contemporary concepts of play, recreation, and leisure are reviewed and analyzed. Research strategies, lifestyle implications and models for interpreting leisure are explored.
Prerequisite: RECL 2P01(1F91) and

2 P 07.
Not open to students with credit in
RECL 2P91 or 298 hc .
Lectures, seminar, 3 hours per week.

## RECL 3P02

## Recreation programs for special populations

A review of the more critical issues in recreation for special populations.
Current trends and future social alternatives; facilitation of change by government and various agencies; the role of the volunteer; building and community accessibility. The major focus will be on program design. A ten hour practicum is included.
Prerequisite: RECL 1 P 00 (2P00), 1P02(2P02).
Lectures, seminar, 3 hours per week.

## RECL 3P03

Introduction to recreation services (formerly part of RECL 1F91)
The delivery of recreation services with particular emphasis on contemporary Canadian society.
Not open to students with credit in RECL 1F91.
Lectures, seminar, 3 hours per week.

## RECL 3P04

Leisure lifestyle assessment
(formerly RECL 2P94)
The physical, psychological and social factors that impact on leisure lifestyle choices.
Not open to students with credit in RECL 2P94(294hc).
Lectures, 3 hours per week.
RECL 3P05

## Leisure services fieldwork

Practical experiences in specific leisure service agencies. In addition to course work in leadership, programming and community resource development, students will be placed in an existing community recreation setting.
Prerequisite: year 3 standing in RECL. Seminars, 3 hours per week, plus fieldwork.

## RECL 3P06

Outdoor recreation programs
(formerly part of RECL 3F06)
Risk management and organizational skills necessary to plan and execute
safe and environmentally sound outdoor recreation experiences.
Prerequisite: RECL 1P06 (2P06).
Not open to students with credit in RECL 3F06.
Lectures, lab, seminar, 3 hours per week.

## RECL 3P07

Interpretive analysis of recreation data
An introduction to research design and the means to understand, evaluate, and interpret statistical information. Prerequisite: RECL 2P07(207hc).
Lectures, lab, 3 hours per week.

## RECL 3P09

Commercial leisure services
The development and role of commercial leisure services in Canadian society. An overview of the concepts, principles and practices for developing a commercial recreation business. Prerequisite: RECL 1P00(2P00), 1P10(2P10).
Not open to students with credit in RECL 308hc.
Lectures, seminar, 3 hours per week.
RECL 3P11
The social psychology of leisure and recreation
(formerly RECL 2P11)
The social psychological dimensions of human behavior during free time including an examination of lifestyle, social habits and motives for leisure and recreation.
Prerequisite: RECL 2P01(1F91). Not open to students with credit in RECL 2P11.
Lectures, seminar, 3 hours per week.
RECL 3P12
Leisure and aging
The philosophy and role of leisure throughout life and the development of strategies for education, planning, and counselling.
Prerequisite: RECL 1P02(2P02), 1P10(2P10).
Not open to students with credit in
RECL 303hc.
Lectures, seminar, 3 hours per week.

## RECL 3P16

Outdoor recreation leadership
(formerly part of RECL 3F06)
The instructional and group management skills necessary to lead outdoor recreation experiences. Emphasis is placed on problem solving, decision making, and the use of sound judgment.
Field trip fee: approximately $\$ 40$.
Prerequisite: RECL 1P06 (2P06).
Not open to students with credit in RECL 3F06.
Lectures, lab, seminar, 3 hours per week.

RECL 3P20
Administration problems in recreation
Problems relating to the delivery of recreation services in Canada. Deci-sion-making theories and principles of planning as they apply to selected sectors of the recreation delivery system.
Prerequisite: RECL 1 P 10 ( 2 P 10 ).
Not open to students with credit in RECL 392hc.
Lectures, 3 hours per week.

## RECL 3P94

## Personalized recreation

The development of specific strategies to enhance the social-emotional development of individuals and the teaching-learning process, leading to a more intimate relationship between teachers or recreation leaders and individuals. There will be emphasis on encouraging the human values of recreation for every person.
Prerequisite: one credit in RECL. Not open to students with credit in PHED 394hc.
Lecture, lab, 3 hours per week.

## RECL 3P99

## Employee wellness programs

Employee recreation, fitness, assistance
and service programs and their impact
in the workplace.
Field trip fee: approximately $\$ 15$.
Prerequisite: RECL 1P00(2P00), 1P10(2P10).
Not open to students with credit in RECL 390hc.
Lectures, seminar, 3 hours per week.

## Recreation and Leisure Studies

RECL 3V90-3V99
Special studies in recreation and leisure
A series of lectures, seminars and practical experiences offered in specialized areas of recreation and leisure.
Prerequisite: third year standing in RECL or permission of the chairperson.

## RECL 4F01

Contemporary issues in leisure

## studies

Significant historical, contemporary and future issues and concerns in recreation and leisure studies. Emphasis on creative lifestyle development and change at all ages.
Prerequisite: year 4 honors standing in RECL.
Not open to students with credit in RECL 402hc.
Lectures, seminar, 3 hours per week.

## RECL 4F05

Fieldwork project
A program of practical experience in which students are placed in community recreation agencies which may be government funded or privately owned. In this placement, students are responsible for a project of master planning or rehabilitative change in recreation behavior or needs assessment. Prerequisite: year 4 honors standing in RECL.
Not open to students with credit in RECL 292hc.
Seminars, 3 hours per week, plus fieldwork.

## RECL 4P07

Experimental design
Development of appropriate and relevant experimental designs in recreation. Students will be expected to propose a research design, engage in literature review and be prepared to submit the design for implementation. Prerequisite: RECL 3P07(307hc), year 4 honors standing in RECL. Lectures, seminar, 3 hours per week.

RECL 4P97
Honors project
Intensive, directed, individual study in a topic of inquiry chosen from one of
the established RECL streams: therapeutic recreation, commercial recreation, outdoor recreation and managerial recreation, selected in consultation with a faculty adviser.
Prerequisite: RECL 4P07(407hc), year 4 honors standing in RECL. Seminars, 3 hours per week.

## Sociology

## Officers of instruction

## Chairperson

Gary B. Rush
Professors
Gary B. Rush
Terrence H. White
Associate professors
Ann D. Duffy
Daniel G. Glenday
Deborah A. Harrison
Victor A. Tomovich
Walter Watson

## Assistant professors

Judith E. Blackwell
A. Dodi Pirie

Ester Reiter
Lloyd G. Ward

## General information

## Schmon tower 1006

The disciplines encompassed by the department of Sociology--social anthropology, social psychology and sociology--are concerned broadly with social processes and structure and with behavior conditioned by participation in such contexts. The department at Brock is committed to a conception of the social sciences as scientific disciplines and to the belief that sound social action projects should be based on rigorous scientific effort. The department is also committed, however, to the view that social analysis is a complex process and that no one discipline can provide a complete perspective.

Business, government, organized labor and voluntary associations increasingly require an understanding of group behavior. Sociology in Canada has made significant contributions to our knowledge of elites and the class structure, the tensions between Quebec
and the rest of the country, gender relations, ethnic and sex segregation in the workforce, crime and delinquency, regional underdevelopment, equality of opportunity, and Canada's role in the Third World. Sociological input has been invited and contributed to the Royal Commission on Bilingualism and Biculturalism, the Task Force on Canadian Unity, the Commission on the Non-medical Use of Drugs, etc. Public policy in the areas of education, crime and delinquency, official languages, and regionalism have all benefitted from sociological analysis. Undergraduate training in sociology provides students with a broad and scientific approach to society that both enhances understanding of social issues and provides a valuable basis for employment in human service industries.

## Pass program

Note: Student declaring a major in sociology (pass, honors, single or combined) are responsible for ensuring that their programs satisfy departmental requirements. To assist in this, faculty advisement is available on request to the department.

The following courses are required: SOCI 1F90, 2F01, 2F10, 3F01; three additional sociology credits. For the latter, courses given outside the department may be credited, provided that they are basic to an integrated program, and written approval is obtained from the student's adviser and the department chairperson. Students considering an honors degree must include SOCI 3F10 in year 3.

Suggested program:

## Year 1

SOCI 1F90; one humanities and one science context credit; two elective credits.

## Yeăr 2

SOCI 2F01, 2F10, one sociology credit; two elective credits.

Year 3
SOCI 3F01; two sociology credits
(SOCI 3F10 is strongly recommended); two elective credits.

## Honors program

The following courses are required: SOCI 1F90, 2F01, 2F10, 3F01, 3F10, 4 F 01 and 4 F 90 or 4 F 91 . The student is required to take three additional credits in sociology.

Years 1 and 2
As in pass program.
Year 3
SOCI 3F01, 3F10, one sociology
credit; two elective credits.
Year 4
SOCI 4F01 and 4F90 or 4F91, one
credit in sociology numbered 3(alpha) 90 or above; two elective credits.

## Combined major program

## Pass program

A student taking a combined major pass program is required to complete five credits in sociology. These will normally include $1 \mathrm{~F} 90,2 \mathrm{~F} 01,2 \mathrm{~F} 10$, 3 F 01 and one additional credit.

## Honors program

In addition to the requirements for a pass program, combined honors majors must complete SOCI 3F10, 4F01 and 4 F 90 or 4F91. Equivalent thesis or practicum work in the other discipline may be substituted for $\mathrm{SOCI} 4 \mathrm{F90}$ or 4F91.

## Description of courses

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

## Sociology

## SOCI 1F90

Introduction to sociology
Principles and methods of social analysis as developed in sociology, social anthropology and social psychology, including elements of social structure, social relations, culture, norms and values, groups, stability and change, introduction to comparative analysis. Emphasis will be placed on field experience, independent student research, and data analysis.
Lectures, seminar, 3 hours per week.

## SOCI 2F01

## History of social thought

The central ideas of the social sciences, their intellectual origin and their change over time. The works of major social philosophers from the 18 th and 19th centuries as well as classical social theorists will be examined. Prerequisite: SOCI 1F90(190).
May be taken concurrently with SOCI 2F10.
Not open to students with credit in SOCI 200, 320 or 421.
Lectures, seminar, 3 hours per week.

## SOCI 2F10

Research methods in social relations Introduction to the methods and procedures employed in social science research: research design and methods of data collections as well as the processing and analysis of data. Lectures emphasize the logic underlying research design and appropriate methods. Labs concentrate on data processing management and analysis. Prerequisite: SOCI 1F90(190); may be taken concurrently with SOCI 2 F01. Not open to students with credit in SOCI $230,231 \mathrm{hc}$ or 232 hc . Lectures, lab, 3 hours per week.

## SOCI 2F54

The documentary film
(also offered as FILM 2F54)
The documentary film from its begin-
nings in photography and the actualités of the Lumières through traditions and developments in documentary practice. The history, theory and aesthetics of documentary film and its cultural implications.
Prerequisite: SOCI 1F90(190), FILM 1F94(194), or permission of the
instructor.
Lectures, seminar, 3 hours per week, plus weekly film lab.

SOCI 2P22
Schools and society
Social analysis of educational institutions emphasizing the influence of society on organizational structure, curriculum and goals; schools as formal organizations; the relationship of education to other aspects of society, particularly the occupational and class structures; schools and society in Canada.
Not open to students with credit in SOCI 291hc.
Lectures, seminar, 3 hours per week.

## SOCI 2P23

## Mass media

(also offered as COMM 2P23)
The organization of the mass media, with special emphasis on the Canadian media and their unique difficulties.
Topics may include the media's use for socialization, reproduction of the social structure, and social change.
Not open to students with credit in SOCI 248hc.
Lectures, seminar, 3 hours per week.

## SOCI 2P31

## Political sociology

The social processes underlying
political domination and conflict; different state structures such as the voluntary, authoritarian, liberal, democratic, and socialist; interrelationships between political institutions and other social institutions and the nature of oppositions to the established political regimes.
Not open to students with credit in SOCI 218 hc .
Lectures, seminar, 3 hours per week.

## SOCI 2P32

## The sociology of work

The concept of work used in various theories (e.g. functionalist theory) will be contrasted with, and examined within, a Marxist perspective. Modes of production, occupational mobility, recreation and leisure, satisfaction, women and minority groups are some of the areas to be covered. Local field trips will be encouraged.

Not open to students with credit in SOCI 311hc.
Lectures, seminar, 3 hours per week.

## SOCI 2P33

## Sociology of deviance

Theories of conforming and deviant social behavior and methodologies used in their investigation; problems of causal analysis in studies of deviance, conformity and over-conformity. Attention will be directed towards various forms of anti-social behavior, particularly those which are socially induced.
Not open to students with credit in SOCI 292hc.
Lectures, seminar, 3 hours per week.
SOCI 2P34
The labor process and trade unions (formerly SOCI 3P32)
Labor process theories which focus on the relationship between technology, the division of labor, social relations of production and the manner in which the state, business and trade unions have responded to changes in the labor process. Seminars will deal with practical problems of contemporary labor relations.
Not open to students with credit in SOCI 3P32 or 351hc.
Lectures, seminar, 3 hours per week.

## SOCI 2P41

## Urbanism

The rise of cities, migration and urbanization; the ecology of city areas; the urban environment and social relations in cities; neighborhood perception, structure and interaction. Not open to students with credit in SOCI 295hc.
Lectures, seminar, 3 hours per week.

## SOCI 2P42

## Community

Communities in rural, urban and suburban settings; the impact of industrialization and increased social scale on community structure and identity; community decision-making and the exercise of power. Not open to students with credit in SOCI 371 hc.
Lectures, seminar, 3 hours per week.

## SOCI 2P43

## Human ecology

The impact of the physical and cultural environment on the spatial and social structure of human aggregates. Not open to students with credit in SOCI 372hc.
Lectures, seminar, 3 hours per week.

## SOCI 2P51

## Gender and society

An examination of the ways in which gender functions as an organizing principle in society. The social construction of masculinity and femininity will be addressed from historical and cross-cultural perspectives. Particular attention will focus on gender in principal institutions of Canadian society: economy, state, family, education and military. Selected gender issues will include men and women in non-traditional occupations, women in the military, gender and power.
Not open to students with credit in SOCI 346hc.
Lectures, seminar, 3 hours per week.

## SOCI 2P52

## Socialization

The development of shared meanings of symbols and commonly accepted forms of behavior. Sources of influence including parents, peers and television; studies of variations in patterns of socialization both within Canada and cross-nationally.
Not open to students with credit in SOCI 266hc.
Lectures, seminar, 3 hours per week.

## SOCI 2P53

## Personality and role

The influence of culturally-determined socialization practices, role expectations and values upon the formation of personality; the self as a social process.
Not open to students with credit in
SOCI 267hc.
Lectures, seminar, 3 hours per week.

## SOCI 2P55

Interpersonal communication (also offered as COMM 2P55)
Perspectives on human communication including both verbal and non-verbal communication.

Not open to students with credit in SOCI 247 hc .
Lectures, lab, 3 hours per week.

## SOCI 2P61

## Introduction to criminology

The nature of criminal behavior, its social causes and consequences; organized crime; white-collar crime; forms of patterned evasion of legal norms; correctional institutions as social systems.
Not open to students with credit in SOCI 293hc.
Lectures, seminar, 3 hours per week.

## SOCI 2P71

## Class, status and power

Classical and contemporary approaches to the study of social class. Topics may include forces and relations of production, the division of labor in society, class relations and class conflict, gender relations, social stratification, social mobility, the role of the state, and culturally-based differentiation (ethnicity, religion, language). Special attention will be given to the Canadian class structure through comparison with other industrialized nations. Not open to students with credit in SOCI 216hc.
Lectures, seminar, 3 hours per week.

## SOCI 2P72

## Social inequality

Classical and contemporary approaches to the study of social inequality. Topics to be discussed include the distinction between natural and social inequalities; political and social philosophies of equality and inequality; contrasting explanations for world inequality.
Special attention will be given to Canada and its location in the world economy.
Not open to students with credit in SOCI 217hc.
Lectures, seminar, 3 hours per week.

## SOCI 2P73

## Issues in development

A theoretical and empirical comparison of alternative explanations of underdevelopment in the Third World. The level of industrialization, urbanization, education and literacy; the distribution of wealth; the development of the
nation-state and prospects for change or revolution in the Third World will be examined as the result of world investment and trading patterns.
Not open to students with credit in SOCI 352hc.
Lectures, seminar, 3 hours per week.

## SOCI 2V80-2V89

## Selected topics in sociology

Selected issues in sociology.
Lectures, seminar, 3 hours per week.

## SOCI 2V90-2V99

## Directed studies

Guided readings on a particular topic which is not covered in the department's regular course offerings. Topics must be chosen in consultation with a faculty member willing to supervise the tutorial.
Prerequisite: permission of the instructor.
Seminars, 3 hours per week.

## SOCI 3F01

## Modern social theory

Major contemporary theories of society, such as structural functionalism, conflict, and symbolic interactionism. Consideration will be given to their origins and development in historical context. Theories will be compared and contrasted in terms of their assumptions, conceptual distinctions, methodological features and ethical implications.
Prerequisite: SOC 2F01(200).
Not open to students with credit in SOCI 220 or 300.
Lectures, seminar, 3 hours per week.

## SOCI 3F10

## Research design

Research design with special emphasis on relating systematic theory to the development of research strategies. Prerequisites: SOCI 2F10(230); may be taken concurrently with SOCI 3F01. Not open to students with credit in SOCI 390 or $391 \mathrm{hc} / 395 \mathrm{hc}$.
Seminars, 3 hours per week.
SOCI 3F21

## The family

(also offered as CHST 3F21)
(formerly $\mathrm{SOCI}(\mathrm{CHST}) 3 \mathrm{P} 21 /$
3P51(290hc/294hc))

Family patterns including gender roles and the dynamics of family change and development. Topics include examination of marriage and family issues, gender role socialization and change, dual careers, alternative life styles, gender roles in cross cultural perspective, and marital and family relationships past, present and future. Not open to students with credit in SOCI 3P21(290hc) or 3P51(294hc). Lectures, seminar, 3 hours per week.

## SOCI 3P26

## Medical sociology

Social factors associated with physical health, illness and impairments; health care delivery systems and the factors which influence their utilization. Not open to students with credit in SOCI 304hc.
Lectures, seminar, 3 hours per week.

## SOCI 3P27

## Psychiatric sociology

Social factors associated with psychiatric illness. The course will emphasize the increased utilization of social science theory and research in the field of psychiatry.
Not open to students with credit in SOCI 303hc
Lectures, seminar, 3 hours per week.

## SOCl 3 P 28

## Introduction to clinical

sociology
Application of sociological knowledge to intervention for individual and social change. The translation of symbolic interactionist and related theories into action will be emphasized. Units of analysis are groups or group settings rather than isolated individuals whose problems are considered intrapsychic. Not open to students with credit in SOCI 305hc.
Seminars, 3 hours per week.

## SOCI 3P30

Sociology of women and work Both quantitative and qualitative research will explore the societal significance and implications of the change in women's participation in paid employment and domestic labor in this century. Attention will focus on specific areas: the ghettoization of the
female labor force, women in professional and non-traditional occupations, microtechnology, part-time work and unionization.
Lectures, seminar 3 hours per week.

## SOCI 3P31

Bureaucracy and complex organizations
Distinctive sociological theories of bureaucracy and complex organizations. Comparisons will be made between state-funded and profitoriented organizations in North America, Japan and Western Europe. Attention will be paid to differences in managerial ideologies, authority and discipline, and the impact of informatics technologies on decisionmaking and communication.
Not open to students with credit in SOCI 345hc.
Lectures, seminar, 3 hours per week.

## SOCI 3P33

Law and society
Comparative analysis of the forms and functions of law in society; influence of culture and social organization on law; the role of law in social change and the social sources of legal change. Not open to students with credit in SOCI 318hc.
Lectures, seminar, 3 hours per week.

## SOCI 3P34

Information technology and work
The application of information technology to the labor process. Topics to be discussed include the relationship of this technology to the number and types of jobs available, to the total number of required hours worked over a lifetime, and to the increased inportance given education and work.
Lectures, seminar, 3 hours per week.

## SOCI 3P42

Canadian society
An analysis of special topics in Canadian studies. Although varying from year to year, topics may include multiculturalism and multilingualism in Canadian society, development and under-development, Canadian elites. Not open to students with credit in SOCI 348 hc .
Lectures, seminar, 3 hours per week.

## SOCI 3P46

Native peoples and Canadian society The relationship between Canada's native peoples and selected institutions in Canadian society such as education, industry and govermment. Topics will include the European impact on indigenous culture, the conflict between traditional life styles and Canadian institutions, and the native peoples' responses.
Not open to students with credit in SOCI 249hc.
Lectures, seminar, 3 hours per week.

## SOCI 3P47

## Ethnic groups

The nature of ethnic groupings in Canadian society; relationships among ethnic groups; intergroup hostility and conflict; prejudice and discrimination; the position and role of these groups in the larger community. Not open to students with credit in SOCI 349hc.
Lectures, seminar, 3 hours per week.
SOCI 3P52

## Beliefs and values

Social analysis of belief systems as organized into ideologies; the interrelationship among ideological systems, emphasizing especially religious and political ideologies.
Not open to students with credit in SOCI 316hc.
Lectures, seminar, 3 hours per week.

## SOCI 3P55

## Interpersonal behavior

The processes through which individuals relate to one another, primarily in
two-person and three-person contexts. Not open to students with credit in SOCI 366hc.
Lectures, seminar, 3 hours per week.

## SOCI 3P56

## Small groups

Group properties, their development over time, their maintenance or modification in the face of changing situations; the impact of group membership on experience and behavior of individuals.
Not open to students with credit in SOCI 367hc.
Lectures, seminar, 3 hours per week.

## SOCI 3P57

Gerontology and the aging process Humanistic, social, historical and cross-cultural perspectives on gerontology and aging. Topics include: examination of conceptual and methodological approaches to studying aging; surveys of programs and prospects for the elderly; cultural, social and personal images of aging; the impact of social, psychological and biological processes affecting aging and the elderly within communities; social planning for the elderly. Lectures, seminar, 3 hours per week.

## SOCI 3P61

Sociology of correction
An investigation of society's agencies of social control that are entrusted to work on rehabilitation of the deviant behavior of juvenile delinquents and adult criminals. Provincial jails and detention centres, and federal penitentiaries are studied. Examples from other societies are also used in tracing innovative methods in correction.
Prerequisite: SOCI 2P61(293hc) or permission of the instructor.
Not open to students with credit in

## SOCI 306hc.

Lectures, seminar, 3 hours per week.

## SOCI 3P66

## Social movements

Either a general survey of the impact of ideology on behavior and the subsequent development of social movements, or specific examinations of particular movements such as: separatism, nationalism, fascism, Marxism, feminism, etc. The topic will vary from year to year.
Not open to students with credit in SOCI 317hc.
Lectures, seminar, 3 hours per week.

## SOCI 3P76

Technology and change
The effects on socio-cultural systems of scientific and technological developments; technological innovation, both adaptive and maladaptive.
Not open to students with credit in SOCI 312hc.
Lectures, seminar, 3 hours per week.

## SOCI 3V10-3V19

## Selected research topics

Selected methodological issues in sociology.

## SOCI 3V80-3V89

Selected topics in sociology
Selected issues in sociology.

## SOCI 3V90-3V99

## Directed studies

Guided readings on a particular topic which is not covered in the department's regular course offerings. Topics must be chosen in consultation with a faculty member willing to supervise the tutorial.
Prerequisite: permission of the instructor.
Seminars, 3 hours per week.

## SOCI 4F01

## Honors seminar

The seminar will provide a forum for honors students to discuss their current research. The seminar's goals are to broaden the students' perspectives by exposing them to a variety of research topics, problems and settings, and to enable them to examine and discuss their own work and that of their peers. Prerequisite: admission to Year 4, or permission of the instructor.
Not open to students with credit in SOCI 490.
Seminars, 3 hours per week.

## SOCI 4F90

## Honors thesis

Students electing this honors option will be required to undertake an independent research project under the supervision of a member of the department. The results of the project will be presented as a thesis. The course will be conducted as a tutorial. Prerequisites: SOCI 2F01(200), 2F10(230), 3F01(300), 3F10(390). SOCI 4F01(490) required and may be taken concurrently.
Not open to students with credit in SOCI 491.

## SOCI 4F91

## Honors practicum

A student electing this honors option typically will serve as a research associate with a local social service
agency. The exact nature of projects will vary with the agency; however, the faculty director, agency supervisor and student will negotiate a mutually acceptable set of expectations. The student will meet bi-weekly with the faculty director.
Prerequisites: SOCI 2F01(200), 2F10(230), 3F01(300); SOCI 3F10(390). SOCI 4F01(490) required and may be taken concurrently. Not open to students with credit in SOCI 495.

## SOCI 4P23

## Research on popular culture

Topics relevant to the mass media and popular culture. Students will design their own reading lists and projects, and work in a largely self-directed manner. The methodological range of the projects will vary with the interests of instructor and students, but will likely include content analysis, ideological analysis, semiological analysis, interviews, and nonparticipant observation of media and/or cultural personnel.
Prerequisite: SOCI 1F90(190) and 2P23(248hc), or permission of the instructor.
Not open to students with credit in SOCI 448 hc .
Seminars, 3 hours per week.

## SOCI 4P42

Special topics in Canadian society An exploration of a substantive area in the study of Canadian society. The topics will cover Canadian communities, Quebec society, native peoples, regionalism, ethnic groups and the intellectual traditions of Canadian political economies.
Not open to students with credit in SOCI 440hc.
Seminars, 3 hours per week.

## SOCI 4P45

Comparative social analysis
Application of the comparative method of analysis to the study of similarities and differences between whole societies (modern and/or traditional), particular structures and processes of given societies (e.g., politics, family, law, organization of work), or between groups or regions of a single society.

## Sociology

Not open to students with credit in SOCI 420 hc . Seminars, 3 hours per week.

SOCI 4P52
Sociology of knowledge
Knowledge as a social product; the cultural and temporal variations in knowledge as causal and as limiting factors in human behavior.
Not open to students with credit in SOCI 315hc.
Seminars, 3 hours per week.
SOCI 4V10-4V19
Selected research topics
(formerly SOCI 4F10)
Selected methodological issues in sociology. Advanced methods for the measurement of variables and the analysis of data in the social sciences with special emphasis on the implications of various theoretical categories of data, multiple approaches to the estimation of reliability and validity, and the use of computer-assisted analytic procedures.
Seminars, lab, 3 hours per week.
SOCI 4V80-4V89
Special topics in sociology
Selected issues in sociology. Course content will vary, depending upon the interests of instructors and students. 1989-90: (4V81) Women and the State
The historical and structural roles of the state in the exercise of patriarchy, with special emphasis on Canada. How the state has responded to reactionary and progressive social movements. Topics may include: female sexuality, marriage and property, childrearing, the New Right, education, work, the public sphere, the courts, violence against women, and military violence.
Seminars, 3 hours per week.

SOCI 4V90-4V99
Directed studies
Guided readings on a particular topic which is not covered in the department's regular course offerings. Topics must be chosen in consultation with a faculty member willing to supervise the tutorial.
Prerequisite: permission of the instruc-
tor.
Seminars, 3 hours per week.

# Institute of Urban and <br> Environmental Studies 

## Officers of Instruction

Director
Bruce W. Krushelnicki
Associate professors
Fikret Berkes
Bruce W. Krushelnicki
John Middleton
Professors emeriti
A.W. Frank Banfield

Robert C. Hoover
Co-operating faculty from the departments of Biological Sciences, Chemistry, Economics, Geography, Geological Sciences, Philosophy, Politics, and Sociology.

## General information

## Mackenzie Chown complex F202

The Institute of Urban and Environmental Studies offers combined major programs leading to BA and BSc degrees at the pass and honors levels in conjunction with seven collateral departments. It also offers a certificate program in urban and environmental studies and administers a BSc program in environmental science. A major in urban and environmental studies is always taken in conjunction with a major in a social science or science discipline.

The Institute's courses are taught by its own faculty, by faculty from other departments and occasionally by outside professionals. The aim is to provide an understanding of current urban and environmental issues, training in appropriate methods of investigation and analysis, and experi-
ence in developing creative solutions. The approach is interdisciplinary and system-oriented, combining the principles and methods of the physical and social sciences. Topics such as pollution, resource management, landuse conflict, food supplies, quality of life and urban planning are examined in various contexts--political, legal, social, economic and physical--with special attention paid to the Niagara peninsula, Ontario and Canada, and to the formulation of policy for change.

Urban and environmental studies are united into a single program, reflecting all aspects of the environment. Year 1 and 2 courses are taken by all students, to provide a background of basic concepts and principles. In year 3 students may concentrate in one or more areas through a combination of courses. Fourth year courses allow indepth examination of research and policy issues.

Students who wish to pursue a pattern of studies which does not coincide with existing combined major programs, may follow a general or integrated studies program in urban and environmental studies specifically designed for their interests.

## Co-operative studies

The Institute's co-operative studies program, organized in conjunction with public and private agencies outside the University, enables students to gain on-the-job practical experience for credit over a four or eight month period. Full time students who have completed year two of a combined major in urban and environmental studies are eligible for the program.

## Environmental science program

See separate calendar entry under Environmental Science.

## Certificate program

The program leading to a certificate in urban and environmental studies provides an overview for interested persons who do not wish to proceed to a degree, and for those whose degree is in a different field. The admission requirements are the same as for the degree program.

The certificate is awarded on completion of six approved credits with an overall average of 70 per cent.

## Required courses

UEST 2F96, 2F97; one year 3 credit in urban and environmental studies; one half credit in mathematics; one half credit in computer science; and two credits in another department, chosen in consultation with the Institute adviser. (See "Electives" below.)

## Combined major programs

The Institute participates in combined major programs with the following collateral departments: Biological Sciences, Chemistry, Economics, Geography, Geological Sciences, Politics and Sociology. The course requirements for these are described below.

Combined major programs involving other disciplines are also possible, and any student wishing to pursue one of these should consult the Institute director and the chairperson of the department in question.

The BA degree is granted if the majority of a student's courses is in the social sciences. The BSc degree is granted if the majority of a student's courses is in the sciences. For this purpose, the following Institute courses carry science credit: UEST 2F97, 3P41, 3P42, 3P51, 3P53, 3P55 and 3V103V15.

## Pass Program

The normal program sequence, including the required courses in urban and environmental studies, is as follows:

## Year 1

UEST 1F90; one credit from collateral department; mathematics credit as specified by the collateral department, otherwise, MATH 1P98 or equivalent and one half credit elective (COSC 1P90 or 1P91 recommended); two context credits.

## Year 2

UEST 2F96 and 2F97; two credits in collateral department; one elective credit (chosen in consultation with the Institute and the collateral department; see Electives below).

Year 3
Two of UEST 3V10-3V15, 3V203 V 25 and $3 \mathrm{~V} 30-3 \mathrm{~V} 35$; one other credit in urban and environmental studies at the year 3 level (excluding UEST 3V80-3V81); two credits in collateral department; one elective credit.

## Honors program

Students who wish to pursue an honors combined major program must qualify for honors status in both urban and environmental studies and the collateral department.

## Years 1, 2 and 3

As in pass program.

## Year 4

UEST 4F90/4F91 or 4F95; two credits in collateral department; one or two elective credits (depending on whether UEST 4F90/4F91 are taken) which will include COSC 1P90 or 1P91 if not taken previously; thesis strongly recommended. To qualify for an honors degree, students must complete a minimum of three credits numbered 3 (alpha) 90 or higher.

## Course requirements for collateral departments

## Biological Sciences

Pass
BIOL 1F90, 2F03; two of BIOL 2P90,
2P91, 2P93, 2P98; two year 3 biology
credits; MATH 1P97/1P98.

## Honors

As for pass degree, plus: two credits in biology, one of which must be at the year 4 level.

## Chemistry

## Pass

CHEM 1F85 or 1F93; 2F10, 2P20/
$2 \mathrm{P} 21,2 \mathrm{P} 40$ and one of CHEM 2P30 or
2P41; one of CHEM 3P20/3P21, 3P30/
3P31; CHEM 3P40; PHYS 1F20 or 1F90; MATH 1P93/1P94.

Honors
As for pass degree, plus: two credits in chemistry at the year 3 or year 4 level, one of which must be at the year 4 level.

## Economics

Pass
ECON 1P91/1P92, 2P21/2P22, 2P31/ 2P32; ECON 2P90 (Math 1P98 is its prerequisite); two year 3 economics credits; MATH 1P60/1P97.

Honors
Consult department.
Geography - BA

## Pass

GEOG 1F90, (GEOG 1F91 is strongly recommended as a science context credit); GEOG $2 \mathrm{P} 07 / 2 \mathrm{P} 08$ (or equivalent), two of GEOG 2P02, 2 P 03 and 2P06; GEOG 3P57, three year 3 half credits from Group A (see listing in Geography section of the calendar) excluding 2P90, 2 P 91 and 2 P 92 .

Honors
As for past degree, plus: GEOG 4F99; one year 4 credit in geography from group A; COSC 1P90 or 1P91 or
equivalent. The courses selected cannot include both GEOG 4F90 and UEST 4F90/4F91.

Geography - BSc
Pass
GEOG 1F91, MATH 1P97/1P98;
GEOG 2 P07/2P08 (or equivalent), two of GEOG $2 \mathrm{P} 04,2 \mathrm{P} 05$ and 2 P 09 ; GEOG 3P56; three year 3 half credits from group B (see listing in Geography section of the calendar).

## Honors

As for pass degree, plus:
GEOG 4F99; one year 4 credit in geography from group B; COSC 1P90 or 1P91 or equivalent. The courses selected cannot include both GEOG 4F90 and UEST 4F90/4F91.

## Geology

## Pass

GEOL 1F95, 2P31, 2P42, 3P31, 3P61;
one of GEOL 3P24, 3P25; one of GEOL 2P01, 2P21; one credit in geology at the year 2 or year 3 level; CHEM 1F85 or 1F93, MATH 1P97/ 1 P98.

Honors
As for pass degree, plus:
two geology credits at the year 3 or year 4 level (one of which must be at the year 4 level); or GEOL 4F90 and one year 4 geology credit.

## Politics

## Pass

POLI 1F90 and four credits in politics at the year 2 level and above. These must include: POLI 2P01 (or 2F90) and $2 \mathrm{P} 80(2 \mathrm{P} 81)$.

## Honors

As for pass degree, plus: two credits in politics which must include 3P91 (or 3P81); and if POLI 2 P 01 was taken instead of 2 F 90 , one of $3 \mathrm{~V} 00-3 \mathrm{~V} 09,4 \mathrm{P} 01,4 \mathrm{P} 02$ and $4 \mathrm{~V} 00-$ 4V09.

## Sociology

## Pass

SOCI 1F90, 2F01, 2F10, 3F01; one
credit in sociology.
Honors
As for pass program, plus:
SOCI 3F10 (preferably taken in year
3); SOCI 4F01 and one of SOCI 4F90, 4F91 or UEST 4F90/4F91.

## Description of courses

Please note that not all courses are offered in every session. Refer to the applicable term timetable for details.

Most year 3 courses are offered in alternate years in a two-year cycle. With permission of the instructor, they are open to suitably qualified second year students. By planning their programs one year in advance, students would have a wider range of courses and combinations from which to choose.

## UEST 1F90

Introduction to urban and environmental studies
Principles needed for understanding the human environment from an interdisciplinary perspective. Examples are chosen from the urban, rural and natural environments of southern Ontario and from other parts of the world. The course discusses acute problems such as pollution, as well as positive aspects of human activity such as environmentally appropriate cities.
Policy options, possibilities for creative social action and planned change are emphasized.
Lectures, seminar, 3 hours per week.

## UEST 2F96

Principles of planned urban change The theory and practice of managing and governing urban systems. Public policy-making, plan-making, and the process of community development. Roles of citizens, professionals and elected officials in the process of planned urban change. Studies of the city as human community, polity,
administrative unit and physical plant. Prerequisite: completion of year 1 requirements for urban and environmental studies or permission of the instructor.
Lectures, seminar, 3 hours per week.

## UEST 2F97

Principles of environmental studies Basic ideas and concepts of environmental sciences. Applied ecology, systems approach, the world futures debate on limits to growth. Major variables of the global ecosystem: population, food production, pollution and natural resources. Environmental economics and politics, with special consideration of energy issues and alternative energy policies.
Prerequisite: completion of year 1 requirements for urban and environmental studies or permission of the instructor.
Lectures, seminar, 3 hours per week; occasional field trips.

UEST 2V90-2V95

## Special topics

A tutorial/seminar/special projects or directed readings course in an area of urban and environmental studies not represented by other courses. Prerequisite: completion of year 1 requirements for urban and environmental studies and permission of the instructor.
Seminars, tutorial, 3 hours per week.

## UEST 3P41

## Marine resources

Introduction to oceanography and marine ecology, and the management of living resources of the sea. Ecological, economic and policy issues in coastal and oceanic fisheries and in aquaculture, with emphasis on Canadian examples. Effect of pollution and other stresses on marine resources. The enclosure of ocean resources: law of the sea.
Prerequisite: UEST 2F96(296) and 2F97(297) or permission of the instructor.
Lectures, seminar, 3 hours per week.

## UEST 3P42

Conservation planning
Application of ecological theory to
environmental planning for conservation of species and ecosystems in a world dominated by human activities. Parks, reserves, zoos, co-existence with man in productive landscapes. Combining conservation with development. Effects of habitat fragmentation, genetic problems of small populations. The World Conservation Strategy, policies for governments and other organizations.
Prerequisite: UEST 2F96(296) and 2F97(297); MATH 1P98(198hc) or equivalent; or permission of the instructor.
Lectures, seminar, workshop, 3 hours per week.

## UEST 3P51

## Environmental microbiology

An introduction to environmental microbiology, emphasizing the role of micro-organisms in the polluted human environment. Aspects of basic microbial processes within the context of waste treatment, toxicology, nutrient recycling and microbial interactions. Prerequisite: BIOL 1F90(190) or UEST 2F97(297) or permission of the instructor.
Lectures, seminar, 3 hours per week.

## UEST 3P52 <br> Urban planning analysis

The theories, processes and methods of urban and regional planning in Canada. Topics include: population projection; survey techniques; land/space allocation; environmental service theory and practice; land change process; use of computer mapping and statistical analysis; municipal taxation and budgeting.
Prerequisite: UEST 2F96(296) and 2F97(297); MATH 1P98(198hc) or equivalent (a half credit in computer science strongly recommended) or permission of the instructor. Seminar, workshop, 3 hours per week.

## UEST 3P53

Environmental impact assessment The development of environmental impact assessment in Canada and in other countries; government regulations and legislation; methods of environmental impact assessment; ecological, social, economic, and
political aspects.
Prerequisite: UEST 2F96(296) and 2F97(297); MATH 1P98(198hc) or equivalent; or permission of the instructor.
Lectures, seminar, workshop, 3 hours per week.

## UEST 3P55

Management of fisheries and wildlife resources
Management and conservation of fishery and wildlife resources with an emphasis on interdisciplinary aspects, current issues and policy questions in the management of living resources. Some training is provided in management tools and techniques. The course has largely Canadian content with case studies from the North, the Great Lakes area and the Atlantic and Pacific coasts.
Prerequisites: UEST 2F96(296) and 2F97(297) or permission of the instructor.
Lectures, workshop, seminar, 3 hours per week.

## UEST 3P56

Urban countryside policy-planning The urban-related countryside and its agricultural and environmentally sensitive resource areas. Policy problems of urban containment, boundary definition, density control and expansion in areas of high foodproduction potential and environmental sensitivity. Comparative approaches to countryside planning policies in other areas of heavy urban impact. Field observation and study assignments on urban countryside policies. Prerequisite: UEST 2F96(296) and 2F97(297) or permission of instructor. Lectures, seminar, 3 hours per week.

## UEST 3P57

Social services planning in the urban region
Community objectives for quality of life through social services. Constitutional basis for social services, role of grants and transfer payments. Regional planning for social and area-development services. Social planning aspects of provincial planning legislation. Policy planning to reduce recidivism and promote prevention. Integration of
social planning for quality of life, administrative planning for serviceprovision, and planning for service centres.
Prerequisite: UEST 2F96(296) and 2F97(297) or permission of instructor. Lectures, seminar, workshop, 3 hours per week.

## UEST 3V10-3V15

Interdisciplinary perspectives on pollution
Mainly a science-oriented course, dealing with sources, effects and eventual fate of different types of pollutants; their metabolic and other biological effects, chemical transformations, dispersal and geological deposition; selected case studies of air and water pollution with emphasis on the interaction of relevant disciplines; scientific knowledge and the formulation of regulations to control pollution. Prerequisite: UEST 2F96(296), 2F97(297) or permission of the instructor.
Not open to students with credit in UEST 393 hc .
Lectures, seminar, 3 hours per week.
UEST 3 V20-3V25
Interdisciplinary perspectives on the quality of life
The process of value formation as the core of the concept of life quality. Development of human potential. The disciplinary and interdisciplinary perceptions required to elucidate the quality of life concept and promote its application through public policy. Special attention given to the interaction between the humanities and social and natural sciences.
Prerequisite: UEST 2F96(296) and 2F97(297) or permission of the instructor.
Lectures, seminar, workshop, 3 hours per week.

UEST 3V30-3V35
Interdisciplinary perspectives in urban and environmental studies Specific topics to be selected annually at the discretion of the director in consultation with co-operating faculty. Prerequisite: UEST 2F96(296) and 2F97(297) or permission of the instructor.

Not open to students with credit in UEST 397 in 1985-87.
Lectures, seminar, workshop, 3 hours per week.

## UEST 3V60-3V65

Selected issues in urban policy
An examination of specific issues of urban policy. These may vary from year to year.
1989-90: (3V62) Regional government in Niagara
(also offered as POLI 3V72)
The creation and development of regional government in Ontario, with special reference to the Niagara region. Topics include such general issues as municipal boundaries and electoral systems and more specific policy areas such as transportation, planning and economic development.
Prerequisite: UEST 2F96 or POLI 3P11.
Lectures, seminar, 3 hours per week.

## UEST 3V80-3V81

## Co-operative education

A program of practical experience in the career opportunities available to students of urban and environmental studies. Students will be placed in offices and laboratories of government ministries and agencies as well as with private industries as full time employees for a period of four months in order to learn the practical applications of their university knowledge. Students will receive continuing supervision and support from the course supervisor and must submit a final report for assessment. The course may commence in either May, September or January of each year.
Prerequisite: third or fourth year standing in urban and environmental studies co-major.
Eligibility will also be determined by academic standing.
May be repeated once.

## UEST 4F90

## Honors thesis

To be taken in conjuntion with UEST $4 F 91$. Each student will undertake an original research project under faculty supervision, with a schedule including tutorials and class meetings held throughout the year. An oral defense
of the final report will be required.
Prerequisite: admission to year 4
honors program.
Co-requisite: UEST 4F91.
Seminar, tutorial, 3 hours per week.
UEST 4F91
Literature research and seminar
To be taken in conjunction with UEST 4F90. Each student will undertake a detailed study of the literature relevant to the topic of the honors thesis, under faculty supervision. The review will be included in the thesis.
Prerequisite: admission to year 4 honors program.
Co-requisite: UEST 4F90.
3 - 5 hours per month.

## UEST 4F95

Advanced seminar in urban and environmental policy
A seminar course on selected topics in urban and environmental policy chosen in conjunction with Institute faculty and faculty from co-operating departments.
Prerequisite: completion of year 3 as a combined major in urban and environmental studies, or permission of the instructor.
Seminars, 3 hours per week.

Electives in urban and environmental studies programs

Electives should be chosen in consultation with the faculty of urban and environmental studies and of the collateral department. Normally, students should take such courses in one or more departments outside their collateral major. In planning their programs, students should be certain to fulfil necessary prerequisites for such courses.

# Scholarships, awards and financial assistance 

| Medallists |
| :--- |
| Spring Convocation 1988 |
| Governor-General's Gold Medal: |
| L. N. Cuthbertson, White Rock, B.C. |

Governor-General's Silver Medal: K. H. A. Mak, Hong Kong

Vice Chancellor's Medal:
H. Boehringer-Gemmrich, Niagara-on-the-Lake

Deans' Honors Lists and In-course Scholarship winners 1988/89

## Administrative Studies

K. L. Campbell, St. Catharines
S. Chemnitz, St. Catharines
R. P. DePetris, St. Catharines
P. A. Durnford, Fonthill
B. Eng, St. Catharines
R. Ens, St. Catharines
H. Fieguth, Virgil
F. D. Gualtieri, Thorold
S. L. Higgins, Jarvis
P. L. Ingram, St. Catharines
D. Ioannoni, Welland
P. F. Keul, Waterdown
J. M. Macri, Niagara Falls
J. M. Moore, Ottawa
P. M. Munn, St. Catharines
D. Penner, St. Catharines
D. Sawatsky, St. Catharines
A. Silva, Mississauga
D. Smith, Belleville
J. M. Terrill, Markham
T. K. Tunstall, Newmarket
J. H. Vangameren, St. Catharines
T. Y. P. Wang, St. Catharines
L. M. Wolfgram, Stratford

## Humanities

J. M. Aoki, Scarborough
P. J. Barkwell, Thorold
C. A. Beam, Niagara Falls
P. D. Boadway, Vineland
D. Bodak, Mississauga
M. Boehringer -Gemmrich, Niagara-on-the-Lake
P. Y. J. C. Brochu, Welland
M. Butler, Niagara-on-the-Lake
M. S. Campbell, Ruthven
E. S. Colliver, St. Catharines
S. M. Curtis, Parry Sound
B. A. Dunlop, Woodstock
G. N. Dunlop, Welland
D. P. Fahey, Sutton West
K. D. Fisher, Niagara Falls
D. B. Gilbert, St. Catharines
P. A. Hobbs, Fort Erie
A. G. Kovacs, Welland
J. Legler, Brampton
L. MacLeod, St. Catharines
I. D. McGuchan, St. Catharines
E. E. McMullan, Niagara Falls
D. S. McNie, Hamilton
C. J. Mullin, Fonthill
D. E. Mundy, Welland
C. V. Oliverio, Welland
J. Papadopoulos, Simcoe
J. R. Richardson, Jordan
M. G. Savoia, Thorold
W. E. H. Smith, Fort Erie
W. R. Steinburg, Ridgeville
L. K. Stieva, Grimsby
C. Voth, St. Catharines
J. G. White, Markham

## Mathematics and Science

P. M. Argenta, Niagara Falls
C. M. Colman, Putnam
A. L. L. East, St. Catharines
G. D. Gardin, Amherstburg
K. C. Hall, Niagara Falls
M. A. Hobe, Sunderland
H. A. Karn, Fort Erie
R. H. Kuderian, St. Catharines
N. A. Kushner, St. Catharines
K. H. A. Mak, Hong Kong
J. M. McGuiggan, St. Catharines
R. C. McLean, St. Catharines
C. D. Parsons, St. Catharines
N. L. Rosmarin, St. Catharines
W. A. Snedden, St. Catharines
L. M. Torbicki, Port Colborne
P. M. Wloch, St. Catharines

## Physical Education and Recreation

D. M. Bak, St. Catharines
A. Bueckert, St. Catharines
M. E. Fenton, Mississauga
R. D. Holtby, St. Catharines
K. E. Jarvis, St. Catharines
M. L. L. Van Kessell, Simcoe
K. C. Romhild, Guelph

## Social Sciences

A. S. Allard, Gloucester
T. L. Amos, Orangeville
O. Bajic, Grimsby
C. A. Balcom, St. Catharines
B. C. Bosch, Smithville
S. K. Bowman, St. Catharines
J. F. Boyle, St. Catharines
H. Briem, West Germany
T. A. Buckley, Brantford
L. A. Budgell, Sarnia
C. L. Buetow, St. Catharines
L. L. Cardinal, Oshawa
M. E. J. Cardy, St. Catharines
M. T. Dalla Pozza, Woodstock
B. M. Devries, Hagersville
D. M. Dimaurizio, St. Catharines
L. Dirisio, Niagara Falls
L. M. Draper, St. Catharines
S. M. A. Durksen, St. Catharines
C. A. Dywan, Grimsby
S. L. Fehrman, St. Catharines
J. A. Flewelling, Burlington
T. G. Freeland, Welland
L. J. Frew, Tiverton
D. M. Goetz, Tottenham
T. A. M. Graham, St. Catharines
J. H. Grant, Dobbinton
M. M. Grimwood,

Niagara-on-the-Lake
D. M. Hawkes, Guelph
M. L. Heimpel, Stratford
O. S. Helmkay, Tottenham
S. Hildebrandt, Niagara-on-the-Lake
S. C. Hrycay, Dryden
J. L. Hurst, St. Catharines
C. M. Jones, St. Catharines
W. Jorgensen, Hamilton
J. Kingdon, Ridgeway
A. M. Konkle, Niagara Falls
G. J. Kosztyo, Niagara Falls
M. C. Kraayeveld, Beamsville
D. K. Kropac, Port Rowan
B. C. B. Lau, St. Catharines
S. D. Leslie, Windsor
Y. W. E. Leung, St. Catharines

| T. L. Levay, Fonthill | C. R. McDermott, Welland |
| :---: | :---: |
| J. A. Lever, St. Catharines | R. C. Moise, St. Catharines |
| K. A. J. Lloyd, Woodstock | O. C. Morgan, Niagara Falls |
| D. J. Long, Niagara Falls | J. L. Senske, St. Catharines |
| E. A. Macleod, Dalkeith | S. Shearing-Johns, Ridgeway |
| L. J. Main, Wainfleet |  |
| J. M. Mann, Brantford | Lily Bell Memorial Scholar |
| W. McDonnell, Caledon East | J. Kennedy Keogh, St. Catharines |
| S. P. McLoughlin, Don Mills |  |
| M. A. Moore, Simcoe | J.P. Bickell Foundation Scholars |
| M. Mule, Hamilton | C. T. Kimmerly, Niagara Falls |
| M. R. Muller, St. Catharines | D. Tarnocai, St. Catharines |
| I. Nespeca, Niagara Falls |  |
| K. S. Ng, St. Catharines | Birks Family Foundation Scholar |
| J. M. O'Brien, Bramalea | R. H. Pauls, St. Catharines |
| G. L. R. Ovenden, Oshawa |  |
| D. C. Pembleton, Ingersoll | Cyanamid of Canada Scholar |
| D. M. Pringle, Niagara Falls | R. H. Pauls, St. Catharines |
| J. Raupp, West Germany |  |
| E. V. Read, Niagara-on-the-Lake | Joseph Dennis Scholars |
| R. J. Roddy, Dunnville | A. Marrone, Thorold |
| M. A. Ronson, Nepean | A. Tavani, Welland |
| S. Runions, Hamilton |  |
| S. E. Sendrowski, Welland | Faculty Board Scholars |
| D. K. Sobey, Ridgeville | D. Bodak, St. Catharines |
| S. L. Spencer, Toronto | T. Buckley, Brantford |
| S. L. Swayze, Fonthill | P. Durnford, Fonthill |
| E. M. Szeman, Fonthill | A. L. L. East, St. Catharines |
| M. D. Tadeson, Hannon | R. Holtby, St. Catharines |
| J. A. Theriault, Dunnville |  |
| L. M. A. Thompson, Trinidad | Sophia Gampel Memorial Scholars |
| A. M. Thomsen, Hamilton | P. M. Argenta, Niagara Falls |
| S. Vandenbelt, Lambeth | K. C. Hall, Niagara Falls |
| S. J. Vowles, Stoney Creek |  |
| K. L. Watson, Hannon | George Head Memorial Scholar |
| K. Wells, Oakville | D. W. Thiessen, St. Catharines |
| P. L. White, Paisley |  |
| S. S. Whitesell, Tillsonburg | Club Heidelberg Scholarship |
| L. A. Whittaker, St. Catharines | Irena Neufeld, St. Catharines |
| M. D. Wiens, Beamville |  |
| C. A. Williams, St. Mary's | Aileen Hood Memorial Scholar |
| A. C. Winter, Niagara-on-the-Lake | K. E. Jarvis, St. Catharines |
|  | H. H. Knoll Memorial Scholarship |
| Donor In-course Scholarship winners 1988-1989 | T. Boldt, St. Catharines |
|  | M. Connor, Niagara Falls |
| - | D. E. Dawson, Burlington |
|  | D. A. Hubert, Vineland |
| Alumni Association Scholars | K. Kirpatrick-Munno, Fenwick |
| E. F. Appelt, Thorold | J. Lapko, Niagara Falls |
| K. E. Cope, Stoney Creek | G. M. L. Martin-Dyck, Thorold |
| V. J. Cottone, Fort Erie | D. K. O'Neill, St. Catharines |
| B. M. Fox, Tilbury | E. Pattison, Thorold |
| T. Iagallo, Niagara Falls | R. E. Quinn, Niagara Falls |
| E. L. Kerry, St. Catharines | R. Shukla, St. Catharines |
| M. A. Marrone, Thorold | D. W. Thiessen, St. Catharines |

Lubrizol Canada Ltd. Scholars
S. H. Nguyen, St. Catharines
P.M. Magruder Memorial Scholar
A. L. L. East, St. Catharines

Gertrude Millward Scholar
R. E. Quinn, Niagara Falls

Molson - CHSC - Folk Arts Council Scholars
L. Perri, St. Catharines
A. Sandorfi, St. Catharines

Trevor Morgan Music Scholar
J. Brown, Welland

Senior Music Scholarship I
R. E. Malone, St. Catharines

Senior Music Scholarship II
J. P. Wells, Vineland

Niagara District Chartered
A.ccountant Association Prize
D. W. Rye, St. Catharines

Partridge Pelissero IgguIden \& Company Scholar
P. L. Ingram, St. Catharines

Quebec and Ontario Paper Company Scholars
P. M. Munn, St. Catharines

Lillie Traver Scholar
W. R. McBride, St. Catharines

Gordon V. Thompson Music Scholar
A. Kovacs, Welland

## Spencer Williams Scholar <br> R. D. Holtby, St. Catharines

Willmot Scholarship in Administration
D. Ioannoni, Welland

Wood Gundy Scholar
R. H. Pauls, St. Catharines

Xerox Canada Inc. Scholar
P. A. Durnford, Fonthill

| Brock Entrance Scholars |
| :--- |
| C. Boyd Slemon Scholarship |
| L. Stanwick, St. Catharines |
| C. Bruce Hill Scholarship |
| J. Healey, Niagara Falls |
| Dr. G. C. Shaver Scholarship |
| J. Carbonara, St. Catharines |

Quebec and Ontario Paper Company Scholar
L. Stanwick, St. Catharines

## Entrance Scholars

B. S. Ahluwalia,

Niagara-on-the-Lake
K. R. Alexander, St. Catharines
R. Armitage, Sudbury
W. Avis, Rexdale
L. Avolio, Welland
L. Ayers, Fonthill
J. Bartlett, Burlington
K. A. Beardwood, Fonthill
F. Biancaniello,

Niagara-on-the-Lake
B. D. Boese, St. Catharines
M. Boulet, Ottawa
L. A. Buchanan, Brockville
R. N. Butcher, Simcoe
J. Butterly, Brampton
K. E. Cain, Fonthill
M. L. Calvert, Lambeth
J. Carbonara, St. Catharines
A. Catterick, Burlington
C. Catton, Blackstock
R. Champagne, Fonthill
K. Clark, Niagara Falls
M. Clark, Deseronto
P. Clarke, Niagara Falls
L. M. Climenhage, Niagara Falls
D. Cocca, Thorold
P. Cole, Kitchener
L. A. Connelly, Sudbury
J. M. Coons, Welland
J. M. Cooper, Warsaw
S. Corriveau, Welland
K. S. Cotton, St. Catharines
F. Covello, Brampton
C. Crawford, St. Catharines
P. T. Crocco, Niagara Falls
M. Crowley, Guelph
E. M. Czartowski, Welland
J. E. Danyluk, St. Catharines
T. F. DeLuca, St. Catharines
M. DePalo, Niagara Falls
M. De Vittorio Jr., Hamilton
M. D. Dilamarter, St. Catharines
D. Dombroski, Cambridge
L. P. Dowhun, Stoney Creek
V. J. Dudar, Bramalea
K. Duff, Minesing
K. Earley, Strathroy
C. Estey, St. Catharines
L. Fera, Mississauga
M. Ferguson, Welland
V. Ferrando, St. Catharines
R. Findlay, Acton
F. Fiore, Niagara Falls
D. Forbes, Hamilton
M. J. Fox, Penetanguishene
N. Franco, Hamilton
B. Frederikse, Guelph
A. Gibsorf, St. Catharines
C. Gignac, Windsor
B. Gillmore, Burlington
D. Grebenc, St. Catharines
A. Guilbeault, St. Catharines
B. A. Hamilton, Stoney Creek
J. Healey, Niagara Falls
P. Heathcote, Hamilton
K. S. Henderson, Brockville
W. D. Herriot, Thornbury
R. T. Hicks, Kingsville
A. Highland, Thornhill
T. Hilton, Port Colborne
P. Hodgins, Niagara Falls
C. Hoekstra, St. Catharines
M. E. Hoekstra, St. Catharines
L. Hoppa, Waterdown
C. Howden, Niagara-on-the-Lake
T. J. Illman, Stoney Creek
S. E. Ireland, Tillsonburg
J. F. Janos, Brantford
K. J. Johnston, Sault Ste. Marie
E. T. Juraj, Stoney Creek
J. D. Kennedy, Thamesford
K. M. Kennedy, Vineland
T. Kilworth, Blind River
S. L. Kmiecik, Welland
J. M. Kosziwka, Kaladar
C. L. Krueger, Hamilton
D. Kvesic, St. Catharines
M. Lafferty, St. Catharines
F. Lanctot, St. Catharines
H. Leeson, Warren
T. Lichty, Millbank
J. P. Liston, Prescott
P. Lowe, Oshawa
K. Malton, St. Catharines
M. Mamak, Sarmia
C. E. Manuel, Sault Ste. Marie
K. Marchand, Fort Erie
N. Martin, Durham
J. Masternak, Beamsville
T. McBride, St. Catharines
P. McDermott, St. Catharines
D. McEllistrum, Guelph
L. McGlenister, St. Catharines
R. E. McGregor, St. Catharines
S. McKenna, Oshawa
E. H. McKindsey, St. Catharines
M. J. McLachlin, Chatham
M. H. McPherson, Wellandport
R. M. Meffe, Thorold
M. Mercier, Welland
E. A. Misquitta, Rexdale
C. L. Moir, Peterborough
S. Mokrzynski, St. Catharines
A. E. Morgan, St. Catharines
M. Morris, Stoney Creek
A. Morrison, St. Catharines
J. R. Murdoch, Niagara Falls
K. A. Murphy, Markham
S. Naeem, Stoney Creek
G. Nagel, Georgetown
D. Nichols, Welland
R. Nigro, Fort Erie
T. A. Osborne, Burlington
C. O'Shea, Lambeth
C. O'Sullivan, Hamilton
T. C. Paal, Simcoe
T. Paladin, Sarnia
J. E. Parker, Simcoe
L. Perri, St. Catharines
A. Plunkett, Cumberland Beach
N. Policella, Welland
L. Price, St. Catharines
D. Riedel, Niagara Falls
P. Robinson, River Valley
V. M. Rocca Jr., Welland
A. Sandorfi, St. Catharines
A. C. Sansom, Niagara Falls
B. R. Sawatsky, St. Catharines
L. Shakespeare, Bowmanville
N. Shook, Sault Ste. Marie
D. Slattery, Hamilton
R. Sneek, St. Catharines
L. Stanwick, St. Catharines
S. Stickland, Binbrook
M. Tajima, Penetanguishene
C. Taylor, Brooklin
G. Thomas, Oakville
R. Thurston, Islington
M. Trousdale, St. Catharines
J. Tucker, Guelph,
M. J. Van Boxmeer, Guelph
B. Vendittelli, St. Catharines
R. Verdile, Thorold
L. Volekaert, Aylmer
K. Walter, Hannon
W. P. Ward, Collingwood
L. A. Watson, Staples
K. A. Wells, Port Colborne
D. M. Williams, St. Catharines
L. Ybema, St. Catharines
B. A. M. Yorke, Sarnia
S. Young, St. Catharines
C. Zeoli, St. Catharines

## Canada Entrance Scholars

B. S. Ahluwalia,

Niagara-on-the-Lake
B. D. Boese, St. Catharines
K. Cotton, St. Catharines
T. DeLuca, St. Catharines
M. N. DePalo, Niagara Falls
D. Dombroski, Cambridge
F. Fiore, Niagara Falls
K. Kennedy, Vineland
S. J. Klassen, Jordan Station
M. Lafferty, St. Catharines
F. R. Lanctot, St. Catharines
J. R. Murdoch, Niagara Falls
M. Tajima, Penetanguishene
B. L. Venditelli, St. Catharines
L. Watson, Staples

## Medals

Prior to each Convocation the academic records of graduands are reviewed and, on the recommendation of Senate, medals are presented to students with exceptional standing in their university careers.

The Governor-General's medal is presented at Spring Convocation to a graduating student from that Convocation or the previous Fall Convocation in recognition of outstanding scholastic and personal achievement.

Vice Chancellor's Medals are presented at each Convocation to students whose consistent work at a superior level warrants recognition.

## Scholarships

Students need not apply for scholarships; the academic records of all full time students are regularly reviewed to assess and compare their qualifications for scholarships. To be eligible for other than an entrance scholarship, a student must be presently registered full time at Brock and have successfully completed five or more credits in the previous fall/winter session. Awards based on donations cannot be guaranteed by the University, and can only be forwarded after the funds have been received from the donor. Awards will be credited to the student in two equal parts, in November and on January 31. A student who withdraws from the University will not receive a refund for that part of tuition fees paid out of scholarship monies.

## Entrance scholarships

Entrance scholarships are administered by the Senate of Brock University. All applicants who enter into full time university study directly from Ontario Grade XIII are automatically considered for entrance scholarships. Subject to the availability of funds, consideration will be given to other Canadian applicants.

The minimum average required for the award of a scholarship is determined each year by the Senate Committee on Awards and Bursaries. Notification of an award is made together with the offer of admission.

Awarded to incoming first year students with the highest averages:

## C. Boyd Slemon Scholarship <br> C. Bruce Hill Scholarship <br> Dr. G. C. Shaver Scholarship

Awarded to an incoming first year student from a Niagara region high school with the highest average:

The Quebec \& Ontario Paper Company Limited Scholarship

Awarded to incoming first year students with high academic standing:

## Brock University Founders' Scholarships

Brock University Admission Scholarships

## In-course scholarships

Brock In-course scholarships are administered by the Senate of Brock University. To be considered for Brock In-course Scholarships and a number of donor scholarships, full time students must have completed five credits or more in the previous fall/winter session with a minimum overall average of 80 per cent. The minimum average required for the award of an in-course or donor scholarship is determined each year by the Senate Committee on Awards and Bursaries.

## Alumni Scholarships

Value: to be determined. To be awarded at the discretion of Senate to students with records of academic excellence.
Donor: Brock University Alumni Association
Established: 1985

## The Lily Bell Memorial Award for English <br> Value: $\$ 250$. To be awarded to the most deserving female student in second or third year English. Donor: University Women's Club of St. Catharines <br> Established: 1974

## Scholarships and Awards

J.P. Bickell Foundation Scholarship Value: $\$ 3000$. Payable $\$ 1000$ in the second, third, and fourth year. To be awarded to an outstanding student majoring in geological sciences. The scholar must have obtained an average of 75 per cent or better at the end of his or her first year, and must maintain this average throughout the subsequent years of the program or relinquish the scholarship.
Donor: J.P. Bickell Foundation Established: 1968

## Birks Family Foundation

## Scholarship

Value: to be determined. To be awarded to outstanding students at the discretion of Senate.
Donor: Birks Family Foundation
Established: 1968

## Raffaele DeLuca Memorial Scholarship

Value: to be determined. To be awarded annually to a student of Italian language on the basis of a distinguished scholastic performance.
Donor: friends of the late Professor Established: 1984

Joseph Dennis Scholarship in Italian Value: $\$ 300$. To be awarded to a first, second, or third year student in Italian on the basis of a distinguished scholastic performance.
Donor: The Grand Lodge of the Order Sons of Italy of Ontario
Established: 1975
Dr. Alan Earp Alumni Scholarship
Value: minimum $\$ 500.00$. To be awarded at the discretion of Senate to a student with a record of academic excellence.
Donor: Brock University Alumni Association
Established: 1988

## Faculty Board Scholarships

Value: to be determined. Eligible candidates will be full time students returning to Brock for the fourth year. There will be one award for each of the three divisions, for the School of Administrative Studies, and for the

School of Physical Education and
Recreation.
Established: 1986
Faculty and Staff Club Scholarships
Value: to be determined. To be awarded to part-time students (including part-time graduate students) on the basis of academic excellence at the discretion of the Senate Committee on Awards.
Donor: Brock University Faculty and Staff Club
Established: 1980

## Sophia Gampel Memorial Scholarships

Value: to be determined. To be divided between two eligible students from the city of Niagara Falls, Ontario.
Donor: Mr. Abraham Gampel, Niagara Falls, Ontario
Established: 1970
George Head Memorial Scholarship
Value: \$200. To a student majoring in administration who demonstrates superior ability.
Donor: Purchasing Management
Association of Canada
Established: 1973
Club Heidelberg Scholarship
Value: $\$ 200$. To be awarded to the top student in the department of Germanic and Slavic Studies pursuing studies in the German language and literature or in the German area studies program, entering second, third or fourth year. Donor: The St. Catharines Heidelberg Social Club
Established: 1965

## Aileen Hood Memorial Scholarship

Value: to be determined. To be awarded to a student of superior ability entering fourth year and majoring in physical education.
Donor: Aileen Hood Estate Established: 1982
H. H. Knoll Memorial Scholarships

Value: to be determined. To be awarded to students of honors standing, who are graduates of secondary schools
in the Niagara Region, and who are taking an undergraduate degree program.
Donor: The family of H. H. Knoll Established: 1987

Lubrizol of Canada Ltd. Scholarship
Value: to be determined. To be awarded to a student of honors standing in the second, third or fourth year, majoring in physics.
Donor: Lubrizol of Canada Ltd.
Established: 1971

## P.M. Magruder Memorial Scholar-

 shipValue: $\$ 600$. To be awarded to a third or fourth year student in chemistry. Students taking a combined or interdepartmental major degree are also eligible.
Donor: Anonymous
Established: 1973

## Gertrude Millward Scholarship

Value: $\$ 200$ annually. To be awarded to a student in the division of humanities for outstanding performance. Donor: Earl Mountbatten Chapter, IODE
Established: 1977

## Molson - CHSC - Folk Arts Council Scholarship

Value: To be determined. To be awarded to a student(s) entering university from a $S$. Catharines high school.

## Trevor Morgan Music Scholarship

 Value: $\$ 250$. To be awarded to the student with the highest standing in music entering second year as a major or combined major in music.Donor: Trevor Morgan
Established: 1973

## Senior Scholarship in Music I

Value: to be determined. To be awarded to a second year student with the highest average marks in music courses entering a third year BA major in music.
Donor: Dr. and Mrs. J. A. Gibson
Established: 1975
Endowed: 1981

Senior Scholarship in Music II Value to be determined. To be awarded to a student of distinguished musical achievement entering the final year of a degree program with a major in music.
Donor: Dr. and Mrs. J. A. Gibson Established: 1986
Endowed: 1986
Niagara District Chartered Accountants Association Prize
Value: $\$ 500$. To be awarded to the graduating student in the Accounting Co-op program with the highest overall average. The successful candidate must have completed his/her work terms with a Chartered Accountant firm. Donor: Niagara District Chartered Accountants Association Established: 1987

## Quebec and Ontario Paper Com-

 pany ScholarshipValue: $\$ 3000 . \$ 900$ to be awarded in the first year, $\$ 700$ in each of the three remaining years to outstanding full time students who are graduates of Niagara regional high schools and are program taking an undergraduate degree program.
Donor: The Quebec and Ontario Paper Company Limited
Established: 1967

## Partridge Pelissero Iggulden \&

 Company ScholarshipValue: $\$ 250$. To be awarded to a fulltime student enrolled in the administration program, who has obtained the highest overall standing at the end of the second year and who has chosen to enrol in the third year accounting option.
Donor: Partridge Pelissero Iggulden \& Company, Chartered Accountants. Established: 1971

Club Rheingold of Welland Scholarships
Value: $\$ 300$. To be awarded to the two top students in German, at the beginning of their third year, on the basis of their performance in second year. Donor: Club Rheingold of Welland Established: 1968

Rose, Horne \& Stevenson Insurance
Agency Scholarship
Value: $\$ 200$. To be divided between
two students of superior ability.
Donor: Rose, Home \& Stevenson
Insurance Agency Ltd.
Established: 1970
Scholler Foundation Scholarship
Value: to be determined. To be awarded to a student of honors stand-
ing majoring in chemistry.
Donor: Scholler Foundation
Established: 1973

## Mel Swart Scholarship

Value: to be determined. To be awarded annually to a senior student with a single major in politics. The scholarship honors Mel Swart's forty years of service at the municipal, regional, and provincial levels of government, including thirteen years as M.P.P. for the Welland-Thorold riding. Donor: Friends of Mel Swart Established: 1988

## Gordon V. Thompson Scholarship

 in MusicValue: $\$ 100$. To be awarded to the student with the highest average marks in music courses in the first year of a single or combined major in music. Donor: Gordon V. Thompson Established: 1973

Lillie A. Traver Scholarship Value: to be determined. To be awarded to a student of honors standing majoring in history.
Donor: Miss Lillie A. Traver
Established: 1976
The Spencer Williams Scholarship
Value: to be determined. To be awarded to an outstanding student in the school of physical education.
Donor: The Rotary Club of
St. Catharines South
Established: 1973
Willmot Scholarship in Administration
Value: $\$ 500$. To be awarded annually to an outstanding student majoring in administration.
Donor: D.G. Willmot
Established: 1972

Wood Gundy Scholarship
Value: to be determined. To be awarded to students of superior ability.
Donor: Wood Gundy Securities Limited
Established: 1970

## Xerox Canada Inc. Fellowship

Value: $\$ 1000$. To be awarded to a student of high scholastic standing in a BA program in the general area of business administration. Donor: Xerox Canada Inc. Established: 1983

## Prizes

Departmental prizes are awarded for excellence in a particular area of study. No application is required; selection and award is made by the department.

## Administrative Studies

John Edds Prize in Accounting
To be awarded to the graduating student in the School of Administrative Studies with the highest average in accounting courses prescribed for accounting majors.
Donor: J.A. Edds
Established: 1986
Administrative Studies Book Prize A book prize awarded to a student or students of outstanding academic achievement in Year 4 of an administrative studies program.

## Maurice Perkins Medal

To be awarded to the graduating student in the School of Administrative Studies with the highest academic standing, in accordance with the standards used in awarding their faculty medal.
Donor: Dr. Maurice F. Perkins

## Biological Sciences

## Biology Faculty Book Prizes

Book prizes are given annually to the student achieving the highest grade in Biology 1F90, to the second and third year students receiving the highest
marks in biology courses and to the fourth year graduating honors students with the best overall record in biology.

## Chemistry

## Chemistry Alumni/Faculty Book

 PrizesA series of book prizes shall be awarded each autumn to second year chemistry majors. Book prizes are also awarded each autumn to third year chemistry majors and combined majors with outstanding achievement.

## The Chemical Institute of Canada Prize

A silver medal, Institute book plates, and $\$ 25$ awarded to the student with the highest standing in the penultimate year of the honors chemistry program. Donor: Chemical Institute of Canada Established: 1967

## Society of Chemical Industry Merit

 AwardA medal and $\$ 50$ awarded to the honors chemistry student with the highest standing in the graduating class. In addition, the student must have obtained a minimum average of 75 per cent in his or her final year and have completed the course in four years.
Donor: Society of Chemical Industry Established: 1967

## Chemical Rubber Company Book Prize

A book prize awarded annually to the best first year student in chemistry. Established: 1964

## Classics

Marilyn Atamian Memorial Book Prize in Classics
A book prize awarded annually to the continuing education student who graduates with the highest average in classics.
Donors: Colleagues of Marilyn
Atamian in the Lincoln County Board of Education
Established: 1981

Department of Classics Book Prize
A book prize awarded to a graduating student for high standing in classics. Established: 1972

Department of Classics Book Prize in Greek
A book prize awarded to a graduating student for high standing in Greek.
Established: 1972
Department of Classics Book Prize in Latin
A book prize awarded to a graduating student for high standing in Latin. Established: 1972

Computer Science and Information Processing

Department of Computer Science and Information Processing Book Prize
Two book prizes to be awarded to second and third year students, having the highest marks in computer science courses.
Established: 1981
Digital Equipment of Canada Ltd. Award of Merit
Value: $\$ 200$ and Medal to be awarded to the top honors student graduating in computer science and information processing.

## Sassoon Cohen Prize

Two book prizes to be awarded to outstanding students in the first and second year computer science programs.

## English Language and Literature

## English Department Book Prize

A book prize to a student or students of outstanding academic achievement in English for years 3 and 4.

## The Carole LaMothe Memorial

 English Essay PrizeTo be awarded for the best essay submitted as part of the required workload in any English or Drama/ English course during the academic
year. Any entry must be submitted to the competition by the student himself. Donors: Department of English and friends of Carole LaMothe Established: 1981-82

## Freshman English Essay Prize

Value: $\$ 75$. To be awarded for the best essay submitted as part of the required workload in English 1F91 or 1F99. Any entry must be submitted to the competition by the student himself. Donor: Department of English Established: 1981-82

## Film Studies, Dramatic and Visual Arts

## M.E. and L.E. Miller Prize in Film and Visual Arts

For excellence over three or four years standing in film or visual arts courses. Established: 1971

## Dr. Marion B. Smith Prize in Fine Arts <br> For excellence over three or four years standing in fine arts courses. <br> Established: 1976 <br> The Jane Forrest Prize in Fine Arts For excellence as an honors student in one or more streams of the Fine Arts department. <br> Established: 1979

## Jean Harding Prize for Festival Achievement

A book prize awarded annually to the student judged to have made the most outstanding contribution to the spring festival of the department of Fine Arts.

## J.H. and J.F. Harding Prize in

 Theatre and Dramatic Literature For excellence over three or four years standing in dramatic literature courses. Established: 1972
## French, Italian and Spanish

Book Prize of the French ConsulGeneral, Toronto
A book prize to be awarded to an outstanding student in French. Donor: Consul-General de France Established: 1965

Andres Bello Prize (Latin-American Studies)
A book prize awarded to a student whose work in Latin-American studies has been of particular distinction. Established: 1971

Brock Community Italian Prize
Approximately $\$ 400$. Awarded to the most outstanding student taking Italian as a major or combined major, in any year.
Donor: The division of Italian and the Italian Club of Brock University

Prize of the Ambassador of Switzerland to Canada
A book prize awarded to students who obtained the highest standing in the French and German languages.
Donor: Ambassador of Switzerland to Canada
Established: 1966
Davies Prizes in Modern Languages Awarded annually to a graduating student in recognition of high academic achievement in each of French, German, Italian, Russian and Spanish.

## Geography

## Canadian Association of Geogra-

 phers Book PrizeThis prize is awarded annually to the best graduating student in the fourth year honors program of the department of Geography.
Donor: Canadian Association of Geographers
Established: 1967

## Department of Geography Year III

 Book PrizeTo be awarded to a Year III student in geography in recognition of both high academic achievement and contribution to the University community.
Donor: Department of Geography
Established: 1986
Department of Geography
Graduating Prize
A prize of geographical books or equipment. To the student in honors geography who attained the highest average in third and fourth year geography. This award may be given to
the winner of the Canadian Association of Geographers book prize.

## Geological Sciences

Canadian Society of Petroleum Geologists Student-Industry Field Trip
A prize of a one-week field trip to Calgary for the best third-year student in "soft-rock" geology.

## The Edhorn Prize in Paleontology

Prize: $\$ 100$. Awarded to the full time
student gaining the highest grade in a
first course in paleontology.
Established: 1985-86
Geological Association of Canada
Thesis Prize, Structural Geology Division
A national competition for the best thesis based primarily on structural geology or tectonics. The department will submit theses to the Division.

The Getty Mines Prize in Economic Geology
Prize: $\$ 100$. Awarded to the full time student gaining the highest grade in a first course in economic geology. Established: 1985-86

## Mineralogical Association of Canada Book Prize

Membership in the M.A.C. and a subscription to Canadian Mineralogist to be awarded annually to the student gaining the highest grade in a first course in mineralogy.

## Germanic and Slavic Studies

Prize of the Embassy of Austria
A book prize to a student or students of outstanding academic achievement in German.
Donor: Austrian Embassy
Established: 1970

## German Embassy Book Prize

Awarded to the top student in each course offered by the German division of the department of Germanic and Slavic Studies.
Donor: German Embassy
Established: 1967

## History

## The Donald G. Creighton Prize in History

Value: $\$ 100$. To be awarded to the student obtaining the highest mark in a first year history course. Established: 1966

Department of History Book Prizes Four book prizes, to be awarded to outstanding students of history in each of year 1 through 4 .

## Mathematics

John and Rosslyn Reed Prizes
For students who show outstanding proficiency in mathematics. Established: 1968

## Music

Music Division Prize, Fine Arts
To be awarded to a student showing all-round excellence in both theoretical and practical music in any year of a single or combined major in music.

## Philosophy

Affleck Memorial Prize in Philosophy
Approximately $\$ 50$ awarded to an outstanding fourth year honors student on the basis of his or her whole record with the department of philosophy. Donors: Relatives and friends of the late Mrs. Rheta Affleck
Established: 1972

## The Paul Seligman Memorial Book

Prize in Philosophy
To be awarded to the part time student graduating with the highest overall average from a three or four year program.

## Physics

Physics Department Book Prize A book prize to one or more students

## Politics

## Politics Book Prizes

Three book prizes to be awarded to the best students entering second, third and fourth year politics programs.
Established: 1966

## Psychology

## Psychology Book Prizes

Prizes are awarded to the best graduating students in each of the third and fourth year psychology programs. There is also a prize to be awarded to the best student in PSYC 3F40.

## Sociology

P.A. Sorokin Book Prize in Sociology A book prize valued at $\$ 50$ is normally awarded to a fourth year graduating student in sociology whose thesis or class project as well as general academic performance is judged by the faculty to be outstanding.

## Urban and Environmental Studies

Environmental Studies Award
Value: to be determined. To be awarded to a third or fourth year student in environmental studies.
Donor: anonymous
Established: 1977

## Urban Studies Award

Value: to be determined. To be awarded to a third or fourth year student in urban studies.
Donor: anonymous
Established: 1977

## Other Awards

## Halia Jordan Memorial <br> Book Prize

Value: $\$ 150$. To be awarded each April to a deserving International

## student.

Donors: friends of the late Mrs. D. L. Jordan
Established: 1986

## Edythe and William Meeker Memorial Book Prize

To be awarded annually, at the spring convocation, to the continuing education student who has graduated that academic year with the highest average.
Donor: Professor J. P. Meeker Established: 1971

## Schaeffe Hall Award

To be awarded to an upper-year residence student of high academic standing who has made a worthy contribution to residence life. Donors: residents of Shaeffe Hall, 1985/86

## Silver Badger Alumni Award

Value to be determined.
This annual Award was established in memory of Barrie-Ann Bergsma, a member of Brock's first graduating class, by her family. The award will be made to a student who has maintained high academic standing, while making a significant on-going contribution to the extra-curricular life of the University. This award is by application or nomination to the Senate Commmittee on Awards. Forms are available from the Office of the Registrar.
Donors: The family and friends of Barrie-Ann Bergsma
Established: 1987

## Badger Award

Value: to be determined. To be granted annually to one or two graduands who have contributed most to the extracurricular life of the University and have maintained a satisfactory academic standing. To be awarded at the spring convocation only. Established: 1980

## Bursaries and other financial assistance

Bursaries are normally awarded late in the academic year to full time students who can show proof of great financial need and who have satisfactory academic standing. Acceptance of a bursary implies that the recipient will complete the current academic year.

All students who can show financial need are expected to apply for assistance under the Ontario Student Assistance Program (OSAP).

Atkinson Charitable Foundation The Atkinson Charitable Foundation has established a bursary program which gives assistance to students of merit and proven financial need. Awards are made only to students who are bona fide residents of the province of Ontario.

## Barkley's of Avonmore Bursary

Value: $\$ 500$. To be awarded as entrance bursaries to deserving students with preference for students from the Third World. Applications for this bursary should be made through the Student Awards office. Recipients will be selected by the Senate Bursary Subcommittee.
Established: 1980

## The Dr. John H. Belton Bursary

Value: $\$ 500$. To be awarded to a mature woman undergraduate who is a Canadian citizen now completing her interrupted education and who is in need of financial assistance. Further details available on the awarding of the bursary.
Donor. Dr. John H. Belton Established: 1986

## J.P. Bickell Foundation Bursary

Value: $\$ 1500$. For distribution to students in great need.
Donor: The J.P. Bickell Foundation Established: 1969

## Birks Family Foundation Bursary

The Birks Family Foundation has established a plan of annual contributions to the student aid fund of recognized Canadian universities for the creation of the Birks Family Foundation Bursaries. The bursaries are awarded by the Foundation on the recommendation of the University scholarship committee and are not restricted to faculty or year and may be renewed. The number and amount of such awards may vary annually, depending upon the funds available for the purpose from the Foundation.

CUPE Local 1295 Bursary
Value: $\$ 500$ annually. To be awarded to a son or daughter of a member of CUPE who demonstrates financial need. First consideration will be given to children of members of CUPE local 1295. If there are no suitable candidates from this group, next consideration will be given to children of members of a Niagara CUPE local and finally, to children of members of a CUPE local in Ontario.

## William J. Edgar Bursary

Value: $\$ 900$. Awarded annually to needy students from the former county of Welland.
Donor: Jenny Bell Edgar Estate
Established: 1966

## Jim Gayman Bursary

Value: $\$ 100$. To be awarded to a student living in residence who is in financial need.
Donor: Brock University Alumni
Association
Established: 1981

## Patrick Geddes Award in Urban Studies

Value: $\$ 500$. To each of two students of proven financial need who are accepted to full time studies in year 2 , 3 , or 4 as combined majors in urban studies and one of: biological sciences, economics, geography, geological sciences, politics, or sociology. This award is by application only to: Director of the Institute of Urban and Environmental Studies, prior to July 1. Established: 1972

## Prof. Ernest E. Goldsmith Bursary Fund

Value: $\$ 900$. To be distributed among worthy students in financial need. Donor: Brock University Alumni Association
Established: 1974
Club Heidelberg Bursary in German
Value: $\$ 100$. To be awarded to a student in second, third or fourth year of German language and literature studies, or the German area studies program, on the basis of academic excellence and need.

Donor: St. Catharines Social Club Heidelberg Inc.
Established: 1973

## IODE Bursary

To be given to needy students who may find it extremely difficult to continue their year without additional outside aid.

## Inter-Provincial Pipe Line Bursary

Value: $\$ 1000$. Awarded annually to students holding Canadian citizenship or permanent resident status who can demonstrate great need. At least 50 per cent of the awards to be made to students in the sciences.
Donor: The Inter-Provincial Pipe Line Company
Established: 1970

## Harry Karowec Memorial Bursary

Value: to be determined. To be
awarded to a student in great need majoring in English literature. Donor: Mrs. Ellen Cote
Established: 1982

## T. J. Kearney Bursary

Value: to be determined. To provide assistance to worthwhile students in financial need with preference to students of proven athletic ability. Established: 1979

## Evelyn Kita Bursary

Value: $\$ 250$. Awarded to students in great need.
Donor: Mrs. Evelyn Kita
Established: 1972

## Ted Lancaster Bursary

Value: $\$ 1000$. To be awarded to a student in need.
Donor: St. Catharines Rotary Club
Established: 1976

[^2]
## Stan Mikita Bursary

Value: to be determined. Provides funds to continuing students in financial need who have satisfactory academic performance and who have achieved a high level of accomplishment in extra-curricular activities.
Donor: Dr. S. Mikita
Established: 1972

## Niagara Regional Development Council Bursary

Value: to be determined. To be awarded to a student or students pursuing studies, investigation or research directed to the promotion of the economic growth of areas known as the regional municipality of Niagara, the counties of Brant, Haldimand and Wentworth, the city of Hamilton and the city of Brantford.
Donor: Niagara Regional Development Council
Established: 1974

## Ontario Credit Union Charitable Foundation Bursary

Value: $\$ 250$. To be awarded to a Canadian citizen or permanent resident in the second, third, or fourth year of a business management course.
Donor: Ontario Credit Union Charitable Foundation.
Established: 1985

## Order of Eastern Star Bursary

Value: $\$ 150$. Awarded to the son or daughter of an Eastern Star member of District Seven, which includes Niagara Falls, Fort Erie, Dunnville, Port Colborne, Welland, Thorold, Fonthill and St. Catharines. The recipient must have satisfactory academic standing. Donor: Lincoln Chapter No. 142, Order of Eastern Star Established: 1966

## Margaret Paddon Bursary

Value: $\$ 300$. To be awarded to a student who is (a) a single parent supporting a family; (b) in financial need; and (c) aspiring to the teaching profession. Application may be made through the Awards office. Donor: Members of the French department, Lincoln County Board of Education
Established: 1979

## Royal Canadian Legion Bursary

Value: $\$ 400$. Awarded to a second year student who is a veteran or the child of a veteran.
Donor: Royal Canadian Legion, H.T.
Church (Ontario No. 24 Branch)
Established: 1967

## St. Catharines Jr. Falcons Hockey Club Bursary

Value: $\$ 200$. To provide assistance to worthwhile students in financial need with preference to any student with proven athletic ability.
Established: 1978

## University Women's Club of St. Catharines Bursary

Value: to be determined. To provide assistance to female students in financial need.
Donor: University Women's Club of St.

## Catharines

Established: 1980

## University Women's Club of St. Catharines Bursary

Value: To be determined. To provide assistance to a mature female student who is continuing her interrupted education on a part time basis and is in need of financial assistance.
Donor: University Women's Club of St. Catharines
Established: 1987

## Walker Brothers Bursary

Value $\$ 500$. To be awarded to a student in second, third or fourth year majoring in geological sciences, on the basis of academic excellence and need.

## Administration of awards

Awards which are administered by the University will be made by Senate to qualified candidates; Senate may withhold any award if no candidates qualify. The award of scholarships, bursaries, prizes, and medals shall be final when formally announced by the University.

Awards administered by donors

American Can of Canada Limited
Competitive scholarships are awarded to children of employees giving full tuition for four years plus a grant-in-aid to the University. Prospective candidates should apply to:
The Administrator
Scholarship Program
American Can of Canada Limited 1 International Boulevard
Rexdale, Ontario, M9W 1A1
Asbestos Workers Union Local 95
Awards are made available to the children of both living and deceased members of the Asbestos Workers Union, Local 95, and further information should be obtained from:
The Administrator
Asbestos Workers Welfare Fund c/o Benefit Plan Administrators Ltd. Box 52, Toronto-Dominion Centre Toronto, Ontario, M5K 1G2

Association of Universities and Colleges of Canada (AUCC)
AUCC administers a number of scholarships offered by private donors and by foreign countries to Canadian students. Complete information can be obtained from:

## AUCC

151 Slater Street
Ottawa, Ontario, K1P 5N2

## Bobby Bauer Memorial Award

For students of outstanding proficiency in hockey in need of financial assistance. Apply, prior to August 31, to: Bobby Bauer Memorial Foundation 60 Victoria Street North
Kitchener, Ontario, N2H 5B9
Morris Berkowitz Memorial Bursary Value to be determined. Established in memory of the late Morris Berkowitz, professor of sociology. To be awarded by the department of Sociology to a full time student or students who have a demonstrable need and a major average of 75 per cent or better in his or her most recent year of study.

Available annually.
Donors: friends of the late Professor Established: 1981

## Rosalind (Hyman) Blauer Award

To be awarded annually to an outstanding member of the Brock community (students, staff or faculty) engaged in work directed at ameliorating the position of women in contemporary society. This award is by application or nomination to the Administrative Committee for the Rosalind Blauer Memorial Fund. Forms are available from the Student Awards office. The award is in honor of the memory of Professor Rosalind (Hyman) Blauer, founding member of the Brock department of Economics.

## Brock Philosophical Society Scholarship

Value: $\$ 500$. To be awarded to the full time undergraduate philosophy major obtaining the highest standing in at least three philosophy courses. Donor: Brock Philosophical Society Established: 1985

## Brock University Alumni Award

Value: $\$ 500$. Eligible candidates will
be full time or part time students who have completed at least ten credits at Brock University with a minimum B average and who have made a meaningful contribution to the development of extra-curricular life within the Brock community. This award is by application or nomination to the Alumni Association. Forms are available from the Alumni Office, Thistle 263.
Donor: Brock University Alumni Association
Established: 1974

## Canadian Armed Forces University Subsidization Plans

The University participates in the Regular Officer Training Plan (ROTP) of the Canadian Armed Forces, a completely subsidized university plan covering tuition, books, medical service and a living allowance for up to four years of undergraduate study. Successful applicants will be enrolled in the Canadian armed forces as officer cadets with promotion to commissioned rank upon graduation.

## Canadian International Paper Company

Seven scholarships are offered annually to children of employees of the company or its subsidiaries in Canada who have a minimum of one year of service. To be eligible, a student must attain a grade average of 75 per cent or higher in the last two years of secondary school in the subjects required for admission to an approved institution.
Further information and application forms may be obtained from:
Awards officer
National Programs Division
Association of Universities and
Colleges of Canada
151 Slater Street
Ottawa, Ontario, K1P 5N1

## The Certified General Accountants Association of Ontario Award

An annual award for excellence to a student graduating from Brock University who has displayed outstanding achievement in accounting. The award is $\$ 1000$ composed of a cash award of $\$ 150$ plus a credit of $\$ 850$ to be drawn on when the candidate wishes, for the purpose of defraying any fees related to courses in the CGA study program.
Donor: The Certified General Accountants Association of Ontario
Established: 1981
Chemistry Alumni/Faculty Award One or more scholarships shall be awarded each year to upper year students in a single or combined major in chemistry. Preference is normally given to second year students. The value of each award shall not be less than $\$ 100$.

## Department of Veterans Affairs

Assistance is available to children of those who have died as a result of military service. This includes service in forces other than those of Canada, if as a result of such service, a pension has been paid on behalf of the child under the Canadian Pension Act. Further information may be obtained through the Veterans Welfare Service of the Department of Veterans Affairs in the applicant's own district.

Sir James Dunn Scholarship This award, which is renewable, provides for the payment of tuition and registration fees up to but not in excess of $\$ 1,000$, depending on the individual concerned. Children of residents of the communities of Sault Ste. Marie, Port
Colborne and Wawa, Ontario, are eligible. Qualified candidates should write for further information to: The Secretary
Scholarship Committee
Algoma Steel Corporation Ltd. Sault Ste. Marie, Ontario

The Hamilton Foundation Bursaries
Applicants must be graduates of a Hamilton secondary school (public or separate), and be able to demonstrate financial need. The purpose of The Hamilton Foundation Bursaries (payable from its Chaney-Ensign Fund) is to provide assistance for the higher education of students who might otherwise be financially unable to attend an approved college/university in Canada or the United States. Applications will be reviewed by a special bursary committee on the Hamilton Foundation. Enquiries should be addressed to the University's Student Awards office.

Imperial OilHigher Education Awards Imperial Oil Limited annually offers free tuition and other compulsory fees to all children or wards of employees or annuitants who proceed to higher education courses. The courses may be taken at any Canadian university or other approved institution of higher learning. Each award is tenable for a maximum of four years. To be eligible, a student must attain an average mark of 70 per cent or higher in the appropriate secondary school examinations of the subjects required for admittance to the approved institution. Further information and application forms may be obtained from:
The Secretary
Committee on Higher Education
Imperial Oil Limited
111 St. Clair Avenue West
Toronto, Ontario, M5W 1K3

## International Nickel Company of Canada (INCO)

Awards are made, covering the cost of tuition and fees for a maximum of four years, to children of employees.
Also, Inco participating scholarships for students in the physical sciences. Further information may be obtained by writing to:
The International Nickel Co. of Canada Limited
Box 44, Toronto-Dominion Centre
Toronto, Ontario, M5K 1E3

## Masonic Foundation of Ontario Bursaries

The foundation provides assistance for students near graduation who otherwise could not complete their year owing to sudden personal emergencies.
Donor: Masonic Foundation of Ontario Established: 1967

## Leonard Foundation

Assistance is given in varying amounts to children of clergymen, school teachers, graduates of the Royal Military College of Canada, members of the Engineering Institute of Canada. Further information may be obtained by writing to:
Senior Trust Officer
Canada Permanent Trust Company
320 Bay Street
Toronto, Ontario, M5H 2P6

## Petrofina Canada Higher Education Merit Awards

These awards are available to encourage the dependent children or wards of employees or annuitants of Petrofina Canada and its subsidiaries to attain a university education. Further information may be obtained from:
The Manager
Personnel Administration and Industrial Relations
Petrofina Canada Limited
1 Place Ville Marie
Montreal, Quebec

## Thompson Products Limited Old Guard Association

Awards are made available to the children of employees of Thompson Products Limited. Further information

## Scholarships and Awards

may be obtained by writing to:
The Treasurer
Old Guard Association of Thompson
Products Limited
Box 3004, 230 Louth St.,
St. Catharines, Ontario
L2R 7B5
United Auto Workers Union, Local 199, Bursaries
Amounts to be determined from time to time by the donor.
Donor: United Auto Workers Union, Local 199
Established: 1966

## To prospective donors

The University welcomes offers of funds for scholarships, bursaries and prizes from individuals, companies and associations.

Enquiries should be addressed to:
Director of Development
Brock University
St. Catharines, Ontario
L2S 3A1
(416) 688-5550 ext. 3591

Ontario Student Assistance Program

These are the components of the Ontario Student Assistance Program (OSAP):

## Ontario Study Grant Plan

The main purpose of the Ontario Study Grant Plan is to provide non-repayable grant assistance to students from less affluent families, normally for their first four years of post-secondary education.

## Canada Student Loans Plan

This plan provides need-tested loan assistance up to and including the doctoral level of study. Students who have reached "independent status" can be assessed for loan assistance without reference to their families' income.

## Ontario Student Loans Plan

The main purpose of the provincial loans plan is to make need-tested loan assistance available to students who are not covered by the Canada Student Loans Plan. This will include students taking less than 60 per cent of a normal course load, and some full-time students whose needs are not fully met by the Canada Student Loans Plan.

## Ontario Special Bursary Plan

The provincial bursary plan ensures that particularly needy part-time students receive grant assistance. There will continue to be an upper limit on the number of courses that a student can take (three full credit courses or their equivalent); students will not be able to receive financial assistance from both this program and the Ontario Study Grant Plan at the same time.

All students who are attending Brock University may qualify for aid under one or more of these plans provided they satisfy the residency requirements outlined in the OSAP brochure, and demonstrate financial need. Students wishing to apply under the Ontario Study Grant Plan, the Ontario Student Loans Plan, or the Canada Student Loans Plan can do so on the same application form. Students intending to apply under the Ontario Special Bursary Plan should contact the Student Awards office directly to arrange a personal interview.

Application forms and brochures for the 1989/90 program will be available in April, 1989, and may be obtained from:
Financial aid office
Thistle north, room 260
Brock University
St. Catharines, Ontario
L2S 3A1

## Reporting awards

All full-time students receiving OSAP assistance are obliged to notify the Student Awards office, in writing and without delay, about awards, scholarships, bursaries, or prizes they may have received.

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## Index

## Index

Academic counselling, 30
Academic regulations, 24
Academic standing, 28
Accounting, 33
Additional qualification courses, 103
Administrative Studies, 33
Alumni Association, 9
Ancient history, 79
Appeals, 31
Application for admission, 15
Application for graduation, 29
Applied Language Studies, 47
Applied Linguistics, 51
Appraiser of the Canadian Institute, 32
Archaeology, 79
Asian Studies, 52
Astronomy, 193
Athletics and recreation, 11
Attempts, 28
Attendance, 26
Auditor status, 21, 30
Awards, bursaries, 12, 236
Biochemistry, 53
Biological Sciences, 54
Board of Trustees, 241
Bookstore, 11
Brock University Students' Union, 9
Bursaries, 236
Business administration, 33
Business Economics, 63
Campus Ministries, 12
Canada Student Loans Plan, 12, 240
Canadian and European Community Studies, 66
Canadian Credit Union Institute Program, 32
Canadian Resident Appraiser, 32
Canadian Studies, 64
Certificate programs, 29
Public Administration, 197
Urban and Environmental
Studies, 223
Certificate plus a degree, 29
Certified Administrative Managers program, 32
Certified General Accountants program, 32, 34
Challenge for credit, 30
Chaplains, 12
Chartered accountants, 32, 34
Chemistry, 68
Child Studies, 74
Classics, 79

Combined major, 25
Communications Studies, 86
Computer Science and Information Processing, 89
Computing services, 10
Concordia Lutheran Theological Seminary, 8
Context electives, 21,26
Co-op accounting option, 34
Co-op urban and environmental studies, 223
Core and context, 26
Counselling, academic, 30
Counselling centre, 12
Course level requirements, 21
Course load, 26
Course numbering, 23
Day care centre, 14
Deans' honors lists, 228
Degree categories, 28
Degree requirements, 24
Development office, 239
Disabled students, 11
Dramatic literature, 123
Dutch, 157
Economics, 94
Education, College of, 100
English as a Second Language, Teaching, 47
English Language and Literature, 116
English language proficiency, 17
Entrance scholarships, 231
Environmental Science, 120
Environmental studies, 223
Evaluation, 27
Examinations, 28
Extra courses, 28
Extradepartmental studies, 121
Faculty, 244
Fees, 19
Film studies, 125
Film Studies, Dramatic and Visual Arts, 122
Finance (program), 33
Financial aid, 12, 19, 236
Fine arts studies, 123
Five courses in one department, 26
Foreign student adviser, 13
French, 134
General Studies, 25, 140
Geography, 141
Geological Sciences, 149
German, 155
Glossary of terms, 21

Grade 13 credits required, 18
Grade 13 students, 17
Grades, 27
Graduate programs,
Biological Sciences, 56
Chemistry, 70
Education, 101
Geological Sciences, 151
Philosophy, 180
Physics, 193
Politics, 197
Great Books Seminar, 172
Greek, 79
Half courses, 21
Health fee, 19
Health Sciences, Pre-professional Studies, 204
Health Services, 13
Health Studies, 161
Hebrew, 84
History, 162
Honors standing terminology, 28
Housing service, 13
Humanities language requirement, 25
In-course scholarships, 231
Institute of Canadian Bankers Program, 32
Institute of Chartered Accountants Program, 32
Institute of Urban and Environmental Studies, 223
Instructional resource centre, 10
Insurance Institute of Canada Program, 32
Integrated studies, 25, 140
Intercollegiate sports, 11
International students, $13,15,16,17$
Intramural athletics program, 11
Italian, 134
January admission, 17
Labor Studies, 167
Language requirement, 25
Late registration fee, 19
Latin, 79
Letters of permission, 21, 30
Liberal studies, 172
Librarians, 243
Library, 10
Limited enrolment courses /programs, 26
Linguistics, 160
Listening room, 10
Literacy test, 25

Major requirements, 21, 24, 25
Management, 33
Map library, 10
Marketing, 33
Master of Arts (MA) programs
Philosophy, 180
Politics, 197
Master of Education (MEd)
programs, 101
Master of Science (MSc) programs
Biological Sciences, 56
Chemistry, 70
Geological Sciences, 151
Physics, 193
Mathematics, 170
Mature student admission, 17
Medals, 228, 231
Music, 175
New numbers, 23
Officers of the University, 242
Ombudsman, 9
Ontario Public Interest Research
Group, 9
Ontario Student Assistance
Program (OSAP), 19, 240
Ontario Teacher's Certificate, 101
Part time programs, 32
Payment of fees, 19
Petitions and Appeals, 31
Philosophy, 180
Physical Education, 186
Physical education centre, 11
Physics, 192
Placement office, 13
Plagiarism, 31
Politics, 196
Prizes and awards, 228
Professional certificate courses, 32
Psychology, 205
Public administration, 197
Re-admission, 17
Real Estate Institute program, 32
Recreation, campus, 11
Recreation, program, 213
Registration, 21, 26
Repeated courses, 28
Replacement of courses, grades, 28
Required courses, core and context, 26
Requirements for degree, 24
Residence, 13, 21
Returned cheque charge, 19
Russian, 155

Sanskrit, 185
Schedule of dates, 4
Scholarships, awards, bursaries, 228
Second degree, 29
Second degree, attempts, 28
Senate, 241
Senior citizens, 16, 19
Single major, 25
Six-course load, 26
Society of Management Accountants program, 32
Sociology, 217
Spanish, 134
Special examinations, 28
Student services, 12
Students' Centre, 9
Students' union, 9
Teacher training program, 100
Teaching English as a Second Language, 47
Theatre, 126
Transcripts, 20, 22, 27
Transfer credit, 16
Transfer student degree requirements, 24
Transfer students, 16
Trust Companies of Canada program, 32
Two degrees, 29
University Choir, 176
Urban and environmental studies, 223
Visual arts, 130
Withdrawal, 20, 26
Withholding of degree or grades, 20


## Brock University Campus Map




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[^0]:    ***TESL 4F05
    Reading in a second language
    (formerly TESL 3F93)
    (also offered as EDUC 4F05)
    Various methodologies for reading instruction. Fundamental principles and strategies for teaching and studying second-language reading. Opportunities will be provided for students to develop skills in reading assessment, instruction and evaluation. Attention will be devoted to techniques for the analysis and implementation of second-

[^1]:    DRAM 4F90
    Critical theory and practice
    (also offered as FILM 4F90 and THEA 4F90)
    An advanced study of critical theory and its application to theatre, dramatic literature, film, radio, television and popular culture. Students will be expected to produce a major piece of

[^2]:    Professor Bruce A. Liberty Memorial Bursary
    Value: to be determined. To be distributed by the department of Geological Sciences to worthy undergraduate or graduate students who have a demonstrable need and a satisfactory record (normally a major average of 70 per cent or better).
    Donor: friends of the late Professor Established: 1982

